



# INGENIERÍA DE DETALLES CAMBIO DE MATERIAL LÍNEAS ELECTROLITO INTERPLANTA A HDPE MEL

BPI17009

**REVISADO**



## HOJA DE DATOS

☐ SIN COMENTARIOS

☒ CON COMENTARIOS

FECHA: 22.10.17 POR: G. Rojas

## ADENDA MATERIALES DE PIPING (PIPING CLASS)

BPI17009-M-6000-DS002

B	13/09/17	Aprobación del Cliente	 F. Zambrano	 H. Martinez	 G. Acevedo		
A	06/09/17	Coordinación Interna	F. Zambrano	H. Martinez	G. Acevedo		
REV.	FECHA	EMITIDO PARA	POR	L.D	J.P.	REV.	APR.
BRASS						CLIENTE	



BRASS Chile S.A.

Tecnología de punta  
en transporte de fluidos



BRASS Chile S.A.

 BRASS Chile S.A.  
Tecnología de punta  
en transporte de fluidos

CONTROL DE PRODUCTOS

Revisado por: 

Fecha: 14/9/17

### HOJA DE DATOS - ADENDA MATERIALES DE PIPING (PIPING CLASS)

N° Documento	: BPI17009-M-6000-DS002	Revisión	: B
Cliente	: Minera Escondida	Fecha Revisión	: 13/09/2017
Proyecto	: Ingeniería de Detalles Cambio de Material Líneas Electrolito Interplanta a HDPE	Preparado Por	: F. Zambrano
N° Proyecto	: BPI17009	Revisado Por	: H. Martínez
		Aprobado Por	: G. Acevedo

<b>Clase</b>	<b>SSPC03</b>	<b>Servicio</b>	<b>Electrolito Rico / Electrolito Pobre</b>
<b>Código de diseño</b>	<b>ASME B31.4</b>	<b>Factor de diseño</b>	<b>0,72</b>
<b>Presión de diseño</b>	<b>540 psi</b>	<b>Clase ASME Flanges</b>	<b>300</b>
<b>Corrosión / Erosión sobre espesor</b>	<b>0 mm</b>	<b>Material de construcción</b>	<b>Acero Inoxidable</b>
<b>Notas</b>	<b>Adenda a clase SSPC03 del documento "TECHNICAL SPECIFICATION - PIPING MATERIAL" N°2325-0000-250-TS-0001. (Ver Anexo I)</b>		

ITEM	RANGO Ø (in)		DESCRIPCIÓN
	DE	HASTA	
CAÑERÍAS	2"	12"	CAÑERÍA SCH 40S SMLS ASTM A312 TP316L BE
	14"	24"	TUBERÍA ESPESOR 0,375" EFW ASTM A312 TP316L BE
FLANGES	2"	24"	FLANGE SO RF ASME B16.5 CLASE 300 ASTM A182 F316
	2"	24"	FLANGE CIEGO RF ASME B16.5 CLASE 300 ASTM A182 F316
	2"	24"	FLANGE ANTEOJO RF (SPECTACLE BLIND) ASME B16.48 CLASE 300 ASTM A182 F316
TEES	14"	24"	TEE RECTA ESPESOR 0,375" BW ASTM A403 WP316L
CODOS	2"	12"	CODO 90DEG RL SCH 40S ASTM A403 WP316L
	14"	24"	CODO 90DEG RL ESPESOR 0,375" ASTM A403 WP316L
	2"	12"	CODO 45DEG RL SCH 40S ASTM A403 WP316L
	14"	24"	CODO 45DEG RL ESPESOR 0,375" ASTM A403 WP316L
REDUCCIONES	14"	24"	REDUCCIÓN CONC. ESPESOR 0,375" BW ASTM A403 WP316L
EMPAQUETADURAS	2"	24"	EMPAQUETADURA RF ESPESOR 1/8" CLASE ASME 300 RELLENOS INORGÁNICOS CON PTFE
ESPÁRRAGOS	5/8"	5/8"	ESPÁRRAGOS ASTM A193 B8M-2, TUERCAS HEXAGONALES ASTM A194 8M, ASME B1.1-11 UNC
	3/4"	3/4"	ESPÁRRAGOS ASTM A193 B8M-2, TUERCAS HEXAGONALES ASTM A194 8M, ASME B1.1-10 UNC
	7/8"	7/8"	ESPÁRRAGOS ASTM A193 B8M-2, TUERCAS HEXAGONALES ASTM A194 8M, ASME B1.1-9 UNC
	1"	1 1/2"	ESPÁRRAGOS ASTM A193 B8M-2, TUERCAS HEXAGONALES ASTM A194 8M, ASME B1.1-8 UN
VÁLVULAS	1"	2"	BA-300 VÁLVULA DE BOLA CLASE ASME 300 RF 316 SS/RPTFE, MANUAL CON PALANCA
	2"	6"	GA-300 VÁLVULA DE COMPUERTA CLASE ASME 300 RF 316 SS, MANUAL CON VOLANTE
	2"	6"	VE-300 VÁLVULA DE VENTEO CLASE ASME 300 RF 316 SS/VITON
KIT DE AISLACIÓN	2"	24"	KIT DE AISLACIÓN (EMPAQUETADURA, MANGUITOS Y GOLILLAS) GRE (NEMA G10), SELLOS DE TEFLÓN

### HOJA DE DATOS - ADENDA MATERIALES DE PIPING (PIPING CLASS)

N° Documento	: BPI17009-M-6000-DS002	Revisión	: B
Cliente	: Minera Escondida	Fecha Revisión	: 13/09/2017
Proyecto	: Ingeniería de Detalles Cambio de Material Líneas Electrolito Interplanta a HDPE	Preparado Por	: F. Zambrano
N° Proyecto	: BPI17009	Revisado Por	: H. Martínez
		Aprobado Por	: G. Acevedo

<b>Clase</b>	<b>CLPC03</b>	<b>Servicio</b>	<b>Electrolito Rico / Electrolito Pobre</b>
<b>Código de diseño</b>	<b>ASME B31.4</b>	<b>Factor de diseño</b>	<b>0,72</b>
<b>Presión de diseño</b>	<b>540 psi</b>	<b>Clase ASME Flanges</b>	<b>300</b>
<b>Corrosión / Erosión sobre espesor</b>	<b>0 mm</b>	<b>Material de construcción</b>	<b>Acero Carbono con revestimiento de HDPE</b>
<b>Notas</b>	<b>Adenda a clase CLPC03 del documento "TECHNICAL SPECIFICATION - PIPING MATERIAL" N°2325-0000-250-TS-0001. (Ver Anexo I)</b>		

ITEM	RANGO Ø (in)		DESCRIPCIÓN
	DE	HASTA	
CAÑERÍAS	2"	12"	CAÑERÍA SCH STD SMLS ASTM A53-B BE (REVESTIDA CON HDPE ROTOMOLDEADO)
	14"	28"	TUBERÍA SCH STD ERW ASTM A53-B BE (REVESTIDA CON HDPE ROTOMOLDEADO)
	24"	24"	TUBERÍA SCH STD SAWL API 5L Gr. B PSL2 BE (REVESTIDA EN TERRENO CON LINER DE HDPE)
FLANGES	2"	24"	FLANGE WN RF SCH STD ASME B16.5 CLASE 300 ASTM A105 (REVESTIDO CON HDPE ROTOMOLDEADO)
	26"	28"	FLANGE WN RF SCH STD ASME B16.47 SERIE A CLASE 300 ASTM A105 (REVESTIDO CON HDPE ROTOMOLDEADO)
	24"	24"	FLANGE SCH STD ASME B16.5 CLASE 300 ASTM A105 (POR PROVEEDOR DE LINER DE HDPE)
OLETS	2"	4"	WELDOLET SCH STD MSS SP-97 ASTM A105 (REVESTIDO CON HDPE ROTOMOLDEADO)
EMPAQUETADURAS	2"	24"	EMPAQUETADURA RF ESPESOR 1/8" CLASE ASME 300 RELLENOS INORGÁNICOS CON PTFE
ESPÁRRAGOS	5/8"	5/8"	ESPÁRRAGOS ASTM A193 B8M-2, TUERCAS HEXAGONALES ASTM A194 8M, ASME B1.1-11 UNC
	3/4"	3/4"	ESPÁRRAGOS ASTM A193 B8M-2, TUERCAS HEXAGONALES ASTM A194 8M, ASME B1.1-10 UNC
	7/8"	7/8"	ESPÁRRAGOS ASTM A193 B8M-2, TUERCAS HEXAGONALES ASTM A194 8M, ASME B1.1-9 UNC
	1"	1 5/8"	ESPÁRRAGOS ASTM A193 B7, TUERCAS HEXAGONALES ASTM A194 2H, ASME B1.1-8 UN
VÁLVULAS	1"	2"	BA-300 VÁLVULA DE BOLA CLASE ASME 300 RF 316 SS/RPTFE, MANUAL CON PALANCA
	2"	6"	GA-300 VÁLVULA DE COMPUERTA CLASE ASME 300 RF 316 SS, MANUAL CON VOLANTE
	2"	6"	VE-300 VÁLVULA DE VENTEO CLASE ASME 300 RF 316 SS/VITON
KIT DE AISLACIÓN	2"	24"	KIT DE AISLACIÓN (EMPAQUETADURA, MANGUITOS Y GOLILLAS) GRE (NEMA G10), SELLOS DE TEFLÓN

TABLA DE DERIVACIONES	Principal	20"	W	W	W	W = Weldolet
		24"	W	W	W	
		28"	W	W	W	
			2"	3"	4"	
Derivación						

### HOJA DE DATOS - ADENDA MATERIALES DE PIPING (PIPING CLASS)

N° Documento	: BPI17009-M-6000-DS002	Revisión	: B
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Proyecto	: Ingeniería de Detalles Cambio de Material Líneas Electrolito	Preparado Por	: F. Zambrano
	Interplanta a HDPE	Revisado Por	: H. Martínez
N° Proyecto	: BPI17009	Aprobado Por	: G. Acevedo

<b>Clase</b>	<b>PEPC51</b>	<b>Servicio</b>	<b>Electrolito Rico (RE)/ Electrolito Pobre (LE)</b>
<b>Código de diseño</b>	<b>AWWA M55</b>	<b>Factor de diseño</b>	<b>1</b>
<b>Presión de diseño</b>	<b>220 psi @ 40°C (RE) 186 psi @ 50°C (LE)</b>	<b>Clase ASME Flanges</b>	<b>300</b>
<b>Corrosión / Erosión sobre espesor</b>	<b>0 mm</b>	<b>Material de construcción</b>	<b>HDPE</b>
<b>Notas</b>	<b>Adenda a clase PEPC51 del documento "TECHNICAL SPECIFICATION - PIPING MATERIAL" N°2325-0000-250-TS-0001. (Ver Anexo I)</b>		

ITEM	RANGO Ø (in)		DESCRIPCIÓN
	DE	HASTA	
<b>CAÑERÍAS</b>	<b>20"</b>	<b>28"</b>	TUBERÍA HDPE PE100 PN20 SDR 9 ISO 4427
<b>FLANGES</b>	<b>20"</b>	<b>28"</b>	FLANGE DE RESPALDO ASTM A36 AWWA C207 CLASE F
	<b>20"</b>	<b>28"</b>	FLANGE DE RESPALDO ASTM A182 F316 AWWA C207 CLASE F
<b>STUB END</b>	<b>20"</b>	<b>28"</b>	STUB END HDPE PE100 PN20 SDR 9 ISO 4427
<b>CODOS</b>	<b>20"</b>	<b>28"</b>	CODO 45DEG RL HDPE PE100 PN20 SDR 9 ISO 4427
<b>REDUCCIONES</b>	<b>24"</b>	<b>28"</b>	REDUCCIÓN CNC HDPE PE100 PN20 SDR 9 ISO 4427
<b>EMPAQUETADURAS</b>	<b>20"</b>	<b>28"</b>	EMPAQUETADURA RF ESPESOR 1/8" CLASE ASME 300 PTFE
<b>ESPÁRRAGOS</b>	<b>1"</b>	<b>1 1/2"</b>	ESPÁRRAGOS ASTM A193 B8M-2, TUERCAS HEXAGONALES ASTM A194 8M, ASME B1.1-8 UN

**HOJA DE DATOS - ADENDA MATERIALES DE PIPING (PIPING CLASS)**

N° Documento	: BPI17009-M-6000-DS002	Revisión	: B
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Proyecto	: Ingeniería de Detalles Cambio de Material Líneas Electrolito	Preparado Por	: F. Zambrano
	Interplanta a HDPE	Revisado Por	: H. Martínez
N° Proyecto	: BPI17009	Aprobado Por	: G. Acevedo

**ANEXO I: TECHNICAL SPECIFICATION - PIPING MATERIAL N°2325-0000-250-TS-0001**



**MINERA ESCONDIDA LTDA**

**SULPHIDE LEACH PROJECT**

## **TECHNICAL SPECIFICATION**

**N°2325-0000-250-TS-0001**

### **PIPING MATERIAL**

Prepared by :

**FLUOR CHILE S.A.**

#### TECHNICAL APPROVALS:

Discipline Lead	Sergio Capponi
Area Engineer	John Bertoia / Sergio Meza / Mike Frieze
Engineering Manager	Carlos Astorga
Client	Robert Jaedecke

REV.	BY	EMISION	DATE	REVISED BY	TECHNICAL APPROVAL
A	E. Clavería	Issued for Internal Coordination	17-Nov-03	S.Capponi	C.Astorga
B	E. Clavería	Issued for Client Approval	31-Dec-03	S.Capponi	C.Astorga
0	E. Clavería	Issued for Design	24-Jun-04	S.Capponi	C.Astorga
1	E. Clavería	General Revision as Indicated	14-Oct-04	S.Capponi	C.Astorga

CLIENT COMMENTS

**FLUOR**

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ATTACHMENT – A: PROJECT VALVE CATALOG

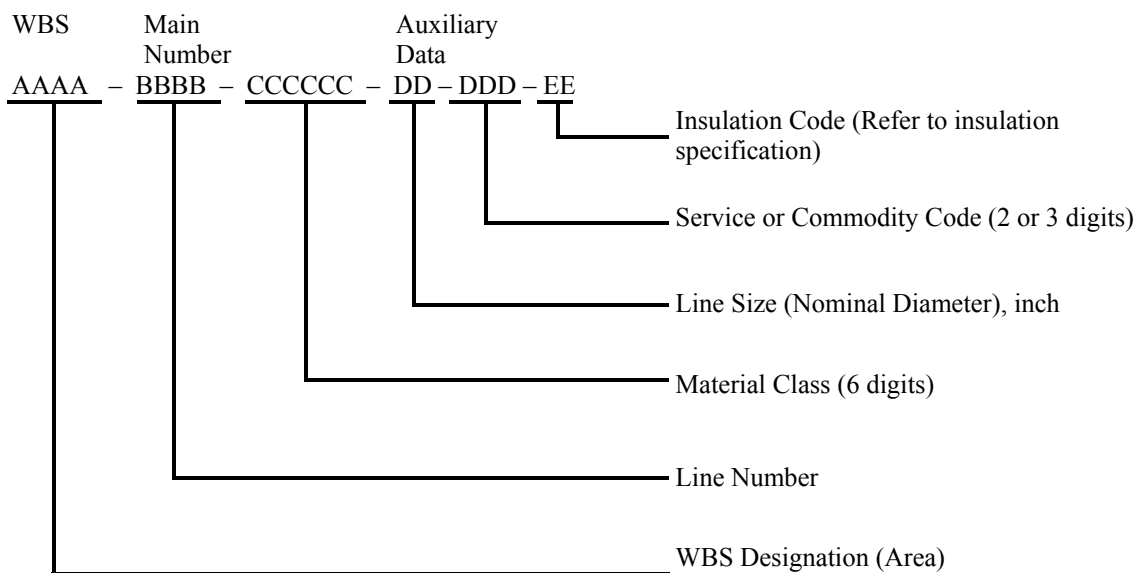
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### 1.0 SCOPE

This specification covers the identification and selection of materials for process and utility including manual valves, pipe and fittings, pipe hangers, miscellaneous related piping, and/or specialty items to be used for the Sulphide Leach Project of Minera Escondida Ltda. Instruments, orifice plates, and control valves are excluded.

### 2.0 LINES IDENTIFICATION

All pipelines shall be identified on the P&ID's, piping line list, piping drawings and isometrics by the following method:



Example: 3100-1574-CSST01-18"-RE-HC

Indicates a 18 inch diameter line, Rich Electrolyte, area 3100, material class CSST01, line N° 1574, insulation class HC.

- Nominal Diameter - Shall be indicated in inches. If metric pipe is used for any material, it must be authorized by engineering. In that case the nearest nominal ANSI diameter shall be noted and the metric dimension will be noted in brackets.
- Line Service Codes - Codes are listed in Section 4.0
- Area - Pipelines shall be numbered with the facility in which they originate and will continue to carry that number when they cross into other facilities. Branches from utility and reagent supply headers shall adopt the facility number into which they enter.
- Material Class Codes - Codes are listed in Section 4.0.



## FLUOR

- Consecutive Line Number - Block of number have been assigned for each Process and service. See Standard Symbols Drawing N° 2325-0000-250-PI-1001. If a line has a material class change, the number sequence will change. Branches which are considered individual lines shall be assigned new line numbers. By-pass branches shall not be assigned new line numbers.
- Manual valve design requirements are established for each respective piping material class. Each valve is identified by an individual tag number as follows:

BU-01

Valve Tag No. (See respective Pipe Material Class Valve Sheet)

Any special piping materials not covered by the Piping Material Classes will be specified in the Specialty Item List and identified as follows:

<u>Designates</u>	<u>IC - 1000</u>	<u>Specific</u>
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## **FLUOR**

### **3.0 TECHNICAL REQUIREMENTS**

#### **3.1 Applicable Documents**

##### **A. Order of Precedence**

Where a conflict arises between the requirements of this specification and the project drawings, as listed in the Purchase Order, or the codes and standards specified herein, this specification shall take precedence.

##### **B. Codes and Standards**

Materials shall comply with applicable portions of the following codes and standards. Unless otherwise specified, the latest editions or revisions of these codes, standards, or specifications, in force at the time of Invitation of Bids.

ASME American Society of Mechanical Engineers

ANSI American National Standards Institute.

ASTM American Society for Testing and Materials.

AWS American Welding Society.

AWWA American Water Works Association.

ISO International Standards Organization.

FM Factory Mutual.

NFPA National Fire Protection Association.

PPI Plastics Pipe Institute.

SENDOS Servicio Nacional de Obras Sanitarias.

#### **3.2 Material Requirements**

##### **A. General**

All materials shall be manufactured in accordance with respective codes and/or standards noted in each appropriate piping material class, and properly identified with the applicable code and/or standard. Materials of each piping material class shall be used within its pressure and temperature ranges only. All materials shall be new, unused, without failures and free of visible particles.

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### B. Substitutions

Manufacturer's names and/or figure numbers illustrate approved type only, and an equivalent substitution may be made, unless otherwise noted.

Equivalents are defined as equal rating, materials, construction, tolerances, and dimensions.

Castings are not an acceptable substitute for forgings.

### C. Manual Valves

Valve trim, seats, seals, and/or packing shall be the Manufacturer's standard unless otherwise specified in an individual piping material class.

When required, chain operators shall be provided with a rotary impact device such as manufactured by the Roto Hammer Co. or equal.

### D. Piping

Piping shall be seamless or longitudinally welded unless otherwise noted in a piping material class. Piping sizes are nominal.

Pipe sizes of 3/8, 1 1/4 inch, 2 1/2 inches, 5 inches, 7 and 9 inches shall not be used, except if it is required in equipment connections.

### E. Pipe Fittings

Taper bore welding fittings shall match pipe ID, if the thickness exceeds the pipe wall by more than 1.5 mm. (1/16 inch).

Reducing bushings are acceptable only when specified in an individual piping material class.

Mitered elbows, sectional elbows and long radius bends shall be acceptable only when specified in an individual piping material class, piping drawings or Isometrics.

### F. Pipe Flanges

Weldneck and socket weld flange bores shall match pipe ID. Taper bore weldnecks to match ID if the thickness exceeds the pipe wall by more than 1.5 mm. (1/16 inch).

Weldneck type expander or reducing flange are permissible in carbon steel pipe services only where called out in piping material class and shown on piping drawings.

Filament-wound fiberglass flanges shall have sealing rings on the contact surface.

Use flat face flanges to mate against flat faced equipment or valve facings. Use 150# F.F. steel against 250# F.F.C.I.

### G. Pressure-Temperature Ratings

Pressure-temperature ratings for NPS 24 and smaller carbon steel, ferritic alloy steel, and austenitic stainless steel piping, flanges, and valves are based on the latest edition of ASME B16.5 and ASME B16.34.

## **FLUOR**

### **H. Corrosion Allowance**

- a) Use the corrosion allowance specified in the individual line classes.
- b) Wall thicknesses for screwed or socket-welded piping shall be based on the specified corrosion allowance
- c) Corrosion allowances different than specified in the individual line classes, except adjusted corrosion allowances, shall be indicated on the P&ID's.

### **I. Materials Not in Specification**

Components not listed in the individual line classes of this specification shall be considered out-of-specification components and shall, in general, be identified as specialty items with the applicable Commodities Catalog Item Code Number on the P&IDs and piping drawings.

### **J. Temporary Startup Strainers**

Conical carbon steel temporary startup strainers are specified in most line classes; however, a more corrosion resistant material may be required for some applications, and shall be so noted on P&ID's.

## **3.3 Valve Operators**

- a) Gate valves shall normally be handwheel operated. Manual gear operators, when specified, shall be fully enclosed type designed to bolt on to valve yoke and shall be field mountable. If gear operated valves are not specified in the individual Line Classes and an operator is required, the valves shall be identified as specialty items on the P&IDs, piping design drawings, and isometrics.
- b) Globe valves larger than those specified in the individual Line Classes are permitted. However, such valves shall be individually reviewed for possible gear operator requirements, and if an operator is required, the valves shall be identified as specialty items on the P&IDs, piping design drawings, and isometrics.
- c) Hydraulic or Pneumatic operators will be used according to P&ID indications.

## **3.4 Full Port Valves**

Full-port valves, when required, shall be specified identically to the comparable standard port valve listed in the individual Line Classes, except Full Port will be added to the description.

## **3.5 Lugged and Wafer Valves**

Butterfly valves connected to tank nozzles, future connections and equal or below to 16" Dia. shall be lugged type. Valves above 16" Dia. shall be wafer type, unless otherwise indicated requirement.

## **3.6 Lap Joint Stub Ends**

Lap joint stub ends shall be used only where shown in the individual Line Class; they shall have the same facing as specified for flanges in the applicable Line Class.

## FLUOR

### 3.7 Bolting

- a) Bolt lengths shall be in accordance with ASME B31.3 paragraph 335.2.3, latest edition.
- b) Machine bolt length shall be measured from the bearing surface of the head to the extreme point.
- c) Stud bolt length measurement shall be based on the effective thread length.
- d) Bolt length shall be specified in 1/2 inch increments.
- e) Bolting shall be machine or stud type. Dimensions (length) shall be per ANSI B16.5, Appendix F, or as required for plastic flanges (HDPE and PVC). All machine bolts and nuts shall be threaded to conform with ANSI B1.1, coarse thread, Class 2A External and Class 2B Internal fit.

### 3.8 Flange Finish

Where a special finish facing is specified, the gasket contact surface roughness shall be 125-250 microinch AARH (Average Arithmetic Roughness Height).

### 3.9 Short Radius Elbows

Short radius welding elbows are permissible only where required by space limitations specifically authorized.

### 3.10 Miscellaneous Items

Wafer or lugged valves with resilient liners shall not require gasketing.

Provide gaskets with ANSI ratings as required, and dimensions in strict accordance with ANSI B16.21. Gasket material per individual piping material classes.

Bolting shall be machine or stud type. Dimensions (length) shall be per ANSI B16.5, Appendix F, or as required for plastic flanges (FRP, HDPE). All machine bolts and nuts shall be threaded to conform with ANSI B1.1, coarse thread, Class 2A External and Class 2B Internal fit.

Pipe threads shall be in accordance with ANSI B2.1.

Butt-welding ends shall be in accordance with ANSI B16.25.

In the case of Thread Compound for pipe, use Teflon tape and for bolting, use "Blue Goop" as manufactured by the Crawford Fitting Company.

Pipe hangers shall be either the fabricated type or those commercially manufactured by "Grinnell". All hangers will be detailed on the standard and special piping support drawings with sufficient purchasing/fabrication information.

All Specialty Items and pipe hangers shall be furnished with metal identification tag, denoting "Item", or "Hanger Number", and "P.O. Number".

For insulated line classes must be used:

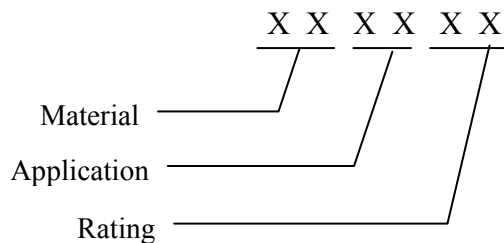
- Antifreezing : AF
- Electric Heat Tracing : ET
- Heat Conservation : HC
- Personnel Protection : PP

Saddles and tees used for plastic materials must be approved by the piping supervisor.

Mitered bends for the classes SSPC01, SMPC01 and SMPC03 must be approved by the piping supervisor.

## FLUOR

### 4.0 SERVICES AND MATERIAL CLASS CODES



#### 4.1 Materials

CG	Carbon Steel, Galvanized
CL	Carbon Steel, HDPE Lining
CR	Carbon Steel, Rubber Lining
CS	Carbon Steel
CT	Carbon Steel, Teflon Lining
CU	Copper
FR	FRP
PC	HDPE, Corrugated
PE	HDPE (High Density Polyethylene)
PF	HDPE, Corrugated Perforated, Double wall
PH	PVC, High Impact
PO	CPVC
PP	Polypropylene
PS	PVC, Sewer
PV	PVC
SA	Stainless Steel, Alloy 20
SF	Stainless Steel, SAF 2507
SM	Stainless Steel, 254-SMO
SS	Stainless Steel 316L

## FLUOR

### 4.2 Applications

ABREVIATIONS	SERVICE
AW	AI, BA, BW, BWB, DW, DSW, FP, FW, IA, HP, HW, K, PA, SS, SWS
FP	FP (Underground and Aboveground Fire Protection)
HX	HOX
KE	HW, K (Kerosene)
LX	LOX
LF	LU, FO
PC	AS, BK, BW, CO, CR, CS, DW, FC, FW, GU, HP, ILS, LE, LGS, LIX, LK, PLS, R, RE, RO, ROC, ROF, SA, SD, SWS
PV	BW, CS, DW, FW, GU, HP, R, RO, ROC, ROF
SP	DW, FW, RE
SW	SWS

### 4.3 Rating

SEQ. NUMBER	CLASS	SEQ. NUMBER	SDR / PSI (PE 63)	SEQ. NUMBER	PN / PSI (PE 63)	SEQ. NUMBER	PN / PSI / SDR (PE 100)
01	150	21	32.5 / 50	41	2.5 / 35	51	20 / 290 / 9
02	250	22	26 / 65	42	3.2 / 50	52	16 / 230 / 11
03	300	23	21 / 80	43	4 / 60	53	12.5 / 180 / 13.6
04	600	24	19 / 85	44	6 / 90	54	---
05	900	25	17 / 90	45	10 / 150	55	10 / 145 / 17
06	1500	26	15.5 / 110	46	12.5 / 180	56	---
07	2500	27	13.5 / 135	47	16 / 232	57	---
08	3000	28	11 / 160	48	20 / 290	58	6 / 90 / 27.6
09	6000	29	9 / 200	49	---	---	---
10	---	30	7.3 / 265	50	---	---	---

**Note:** Seq. Number 41 to 48 to be used in Desalination Plant (Degremont) for FRP material.

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### 4.4 Process

Service	Service Code	Class Code
Barren Organic	BK	<b>PEPC55-SSPC01</b>
Crud	CR	<b>PEPC55-SMPC01</b>
Gravity Raffinate	R	<b>PEPC21</b>
Lean Electrolyte	LE	<b>FRPC01-PEPC55-PVPC01-SSPC01</b>
Lean Electrolyte Pipeline	LE	<b>SSPC01</b>
Loaded Organic	LK	<b>PEPC55-SSPC01</b>
Pregnant Leach Solution	PLS	<b>PCPC25-PEPC55- PFPC25-SMPC01-SMPC03</b>
Raffinate	R	<b>CLPC03- PEPC51-PEPC52-PEPC55-PEPV55- PHPC21-PHPC22-SMPC01-SMPC03</b>
Rich Electrolyte	RE	<b>PEPC55-PVPC01-SSPC01</b>
Rich Electrolyte Pipeline	RE	<b>FRPC01-SSPC01-SSPC03-SSSP03</b>
Sludge, Floated	CL	<b>CLPC01-FRPC58*-PEPC58*</b>
Sludge, Concentrated	CL	<b>CLPC01-FRPC58*-PEPC58*</b>
SX Lean Electrolyte	LE	<b>PEPC55- SSPC01</b>
SX Pregnant Leach Solution	PLS	<b>PEPC55-SMPC01</b>
Standard Drains	SD	<b>SSPC01</b>
		* : Spec by Degremont <b>Bold</b> : Spec. Available with Fluor

### 4.5 Reagents

Service	Service Code	Class Code
Bisulfite	BS	<b>FRPC55*-PEPC55-PVPC55*</b>
Cobalt Sulfate	CS	<b>PEPC55-SSPC01</b>
Diluent (Kerosene)	K	<b>CSKE01</b>
FC-1100	FC	<b>SSPC01</b>



## FLUOR

Extractant	LIX	FRPC55*-PVPC55*- <b>PEPC55</b>
Flocculant	CF	FRPC55*- <b>PEPC55</b> -PPPC55*-PVPC55*
Flocculant Accelerator	AC	FRPC55*- <b>PEPC55</b> -PPPC55*-PVPC55*- <b>SSPC01</b>
Guar	GU	<b>PEPC55-SSPC01</b>
Hydrochloric Acid	HA	<b>FRPC01-PEAW58-PVPC01</b>
Hypochlorite	HP	FRPC58*-PEPC58*-PPPC58*-PVPC58*- <b>SSPC01</b>
Polyelectrolite	PL	FRPC55*-PEPC55*-PPPC55*-PVPC55*- <b>SSPC01</b>
Sulfuric Acid (90-100%)	SA	CSPC01*- <b>CSSA01-SSPC01</b>
Sulfuric Acid, Diluted	SAD	<b>CLPC01-CTPC01*-PEPC55-SSPC01</b>
		* : Spec by Degremont <b>Bold</b> : Spec. Available with Fluor

### 4.6 Utilities

Service	Service Code	Class Code
Air, Instrument	IA	<b>CGAW01-CUAW01*</b>
Air, Plant	PA	<b>CSAW01-PPAW01</b>
Air, Process (Press.DAF; Filters washing)	AP	CGPC01*- <b>CLPC01-FRPC58*-PEPC55-PEPC58*</b>
Air, Sparging	AS	<b>CSAW01-PVPC01</b>
Blower Air	BA	<b>CSAW01-SSPC01</b>
Caustic Soda	CA	<b>SSPC01-PEPC55</b>
Crud	CR	<b>PEPC55-SMPC01</b>
Fuel N 2 (HFO)	FO	<b>CSLF01</b>
Heap Air	AI	<b>PFAW21-PCAW21</b>
Oil, Hydr. (high pressure)	HOX	<b>CSHX07</b>
Oil, Hydr. (Low pressure)	LOX	<b>CSLX06</b>
Oil, Lube	LU	<b>CSLF01</b>
Oil, Stripping System	SH	<b>CSHX07-CSLX06</b>
Sanitary Sewer	SS	<b>PSAW01</b>
Tankhouse Condensated	CO	<b>PVPC01-FRPC01</b>

## FLUOR

Water, Brine	BW	<b>CLPC01-CRPC01*-FRPC55*-FRPC58*-PEAW58-PEPC21-PEPC55-PEPC58*-PVPC55*-PVPC58*-SFPC01*-SFPC03*-SSPC01</b>
Water, Brine Backwash	BWB	FRPC58*-PEPC58*-FRPC58*-PVPC55*-PVPC58*
Water, Desalinated	DSW	<b>CSAW01-CSAW05-PEAW58</b>
Water, Fire Protection	FP	<b>CSFP01-PEFP53-SSPC01</b>
Water, Fresh	FW	CGPC01*- <b>CSAW01-PEAW58-PEPC55</b> -PVPC55*
Water, Hot	HW	<b>CSAW01-SSPC01</b>
Water, Potable	DW	CGPC01*- <b>CUAW01-FRPC01-PEPC55-PEPV55-PVPC01-SSPC01</b>
Water, Reclaim	RW	<b>CSAW01-PEPC55</b>
Water, Reverse Osmosis	RO	FRPC52*-FRPC58*- <b>PEPC52-PEPC55-PEPC58*-PPPC52*-PPPC58*-PVPC52*-PVPC58*-SSPC01</b>
Water, Reverse Osmosis Cleaning	ROC	FRPC58*-PEPC58*-PVPC58*
Water, Reverse Osmosis Flushing	ROF	FRPC55*- <b>PEPC55</b> -PVPC55*-PPPC55*
Water, Sea Supply	SWS	<b>CLSW01-CRSW01*-FRSW55*-FRSW58*-PEAW58-PESW55*-PESW58*-PVSW55*-PVSW58*-SFSW01*-SFSW03*</b>
		* : Spec by Degremont <b>Bold</b> : Spec. Available with Fluor

### Notes:

- For services showing material Classes PEFP53 and PEPC55, the following criteria will be applied:

Material Class PEFP53/PEPC55 will be preferred for yard piping, PEFP53 or PEPC55 according to the service pressure rating.

For potable water, material Class CUAW01 (Copper) will be used inside washrooms and office areas.

- For services showing material Class PEFP53/PEPC55 and Class SMPC01/SMPC03, the following criteria will be applied:

Material Class PEFP53/PEPC55 (HDPE) will be preferred for yard piping where operating pressure is compatible.

Material Class SMPC01/SMPC03 will be used only in manifolds with their connections, and sections of lines including valves.

## FLUOR

### 5.0 MATERIAL CLASS SUMMARY DESCRIPTION

SPEC	SMALL DIAMETER		LARGE DIAMETER	
	FITTINGS	PIPE	PIPE	FITTINGS
CGAW01	1/2"-2": M.I.A197 Galv. 300# Screwed.	1/2"-2" C.S. A53-B Galv. Sch XS, Welded, T & C.	3"-4": C.S. A53-B Galv. Sch. Std Welded Buttweld.	3"-4": M.I. A197 Galv. 300# Screwed. Buttweld / Flanged
CLPC01	1"-2": C.S. A234-WPB HDPE Lining Buttweld or Flanged	1"-2": C.S. A53-B ERW, Sch Std , HDPE Lining Buttweld or Flanged	2.5"-48": C.S. A53-B ERW , Sch Std HDPE Lining Buttweld or Flanged	2.5"-48": C.S. A234-WPB HDPE Lining Buttweld or Flanged
CLPC03	1"-2": C.S. A234-WPB Sch Std, HDPE Lining Buttweld or Flanged	1"-2": C.S. A53-B ERW Sch Std HDPE Lining Buttweld or Flanged	2.5"-24": C.S. A53-B ERW Sch Std HDPE Lining Buttweld or Flanged  26"-48": C.S. A53 Wall Thickness 0.500" ERW with HDPE Lining Buttweld or Flanged	2.5"-24": C.S. A234-WPB Sch Std HDPE Lining Buttweld or Flanged  26"-48": C.S. A234-WPB Sch XS HDPE Lining Buttweld or Flanged
CLSW01	2": C.S. A234-WPB Sch Std Hot Dipped HDPE Lining Buttweld or Flanged	2": C.S. A53-B Sch Std ERW Hot Dipped HDPE Lining Buttweld or Flanged	2.5"-42": C.S. A53 Sch Std ERW Hot Dipped HDPE Lining Buttweld or Flanged	2.5"-42": C.S. A234-WPB Hot Dipped HDPE Lining Buttweld or Flanged
CSAW01	1/2"-2": M.I. A197 300# screwed or C.S. A105 3000# Socketweld & Screwed.	1/2"-2": C.S. 106-B Sch XS Smls Socketweld & Screwed	2 1/2"-24": C.S. A-53 B Sch. Std ERW Buttweld.	2 1/2"-24": C.S. A234 WPB Sch Std Buttweld.
CSAW03	1/2"-2": M.I. A197 300# Screwed or C.S. A105 3000# Screwed	1/2"-2": C.S. 106-B Sch XS Smls Threaded & Coupling	3"-6": C.S. A53-B Sch Std ERW BE  8"-24": C.S. A-53 B Sch. Std ERW BE	3"-6": C.S. A234 WPB Sch Std Smls Buttweld  8"-24": C.S.A-53 B Sch. Std Smls Buttweld

**FLUOR**

CSAW05	1/2"-2": C.S. A105 3000# Screwed	1/2"-2": C.S. 106-B Sch XS Smls T & C or Plain End	3"-8":C.S.API-5L-B/A-53 B, Sch.XS ERW Buttweld. 3"-24":C.S.API-5L-X60 Wall Thickness 0.250" ERW Buttweld. 3"-24":C.S.API-5L-X60 Wall Thickness 0.312" ERW Buttweld. 3"-24":C.S.API-5L-X60 Wall Thickness 0.375" ERW Buttweld. 3"-24":C.S.API-5L-X60 Wall Thickness 0.500" ERW Buttweld. 10"-24":C.S.API-5L-B/A- 53 B, Sch.80 ERW Buttweld.	3"-8": C.S. A234 WPB Sch. XS Buttweld. 10"-24": C.S. A234 WPB Sch. 80 Buttweld.
CSFP01	1/2"-2 1/2": M.I. A197 300# or C.S. A105 3000#. Screwed.	1/2"-2": C.S. A53-B Sch XS Smls Screwed	3"-24":C.S. A-53 B Sch. Std ERW Buttweld.	3"-24": C.S. A234 WPB Sch Std Buttweld.
CSHX07	1/2"-2": C.S. A105 6000# Socketweld.	1/2"-2": C.S. A106-B Sch 160 Smls Socketweld.	3"-4": C.S. API-5L-B Sch 160 Smls Buttweld.	3"-4": C.S. A234 WPB Sch 160 Smls Buttweld.
CSKE01	1/2"-2": C.S. A105 3000# Socketweld	1/2"-2": C.S. 106-B Sch XS Smls Socketweld	3"-12":C.S. A-53 B Sch. Std ERW Buttweld.	3"-12": C.S. A234 WPB Sch Std Buttweld.
CSLF01	1/2"-2": C.S. A105 3000# Socketweld.	1/2"-2": C.S. A106-B Sch 80 SMLS Socketweld.	3"-8":C.S. A-53 B Sch. Std ERW Buttweld.	3"-8": C.S. A234 WPB Sch Std. Buttweld.
CSLX06	1/2"-2": C.S. A105 6000# Socketweld.	1/2"-2": C.S. A106-B Sch 160 Smls Socketweld.	3"-4": C.S. API-5L-B Sch 160 Smls Buttweld.	3"-4": C.S. A234 WPB Sch 160 Buttweld.
CSSA01	1/2"-2": C.S. A105 3000# Socketweld	1/2"-2": C.S. 106-B Sch XS Smls Socketweld	3"-12":C.S. A-53 B Sch. Std ERW Buttweld.	3"-12": C.S. A234 WPB Sch Std Buttweld.
CUAW01	1/4"-2": Copper Alloy Tubing Solder Joint	1/4"-2": Copper Tubing B88 Solder Joint	N/A	N/A

**FLUOR**

SPEC	SMALL DIAMETER		LARGE DIAMETER	
	FITTINGS	PIPE	PIPE	FITTINGS
FRPC01	1"-2" FRP Fiberglass Resin Filament Wound	1"-2" FRP Fiberglass Resin Filament Wound	2 1/2"-48" FRP Fiberglass Resin Filament Wound	2 1/2"-48" FRP Fiberglass Resin Filament Wound
PCPC25	N.A.	N.A.	2"-48": HDPE 17@50# Buttfused. Corrugated Smooth With Coupling	2"-48":HDPE 17@50# Corrugated Smooth Fabricated
PEAW58	N.A.	N.A.	2"-40": HDPE PE 100 SDR 27.6 (90 PSI) Buttfused.	2"-40":HDPE PE100 SDR 27.6 (90 PSI) Molded (2"-8") or Fab (10"-24"). Buttfused.
PEFP53	N.A.	N.A.	2"-24": HDPE PE 100 SDR 13.6 (180 PSI) Buttfused.	2"-16":HDPE PE 100 SDR 13.6 (180 PSI) Molded (2"-8") or Fab (10"-24"). Buttfused.
PEPC21	N.A.	N.A.	10"-60":HDPE PE 3408 SDR 32.5 (50 PSI) Buttfused.	10"-60":HDPE PE 3408 SDR 32.5 (50 PSI) Fab Buttfused.
PEPC51	N.A.	N.A.	2"-24": HDPE PE 100 SDR 9 (290 PSI) Buttfused.	2"-24":HDPE PE 100 SDR 9 (290 PSI) Fabricated (2"-24"). Buttfused
PEPC52	N.A.	N.A.	2"-48": HDPE PE 100 SDR 11 (230 PSI) Buttfused.	2"-48":HDPE PE 100 SDR 11 (230 PSI) Molded (2"-8")or Fab (10"-48"). Buttfused
PEPC55	N.A.	N.A.	2"-48": HDPE PE 100 SDR 17 (145 PSI) Buttfused.	2"-48":HDPE PE 100 SDR 17 (145 PSI) Molded (2"-8")or Fab (10"-36"). Buttfused.
PEPV55	N.A.	N.A.	2"-48": HDPE PE 100 SDR 17 (145 PSI) Buttfused.	2"-48":HDPE PE 100 SDR 17 (145 PSI) Molded (2"-8")or Fab (10"-48"). Buttfused.
PFAW21	N.A.	N.A.	2"-48": HDPE 17@50# Buttfused. corrugated perforated	2"-48":HDPE 17@50# Corrugated perforated Fabricated Buttfused
PFPC25	N.A.	N.A.	2"-48": HDPE 17@50# Coupled Corrugated Perforated	2"-48":HDPE 17@50# Coupled Corrugated Perforated
PHPC21	N.A.	N.A.	02"-12": High Impact PVC SDR 32.5	02"-12": High Impact PVC SDR 32.5

**FLUOR**

PHPC22	N.A.	N.A.	02"-12": High Impact PVC SDR 26.	02"-12": High Impact PVC SDR 26
PHPC23	N.A.	N.A.	02"-12": High Impact PVC SDR 21	02"-12": High Impact PVC SDR 21
PPAW01	N.A.	N.A.	1/2"-4": Polypropylene Sch 80 Solvent Welded System.	1/2"-4": Polypropylene Sch 80 socket ends. Solvent Welded System.
PSAW01	N.A.	N.A.	1 1/2"-6": PVC Sch 40 PE and SDR35 BEEL x Spigot. Solvent Welded System.	1 1/2"-6": PVC socket ends. Solvent Welded System.
PVPC01	N.A.	N.A.	1/2"-24": PVC Sch 80 PE SMLS. Solvent Welded System.	1/2"-24": PVC Sch 80 Molded (1/2"-8") or Fab (4"-24"). Solvent Welded System
SMPC01	1/2"-2": 254 SMO A403 Sch 40s butt weld.	1/2"-2": 254 SMO A312 Sch 40s SMLS butt weld.	3"-24": 254 SMO A312 Sch 10s ERW (3"-8") or Sch 5s SMLS (10"-24") butt weld.	3"-24": 254 SMO A403 Sch 10s (3"-8") or Sch 5s (10"-24") butt weld.
SMPC03	1/2"-2": 254 SMO A403 Sch 40s Butt weld.	1/2"-2": 254 SMO A312 Sch 40s SMLS Butt weld.	3"-24": 254 SMO A312 Sch 10s ERW Butt weld.	3"-24": 254 SMO A403 Sch 10s Butt weld.
SSPC01	1/2"-2": S.S. 316L A182 3000# Socket weld	1/2"-2": S.S. 316L A312 SCH 40S SMLS Socket weld	3"-36": S.S. 316L A312 Sch 10S EFW (3"-24") or 0.312 (26"-36") all Butt weld.	3"-36": S.S. 316L A403 WP316L/WP316L – W Sch 10S and 0.312 all Butt weld.
SSPC03	1/2"-2": S.S. 316L A182 3000# Socket weld	1/2"-2": S.S. 316L A312 SCH 40 SMLS Socket weld	3"-24": S.S. 316L A312 Sch 40s EFW (3"-12") or 0.375 (14"-24") all Butt weld.	3"-36": S.S. 316L A403 WP316L/WP316L – W Sch 40s and 0.375 all Butt weld.
SSSP03	1/2"-2": S.S. 316L A182 3000# Socket weld	1/2"-2": S.S. 316L A312 SCH 40 SMLS Socket weld	3"-36": S.S. 316L A312 Sch 10s EFW (3"-24") or 0.500 (14"-246") all Butt weld.	3"-36": S.S. 316L A403 WP316L/WP316L – W Sch 40s and 0.500 all Butt weld.

## FLUOR

### 6.0 BRANCH CONNECTION SCHEDULE

#### 6.1 BRANCH TABLE LINE CLASS – CSAW01

H E A D E R  S I Z E	1/2	T															
	3/4	RT	T														
	1	RT	RT	T													
	1 1/2	RT	RT	RT	T												
	2	RT	RT	RT	RT	T											
	3	TL	TL	TL	TL	TL	T										
	4	TL	TL	TL	TL	TL	RT	T									
	6	TL	TL	TL	TL	TL	ST	RT	T								
	8	TL	TL	TL	TL	TL	ST	ST	RT	T							
	10	TL	TL	TL	TL	TL	ST	ST	ST	RT	T						
	12	TL	TL	TL	TL	TL	ST	ST	ST	ST	RT	T					
	14	TL	TL	TL	TL	TL	ST	ST	ST	ST	ST	RT	T				
	16	TL	TL	TL	TL	TL	ST	ST	ST	ST	ST	ST	RT	T			
	18	TL	TL	TL	TL	TL	ST	ST	ST	ST	ST	ST	ST	RT	T		
	20	TL	TL	TL	TL	TL	ST	ST	ST	ST	ST	ST	ST	ST	RT	T	
	24	TL	TL	TL	TL	TL	ST	ST	ST	ST	ST	ST	ST	ST	ST	RT	T
	1/2	3/4	1	1 1/2	2	3	4	6	8	10	12	14	16	18	20	24	

T = Full Size Tee  
RT = Reducing Tee  
TL = Thredolet  
ST = Stub-on

**BRANCH SIZE**

#### 6.2 BRANCH TABLE LINE CLASS – CSKE01

H E A D E R  S I Z E	1/2	T															
	3/4	RT	T														
	1	RT	RT	T													
	1 1/2	RT	RT	RT	T												
	2	RT	RT	RT	RT	T											
	3	SL	SL	SL	SL	SL	T										
	4	SL	SL	SL	SL	SL	RT	T									
	6	SL	SL	SL	SL	SL	ST	RT	T								
	8	SL	SL	SL	SL	SL	ST	ST	RT	T							
	10	SL	SL	SL	SL	SL	ST	ST	ST	RT	T						
	12	SL	SL	SL	SL	SL	ST	ST	ST	ST	RT	T					
	14	SL	SL	SL	SL	SL	ST	ST	ST	ST	ST	RT	T				
	16	SL	SL	SL	SL	SL	ST	ST	ST	ST	ST	ST	RT	T			
	18	SL	SL	SL	SL	SL	ST	ST	ST	ST	ST	ST	ST	RT	T		
	20	SL	SL	SL	SL	SL	ST	ST	ST	ST	ST	ST	ST	ST	RT	T	
	24	SL	SL	SL	SL	SL	ST	ST	ST	ST	ST	ST	ST	ST	ST	RT	T
	1/2	3/4	1	1 1/2	2	3	4	6	8	10	12	14	16	18	20	24	

T = Full Size Tee  
RT = Reducing Tee  
SL = Sockolet  
ST = Stub-on

**BRANCH SIZE**

## FLUOR

### 6.3 BRANCH TABLE LINE CLASS – CSFP01

H E A D E R  S I Z E	1/2	T																		
	3/4	RT	T																	
	1	RT	RT	T																
	1 1/2	RT	RT	RT	T															
	2	RT	RT	RT	RT	T														
	3	TL	TL	TL	TL	TL	T													
	4	TL	TL	TL	TL	TL	RT	T												
	6	TL	TL	TL	TL	TL	ST	RT	T											
	8	TL	TL	TL	TL	TL	ST	ST	RT	T										
	10	TL	TL	TL	TL	TL	ST	ST	ST	RT	T									
	12	TL	TL	TL	TL	TL	ST	ST	ST	ST	RT	T								
	14	TL	TL	TL	TL	TL	ST	ST	ST	ST	ST	RT	T							
	16	TL	TL	TL	TL	TL	ST	ST	ST	ST	ST	ST	ST	T						
	18	TL	TL	TL	TL	TL	ST	ST	ST	ST	ST	ST	ST	ST	ST	T				
	20	TL	TL	TL	TL	TL	ST	ST	ST	ST	ST	ST	ST	ST	ST	ST	T			
	24	TL	TL	TL	TL	TL	ST	ST	ST	ST	ST	ST	ST	ST	ST	ST	ST	T		
	26	TL	TL	TL	TL	TL	ST	ST	ST	ST	ST	ST	ST	ST	ST	ST	ST	ST	T	
	28	TL	TL	TL	TL	TL	ST	ST	ST	ST	ST	ST	ST	ST	ST	ST	ST	ST	ST	T
	30	TL	TL	TL	TL	TL	ST	ST	ST	ST	ST	ST	ST	ST	ST	ST	ST	ST	ST	T
	1/2	3/4	1	1 1/2	2	3	4	6	8	10	12	14	16	18	20	24	26	28	30	

T = Full Size Tee

RT = Reducing Tee

TL = Thredolet

ST = Stub-on

#### BRANCH SIZE

### 6.4 BRANCH TABLE LINE CLASS – CLPC03 / CLSW01

H E A D E R  S I Z E	1/2	-																		
	3/4	-	-																	
	1	-	-	-																
	1 1/2	-	-	-	-															
	2	SL	SL	RT	RT	T														
	3	SL	SL	SL	RT	RT	T													
	4	SL	SL	SL	RT	RT	RT	T												
	6	SL	SL	SL	SL	SL	ST	RT	T											
	8	SL	SL	SL	SL	ST	ST	ST	RT	T										
	10	SL	SL	SL	SL	ST	ST	ST	ST	RT	T									
	12	SL	SL	SL	SL	ST	ST	ST	ST	ST	RT	T								
	14	SL	SL	SL	SL	ST	ST	ST	ST	ST	ST	RT	T							
	16	SL	SL	SL	SL	ST	ST	ST	ST	ST	ST	ST	RT	T						
	18	SL	SL	SL	SL	ST	ST	ST	ST	ST	ST	ST	ST	RT	T					
	20	SL	SL	SL	SL	ST	ST	ST	ST	ST	ST	ST	ST	ST	RT	T				
	24	SL	SL	SL	SL	ST	ST	ST	ST	ST	ST	ST	ST	ST	ST	RT	T			
	26	SL	SL	SL	SL	ST	ST	ST	ST	ST	ST	ST	ST	ST	ST	ST	RT	T		
	28	SL	SL	SL	SL	ST	ST	ST	ST	ST	ST	ST	ST	ST	ST	ST	ST	RT	T	
	30	SL	SL	SL	SL	ST	ST	ST	ST	ST	ST	ST	ST	ST	ST	ST	ST	ST	RT	T
	1/2	3/4	1	1 1/2	2	3	4	6	8	10	12	14	16	18	20	24	26	28	30	

T = Full Size Tee

RT = Reducing Tee

SL = Sockolet

ST = Stub-on

#### BRANCH SIZE



## FLUOR

### 6.5 BRANCH TABLE LINE CLASS – CGAW01

H E A D E R  S I Z E	1/2	T																		
	3/4	RT	T																	
	1	RT	RT	T																
	1 1/2	RT	RT	RT	T															
	2	RT	RT	RT	RT	T														
	2 1/2	TB	TB	TB	RT	RT	T													
	3	TB	TB	TB	TB	TB	RT	T												
	4	TB	TB	TB	TB	TB	TB	RT	T											
	6	-	-	-	-	-	-	-	-	-										
	8	-	-	-	-	-	-	-	-	-	-									
	10	-	-	-	-	-	-	-	-	-	-	-								
	12	-	-	-	-	-	-	-	-	-	-	-	-							
	14	-	-	-	-	-	-	-	-	-	-	-	-	-						
	16	-	-	-	-	-	-	-	-	-	-	-	-	-	-					
	18	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
	20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
	24	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
	26	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	28	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	30	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	1/2	3/4	1	1 1/2	2	2 1/2	3	4	6	8	10	12	14	16	18	20	24	26	28	30

T = Full Size Tee  
RT = Reducing Tee  
TB = Tee + Bushing Reducer

BRANCH SIZE

### 6.6 BRANCH TABLE LINE CLASS – CSSA01

H E A D E R  S I Z E	1/2	T																		
	3/4	RT	T																	
	1	RT	RT	T																
	1 1/2	RT	RT	RT	T															
	2	RT	RT	RT	RT	T														
	3	SL	SL	SL	SL	SL	T													
	4	SL	SL	SL	SL	SL	RT	T												
	6	SL	SL	SL	SL	SL	ST	RT	T											
	8	SL	SL	SL	SL	SL	ST	ST	RT	T										
	10	SL	SL	SL	SL	SL	ST	ST	ST	RT	T									
	12	SL	SL	SL	SL	SL	ST	ST	ST	ST	RT	T								
	14	SL	SL	SL	SL	SL	ST	ST	ST	ST	ST	RT	T							
	16	SL	SL	SL	SL	SL	ST	ST	ST	ST	ST	ST	RT	T						
	18	SL	SL	SL	SL	SL	ST	ST	ST	ST	ST	ST	ST	RT	T					
	20	SL	SL	SL	SL	SL	ST	ST	ST	ST	ST	ST	ST	ST	RT	T				
	24	SL	SL	SL	SL	SL	ST	ST	ST	ST	ST	ST	ST	ST	ST	RT	T			
	26	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	28	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	30	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	1/2	3/4	1	1 1/2	2	3	4	6	8	10	12	14	16	18	20	24	26	28	30	

T = Full Size Tee  
RT = Reducing Tee  
SL = Sockolet, use thredolet for Instrument connection  
ST = Stub-on

BRANCH SIZE

## FLUOR

### 6.7 BRANCH TABLE LINE CLASS – CSLX06

H E A D E R  S I Z E	½	T																	
	¾	SL	T																
	1	SL	SL	T															
	1½	SL	SL	SL	T														
	2	SL	SL	SL	SL	T													
	3	SL	SL	SL	SL	SL	T												
	4	SL	SL	SL	SL	SL	ST	T											
	6	-	-	-	-	-	-	-	-										
	8	-	-	-	-	-	-	-	-	-									
	10	-	-	-	-	-	-	-	-	-	-								
	12	-	-	-	-	-	-	-	-	-	-	-							
	14	-	-	-	-	-	-	-	-	-	-	-	-						
	16	-	-	-	-	-	-	-	-	-	-	-	-	-					
	18	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
	20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
	24	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
	26	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	28	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	30	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	½	¾	1	1½	2	3	4	6	8	10	12	14	16	18	20	24	26	28	30

**BRANCH SIZE**

T = Full Size Tee  
SL = Sockolet, use thredolet for Instrument connection  
ST = Stub-on

### 6.8 BRANCH TABLE LINE CLASS – CSHX07

H E A D E R  S I Z E	½	T																	
	¾	SL	T																
	1	SL	SL	T															
	1½	SL	SL	SL	T														
	2	SL	SL	SL	SL	T													
	3	SL	SL	SL	SL	SL	T												
	4	SL	SL	SL	SL	SL	ST	T											
	6	-	-	-	-	-	-	-	-										
	8	-	-	-	-	-	-	-	-	-									
	10	-	-	-	-	-	-	-	-	-	-								
	12	-	-	-	-	-	-	-	-	-	-	-							
	14	-	-	-	-	-	-	-	-	-	-	-	-						
	16	-	-	-	-	-	-	-	-	-	-	-	-	-					
	18	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
	20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
	24	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
	26	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	28	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	30	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	½	¾	1	1½	2	3	4	6	8	10	12	14	16	18	20	24	26	28	30

**BRANCH SIZE**

T = Full Size Tee  
SL = Sockolet, use thredolet for Instrument connection  
ST = Stub-on

**FLUOR**

6.9 BRANCH TABLE LINE CLASS – CSLF01

H E A D E R  S I Z E	1/2	T																	
	3/4	RT	T																
	1	RT	RT	T															
	1 1/2	RT	RT	RT	T														
	2	RT	RT	RT	RT	T													
	3	SL	SL	SL	SL	SL	T												
	4	SL	SL	SL	SL	SL	RT	T											
	6	SL	SL	SL	SL	SL	ST	RT	T										
	8	SL	SL	SL	SL	SL	ST	ST	RT	T									
	10	-	-	-	-	-	-	-	-	-									
	12	-	-	-	-	-	-	-	-	-	-								
	14	-	-	-	-	-	-	-	-	-	-	-							
	16	-	-	-	-	-	-	-	-	-	-	-	-						
	18	-	-	-	-	-	-	-	-	-	-	-	-	-					
	20	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
	24	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
	26	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
	28	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	30	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	1/2	3/4	1	1 1/2	2	3	4	6	8	10	12	14	16	18	20	24	26	28	30

T = Full Size Tee  
RT = Reducing Tee  
SL = Sockolet, use throdolet for Instrument connection  
ST = Stub-on

**BRANCH SIZE**

6.10 BRANCH TABLE LINE CLASS – CSAW03 / CSAW05

H E A D E R  S I Z E	1/2	T																	
	3/4	RT	T																
	1	RT	RT	T															
	1 1/2	RT	RT	RT	T														
	2	RT	RT	RT	RT	T													
	3	ST	ST	ST	ST	ST	T												
	4	ST	ST	ST	ST	ST	RT	T											
	6	ST	ST	ST	ST	ST	ST	RT	T										
	8	ST	ST	ST	ST	ST	ST	ST	RT	T									
	10	ST	ST	ST	ST	ST	ST	ST	ST	RT	T								
	12	ST	ST	ST	ST	ST	ST	ST	ST	ST	RT	T							
	14	ST	ST	ST	ST	ST	ST	ST	ST	ST	ST	RT	T						
	16	ST	ST	ST	ST	ST	ST	ST	ST	ST	ST	ST	RT	T					
	18	ST	ST	ST	ST	ST	ST	ST	ST	ST	ST	ST	ST	RT	T				
	20	ST	ST	ST	ST	ST	ST	ST	ST	ST	ST	ST	ST	ST	RT	T			
	24	ST	ST	ST	ST	ST	ST	ST	ST	ST	ST	ST	ST	ST	ST	RT	T		
		1/2	3/4	1	1 1/2	2	3	4	6	8	10	12	14	16	18	20	24		

T = Full Size Tee  
RT = Reducing Tee  
SL = Sockolet, use throdolet for Instrument connection  
ST = Stub-on  
WL= Weldolet (Specially for class CSAW05)

**BRANCH SIZE**

### 6.12.1 BRANCH TABLE LINE CLASS – PEFP28/PEPC21/PEFP53/PEAW58/PEPC55/PEPV55/PEPC51/PEPC52

[illegible]

## BRANCH SIZE

## 6.12 BRANCH TABLE LINE CLASS – CUAW01

H E A D E R	½	T															
	¾	ST	T														
	1	ST	ST	T													
	1½	ST	ST	ST	T												
	2	ST	ST	ST	ST	T											
	3	ST	ST	ST	ST	ST	T										
	4	ST	ST	ST	ST	ST	ST	T									
	6	ST	ST	ST	ST	ST	ST	ST	T								
	8	ST	ST	ST	ST	ST	ST	ST	ST	T							
	10	ST	ST	ST	ST	ST	ST	ST	ST	ST	T						
S I Z E	12	ST	ST	ST	ST	ST	ST	ST	ST	ST	T						
	14	ST	ST	ST	ST	ST	ST	ST	ST	ST	ST	T					
	16	ST	ST	ST	ST	ST	ST	ST	ST	ST	ST	ST	T				
	18	ST	ST	ST	ST	ST	ST	ST	ST	ST	ST	ST	ST	ST			
	20	ST	ST	ST	ST	ST	ST	ST	ST	ST	ST	ST	ST	ST	ST		
	24	ST	ST	ST	ST	ST	ST	ST	ST	ST	ST	ST	ST	ST	ST	ST	ST
		½	¾	1	1½	2	3	4	6	8	10	12	14	16	18	20	24

T = Full Size Tee

RT = Reducing Tee

ST = Stub-On

## BRANCH SIZE

## FLUOR

### 6.13 BRANCH TABLE LINE CLASS – PVPC01

H E A D E R  S I Z E	1/2	T															
	3/4	RT	T														
	1	RT	RT	T													
	1 1/2	C	RT	RT	T												
	2	RT	RT	RT	RT	T											
	3	C	C	C	C	RT	T										
	4	C	C	C	C	C	RT	T									
	6	C	C	C	C	C	C	RT	T								
	8	C	C	C	C	C	C	C	RT	T							
	10	C	C	C	C	C	C	C	C	RT	T						
	12	C	C	C	C	C	C	C	C	RT	RT	T					
	14	-	-	-	-	-	-	-	-	-	-	-	-				
	16	-	-	-	-	-	-	-	-	-	-	-	-	-			
	18	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
	20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	24	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	1/2	3/4	1	1 1/2	2	3	4	6	8	10	12	14	16	18	20	24	

BRANCH SIZE

T = Full Size Tee

RT = Reducing Tee

C = Combination of Reducing Tee & Bushing Reducer

1

### 6.14 BRANCH TABLE LINE CLASS – PHPC21/PHPC22/PHPC23

H E A D E R  S I Z E	½	T																			
	¾	RT	T																		
	1	RT	RT	T																	
	1½	RT	RT	RT	T																
	2	RT	RT	RT	RT	T															
	3	SL	SL	SL	SL	RT	T														
	4	SL	SL	SL	SL	SL	RT	T													
	6	SL	SL	SL	SL	SL	ST	RT	T												
	8	SL	SL	SL	SL	SL	ST	ST	RT	T											
	10	SL	SL	SL	SL	SL	ST	ST	ST	RT	T										
	12	SL	SL	SL	SL	SL	ST	ST	ST	ST	RT	T									
	14	SL	SL	SL	SL	SL	ST	ST	ST	ST	ST	RT	T								
	16	SL	SL	SL	SL	SL	ST	ST	ST	ST	ST	ST	RT	T							
	18	SL	SL	SL	SL	SL	ST	ST	ST	ST	ST	ST	ST	RT	T						
	20	SL	SL	SL	SL	SL	ST	ST	ST	ST	ST	ST	ST	ST	RT	T					
	24	SL	SL	SL	SL	SL	ST	ST	ST	ST	ST	ST	ST	ST	ST	RT	T				
	26	SL	SL	SL	SL	SL	ST	ST	ST	ST	ST	ST	ST	ST	ST	ST	RT	T			
	28	SL	SL	SL	SL	SL	ST	ST	ST	ST	ST	ST	ST	ST	ST	ST	ST	RT	T		
	30	SL	SL	SL	SL	SL	ST	ST	ST	ST	ST	ST	ST	ST	ST	ST	ST	ST	RT	T	
		½	¾	1	1½	2	3	4	6	8	10	12	14	16	18	20	24	26	28	30	

T = Full Size Tee

RT = Reducing Tee

SL = Sockolet

ST = Stub-on

BRANCH SIZE

T = Full Size Tee

RT = Reducing Tee

SL = Sockolet

ST = Stub-on

## FLUOR

### 6.15 BRANCH TABLE LINE CLASS – PSAW01

H E A D E R  S I Z E	1/2	T																	
	3/4	RT	T																
	1	RT	RT	T															
	1 1/2	C	RT	RT	T														
	2	C	C	RT	RT	T													
	3	C	C	C	C	RT	T												
	4	C	C	C	C	RT	RT	T											
	6	C	C	C	C	C	RT	RT	T										
	8	-	-	-	-	-	-	-	-	-									
	10	-	-	-	-	-	-	-	-	-	-								
	12	-	-	-	-	-	-	-	-	-	-	-							
	14	-	-	-	-	-	-	-	-	-	-	-	-						
	16	-	-	-	-	-	-	-	-	-	-	-	-	-					
	18	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
	20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
	24	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
	26	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	28	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	30	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	1/2	3/4	1	1 1/2	2	3	4	6	8	10	12	14	16	18	20	24	26	28	30

BRANCH SIZE

T = Full Size Tee

RT = Reducing Tee

C = Combination of Reducing Tee & Bushing Reducer

1

### 6.16 BRANCH TABLE LINE CLASS – SSPC01/SSPC03/SSSP03/SMPC01/SMPC03

H E A D E R  S I Z E	1/2	T																	
	3/4	CR	T																
	1	CR	CR	T															
	1 1/2	CR	CR	CR	T														
	2	CR	CR	CR	CR	T													
	3	SL	SL	SL	SL	SL	T												
	4	SL	SL	SL	SL	SL	RT	T											
	6	SL	SL	SL	SL	SL	ST	RT	T										
	8	SL	SL	SL	SL	SL	ST	ST	RT	T									
	10	SL	SL	SL	SL	SL	ST	ST	ST	RT	T								
	12	SL	SL	SL	SL	SL	ST	ST	ST	ST	RT	T							
	14	SL	SL	SL	SL	SL	ST	ST	ST	ST	ST	RT	T						
	16	SL	SL	SL	SL	SL	ST	ST	ST	ST	ST	ST	RT	T					
	18	SL	SL	SL	SL	SL	ST	ST	ST	ST	ST	ST	ST	RT	T				
	20	SL	SL	SL	SL	SL	ST	ST	ST	ST	ST	ST	ST	ST	RT	T			
	24	SL	SL	SL	SL	SL	ST	ST	ST	ST	ST	ST	ST	ST	ST	RT	T		
	26	SL	SL	SL	SL	SL	ST	ST	ST	ST	ST	ST	ST	ST	ST	ST	RT	T	
	28	SL	SL	SL	SL	SL	ST	ST	ST	ST	ST	ST	ST	ST	ST	ST	ST	RT	T
	30	SL	SL	SL	SL	SL	ST	ST	ST	ST	ST	ST	ST	ST	ST	ST	ST	ST	T
	1/2	3/4	1	1 1/2	2	3	4	6	8	10	12	14	16	18	20	24	26	28	30

BRANCH SIZE

T = Full Size Tee

RT = Reducing Tee

SL = Sockolet, use Thredolet for Instrument connection

ST = Stub-on

CR = Combination of Tee & Reducing Insert

1

## **FLUOR**

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### **7.0 MATERIAL CLASS COMPONENTS**


(See next page)

**FLUOR**

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ATTACHMENT – A:      PROJECT VALVE CATALOG




SEQ NO.	REV	NOTE NO.	ITEM NAME	ITEM CODE	SIZE RANGE / SMALL END SIZES	DESCRIPTION	REFERENCE / LARGE END SIZES	NOTES					
10						***** VALVES *****		DS1 FOR LINE SIZES LARGER THAN NPS 3, USE BUTTWELDED STAINLESS STEEL CLASS S .					
20													
30													
40			GATSCR	5005302	1/2 - 4	GA-08: GATE API CL 800# SCRDL STL, 316 TRIM	VOGT #12111						
50			GLOSCR	5040231	1/2 - 4	GL-07: GLOBE 800# SCRDL 316 SS	VOGT #12501						
60			BALSCR	5058894	1/2 - 2	BA-01: BALL 600# WOG SCRDL 316 SS/RTFE, HNDL OP	NIBCO T570CSR66						
70			BAL	5300960	3 - 6	BA-15: BALL CL 150# FF 316 BODY & TRIM HDLE OP	NIBCO F510	NR2 SIZES IN SMALL END SIZES COLUMN ARE BRANCH SIZE OF OLETS OR TEES. SIZES IN LARGE END SIZES COLUMN ARE RUN PIPE SIZE OF OLETS OR TEES.					
80			CHESCR	5006801	1/2 - 4	CH-22: CHECK 800# SCRDL STL, 316 TRIM, HORIZ	VOGT #701-F8M						
90			BTFLUG	5306835	2 - 4	BU-20: BUTTERFLY TAP-LUG FF CS/SS TRIM/BUNA-N SEAT CL150 LO	KEYSTONE VALVE						
100						***** PIPE *****							
110		DS1											
120													
130			PIP	5358234	1/2 - 2	PIPE XS WELDED CS A53 TYPE F GALV T&C		NR2					
140			PIP	5358231	2 1/2 - 4	PIPE STD WELDED CS A53 TYPE F GALV T&C							
150						***** FITTINGS *****							
160													
170													
180			ELL	5488624	1/2 - 4	ELL 90 DEG 300# SCRDL GALV MI A197							
190			45L	5488626	1/2 - 4	ELL 45 DEG CLASS 300# SCRDL GALV MI A197		3/4 - 4					
200			TEE	5488628	1/2 - 4	TEE CLASS 300# SCRDL GALV MI A197							
210			CAP	5488629	1/2 - 4	CAP CLASS 300# SCREWED BANDED GALVANIZED MI A197							
220			UNI	5488631	1/2 - 4	UNION CLASS 300# SCRDL GALV MI BRASS TO IRON							
230			PLG	5490953	1/2 - 4	PLUG ROUND HEAD SCRDL GALV STL A105							
240			PLGSCR	5490958	3 - 4	BULL PLUG SMLS SCRDL STD GALV A234-WPB							
250			REDECC	5488633	1/2 - 2	REDUCER ECCENTRIC CLASS 300# SCRDL GALV MI A197	3/4 - 4	3/4 - 4					
260			RED	5488632	1/2 - 2	REDUCER CONCENTRIC CLASS 300# SCRDL GALV MI A197	3/4 - 4						
270	1		BUS	5491242	1/2 - 2 1/2	BUSHING HEX HEAD SCRDL GALV STL A105	3/4 - 4						
280			REDTEE	5488622	1/2 - 3	TEE RED CLASS 300# SCRDL GALV MI A197	3/4 - 4						
281			COU	5488625	1/2 - 4	COUPLING CLASS 300# SCRDL GALV MI A197							
282						***** PIPE FLANGES *****							
290								SERVICE					
300													
310			SFL	5599594	1/2 - 4	FLG SCRDL 150# FF GALV STL A105							
320			SFLRF	5599595	1/2 - 4	FLG SCRDL 150# RF GALV STL A105							
330			BLF	5615486	1/2 - 4	FLG BLIND 150# FF GALV STL A105							
340						***** CONDENSATE TRAP *****							
350								INSTRUMENT AIR : IA POTABLE WATER : DW					
360													
370			CTRPSS	5764125	1/2 - 3	CT-01: CONDENSATE TRAP 200# SCRDL SS SEMI-AUTOM.							
380			CTRPCI	5764124	1/2 - 3	CT-02: CONDENSATE TRAP 200# SCRDL CI SEMI-AUTOM.							
390						***** PIPE NIPPLES *****							
400													
410								MATERIAL: GALV. CARBON STEEL FLANGE RATING: 150 FF TEMPERATURE RANGE: 0 / 50 C COMMENT:					
420			NIPTBE	5541082	1/2 - 2	NIPPLE XS GALV STL A106-B TBE L=100MM							
430			NIPTBE	5541081	2 1/2 - 4	NIPPLE STD WT GALV STL A106-B TBE L=100MM							
440						***** SWAGE NIPPLES *****							
450													
460													
470			SWACTE	5543831	1/2 - 2	SWAGE CONC XS GALV STL A234 GR WPB TBE	3/4 - 4						
			Sulphide Leach Project Fluor Chile - Minera Escondida 53232500 Antofagasta			CONSTRUCTION	Sulphide Leach Project						
						SCREWED / FLANGED	CORR. ALLOW. 0 IN	DATE 14OCT04	BY ECQ	REV 1	SHEET 1 OF 2	PA 5	CLASS CGAW01


SEQ NO.	REV	NOTE NO.	ITEM NAME	ITEM CODE	SIZE RANGE / SMALL END SIZES	DESCRIPTION	REFERENCE / LARGE END SIZES	NOTES						
480						***** HOSES *****								
490														
500														
510			HOS	5772020	1/4 - 6	GENRL.PURP.YARN REINF SYNTH.RUBBER BLACK								
520														
530														
540						***** GASKETS *****								
550														
560			GASFF	5669788	1/2 - 4	GASKET 150# INORG.FILLERS W/PTFE 1/8" FF	DURLON 9000							
570			GASRF	5669790	1/2 - 4	GASKET 150# INORG.FILLERS W/PTFE 1/8" RF								
580														
590						***** BOLTING *****								
600														
610			BOLS	5675658	1/4 - 99	STUD-BOLT GALV CHROME-MOLY A193 GRADE B7								
620			BOLM	5675635	1/4 - 99	MACH BOLT GALV CS A307 GR B W/1 SEMI-FINISH HEAVY HEX NUT								
630														
640						***** STRAINERS *****								
650														
660			STR	5762052	1/2 - 2	Y-STRAINER 150# SCRD BRONZE .033 PERF								
670														
680						***** HOSE CONNECTIONS *****								
690														
700			CPLF	5763102	1/4 - 2	COUP.AIR HOSE 2-LUG QUICK ACT.BRASS FNPT								
710			CPLM	5763103	1/4 - 2	COUP.AIR HOSE 2-LUG QUICK ACT.BRASS MNPT								
720														
721						***** SAFETY SHOWER *****								
722			SAF	5761535	1 1/2 - 1 1/2	SAFETY SHOWER, EYE/FACE WASH COMBINATION UNIT AND ELECTRICAL WATER HEATER	HAWS 8306							
723														
730						***** BRANCHES *****								
740														
750						USE SCREWED TEES FOR ALL BRANCHES.								
760						INTEGRAL REDUCING TEES ARE PREFERRED FOR								
770						REDUCING BRANCHES, BUT BUSHINGS ARE								
780						PERMITTED WHERE REDUCING TEES ARE NOT								
790						AVAILABLE.								
800														
810						***** CONSTRUCTION DETAILS *****								
820														
830						SEAL WELDING ----- NONE								
840						PIPE BENDS ----- NONE								
850						THREAD SEALANT ----- TEFLON TAPE								
860						PWHT ----- NONE								
			<div>Fluor</div> <div>Sulphide Leach Project Fluor Chile - Minera Escondida 53232500 Antofagasta</div>			CONSTRUCTION	Sulphide Leach Project							
						SCREWED / FLANGED	CORR. ALLOW. 0 IN	DATE 14OCT04	BY ECQ	REV 1	SHEET 2 OF 2	PA 5	CLASS CGAW01	


# FLUOR

SEQ NO.	REV	NOTE NO.	ITEM NAME	ITEM CODE	SIZE RANGE / SMALL END SIZES	DESCRIPTION	REFERENCE / LARGE END SIZES	NOTES						
440			WNK	5617150LA	26 - 48	FLG WN MSS CLASS 150 RF CS A105 STD BORE HDPE LINING								
450			BLF	5615150LA	1 - 24	FLG BLIND CLASS 150 RF CS A105 HDPE LINING								
460			BLF	5621150LA	26 - 48	FLG BLIND MSS CLASS 150 RF CS A105 HDPE LINING								
470														
480						*****GASKETS*****								
490			GAS	5667790	1/2 - 48	GASKET CLASS 150 INORG. FILLERS W/PTFE 1/8" RF								
500						*****BOLTING*****								
510														
520														
530			BOL	5675689	1/2 - 1 1/8	MACH BOLT 316 SS A193 GR B8M W/1 SEMI-FINISH HEAVY HEX. NUT								
540			BOLM	5675631	1/2 - 1 1/8	MACH BOLT CS A307 GR B W/1 SEMI-FINISH HEAVY HEX. NUT								
550			BOL	5675690	1/2 - 1 1/8	STUD-BOLT 316SS A193 B8M-2 W/A194-8M NUT								
560			BOLS	5675648	1/2 - 1 1/8	STUD-BOLT CHROME-MOLY ALLOY A193 GR B7 W/CS A194 GR 2H NUTS								


SEQ NO.	REV	NOTE NO.	ITEM NAME	ITEM CODE	SIZE RANGE / SMALL END SIZES	DESCRIPTION	REFERENCE / LARGE END SIZES	NOTES					
10						*****VALVE*****		PB3 BEND FOR RAFFINATE IMPULSION LINE VC3 USE THESE VALVE ONLY IN LINES WITH DESIGN PRESSURE BIGGER THAN 75 PSIG.					
20													
30													
40			BAL	5303901	1/2 - 2	BA-09: BALL CL 300# RF 254 SMO ASTM A312	COOPER 430RF						
50			B-26S	5308755S	4 - 6	BU-04: BUTTERFLY HP CL300# 254 SMO TRIM LUG LO	XOMOX						
60			B-27S	5308756S	8 - 24	BU-05: BUTTERFLY HP CL 300# 254 SMO TRIM GO LUG	XOMOX						
70			B-31S	5308754S	26 - 48	BU-15: BUTTERFLY HP CL 300# 254 SMO GO MSS LUG	DEZURIK BHP						
80			GAT	5269520	4 - 6	GA-07: GATE CL 300# RF 254SMO W/TFE PACKING	COOPER 130RF						
90			GAT	5269520G	8 - 24	GA-07G: GATE CL 300# RF 254SMO W/TFE PACKING GEAR OP	COOPER 130RF						
100			CHE	5276836	1 - 2	CH-21: CHECK CL 300# RF 254 SMO UNS S31254 SWING	COOPER #330 RF						
110		VC3	C-14S	5291170S	3 - 24	CH-05: CHECK 300# WAFER 254 SMO EXT SPRING & WT							
120			C-45S	5163448S	3 - 24	CH-04: CHECK SILENT 300# RF TFE 254SMO							
130			V-13S	5001496S	4 - 6	VE-11: AIR/VAC VALVE 300# RF 254 SMO							
140													
150						*****PIPE*****							
160													
170			PIPBAR	5356515LA	1 - 24	PIPE STD WT BE ERW CS A53-B TYPE E (TO BE HDPE LINING)							
180			PIPBAR	5356585	26 - 48	PIPE 0.500 IN WALL BE CS API-5L GRADE X60 (TO BE INTERNAL HDPE LINING)							
190													
200						***** INDUCTION PIPE BENDS *****							
210													
220													
230													
240													
250													
260	1	PB3	INDIPB	5356525PB01	42 - 42	INDUCTION BEND OF PIPE 0.625 IN WALL ERW CS A 53 GR B ANGLE=15,1°.							
270													
280						*****FITTINGS*****							
290													
300			ELLBW	5374114LA	1 - 24	ELL 90 DEG LR STD WT BW STL A234 WPB (TO BE HDPE LINING)							
310			45LBWE	5374120LA	1 - 24	ELL 45 DEG LR STD WT BW SMLS CARBON STEEL A234 WPB (TO BE HDPE LINING)							
320													
330													
340	1		ELLBE	5725200LA	26 - 48	ELL 90 DEG BE XS CARBON STEEL (TO BE HDPE LINING)							
350													
360													
370													
380	1		ELLFLG	5725202LA	26 - 48	ELL 45 DEG BE XS CARBON STEEL (TO BE HDPE LINING)							
390													
400													
410			TEE	5380837LA	1 - 24	TEE STD WT BW CARBON STEEL A234 GR WPB-W (TO BE HDPE LINING)		SERVICE					
420			TEE	5373961LA	26 - 48	TEE XS BW SMLS CARBON STEEL A234 WPB (TO BE HDPE LINING)		RAFFINATE : R					
430													
440													
450													
460			RED	5380839LA	1 - 22	RED CONC STD WT BW CARBON STEEL A234 GR WPB-W (TO BE HDPE LINING)	2 - 24						
470						RED CONC XS BW SMLS CARBON STEEL A234 WPB (TO BE HDPE LINING)	28 - 48						
480			RED	5374287LA	26 - 46								
490													
500			REDEB	5380840LA	1 - 22	RED ECC STD WT BW CARBON STEEL A234 GR WPB-W (TO BE HDPE LINING)	2 - 24						
510						RED ECC XS BW SMLS CARBON STEEL A234 WPB (TO BE HDPE LINING)	28 - 48						
520			REDEBW	5374288LA	26 - 46			MATERIAL: CS / HDPE LINING					
530								FLANGE RATING: 300 RF					
540								TEMPERATURE RANGE: 0 / 50 C					
550						*****PIPE FLANGES*****		COMMENT:					
			Sulphide Leach Project Fluor Chile - Minera Escondida 53232500 Antofagasta			CONSTRUCTION	Sulphide Leach Project						
						BUTT WELD - FLANGED	CORR. ALLOW. 0 IN	DATE 14OCT04	BY ECQ	REV 1	SHEET 1 OF 2	PA 5	CLASS CLPC03


SEQ NO.	REV	NOTE NO.	ITEM NAME	ITEM CODE	SIZE RANGE / SMALL END SIZES	DESCRIPTION	REFERENCE / LARGE END SIZES	NOTES					
560	1		SOF RF	5597500LA	1 - 24	FLG SO CL 300 RF CS A105 ASME B16.5 (TO BE HDPE LINING)							
570			SOF	5597505LA	26 - 48	FLG SO CL 300 B16.47 RF CS A105 (TO BE HDPE LINING)							
580			WNK	5554635LA	1 - 6	FLG WN CL 300 B16.5 RF CS A105 STD BORE (TO BE HDPE LINING)							
600			WNK RF	5554640LA	26 - 48	FLG WN CL 300 B16.47 RF CS A105 XS BORE (TO BE HDPE LINING)							
610			BLF	5615497LA	1 - 24	FLG BLIND CL 300 B16.5 RF CS A105 (TO BE HDPE LINING)							
620			BLF	5621019LA	26 - 48	FLG BLIND CL 300 B16.47 RF CS A105 (TO BE HDPE LINING)							
630			GAS	5669799	1/2 - 48	*****GASKETS*****							
640						GASKET 300# INORG.FILLERS W/PTFE 1/8" RF							
650						*****BOLTING*****							
660													
670			BOL	5675689	1/2 - 1 1/8	MACH BOLT 316 SS A193 GR B8M W/1 SEMI-FINISH HEAVY HEX. NUT							
680						MACH BOLT CS A307 GR B W/1 SEMI-FINISH HEAVY HEX. NUT							
690						STUD-BOLT 316SS A193 B8M-2 W/A194-8M NUT							
700						STUD-BOLT CHROME-MOLY ALLOY A193 GR B7 W/CS A194 GR 2H NUTS							
710			BOLM	5675631	1/2 - 1 1/8								
720			BOL	5675690	1/2 - 1 1/8								
730			BOLS	5675648	1/2 - 1 1/8								
740			MK	3100-MK-03	42 - 42	***** SPECIAL PIECES *****							
750						PIEZA ESPECIAL (MANIFOLD) 3100-MK-03 : C.S. C/REVEST.							
760						HDPE FLGD. CL 300 SEG. PL. N° 3100-250-SK-005							
</													


SEQ NO.	REV	NOTE NO.	ITEM NAME	ITEM CODE	SIZE RANGE / SMALL END SIZES	DESCRIPTION	REFERENCE / LARGE END SIZES	NOTES					
10						*****VALVE*****		VC3 USE THESE VALVE ONLY IN LINES WITH DESIGN PRESSURE BIGGER THAN 75 PSIG.					
20			BAL	5114960	1/2 - 2	BA-04: BALL 150# FF PVC/TEFLON SEAT/VITON SEAL LO	CHEMTROL TU						
30													
40			KNF	5154060	3 - 6	KN-04: KNIFE GATE 75 PSI CWP FF DI W/VITON SEAT SUPER DUPLEX STEM HDWL OP	CLARKSON						
50			KNF	5154060G	8 - 22	KN-04G: KNIFE GATE 75 PSI CWP FF DI W/VITON SEAT SUPER DUPLEX STEM GO	CLARKSON						
60			KNF	5154060H	24 - 42	KN-04H: KNIFE 75 PSI CWP FF DI W/VITON SEAT SUPER DUPLEX STEM HYDR. ACTING CYL.	CLARKSON						
70													
80			CHEWAF	5280760	3 - 40	CH-45: CHECK 75 PSI CWP FF SUPER DUPLEX BODY , SPRING WAFER-TYPE	GOODWIN 9ANFP11						
90	1	VC3											
100						***** HYDRAULIC UNITS *****							
110			HYD	5-KN04H-HYD	<No Size> - <No	HYDRAULIC UNIT TO KN-04H KNIFE GATE VALVE (IC=5154060H)							
120													
130						*****PIPE*****							
140			PIP	5356520L	1/2 - 42	PIPE STD WT ERW CS A53-B TYPE E HOT DIPPED HDPE LINING							
150													
160						*****FITTINGS*****							
170			ELL	5374114L	2 - 42	ELL 90 DEG LR STD WT BW CS A234 WPB HOT DIPPED HDPE LINING							
180													
190			45L	5374125L	2 - 42	ELL 45 DEG LR STD WT BW SMLS CS A234 WPB HOT DIPPED HDPE LINING							
200													
210			TEE	5373971L	2 - 42	TEE STD WT BW SMLS CS A234 WPB HOT DIPPED HDPE LINING							
220													
230			TEERED	5201110L	2 - 40	TEE RED STD WT BW SMLS CS A234 WPB HOT DIPPED HDPE LINING	2 1/2 - 42						
240													
250			RED	5371720L	2 - 40	RED CONC STD WT BW SMLS CS A234 WPB HOT DIPPED HDPE LINING	2 1/2 - 42						
260													
270			REDEBW	5374126L	2 - 40	RED ECC STD WT BW SMLS CS A234 WPB HOT DIPPED HDPE LINING	2 1/2 - 42						
280													
290													
300			TOL	5514671L	1/2 - 2	THREDOLET CLASS 3000 CS A105 HOT DIPPED HDPE LINING	3/4 - 42						
310													
320			COUDRE	5751071L	3 - 42	COUPLING DRESSER STYLE 38 CS HOT DIPPED HDPE LINING 1/4 IN THICK X 7 IN LONG							
330						*****PIPE FLANGES*****							
340													
350													
360			SOF	5597464L	1/2 - 6	FLG SO 150# FF CS A105 HOT DIPPED HDPE LINING							
370			SOFF	5597400L	8 - 42	FLG SO ANSI/AWWA C207 CL D (175-150 PSI) FF CS A105 HDPE HOT DIPPED LINING							
380													
390			BLF	5615476L	1/2 - 6	FLG BLIND 150# FF STL A105 HOT DIPPED HDPE LINING							
400			BLDFF	5597405L	8 - 42	FLG BLIND ANSI/AWWA C207 CL D (175-150 PSI) FF CS A105 HDPE HOT DIPPED LINING							
410													
			Sulphide Leach Project Fluor Chile - Minera Escondida 53232500 Antofagasta			CONSTRUCTION	Sulphide Leach Project						
						BUTT WELD - FLANGED	CORR. ALLOW. 0 IN	DATE 14OCT04	BY ECQ	REV 1	SHEET 1 OF 2	PA 5	CLASS CLSW01


SEQ NO.	REV	NOTE NO.	ITEM NAME	ITEM CODE	SIZE RANGE / SMALL END SIZES	DESCRIPTION	REFERENCE / LARGE END SIZES	NOTES					
420			GAS	5669787	3 - 42	*****GASKETS*****	GARLOCK						
430						GASKET 150# PTFE 1/8" MET/NON-MET FLG FF							
440						*****BOLTING*****							
450			BOL	5675700	1/2 - 1 1/8	STUD-BOLT 316SS GR B8M W/A194 GR 2H NUTS AND WASHERS							
460													
470			GASFR	5754400	1/2 - 42	***** CATHODIC PROTECTION *****							
480						INSULATION KIT FOR ANSI CL 150 FLANGES							
490													
500													
								SERVICE					
								SWS : SEA WATER SUPPLY BW : BRINE					
								MATERIAL: CS HDPE HOT D/LINING FLANGE RATING: 150# FF TEMPERATURE RANGE: 0 / 50 C COMMENT:					
			Sulphide Leach Project Fluor Chile - Minera Escondida 53232500 Antofagasta			CONSTRUCTION		Sulphide Leach Project					
						BUTT WELD - FLANGED		CORR. ALLOW. 0 IN	DATE 14OCT04	BY ECQ	REV 1	SHEET 2 OF 2	PA 5





SEQ NO.	REV	NOTE NO.	ITEM NAME	ITEM CODE	SIZE RANGE / SMALL END SIZES	DESCRIPTION	REFERENCE / LARGE END SIZES	NOTES						
10						*****VALVE*****		FR2 USE FLAT FACE FLANGES AGAINST ALL CLASS 125 CAST IRON FLANGED VALVES AND EQUIPMENT. GU3 USE FOR ELECTROLYTIC ISOLATION BETWEEN UNDERGROUND AND ABOVEGROUND METALLIC PIPING. ND6 NOT USE IN BLOWER AIR. NR2 SIZES IN SMALL END SIZES COLUMN ARE BRANCH SIZE OF OLETS OR TEES. SIZES IN LARGE END SIZES COLUMN ARE RUN PIPE SIZE OF OLETS OR TEES. SB2 DO NOT USE STEEL BLINDS OR SPACERS NEXT TO FLAT FACE IRON FLANGES OR IRON BODY VALVES. SB5 USE JACK SCREWS ONLY WHERE PIPING CAN NOT BE OPENED WITH FLANGE SPREADER. UH7 USE CLASS 3000 THREDOLET FOR TEMPERATURE INSTRUMENT CONNECTIONS. USE CLASS 3000 SCRDLATROLET FOR TEMPERATURE CONNECTIONS IN VERTICAL LINES. USE CLASS 3000 SCRDELBOLET FOR TEMPERATURE CONNECTIONS IN ELBOWS. UH8 USE ONLY IN HOT WATER SYSTEM. VF6 PRESSURE RATING FOR THIS VALVE IS 150 PSIG. USE ONLY FOR LINES WITH DESIGN PRESSURE LESS THAN 75 PSIG WHERE ONE OF THE MATING FLANGES MAY BE REMOVED (E.G. FOR MAINTENANCE) WHILE VALVE IS PRESSURIZED. DO NOT USE GASKETS WITH THIS VALVE.						
20														
30														
40			BALSCR	5058894	1/2 - 2	BA-01: BALL 600# WOG SCRDL 316 SS/RTFE, HNDL OP	NIBCO T570CSR66							
50			GATSCR	5039577	1/2 - 2	GA-01: GATE CL 800# FNPT RP WB CS/13%CR TR/S.SEAT	SMITH #870-OOHO							
60			GATFLG	5156155	3 - 6	GA-03: GATE CL 150# FF OS&Y CAST STEEL HDWHL	VELAN							
70			GAT	5156155G	8 - 30	GA-03G: GATE CL 150# FF OS&Y CAST STEEL GEAR OP	VELAN							
80			BTF	5309238	8 - 24	BU-01: BUTTERFLY HP ECC DISC CL 150# 316SS F LUG GO	KEYSTONE #362S							
90			BTF	5306825	3 - 6	BU-16: BUTTERFLY WAFER CI/316SS VITON ST 125# LEVER	KEYSTONE #100							
100		VF6	BTFLUG	5306835	3 - 6	BU-20: BUTTERFLY TAP-LUG FF CS/SS TRIM/BUNA-N SEAT CL150 LO	KEYSTONE AR2							
110			BTFLUG	5306840	8 - 24	BU-21: BUTTERFLY TAP-LUG FF CS/SS VITON CL150 GO	KEYSTONE AR2							
120		UH8	BTFTFE	5306827	3 - 6	BU-19: BUTFLY WAF CI/316SS TFE ST 125# LO	KEYSTONE #100							
130		UH8	BTFTFE	5306833	8 - 24	BU-03: BUTFLY WAF CI/316SS TEFLON ST 125# GO	KEYSTONE #100							
140			GLOSCR	5000612	1/2 - 2	GL-02: GLOBE INSIDE STEM CI/SS TRIM FNPT 150# SWP	CRANE 254 XR							
150			GLOFLG	5160480	3 - 12	GL-03: GLOBE OS&Y CS W/13%CR TRIM FF CL 150 HWL								
160			CHESCR	5001460	1/2 - 2	CH-07: CHECK SWING F.P. CS/SS SEAT FNPT CL 150	ALOYCO							
170			CHEWAF	5280772	3 - 24	CH-12: CHECK WAF CS/BUNA N SEAT RF CL 150	MUESCO-MUELLER							
180			VNTAIR	5001470	1/2 - 2	VE-01: VENT WTER CS/SS FLT BUNA SEAT FNPT CL150								
190			AIRBRK	5001475	1 - 2	VE-02: AIR REL. & VAC.BRKR CI/SS TRM FNPT CL150								
200			VACBRK	5001480	3 - 8	VE-03: AIR REL.& VAC.BRKR CI/316 SS TR.FF CL150								
210			PIN	5054475	4 - 6	PC-01: PINCH FULL ROUND ENCLOSED CI/GUM RUB.BODY FF 150#								
220			CTRPSS	5764125	1/2 - 2	CT-01: CONDENSATE TRAP 200# SCRDL SS SEMI-AUTOM.								
230			KNF	5154055	4 - 6	KN-03: KNIFE GATE WAF 150 PSI CWP FF CI W/304 WP RESIL SEAT HDWL	L & M M145							
240			KNF	5154055G	8 - 24	KN-03G: KNIFE GATE TAP-LUG 150 PSI CWP FF CI W/304 WP RESIL SEAT GEAR OP	L & M M145							
250						*****PIPE*****								
260														
270														
280			PIP	5356039	1/2 - 2	PIPE XS SMLS CS A106-B T&C								
290			PIP	5356515	2 1/2 - 30	PIPE STD WT ERW CS A53-B TYPE E BE								
300						*****FITTINGS*****								
310														
320														
330		ND6	ELL	5488389	1/2 - 2	ELL 90 DEG CLASS 300# SCRDL MI A197								
340		ND6	45L	5488391	1/2 - 2	ELL 45 DEG CLASS 300# SCRDL MI A197								
350		ND6	TEESCR	5488393	1/2 - 2	TEE CLASS 300 SCRDL MI A197								
360		ND6	TEERSC	5253125	3/4 - 2	TEE RED MI A197 THRD BLACK CL 150								
370		ND6	CAP	5488394	1/2 - 2	CAP CLASS 300# SCREWED BANDED MI A197								
380		ND6	COUFSC	5488395	1/2 - 2	COUPLING CLASS 300# SCRDL MI A197								
390		ND6	UNI	5488404	1/2 - 2	UNION CLASS 300# SCRDL MI A197 BRASS TO IRON								
400		UH7	TOL	5514671	1/2 - 2	THREDOLET CLASS 3000# STL A105	BONNEY FORGE							
410		UH7	LOT	5524731	1/2 - 2	LATROLET CLASS 3000# SCRDL STL A105	3 - 24							
420		UH7	EOT	5516731	1/2 - 2	ELBOLET CLASS 3000# SCRDL STL A105								
430			BUS	5253101	1/2 - 2	BUSHING RED.OUTSIDE HEX MI A197 THREADED								
440														
450			ELLBW	5374114	2 1/2 - 30	ELL 90 DEG LR STD WT BW STL A234 WPB								
460			45L	5374120	2 1/2 - 30	ELL 45 DEG LR STD WT BW SMLS CARBON STEEL A234 WPB								
470			TEE	5374123	2 1/2 - 30	TEE STD WT BW SMLS CARBON STEEL A234 WPB								
			Sulphide Leach Project Fluor Chile - Minera Escondida 53232500 Antofagasta			CONSTRUCTION	Sulphide Leach Project							
						2" & SMALLER - SCR<2 1/2" & LARGER - BUTT WELD	CORR. ALLOW. 0,062 IN	DATE 14OCT04	BY ECQ	REV 1	SHEET 1 OF 3	PA 5	CLASS CSAW01	


SEQ NO.	REV	NOTE NO.	ITEM NAME	ITEM CODE	SIZE RANGE / SMALL END SIZES	DESCRIPTION	REFERENCE / LARGE END SIZES	NOTES						
480		NR2	TEERED	5201110	2 1/2 - 30	TEE RED CS ASTM A234 GR WPB BW STD	3 - 30 3 - 30  KWH							
490			RED	5374125	2 1/2 - 30	REDUCER CONCENTRIC STD WT BW SMLS CARBON STEEL A234 WPB								
500			REDEBW	5374126	2 1/2 - 30	REDUCER ECCENTRIC STD WT BW SMLS CARBON STEEL A234 WPB								
510			CAP	5374124	2 1/2 - 30	CAP STD WT BW SMLS CARBON STEEL A234 WPB								
520			PLG	5490662	1/2 - 2	PLUG SQUARE HEAD SCR D STL A105								
530														
540														
550														
560		FR2				*****PIPE FLANGES*****								
570														
580			SFLRF	5599606	1/2 - 2	FLG SCR D 150# RF STL A105								
590			SFLFF	5599608	1/2 - 2	FLG SCR D 150# FF STL A105								
600			SOFFF	5597464	2 1/2 - 30	FLG SO 150# FF STL A105								
610			SOFRF	5597469	2 1/2 - 30	FLG SO 150# RF STL A105								
620			SOFRFF	5597470	2 1/2 - 28	FLG SO REDUCING 150# FF STL								
630			SOFRRF	5597466	2 1/2 - 28	FLG SO REDUCING 150# RF STL								
640			BLFRFC	5615476	1/2 - 30	FLG BLIND 150# RF STL A105								
650			BLFFF	5615477	1/2 - 30	FLG BLIND 150# FF CS A105								
660														
670						***** AWWA FLANGES *****								
680														
690			SOF	5597410	4 - 30	FLG SO ANSI/AWWA C207 CL D (175-150 PSI) FF CS A105								
700			BLD	5597408	4 - 30	FLG BLIND ANSI/AWWA C207 CL D (175-150 PSI) FF CS A105								
710														
720		GU3	FISSET	5756627	1/2 - 30	INSULATION KIT PHENOLIC-NEOPRENE/MYLAR SLEEVES FOR FLANGES 150# RF OR FF								
730														
740						***** ORIFICE FLANGES*****								
750														
760			ORIXS	5622523	1 - 2	WN ORIF SET CLASS 300# RF CARBON STEEL XS BORE A105								
770			ORISTD	5622520	2 1/2 - 30	WN ORIFICE SET CLASS 300# RF CARBON STEEL STD WEIGHT BORE A105								
780														
790		SB5				***** SPECTACLE BLINDS *****								
800		SB2												
810			SPERF	5749496	2 - 30	SPECTACLE BLIND CL 150# RF CS A515 GR 70								
820			SPEDIS	5749852	16 - 30	PADDLE BLIND CL 150 RF CS A515 GR 70								
830			SPEDON	5749853	16 - 30	PADDLE SPACER CL 150 RF CS A515 GR 70								
840														
850						***** SWAGE NIPPLES *****								
860														
870	1		SWACTS	5543591	2 - 4	SWAGE CONC XS CS A234 GR WPB BLEXTSE								
880	1		SWACXS	5543595	1/2 - 2	SWAGE CONC XS CS A234 GR WPB MNPT								
890	1		SWAETS	5548681	2 - 4	SWAGE ECC XS STL A234 GR WPB BLEXTSE								
900	1		SWA	5548685	1/2 - 2	SWAGE ECC XS STL A234 GR WPB MNPT								
910														
920						*****GASKETS*****								
930														
940			GASFF	5669788	1/2 - 30	GASKET 150# INORG.FILLERS W/PTFE 1/8" FF	DURLON 9000							
			Sulphide Leach Project Fluor Chile - Minera Escondida 53232500 Antofagasta		CONSTRUCTION		Sulphide Leach Project							
					2" & SMALLER - SCR<r><n>2 1/2" & LARGER - BUTT WELD		CORR. ALLOW.		DATE	BY	REV	SHEET	PA	CLASS
					0.062 IN		14OCT04	ECQ	1	2 OF 3	5	CSAW01		

SEQ NO.	REV	NOTE NO.	ITEM NAME	ITEM CODE	SIZE RANGE / SMALL END SIZES	DESCRIPTION	REFERENCE / LARGE END SIZES	NOTES					
950			GAS	5667790	1/2 - 30	GASKET CLASS 150 INORG. FILLERS W/PTFE 1/8" RF							
960						*****BOLTING*****							
970			BOL	5675648	1/2 - 1 1/8	STUD-BOLT CHROME-MOLY ALLOY A193 GR B7 W/CS A194 GR							
980			BOLCS	5675800	1/2 - 1 1/8	2H NUTS SCREW BOLT ASTM A193 GRADE B7							
990						*****STRAINERS*****							
1000			STR	5762052	1/2 - 2	Y-STRAINER 150# SCR D BRONZE .033 PERF							
1010			STRWYE	5763052	2 1/2 - 12	Y-STRAINER 150# RF STL, 316 SCR .033PERF							
1020			STRDUB	5904201	1 - 16	STRAINER DUPLEX BASKET TYPE CS BODY FF 150#	HAYWARD MODL 50						
1030						***** TEMPORARY STRAINERS *****							
1040			STRFLT	5904203	1/2 - 30	STRAINER FLAT PERF 5/16IN HOLES CS FF 150#							
1050						*****HOSE AND HOSE FITTINGS*****							
1060			HOS	5755476	1/4 - 2	HOSE FLEX. SYNTH. RUBBER GENERAL PURP. MNPT ENDS 300							
1070						PSI							
1080			CPL	5763102	1/4 - 2	COUP.AIR HOSE 2-LUG QUICK ACT.BRASS FNPT							
1090			CPLM	5763103	1/4 - 2	COUP.AIR HOSE 2-LUG QUICK ACT.BRASS MNPT							
1100			CPLMI	5769100	1/4 - 2	COUP.AIR HOSE 2-LUG QUICK MI HOSE SHANK							
1110			CLP	5755300	3/4 - 6	CLAMP HOSE SGL.BLT SPLT.BND MI LO/MEDPRS							
1120			CQHSHK	5759110	3/4 - 6	COUPLER QUICK, HOSE SHANK EX.HVY.CS 150#							
1130			AQT	5759150	3/4 - 6	ADAPTER QUICK CPLG MNPT,EX.HEAVY.CS 150#							
1140			AQH	5759130	3/4 - 6	ADAPTER QUICK, HOSE SHANK EX.HVY CS 150#							
1150						*****EXPANSION JOINT*****							
1160			EXP	5984750	4 - 24	EXPANSION JOINT SINGLE ARCH BUTYL CS RET.RINGS FF							
1170						CLASS 150#							
1180			EXPJNT	5984765	4 - 24	EXPANSION JOINT SINGLE ARCH BUTYL CS FF CLASS 150#							
1190						***** STEEL COUPLING *****							
1200			COU	5751071	8 - 30	COUPLING DRESSER STYLE 38 CS 1/4 IN THICK X 7 IN LONG							
1210													
1220													
1230													
1240													
1250													
1260													
1270	1												
1271													
1280													
1290													
1300													
			Sulphide Leach Project Fluor Chile - Minera Escondida 53232500 Antofagasta			CONSTRUCTION	Sulphide Leach Project						
						2" & SMALLER - SCR< r>< n>2 1/2" & LARGER - BUTT WELD	CORR. ALLOW. 0.062 IN	DATE 14OCT04	BY ECQ	REV 1	SHEET 3 OF 3	PA 5	CLASS CSAW01


SEQ NO.	REV	NOTE NO.	ITEM NAME	ITEM CODE	SIZE RANGE / SMALL END SIZES	DESCRIPTION	REFERENCE / LARGE END SIZES	NOTES						
10						***** VALVES *****		FS6 USE ONLY IN FITTING TO FITTING CONNECTION WITH THE SUPERVISOR APPROVAL NR2 SIZES IN SMALL END SIZES COLUMN ARE BRANCH SIZE OF OLETS OR TEES. SIZES IN LARGE END SIZES COLUMN ARE RUN PIPE SIZE OF OLETS OR TEES. PL1 USE THIS PIPE AND SIZE IN MONTURAQUI WATER PIPELINE						
20														
30			BALSW	5002530	1/2 - 2	BA-02: BALL CL 300 FR-SFE.REG.P.CS/SS TR/TFE SW	CRANE							
40			BAL	5059215	1/2 - 2	BA-22: BALL 600# THRD FNPT END ENTRY CS/RTFE,HNDL OP								
50			BTF LG	5308880	3 - 6	BU-25: BUTTERFLY HP CLASS 300# CS/BUNA-N TAP-LUG LO								
60			BTF LG	5308882	8 - 24	BU-36: BUTTERFLY HP CLASS 300# CS/BUNA-N TAP-LUG GO								
70			CHEWAF	5291502	2 - 24	CH-35: CHECK CL 300# RF WAFER, NON-SLAM, CS/BUNA-N								
80			KNF	5154050	4 - 6	KN-02: KNIFE GATE TAP LUG CL 300# CWP CS-304SS HANDWHEEL OP								
90			KNF	5154050G	8 - 24	KN-02G: KNIFE GATE TAP LUG CL 300# CWP CS-304SS GEAR OP								
100			GAT	5156868	2 - 6	GA-26: GATE 300# RF STL, F6/STELLITED SEATS TFE PACKG	POWELL 3003							
110			GAT	5156868G	8 - 36	GA-26G: GATE 300# RF STL, F6/STELLITED SEATS TFE PACKG GEAR OP	POWELL 3003	SERVICE FRESH WATER : FW DESALINATION WATER : DSW MATERIAL: CARBON STEEL FLANGE RATING: 300 RF TEMPERATURE RANGE: 0 / 50 C COMMENT:						
111			GATFLG	5156868HM	18 - 18	GA-26HM: GATE 300# RF STL, F6/STELLITED SEATS TFE HYDR-MANUAL OP.	POWELL 3003							
120			ARV	5001494	2 - 6	VE-13: COMBINATION AIR VALVE CLASS 300 RF DI/SS/BUNA								
130						***** PIPE *****								
140														
150			PIP	5356039	1/2 - 2	PIPE XS SMLS CS A106-B T&C								
160			PIPSTD	5356515	3 - 24	PIPE STD WT ERW CS A53-B TYPE E BE								
161			PIPERW	5356515C	3 - 24	PIPE STD WT ERW BE CS A53-B TYPE E (TO BE COATED)								
170		PL1	PIPBAR	5356515	24 - 24	PIPE STD WT ERW CS A53-B TYPE E BE								
180			PIP	5356514	14 - 24	PIPE SCH 40 ERW CS A53-B TYPE E BE								
190						***** FITTINGS FORGED *****								
200		NR2												
210			ELL	5488389	1/2 - 2	ELL 90 DEG CLASS 300# SCRDI MI A197		BONNEY FORGE						
220			45L	5488391	1/2 - 2	ELL 45 DEG CLASS 300# SCRDI MI A197								
230			TEE	5488393	1/2 - 2	TEE CLASS 300 SCRDI MI A197								
240			CAP	5488394	1/2 - 2	CAP CLASS 300# SCREWED BANDED MI A197								
250			COU	5488395	1/2 - 2	COUPLING CLASS 300# SCRDI MI A197								
260			UNI	5488404	1/2 - 2	UNION CLASS 300# SCRDI MI A197 BRASS TO IRON								
270			RED	5488397	1/2 - 1 3/4	REDUCER BANDED CLASS 300# SCRDI MI A197								
280			PLG	5490670	1/2 - 2	PLUG HEX HEAD SCRDI STL A105								
290			TOL	5514671	1/2 - 2	THREDOLET CLASS 3000# STL A105								
300						***** FITTINGS STANDARD WEIGHT *****								
310								4 - 12						
320			ELL	5374114	3 - 12	ELL 90 DEG LR STD WT BW STL A234 WPB								
330			45L	5374120	3 - 12	ELL 45 DEG LR STD WT BW SMLS CARBON STEEL A234 WPB								
340			TEESTD	5374123	3 - 12	TEE STD WT BW SMLS CARBON STEEL A234 WPB								
350			RED CST	5374125	3 - 10	REDUCER CONCENTRIC STD WT BW SMLS CARBON STEEL A234 WPB								
360			REDEST	5374126	3 - 10	REDUCER ECCENTRIC STD WT BW SMLS CARBON STEEL A234 WPB	4 - 12							
370			CAP	5374124	3 - 12	CAP STD WT BW SMLS CARBON STEEL A234 WPB								
380			LAT STD	5374133	3 - 12	LATERAL 45 DEG STD WT BW SMLS CS A234 WPB								
390						***** FITTINGS SCH 40 *****								
400			ELL	5374060	14 - 24	ELL 90 DEG LR SCH 40 BW STL A234 WPB								
410			ELLBW	5374060C	14 - 24	ELL 90 DEG LR SCH 40 BW CARBON STEEL A234 WPB (TO BE COATED)		4 - 12						
411						ELL 45 DEG LR SCH 40 BW SMLS CARBON STEEL A234 WPB								
420			45L	5374066	14 - 24									
			Sulphide Leach Project Fluor Chile - Minera Escondida 53232500 Antofagasta			CONSTRUCTION		Sulphide Leach Project						
						2" AND SMALLER - SCREWED 3" AND LARGER - BUTT WELD		CORR. ALLOW. 0,0625 IN	DATE 14OCT04	BY ECQ	REV 1	SHEET 1 OF 3	PA 5	CLASS CSAW03

SEQ NO.	REV	NOTE NO.	ITEM NAME	ITEM CODE	SIZE RANGE / SMALL END SIZES	DESCRIPTION	REFERENCE / LARGE END SIZES	NOTES							
430			TEEBW	5374069	14 - 24	TEE SCH 40 BW SMLS CARBON STEEL A234 WPB	16 - 24 16 - 24								
431			TEE	5374069C	14 - 24	TEE SCH 40 BW SMLS CARBON STEEL A234 WPB (TO BE COATED)									
440			REDCBW	5374071	14 - 22	RED CONC SCH 40 BW SMLS CARBON STEEL A234 WPB									
450			REDEBW	5374072	14 - 22	RED ECC SCH 40 BW SMLS CARBON STEEL A234 WPB									
460			CAP	5374070	14 - 24	CAP SCH 40 BW SMLS CARBON STEEL A234 WPB									
470			LATBW	5374078	14 - 24	LATERAL 45 DEG SCH 40 STL A234 WPB									
480															
490						***** PIPE FLANGES *****									
500			SWF	5601796	1/2 - 2	FLG SW CLASS 300 RF STL STD BORE A105									
510			SFL	5599620	1/2 - 2	FLG SCR D 300# RF CS A105									
520			SOF	5597491	3 - 24	FLG SO 300# RF STL A105									
521			SOFRF	5597491C	3 - 24	FLG SO 300# RF STL A105 (TO BE COATED)									
530		FS6	WNK	5554635	3 - 12	FLG WN 300# RF CS A105 STD BORE									
540			WNK	5554640	14 - 24	FLG WN 300# RF CS A105 SCH 40 BORE									
550			BLF	5615497	1/2 - 24	FLG BLIND 300# RF FORGED CARBON STEEL A105									
560															
570						***** AWWA FLANGES *****									
580			SOFFF	5597410	8 - 24	FLG SO ANSI/AWWA C207 CL D (175-150 PSI) FF CS A105									
590			BLD	5597408	8 - 24	FLG BLIND ANSI/AWWA C207 CL D (175-150 PSI) FF CS A105									
591			BLDFFF	5597408C	8 - 24	FLG BLIND ANSI/AWWA C207 CL D (175-150 PSI) FF CS A105 (TO BE COATED)									
600															
610						***** PIPE NIPPLES *****									
620			NIPTOE	5540963	1/2 - 2	NIPPLE XS STL A106-B TOE-POE L=100MM									
630			NIP	5540953	1/2 - 2	NIPPLE XS STL A106-B TBE L=100MM									
640															
650						***** SWAGE NIPPLES *****									
660			SWACTS	5543591	1/2 - 2	SWAGE CONC XS CS A234 GR WPB BLEXTSE									
670			SWAETS	5548681	1/2 - 2	SWAGE ECC XS STL A234 GR WPB BLEXTSE									
680															
690						***** GASKETS *****									
700			GASHRF	5669799	1/2 - 24	GASKET 300# INORG.FILLERS W/PTFE 1/8" RF									
710															
720						***** SPECTACLE BLINDS *****									
730			SPE	5749497	3 - 24	SPECTACLE BLIND CL 300 RF CS A515 GR 70 ASME B16,5									
740															
750						***** BOLTING *****									
760			BOLCS	5675648	1/2 - 99	STUD-BOLT CHROME-MOLY ALLOY A193 GR B7 W/CS A194 GR 2H NUTS									
770			BOLSS	5675690	1/2 - 99	STUD-BOLT 316SS A193 B8M-2 W/A194-8M NUT									
780			BOLMCS	5675631	1/2 - 99	MACH BOLT CS A307 GR B W/1 SEMI-FINISH HEAVY HEX. NUT									
790			BOLMS	5675689	1/2 - 99	MACH BOLT 316 SS A193 GR B8M W/1 SEMI-FINISH HEAVY HEX. NUT									
800															
810						***** STRAINER *****									
820			STRWYE	5904205	1/2 - 2	STRAINER WYE W/BLOWOFF CS/316SS SCREEN RF 300#									
830			STRNER	5762672	3 - 20	STRAINER 300# RF 316 SS BODY & BASKET									
840								SERVICE  FRESH WATER : FW DESALINATION WATER : DSW   MATERIAL: CARBON STEEL FLANGE RATING: 300 RF TEMPERATURE RANGE: 0 / 50 C COMMENT:							
850						***** TEMPORARY STRAINER *****									
860			STRCON	5762580	3 - 20	STRAINER 300# RF STL CONICAL									
			Sulphide Leach Project Fluor Chile - Minera Escondida 53232500 Antofagasta			CONSTRUCTION		Sulphide Leach Project							
						2" AND SMALLER - SCREWED 3" AND LARGER - BUTT WELD		CORR. ALLOW. 0,0625 IN		DATE 14OCT04	BY ECQ	REV 1	SHEET 2 OF 3	PA 5	CLASS CSAW03


SEQ NO.	REV	NOTE NO.	ITEM NAME	ITEM CODE	SIZE RANGE / SMALL END SIZES	DESCRIPTION	REFERENCE / LARGE END SIZES	NOTES					
								SERVICE					
								FRESH WATER : FW DESALINATION WATER : DSW					
								MATERIAL: CARBON STEEL FLANGE RATING: 300 RF TEMPERATURE RANGE: 0 / 50 C COMMENT:					
			Sulphide Leach Project Fluor Chile - Minera Escondida 53232500 Antofagasta			CONSTRUCTION		Sulphide Leach Project					
						2" AND SMALLER - SCREWED 3" AND LARGER - BUTT WELD		CORR. ALLOW. 0,0625 IN	DATE 14OCT04	BY ECQ	REV 1	SHEET 3 OF 3	PA 5


SEQ NO.	REV	NOTE NO.	ITEM NAME	ITEM CODE	SIZE RANGE / SMALL END SIZES	DESCRIPTION	REFERENCE / LARGE END SIZES	NOTES						
10						***** VALVES *****		NR2 SIZES IN SMALL END SIZES COLUMN ARE BRANCH SIZE OF OLETS OR TEES. SIZES IN LARGE END SIZES COLUMN ARE RUN PIPE SIZE OF OLETS OR TEES. PB2 BENDS FOR DESALINATION WATER PIPELINE						
30			GAT	5165191	1 - 6	GA-23: GATE CL 900# OS&Y CS A216-WCB RF HWL	VELAN							
40			GAT	5165191G	8 - 24	GA-23G: GATE CL 900# OS&Y CS A216-WCB RF GEAR OP	VELAN							
50			CHK	5163445	8 - 24	CH-42: CHECK SILENT CL 900# RF TFE CS A216-WCB	APCO SERIES 600							
60			CHE	5163437	8 - 8	CH-44: CHECK SWING CL 900# RF CS W/13%CR SS TRIM	POWELL #1561A							
70			GATSWWS	5115273	1/2 - 2	GA-28: GATE CL 900 API 602 SW CS A105, F6/STEL SEATS	OSWAL VALVE							
80	1		CHEWAF	5280760	3 - 48	CH-45: CHECK 75 PSI CWP FF SUPER DUPLEX BODY , SPRING WAFER-TYPE	GOODWIN 9ANFP11							
90			CHE	5163450	12 - 36	CH-46: CHECK SWING PIGGABLE CL 900 RF CS A216 GR WCC								
120			KNF	5154060H	24 - 48	KN-04H: KNIFE 75 PSI CWP FF DI W/VITON SEAT SUPER DUPLEX STEM HYDR. ACTING CYL.	CLARKSON							
130			ARV	5001497	2 - 8	VE-15: COMBINATION AIR VALVE CL 900 RF 316 SS / VITON								
140			COM	5001498	2 - 6	VE-16: COMBINATION AIR VALVE CL 300 RF 316 SS / VITON								
150			ARVFRF	5001505	3 - 6	VE-17: AIR RELEASE VALVE CL 900 RF 316 SS / VITON	APCO							
160	1		ARVFLG	5001510	1 - 3	VE-19: AIR RELEASE VALVE CL 300 RF 316 SS / VITON	APCO							
170						***** PIPE *****		DESALINATION WATER : DSW						
180														
200			PIP	5356039	1/2 - 2	PIPE XS SMLS CS A106-B T&C								
210			PIPBAR	5356033	1/2 - 2	PIPE XS SMLS CS A106 B PE								
220			PIP	5356518	3 - 8	PIPE XS ERW CS API-5L-B/ A53 GR B TYPE E								
230			PIPBR	5356505	24 - 24	PIPE SCH 60 ERW CS API-5L GRADE X60 BE								
240			PIP	5356510	10 - 24	PIPE SCH 80 ERW CS API-5L-B/ A53 GR B TYPE E								
250			PIPBAR	5356550	3 - 24	PIPE 0.250 IN WALL CS API-5L GRADE X60 BE								
260			PIPCD	5356550C	3 - 24	PIPE 0.250 IN WALL BE CS API-5L GRADE X60 (TO BE COATED)								
270			PIPBDE	5356560	3 - 24	PIPE 0.312 IN WALL CS API-5L GRADE X60 BE								
280			PIPEBE	5356570	3 - 24	PIPE 0.375 IN WALL CS API-5L GRADE X60 BE								
290			PIPEBB	5356580	3 - 24	PIPE 0.500 IN WALL CS API-5L GRADE X60 BE								
300						***** PIPE INDUCTION BENDS *****		MATERIAL: CARBON STEEL FLANGE RATING: 900 RF TEMPERATURE RANGE: 0 / 50 C COMMENT:						
310	1	PB2												
330			INDBBB	5356560PB01C	24 - 24	INDUCTION BEND OF CS PIPE API-5L GR X60, 0.312 IN WALL, 7,29 M. LENGTH. (TO BE COATED)								
340			INDBBI	5356560PB02C	24 - 24	INDUCTION BEND OF CS PIPE API-5L GR X60, 0.312 IN WALL, 4,38 M. LENGTH. (TO BE COATED)								
350			INDBBP	5356560PB03C	24 - 24	INDUCTION BEND OF CS PIPE API-5L GR X60, 0.312 IN WALL, 6,65 M. LENGTH. (TO BE COATED)								
360			INDBDP	5356560PB04C	24 - 24	INDUCTION BEND OF CS PIPE API-5L GR X60, 0.312 IN WALL, 6,43 M. LENGTH. (TO BE COATED)								
370			INDBEN	5356560PB05C	24 - 24	INDUCTION BEND OF CS PIPE API-5L GR X60, 0.312 IN WALL, 4,64 M. LENGTH. (TO BE COATED)								
380			INDBIP	5356560PB06C	24 - 24	INDUCTION BEND OF CS PIPE API-5L GR X60, 0.312 IN WALL, 7,46 M. LENGTH. (TO BE COATED)								
381			INDBP2	5356560PB07C	24 - 24	INDUCTION BEND OF CS PIPE API-5L GR X60, 0.312 IN WALL, 5,57 M. LENGTH. (TO BE COATED)								
384			INDBP3	5356560PB08C	24 - 24	INDUCTION BEND OF CS PIPE API-5L GR X60, 0.312 IN WALL, 5,78 M. LENGTH. (TO BE COATED)								
385			INDPPP	5356560PB01C	24 - 24	INDUCTION BEND OF CS PIPE API-5L GR X60, 0.312 IN WALL, 7,29 M. LENGTH. (TO BE COATED)								
390			INDBND	5356580PB01C	24 - 24	INDUCTION BEND OF CS PIPE API-5L GR X60, 0.5 IN WALL, 1,75 M. LENGTH. (TO BE COATED)								
400			INDBPI	5356580PB02C	24 - 24	INDUCTION BEND OF CS PIPE API-5L GR X60, 0.5 IN WALL, 1,52 M. LENGTH. (TO BE COATED)								
410			INDBPP	5356580PB03C	24 - 24	INDUCTION BEND OF CS PIPE API-5L GR X60, 0.5 IN WALL, 3,45 M. LENGTH. (TO BE COATED)								
			Sulphide Leach Project Fluor Chile - Minera Escondida 53232500 Antofagasta			CONSTRUCTION	Sulphide Leach Project							
						4" AND LARGER - BUTT WELD	CORR. ALLOW. 0,063 IN	DATE 14OCT04	BY ECQ	REV 1	SHEET 1 OF 3	PA 5	CLASS CSAW05	





SEQ NO.	REV	NOTE NO.	ITEM NAME	ITEM CODE	SIZE RANGE / SMALL END SIZES	DESCRIPTION	REFERENCE / LARGE END SIZES	NOTES					
420			INDIBP	5356580PB04C	24 - 24	INDUCTION BEND OF CS PIPE API-5L GR X60, 0.5 IN WALL, 3,59 M. LENGTH. (TO BE COATED)	BONNEY FORGE BONNEY FORGE BONNEY FORGE 3/4 - 2  3/4 - 2 3 - 24						
430			INDIIP	5356580PB05C	24 - 24	INDUCTION BEND OF CS PIPE API-5L GR X60, 0.5 IN WALL, 1,77 M. LENGTH. (TO BE COATED)							
440			INDIPB	5356580PB06C	24 - 24	INDUCTION BEND OF CS PIPE API-5L GR X60, 0.5 IN WALL, 3.06 M. LENGTH. (TO BE COATED)							
450			INDPBB	5356580PB07C	24 - 24	INDUCTION BEND OF CS PIPE API-5L GR X60, 0.5 IN WALL, 2.34 M. LENGTH. (TO BE COATED)							
460			INDPBD	5356580PB08C	24 - 24	INDUCTION BEND OF CS PIPE API-5L GR X60, 0.5 IN WALL, 2.98 M. LENGTH. (TO BE COATED)							
470			INDPBI	5356580PB09C	24 - 24	INDUCTION BEND OF CS PIPE API-5L GR X60, 0.5 IN WALL, 2.58 M. LENGTH. (TO BE COATED)							
480			INDPBN	5356580PB10C	24 - 24	INDUCTION BEND OF CS PIPE API-5L GR X60, 0.5 IN WALL, 2.37 M. LENGTH. (TO BE COATED)							
490			INDPBP	5356580PB11C	24 - 24	INDUCTION BEND OF CS PIPE API-5L GR X60, 0.5 IN WALL, 5,00 M. LENGTH. (TO BE COATED)							
500			INDPD	5356580PB12C	24 - 24	INDUCTION BEND OF CS PIPE API-5L GR X60, 0.5 IN WALL, 6,15 M. LENGTH. (TO BE COATED)							
510			INDPIB	5356580PB13C	24 - 24	INDUCTION BEND OF CS PIPE API-5L GR X60, 0.5 IN WALL, 4,06 M. LENGTH. (TO BE COATED)							
520			INDPII	5356580PB14C	24 - 24	INDUCTION BEND OF CS PIPE API-5L GR X60, 0.5 IN WALL, 4.06 M. LENGTH. (TO BE COATED)							
530			IND	5356580PB15C	24 - 24	INDUCTION BEND 90 DEG CS API-5L GR X60, BE, 0.5 IN WALL, R=3m L tg=0.5m (TO BE COATED)							
540			INDIPI	5356580PB16C	24 - 24	INDUCTION BEND 45 DEG CS API-5L GR X60, BE, 0.5 IN WALL, R=3m L tg=0.5m (TO BE COATED)							
550			INDIPP	5356580PB17C	24 - 24	INDUCTION BEND 22 DEG CS API-5L GR X60, BE, 0.5 IN WALL, R=3m L tg=0.5m (TO BE COATED)							
560						***** FITTINGS *****							
570	NR2		ELL	5478105	1/2 - 2	ELL 90 DEG CLASS 3000 SW CS A105							
590		45L	5478106	1/2 - 2	ELL 45 DEG CLASS 3000 SW STL A105								
600		TEESW	5478107	1/2 - 2	TEE CLASS 3000 SW CARBON STEEL A105								
610		TEERSW	5202111	1/2 - 1 1/2	TEE RED CL 3000 SW CS ASTM A105								
620		CAP	5478108	1/2 - 2	CAP CLASS 3000 SW FORGED CARBON STEEL A105								
630		COU	5478109	1/2 - 2	COUPLING CLASS 3000 SW STL A105								
640		COURSW	5478200	1/2 - 1 1/2	COUPLING RED CLASS 3000 SW CARBON STEEL A105								
650		UNI	5478111	1/2 - 2	UNION CLASS 3000 SW STL A105								
660		INS	5202115	1/2 - 1 1/2	REDUCING INSERT TYPE 1 CL 3000 SW CS A105								
670		SOL	5532671	1/2 - 2	SOCKOLET CLASS 3000 STL A105								
680													
690													
700		ELL	5374276	3 - 8	ELL 90 DEG LR XS BW CS A234 WPB								
710		45L	5374282	3 - 8	ELL 45 DEG LR XS BW SMLS CARBON STEEL A234 WPB								
720													
730		ELL	5374280	10 - 24	ELL 90 DEG LR SCH 80 BW CS A234 WPB								
740	45L	5374290	10 - 24	ELL 45 DEG LR SCH 80 BW SMLS CARBON STEEL A234 WPB									
750													
760	ELLBW3	5201135	3 - 8	ELBOW 90 DEG 5D CS A234 GR WPB BW XS									
770	ELLBW5	5201145	3 - 8	ELBOW 45 DEG 5D CS A234 GR WPB BW XS									
780													
790	ELLBWD	5201185	10 - 24	ELBOW 90 DEG 5D CS A234 GR WPB BW SCH 80									
800	ELLB5D	5201155	10 - 24	ELBOW 45 DEG 5D CS A234 GR WPB BW SCH 80									
810													
820			TEEBW	5374285	3 - 8	TEE XS BW SMSLS CARBON STEEL A234 WPB							
			Sulphide Leach Project Fluor Chile - Minera Escondida 53232500 Antofagasta			CONSTRUCTION	Sulphide Leach Project						
						4" AND LARGER - BUTT WELD	CORR. ALLOW. 0,063 IN	DATE 14OCT04	BY ECQ	REV 1	SHEET 2 OF 3	PA 5	CLASS CSAW05





SEQ NO.	REV	NOTE NO.	ITEM NAME	ITEM CODE	SIZE RANGE / SMALL END SIZES	DESCRIPTION	REFERENCE / LARGE END SIZES	NOTES							
830			TEESBW	5374295	10 - 24	TEE SCH 80 BW SMLS CARBON STEEL A234 WPB									
840			TEE	5380740	3 - 6	TEE RED XS BW CARBON STEEL A234 GR WPB-W									4 - 8
850			TEE	5380848	8 - 22	TEE RED SCH 80 BW CARBON STEEL A234 GR WPB-W									10 - 24
860															
870			REDCBW	5374287	3 - 6	REDUCER CONCENTRIC XS BW SMLS CARBON STEEL A234 WPB									4 - 8
880			RED	5374297	8 - 22	RED CONC SCH 80 BW SMLS CARBON STEEL A234 WPB									10 - 24
890															
900			REDEBW	5374288	3 - 6	RED ECC XS BW SMLS CARBON STEEL A234 WPB									4 - 8
910			REDEXS	5374298	8 - 22	RED ECC SCH 80 BW SMLS CARBON STEEL A234 WPB									10 - 24
920															
930			WOL	5504560	1/2 - 6	WELDOLET XS FORGED CS A105 BW									2 - 8
940			WOL	5504550	8 - 22	WELDOLET SCH 80 FORGED CS A105									10 - 24
950															
960			CAP	5374286	3 - 8	CAP XS BW SMLS CARBON STEEL A234 WPB									
970			CAP	5374296	10 - 24	CAP SCH 80 BW SMLS CARBON STEEL A234 WPB									
980															
990						***** PIPE FLANGES *****									
1010			SWF	5601800	1/2 - 2	FLG SW CL 900 RF CS A105 XS BORE									
1020			WNK	5555805	3 - 8	FLG WN CL 900# RF CS A105 XS BORE									
1030			WNK	5555815	10 - 24	FLG WN CL 900 RF CS A105 SCH 80 BORE									
1040			BLF	5615400	2 - 24	FLG BLIND CL 900 RF CARBON STEEL A105									
1050															
1060						***** GASKETS *****									
1080			GASRF	5667795	2 - 24	GASKET CL 900# INORG.FILLERS W/PTFE 1/8" RF									
1090															
1100						***** BOLTING *****									
1120			BOL	5675648	1/2 - 99	STUD-BOLT CHROME-MOLY ALLOY A193 GR B7 W/CS A194 GR 2H NUTS									
1121															
1122						***** STRAINER *****									
1123															
1124			STR	5762690	8 - 16	STRAINER 900# RF A216 CS BODY, SS316 BASKET									
1126															
1128						***** TRANSITION PIECES *****									
1130															
1140			SPT	5356510PT01	24 - 24	PIEZA DE TRANSICION L=1000 MM ESP.1,21" x 0,97" FAB. DE CAÑERIA API 5L A53-B SCH 80		SERVICE							
1150			SPT1	5356505PT01	24 - 24	PIEZA DE TRANSICION L=1000 MM ESP.0,969" x 0,375" FAB. DE CAÑERIA API 5L GR X60 BE SCH 60		DESALINATION WATER : DSW							
1160			SPA2	5365580PT01	24 - 24	PIEZA DE TRANSICION L=1000 MM ESP. 0,5" x 0.375"FAB DE CAÑERIA API 5L GRX60 BE XS									
1170			SPT3	5355801PT01	24 - 24	PIEZA DE TRANSICION L=1000 MM ESP.0,969" x 0,5" FAB. DE CAÑERIA API 5L GR X60 BE SCH 60									
1180			SPT4	5355601PT01	24 - 24	PIEZA DE TRANSICION L=1000 MM ESP.0,5" x 0,25" FAB. DE CAÑERIA API 5L GR X60 BE SCH 60.		MATERIAL: CARBON STEEL							
1190			SPT5	5355703PT01	24 - 24	PIEZA DE TRANSICION L=1000 MM ESP.0,5" x 0,312" FAB. DE CAÑERIA API 5L GR X60 BE SCH 60.		FLANGE RATING: 900 RF							
								TEMPERATURE RANGE: 0 / 50 C							
								COMMENT:							
			Sulphide Leach Project Fluor Chile - Minera Escondida 53232500 Antofagasta			CONSTRUCTION		Sulphide Leach Project							
						4" AND LARGER - BUTT WELD		CORR. ALLOW. 0,063 IN		DATE 14OCT04	BY ECQ	REV 1	SHEET 3 OF 3	PA 5	CLASS CSAW05


SEQ NO.	REV	NOTE NO.	ITEM NAME	ITEM CODE	SIZE RANGE / SMALL END SIZES	DESCRIPTION	REFERENCE / LARGE END SIZES	NOTES							
10						*****VALVE*****		GU3 USE FOR ELECTROLYTIC ISOLATION BETWEEN UNDERGROUND AND ABOVEGROUND METALLIC PIPING. NR2 SIZES IN SMALL END SIZES COLUMN ARE BRANCH SIZE OF OLETS OR TEES. SIZES IN LARGE END SIZES COLUMN ARE RUN PIPE SIZE OF OLETS OR TEES.							
20															
30															
40			BALSCR	5058825	1/2 - 2 1/2	BA-13: BALL 400# SCRD CS HDLE OP UL/FM	JAMESBURY								
50			BTFLGO	5308128	3 - 24	BU-31: BUTTERFLY CL150# DI BUNA-N LIN LUG UL/FM GO	DEMCO #NF-H								
60			CHEFLG	5153805	2 - 14	CH-31: CHECK SWING 175# CWP FF HOR/VERT IBBM UL/FM	CRANE #375								
70			CHEWAF	5280008	2 - 24	CH-10: CHECK WAF IBBM BUNA-N SEAL FF 250 UL/FM	DUOCHECK U12HMP								
80			GATSCR	5000774	1/2 - 2	GA-16: GATE CL 200# (175# CWP) FNPT OS&Y BRONZE HDWL UL/FM	CRANE #459								
90			GATFLG	5156030	2 1/2 - 10	GA-17: GATE 175# CWP FF OS&Y IBBT HDWL UL/FM									
130	1		GAT	5156020	4 - 24	GA-21: GATE 175# CWP FF INSIDE STEM IBBT F/IND POST	KENNEDY #701X								
131						*****PIPE*****									
140															
150															
160			PIP	5356039	1/2 - 2	PIPE XS SMLS CS A106-B T&C									
170			PIP	5356515	2 1/2 - 36	PIPE STD WT ERW CS A53-B TYPE E BE									
180						*****FITTINGS*****									
190															
200															
210			TEE	5488393	1/2 - 2	TEE CLASS 300 SCRD MI A197									
220			CAP	5488394	1/2 - 2	CAP CLASS 300# SCREWED BANDED MI A197									
230			COU	5488395	1/2 - 2	COUPLING CLASS 300# SCRD MI A197									
240			PLG	5490662	1/2 - 2	PLUG SQUARE HEAD SCRD STL A105									
260			UNI	5488404	1/2 - 2	UNION CLASS 300# SCRD MI A197 BRASS TO IRON									
270			COU	5751071	2 1/2 - 36	COUPLING DRESSER STYLE 38 CS 1/4 IN THICK X 7 IN LONG									
280			ELL	5374114	2 1/2 - 36	ELL 90 DEG LR STD WT BW STL A234 WPB									
290			45L	5374120	2 1/2 - 36	ELL 45 DEG LR STD WT BW SMLS CARBON STEEL A234 WPB									
300		NR2	TEE	5374123	2 1/2 - 36	TEE STD WT BW SMLS CARBON STEEL A234 WPB									
310			REDCBW	5374125	2 1/2 - 36	REDUCER CONCENTRIC STD WT BW SMLS CARBON STEEL A234 WPB									
320			REDEBW	5374126	2 1/2 - 36	REDUCER ECCENTRIC STD WT BW SMLS CARBON STEEL A234 WPB									
330			CAP	5374124	2 1/2 - 36	CAP STD WT BW SMLS CARBON STEEL A234 WPB									
340			ELL	5488389	1/2 - 2	ELL 90 DEG CLASS 300# SCRD MI A197									
341			45L	5488391	1/2 - 2	ELL 45 DEG CLASS 300# SCRD MI A197									
350			TOL	5514671	1/2 - 2	THREDOLET CLASS 3000# STL A105	3/4 - 24								
351			BUS	5253101	1/2 - 1	BUSHING RED.OUTSIDE HEX MI A197 THREADED	3/4 - 2								
352			SWA	5543595	1/2 - 1	SWAGE CONC XS CS A234 GR WPB MNPT	3/4 - 2								
353						*****PIPE FLANGES*****									
360															
370															
380			SFL	5599608	1/2 - 2	FLG SCRD 150# FF STL A105									
390			SFLRF	5599606	1/2 - 2	FLG SCRD 150# RF STL A105									
400			BLF	5615477	1/2 - 36	FLG BLIND 150# FF CS A105									
410			BLFRF	5615476	1/2 - 36	FLG BLIND 150# RF STL A105	KWH								
420			SOF	5597464	2 1/2 - 36	FLG SO 150# FF STL A105									
430			SOFRF	5597469	2 1/2 - 36	FLG SO 150# RF STL A105									
450		GU3	FIS	5756627	1/2 - 36	INSULATION KIT PHENOLIC-NEOPRENE/MYLAR SLEEVES FOR FLANGES 150# RF OR FF									
460						***** GASKETS *****									
530															
			Sulphide Leach Project Fluor Chile - Minera Escondida 53232500 Antofagasta			CONSTRUCTION	Sulphide Leach Project								
						2" & SMALLER - SCR<2 1/2" & LARGER - BUTT WELD	CORR. ALLOW. 0,0625 IN	DATE 14OCT04	BY ECQ	REV 1	SHEET 1 OF 2	PA 5	CLASS CSFP01		


SEQ NO.	REV	NOTE NO.	ITEM NAME	ITEM CODE	SIZE RANGE / SMALL END SIZES	DESCRIPTION	REFERENCE / LARGE END SIZES	NOTES						
540								<div>DURLON 9000</div> <div>SERVICE</div> <div>ABOVE GROUND FIRE WATER : FP</div> <div>MATERIAL: CARBON STEEL FLANGE RATING: 150 FF TEMPERATURE RANGE: 0 / 50 C COMMENT:</div>						
550			GAS	5669788	1/2 - 36	GASKET 150# INORG.FILLERS W/PTFE 1/8" FF								
560			GASRF	5669790	1/2 - 36	GASKET 150# INORG.FILLERS W/PTFE 1/8" RF								
590														
591														
592														
593														
594														
600						*****BOLTING*****								
610														
620			BOLS	5675648	1/2 - 1 1/8	STUD-BOLT CHROME-MOLY ALLOY A193 GR B7 W/CS A194 GR 2H NUTS								
630			BOLM	5675631	1/2 - 1 1/8	MACH BOLT CS A307 GR B W/1 SEMI-FINISH HEAVY HEX. NUT								
650														
660						***** TEMPORARY STRAINERS *****								
670														
680			STR	5904234	1 - 36	STRAINER FLAT 150# FF STL								
690														
700						*****FIRE PROTECTION EQUIPMENT*****								
710														
711			CAB	5963603	2 1/2 - 2 1/2	CABINET FIRE HOSE REEL SURFACE MOUNTED FNPT								
720			CAB	5963600	1 1/2 - 1 1/2	CABINET FIRE HOSE & EXTINGUISHER SURFACE MOUNTED FNPT								
730			CABREC	5963605	1 1/2 - 1 1/2	CABINET FIRE HOSE & EXTING RECESS MOUNTED FNPT								
740			CAR	5963602	1 1/2 - 2 1/2	CART FIRE HOSE LIGHT DUTY CS W/SJ HOSE & NOZZLE								
750			NOZ	5963615	1 - 2 1/2	NOZZLE JET DIRECT BRONZE 150 #								
760			NOZ	5963610	1 1/2 - 2 1/2	NOZZLE MONITOR BRONZE, FF 150 #								
770			HOS	5708019	1 1/2 - 2	FIRE HOSE W/FOG STRAIGHT STREAM NOZZLE								
780			HHO	5943773	2 1/2 - 2 1/2	HOSE HOUSE COMPONENTS LEG SUPPORTED FOR FIRE HYDRANT								
			Sulphide Leach Project Fluor Chile - Minera Escondida 53232500 Antofagasta			CONSTRUCTION	Sulphide Leach Project							
						2" & SMALLER - SCR<r><n>2 1/2" & LARGER - BUTT WELD	CORR. ALLOW. 0,0625 IN	DATE 14OCT04	BY ECQ	REV 1	SHEET 2 OF 2	PA 5	CLASS CSFP01	

SEQ NO.	REV	NOTE NO.	ITEM NAME	ITEM CODE	SIZE RANGE / SMALL END SIZES	DESCRIPTION	REFERENCE / LARGE END SIZES	NOTES						
10		DL3				** SPECIAL PROVISIONS - SEE NOTE DL3**		DL3 FOR NOMINAL WALL THICKNESSES GREATER THAN 0.5" (12.7 MM), THE MINIMUM TEMPERATURE OF THIS LINE CLASS IS HIGHER THAN -20°F (-29°C). SEE ASME B31.3 FIG. 323.2.2, CURVE B. FF2 ALL FLANGE FACINGS SHALL HAVE A SPECIAL FINISH OF 125-250 RA. JA2 SEAL-WELD ALL THREADED CONNECTIONS. NC1 USE SW FULL COUPLING FOR LINE COUPLING ONLY. USE SOCKOLET OR SOCKETWELD TEE FOR SOCKETWELD BRANCH CONNECTIONS. SEE BRANCH CHART. NN6 SHORT RADIUS ELBOWS ARE LIMITED TO 80% OF MAWP OF SAME SIZE AND PIPE SCHEDULE AND SHALL NOT BE USED WITHOUT APPROVAL BY THE LEAD PIPING MATERIALS ENGINEER. NR2 SIZES IN SMALL END SIZES COLUMN ARE BRANCH SIZE OF OLETS OR TEES. SIZES IN LARGE END SIZES COLUMN ARE RUN PIPE SIZE OF OLETS OR TEES. NR4 USE SWAGES WHERE SMALL END IS 2" OR SMALLER AND LARGE END IS 6" OR SMALLER. USE REDUCERS FOR SMALL END LARGER THAN 2". PN1 ALL PIPE NIPPLES USED FOR BRANCHES OR INSTRUMENT CONNECTIONS BETWEEN THE HEADER OR VESSEL AND THE FIRST BLOCK VALVE SHALL BE SCHEDULE 160. SB5 USE JACK SCREWS ONLY WHERE PIPING CAN NOT BE OPENED WITH FLANGE SPREADER.						
20		FF2				***** VALVES *****								
30														
40														
50			GAT	5313021	1/2 - 4	GA-09: GATE CLASS 2500# OS&Y PSB BW SCH160 CS/STELLITED S&D								
80			GLOSW	5062790	1/2 - 2	GL-08: GLOBE CLASS 2500# OS&Y WB SW CS/STELLITED S&D		FF2 ALL FLANGE FACINGS SHALL HAVE A SPECIAL FINISH OF 125-250 RA. JA2 SEAL-WELD ALL THREADED CONNECTIONS. NC1 USE SW FULL COUPLING FOR LINE COUPLING ONLY. USE SOCKOLET OR SOCKETWELD TEE FOR SOCKETWELD BRANCH CONNECTIONS. SEE BRANCH CHART. NN6 SHORT RADIUS ELBOWS ARE LIMITED TO 80% OF MAWP OF SAME SIZE AND PIPE SCHEDULE AND SHALL NOT BE USED WITHOUT APPROVAL BY THE LEAD PIPING MATERIALS ENGINEER. NR2 SIZES IN SMALL END SIZES COLUMN ARE BRANCH SIZE OF OLETS OR TEES. SIZES IN LARGE END SIZES COLUMN ARE RUN PIPE SIZE OF OLETS OR TEES. NR4 USE SWAGES WHERE SMALL END IS 2" OR SMALLER AND LARGE END IS 6" OR SMALLER. USE REDUCERS FOR SMALL END LARGER THAN 2". PN1 ALL PIPE NIPPLES USED FOR BRANCHES OR INSTRUMENT CONNECTIONS BETWEEN THE HEADER OR VESSEL AND THE FIRST BLOCK VALVE SHALL BE SCHEDULE 160. SB5 USE JACK SCREWS ONLY WHERE PIPING CAN NOT BE OPENED WITH FLANGE SPREADER.						
90			GLOFLG	5162821	3 - 4	GL-10: GLOBE CLASS 2500# OS&Y-BB RJ CS/STELLITED S&D								
100		VC2	CHESW	5063592	1/2 - 2	CH-24: CHECK CLASS 2500# SW CS/STELLITED S&D SWB								
110			CHEWAF	5281566	1/2 - 2	CH-25: CHECK WAFER TYPE DUAL PLATE CLASS 2500# CS								
120			CHEBW	5315916	3 - 4	CH-26: CHECK 2500# BW STL,F6/STELL S&D SCH 160								
130						***** PIPE *****								
140														
150														
160			PIP	5356037	1/2 - 2	PIPE SCH 160 SMLS CS A106-B PE								
170			PIP	5356238	3 - 4	PIPE SCH 160 SMLS CS API-5L-B BE								
180						***** FITTINGS *****								
190		NR2												
200														
210			ELL	5478301	1/2 - 2	ELL 90 DEG CLASS 6000# SW CS A105								
220			45L	5478302	1/2 - 2	ELL 45 DEG CLASS 6000# SW STL A105								
230		NC1	TEE	5478303	1/2 - 2	TEE CLASS 6000 SW STL A105								
240			CAPSW	5478304	1/2 - 2	CAP CLASS 6000# SW FORGED CARBON STEEL A105								
250		UD6	CAPSCR	5490566	1/2 - 2	CAP CLASS 6000# SCREWED FORGED CARBON STEEL A105								
260		NC1	COU	5478305	1/2 - 2	COUPLING CLASS 6000# SW CARBON STEEL A105								
270					1/2 - 2	UNION - NONE - USE FLANGES								
280		UD7	PLGSCR	5490670	1/2 - 2	PLUG HEX HEAD SCRD STL A105								
290		PN1	PLGSW	5478115	1/2 - 2	PLUG ROUND HEAD SW STL A105								
300		NC1	SOL	5532831	1/2 - 2	SOCKOLET CLASS 6000 STL A105								
310			TOL	5514691	1/2 - 2	THREDOLET CLASS 6000# STL A105								
311			CAP	5478101	1/2 - 2	REDUCING INSERT TYPE 1 CL 6000# SW FORGED CS A105								
312														
320		UK1	WOL	5504555	1/2 - 2	WELDOLET SCH 160 FORGED CS A105								
330		UK2	EOT	5516851	1/2 - 1 1/2	ELBOLET SCH 160 STL A105								
340		UK5	LOT	5524851	1/2 - 1 1/2	LATROLET SCH 160 STL A105								
350		NN6	ELL	5374492	3 - 4	ELL 90 DEG LR SCH 160 BW STL A234 WPB								
360			45L	5374498	3 - 4	ELL 45 DEG LR SCH 160 SMLS CARBON STEEL A234 WPB								
370			TEE	5374501	3 - 4	TEE SCH 160 BW SMLS CARBON STEEL A234 WPB								
380			CAP	5374502	3 - 4	CAP SCH 160 BW SMLS CARBON STEEL A234 WPB								
390			REDCBW	5374503	3 - 4	RED CONC SCH 160 BW SMLS CARBON STEEL A234 WPB								
400			REDEBW	5374504	3 - 4	RED ECC SCH 160 BW SMLS CARBON STEEL A234 WPB								
410			WOL	5504555	3 - 4	WELDOLET SCH 160 FORGED CS A105								
420														
430		FF2				***** PIPE FLANGES *****								
440														
450			SWF	5602100	1/2 - 2	FLG SW CLASS 2500# RJ CARBON STEEL SCH 160 BORE A105								
470			WNKRF	5555800	1/2 - 4	FLG WN CLASS 2500# RF CARBON STEEL SCH 160 BORE A105								
480			WNKRJ	5555880	1/2 - 4	FLG WN CLASS 2500# RJ CARBON STEEL SCH 160 BORE A105								
490			BLFRF	5615538	2 1/2 - 4	FLG BLIND CLASS 2500# RF CARBON STEEL A105								
500			BLFRJ	5615536	2 1/2 - 4	FLG BLIND CLASS 2500# RJ CARBON STEEL A105								
			Sulphide Leach Project Fluor Chile - Minera Escondida 53232500 Antofagasta			CONSTRUCTION		Sulphide Leach Project						
						1 1/2" & SMALLER - SW 3" & LARGER - BUTTWELD		CORR. ALLOW. 0,062 IN	DATE 14OCT04	BY ECQ	REV 1	SHEET 1 OF 2	PA 5	CLASS CSHX07


SEQ NO.	REV	NOTE NO.	ITEM NAME	ITEM CODE	SIZE RANGE / SMALL END SIZES	DESCRIPTION	REFERENCE / LARGE END SIZES	NOTES						
510								UD6 USE FOR UNVALVED CAPPED HYDROSTATIC TEST VENTS AND DRAINS. UD7 USE THREDOLET AND SCREWED PLUG ONLY FOR INSTRUMENT CONNECTIONS UK1 USE SCH 160 WELDOLET AND WELD NECK FLANGE SCH 160 BORE FOR TEMPERATURE INSTRUMENT CONNECTIONS. UK2 USE SCH 160 BUTTWELD END ELBOLET AND WELD NECK FLANGE SCH 160 BORE FOR TEMPERATURE INSTRUMENT CONNECTIONS. UK5 USE SCH 160 BUTTWELD END LATROLET AND WELD NECK FLANGE SCH 160 BORE FOR TEMPERATURE INSTRUMENT CONNECTIONS IN VERTICAL LINES ONLY. VC2 INSTALL THESE CHECK VALVES IN THE HORIZONTAL POSITION ONLY.						
520		FF2				***** ORIFICE FLANGES *****								
530														
540			ORI	5623362	2 - 4	WN ORIF SET CLASS 2500# RF CARBON STEEL SCH160 BR A105								
550														
570						***** PIPE NIPPLES *****								
580														
590														
600		JA2	NIPTOE	5541000	1/2 - 2	NIPPLE SCH 160 CARBON STEEL A106-B TOE-POE L=4 IN (100MM)								
610		JA2	NIP	5540970	1/2 - 2	NIPPLE SCH 160 CARBON STEEL A106-B PBE L=4 IN								
640														
650		NR4				***** SWAGE NIPPLES *****								
660														
670		JA2	SWACBE	5543661	1/2 - 2	SWAGE CONCENTRIC SCH 160 CARBON STEEL A234 GR WPB BBE								
680		JA2	SWAEBE	5548751	1/2 - 2	SWAGE ECCENTRIC SCH 160 CARBON STEEL A234 GR WPB BBE								
700														
710						***** GASKETS *****								
720														
730			GASFRS	5675551	1/2 - 4	GASKET 2500# 304 SS SPIRAL WOUND NON-ASB								
740			GASRJ	5674854	1/2 - 4	GASKET 2500# 304 SS OVAL RING								
760														
770						***** BOLTING *****								
780														
790			BOLS	5675648	1/4 - 99	STUD-BOLT CHROME-MOLY ALLOY A193 GR B7 W/CS A194 GR 2H NUTS								
830						***** STRAINERS *****								
840														
850														
860			STR	5762723	1/2 - 4	STRAINER 2500# RJ 316 SS CONICAL								
880														
890		SB5				***** SPECTACLE BLINDS *****								
900														
910			SPE	5749574	1/2 - 4	SPECTACLE BLIND 2500# RJ STL								
								SERVICE						
								HYDR.SYST.HIGH PRESS.:HOX						
								MATERIAL: CARBON STEEL FLANGE RATING: 2500 RFSF TEMPERATURE RANGE: 0 / 50 C COMMENT:						
			Sulphide Leach Project Fluor Chile - Minera Escondida 53232500 Antofagasta			CONSTRUCTION		Sulphide Leach Project						
						1 1/2" & SMALLER - SW 3" & LARGER - BUTTWELD		CORR. ALLOW. 0,062 IN	DATE 14OCT04	BY ECQ	REV 1	SHEET 2 OF 2	PA 5	CLASS CSHX07


SEQ NO.	REV	NOTE NO.	ITEM NAME	ITEM CODE	SIZE RANGE / SMALL END SIZES	DESCRIPTION	REFERENCE / LARGE END SIZES	NOTES						
10						*****VALVE*****		JA2 SEAL-WELD ALL THREADED CONNECTIONS. UH8 USE ONLY IN HOT WATER SYSTEM.						
20														
30														
40			BALSW	5002530	1/2 - 2	BA-02: BALL CL 300 FR-SFE.REG.P.CS/SS TR/TFE SW	CRANE							
50			BALFLG	5004518	2 1/2 - 4	BA-12: BALL FIRE-SAFE CL150# RF REG-PORT CS/SS TRIM/TFE SEAT	CRANE							
60			BTFLG	5308870	3 - 6	BU-12: BUTTERFLY HP CL 150# CS/VITON TAP-LUG LO	KEYSTONE #362							
70			BTF	5308871	8 - 12	BU-22: BUTTERFLY HP CL 150# CS/BUNA-N TAP-LUG GO								
80		UH8	BTF	5306827	3 - 6	BU-19: BUTFLY WAF CI/316SS TFE ST 125# LO	KEYSTONE #100							
90		UH8	BTFTFE	5306833	8 - 12	BU-03: BUTFLY WAF CI/316SS TEFLON ST 125# GO	KEYSTONE #100							
100			CHESW	5002280	1/2 - 2	CH-08: CHECK SWING HOR/VERT CS/SS TRIM SW CL800	VOGT SWS-74							
110			CHE	5290394	3 - 12	CH-37: CHECK 150# RF 316 SS WAFER-TYPE	DUO-CHECK							
120			GLOFLG	5004110	2 1/2 - 6	GL-04: GLOBE OS&Y CS W/13%CR TRIM RF CL 150 HWL								
130			GLOSW	5002184	1/2 - 2	GL-05: GLOBE REG BB CS/13%CR TRIM STL SW CL 800	VOGT SW-12141							
140			ARV	5001490	2 - 6	VE-04: COMBINATION AIR VALVE CLASS 150 RF DI/SS/BUNA								
150						*****PIPE*****								
160														
170														
180			PIP	5356033	1/2 - 2	PIPE XS SMLS CS A106 B PE								
190			PIP	5356515	2 1/2 - 12	PIPE STD WT ERW CS A53-B TYPE E BE								
200						*****FITTINGS*****								
210														
220														
230			SOLLET	5532671	1/2 - 2	SOCKOLET CLASS 3000 STL A105	BONNEY FORGE							
240			ELLSW	5478105	1/2 - 2	ELL 90 DEG CLASS 3000 SW CS A105	BONNEY FORGE							
250			45LSW	5478106	1/2 - 2	ELL 45 DEG CLASS 3000 SW STL A105	BONNEY FORGE							
260			TEESW	5478107	1/2 - 2	TEE CLASS 3000 SW CARBON STEEL A105	BONNEY FORGE							
270			TEERSW	5202111	3/4 - 2	TEE RED CL 3000 SW CS ASTM A105								
280			CAPSW	5478108	1/2 - 2	CAP CLASS 3000 SW FORGED CARBON STEEL A105								
290			COU	5478109	1/2 - 2	COUPLING CLASS 3000 SW STL A105								
300			COURSW	5478200	3/4 - 2	COUPLING RED CLASS 3000 SW CARBON STEEL A105	BONNEY FORGE							
310			UNISW	5478111	1/2 - 2	UNION CLASS 3000 SW STL A105								
311			INS	5202115	1/2 - 2	REDUCING INSERT TYPE 1 CL 3000 SW CS A105								
312														
320			ELLBW	5374114	2 1/2 - 12	ELL 90 DEG LR STD WT BW STL A234 WPB								
330			45LBW	5374120	2 1/2 - 12	ELL 45 DEG LR STD WT BW SMLS CARBON STEEL A234 WPB								
340			TEEBW	5374123	2 1/2 - 12	TEE STD WT BW SMLS CARBON STEEL A234 WPB								
350			TEERED	5201110	2 1/2 - 12	TEE RED CS ASTM A234 GR WPB BW STD	KEROSENE (DILUENT) : K HOT WATER : HW							
360			REDCBW	5374125	2 1/2 - 12	REDUCER CONCENTRIC STD WT BW SMLS CARBON STEEL A234 WPB								
370			REDEBW	5374126	2 1/2 - 12	REDUCER ECCENTRIC STD WT BW SMLS CARBON STEEL A234 WPB								
380			CAPBW	5374124	2 1/2 - 12	CAP STD WT BW SMLS CARBON STEEL A234 WPB								
390			LATBW	5374133	2 1/2 - 6	LATERAL 45 DEG STD WT BW SMLS CS A234 WPB								
400						*****PIPE FLANGES*****								
410														
420			SWFFF	5601728	1/2 - 2	FLG SW CLASS 150 FF STL XS BORE A105	MATERIAL: CARBON STEEL							
430			SWFRF	5601738	1/2 - 2	FLG SW CLASS 150 RF STL XS BORE A105	FLANGE RATING: 150 RF							
440			SOFFF	5597464	2 1/2 - 12	FLG SO 150# FF STL A105	TEMPERATURE RANGE: 0 / 50 C							
450			SOFRF	5597469	2 1/2 - 12	FLG SO 150# RF STL A105	COMMENT:							
460														
			Sulphide Leach Project Fluor Chile - Minera Escondida 53232500 Antofagasta			CONSTRUCTION	Sulphide Leach Project							
						2" & SMALLER - SW<r><n>2 1/2" & LARGER - BUTT WELD	CORR. ALLOW. 0,0625 IN	DATE 14OCT04	BY ECQ	REV 1	SHEET 1 OF 2	PA 5	CLASS CSKE01	

SEQ NO.	REV	NOTE NO.	ITEM NAME	ITEM CODE	SIZE RANGE / SMALL END SIZES	DESCRIPTION	REFERENCE / LARGE END SIZES	NOTES						
470			BLFFF	5615477	1/2 - 12	FLG BLIND 150# FF CS A105	KWH							
480			BLFRF	5615476	1/2 - 12	FLG BLIND 150# RF STL A105								
490														
500						***** ORIFICE FLANGES *****								
510														
520			ORIXS	5622523	1 - 1	WN ORIF SET CLASS 300# RF CARBON STEEL XS BORE A105								
530			ORISTD	5622520	3 - 12	WN ORIFICE SET CLASS 300# RF CARBON STEEL STD WEIGHT BORE A105								
540						***** SWAGE NIPPLES *****								
550														
560														
570	JA2		SWACBP	5547000	1/2 - 2	SWAGE CONC XS STL A234 GR WPB BLE X PSE								
580	JA2		SWAEBP	5552000	1/2 - 2	SWAGE ECC XS STL A234 GR WPB BLE X PSE								
590						***** GASKETS *****								
600														
610														
620			GASFF	5669788	1/2 - 12	GASKET 150# INORG.FILLERS W/PTFE 1/8" FF	DURLON 9000							
630			GASRF	5667790	1/2 - 12	GASKET CLASS 150 INORG. FILLERS W/PTFE 1/8" RF								
640						*****BOLTING*****								
650														
660														
670			BOLS	5675648	1/2 - 1 1/8	STUD-BOLT CHROME-MOLY ALLOY A193 GR B7 W/CS A194 GR 2H NUTS								
680						*****STRAINERS*****								
690														
700														
710			STR	5762062	1/2 - 2	Y-STRAINER 150# SW BRONZE .033 PERF	MUELLER #351							
720			STR	5763052	2 1/2 - 12	Y-STRAINER 150# RF STL, 316 SCR .033PERF								
730			STRDUB	5904500	1 - 12	STRAINER DUPLEX BASKET TYPE CS BODY RF 150#								
740						***** TEMPORARY STRAINERS *****								
750														
760														
770			STRCRF	5904207	1/2 - 2	STRAINER FLAT 150# RF CARBON STEEL								
780			STRFLT	5904211	2 1/2 - 12	STRAINER FLAT PERF 5/16IN HOLES CS RF 150#								
790						*****HOSE FITTINGS*****								
800														
810														
820			HOS	5755300	3/4 - 6	CLAMP HOSE SGL.BLT SPLT.BND MI LO/MEDPRS								
821	C		CPL	5763102	1/2 - 2	COUP.AIR HOSE 2-LUG QUICK ACT.BRASS FNPT								
822	C		CPLM	5763103	1/2 - 2	COUP.AIR HOSE 2-LUG QUICK ACT.BRASS MNPT								
			Sulphide Leach Project Fluor Chile - Minera Escondida 53232500 Antofagasta			CONSTRUCTION		Sulphide Leach Project						
						2" & SMALLER - SW<math>\lt; n>2\frac{1}{2}</math>" & LARGER - BUTT WELD		CORR. ALLOW. 0,0625 IN		DATE 14OCT04	BY ECQ	REV 1	SHEET 2 OF 2	PA 5


SEQ NO.	REV	NOTE NO.	ITEM NAME	ITEM CODE	SIZE RANGE / SMALL END SIZES	DESCRIPTION	REFERENCE / LARGE END SIZES	NOTES					
10						***** VALVES *****		JA2 SEAL-WELD ALL THREADED CONNECTIONS.					
20								NR2 SIZES IN SMALL END SIZES COLUMN ARE					
30								BRANCH SIZE OF OLETS OR TEES. SIZES IN					
40			BALSW	5002530	1/2 - 2	BA-02: BALL CL 300 FR-SFE.REG.P.CS/SS TR/TFE SW	CRANE	LARGE END SIZES COLUMN ARE RUN PIPE					
50			BALFLG	5004518	2 - 4	BA-12: BALL FIRE-SAFE CL150# RF REG-PORT CS/SS TRIM/TFE SEAT	CRANE	SIZE OF OLETS OR TEES.					
60			GLOSW	5002184	1/2 - 2	GL-05: GLOBE REG BB CS/13%CR TRIM STL SW CL 800	VOGT SW-12141						
70			GLOFLG	5004110	3 - 6	GL-04: GLOBE OS&Y CS W/13%CR TRIM RF CL 150 HWL							
80			CHESW	5002280	1/2 - 2	CH-08: CHECK SWING HOR/VERT CS/SS TRIM SW CL800	VOGT SWS-74						
90			CHEFLG	5004210	3 - 6	CH-11: CHECK SWING CL 150# RF CS W/13%CR SS TRIM	POWELL #1561A						
100			BTF	5308870	3 - 4	BU-12: BUTTERFLY HP CL 150# CS/VITON TAP-LUG LO	KEYSTONE #362						
110			BTF	5308871	6 - 8	BU-22: BUTTERFLY HP CL 150# CS/BUNA-N TAP-LUG GO							
120			ARV	5001490	2 - 6	VE-04: COMBINATION AIR VALVE CLASS 150 RF DI/SS/BUNA							
130						***** PIPE *****							
140													
150													
160			PIP	5356033	1/2 - 2	PIPE XS SMLS CS A106 B PE							
170			PIP	5356515	3 - 8	PIPE STD WT ERW CS A53-B TYPE E BE							
180						***** FITTINGS *****							
190		NR2											
200													
210			ELL	5478105	1/2 - 2	ELL 90 DEG CLASS 3000 SW CS A105	BONNEY FORGE						
220			45L	5478106	1/2 - 2	ELL 45 DEG CLASS 3000 SW STL A105	BONNEY FORGE						
230			TEE	5478107	1/2 - 2	TEE CLASS 3000 SW CARBON STEEL A105	BONNEY FORGE						
240			CAP	5478108	1/2 - 2	CAP CLASS 3000 SW FORGED CARBON STEEL A105							
250			COU	5478109	1/2 - 2	COUPLING CLASS 3000 SW STL A105							
260			SOL	5532671	1/2 - 2	SOCKOLET CLASS 3000 STL A105	BONNEY FORGE						
261			INS	5202115	1/2 - 2	REDUCING INSERT TYPE 1 CL 3000 SW CS A105							
262			TOL	5514671	1/2 - 2	THREDOLET CLASS 3000# STL A105	BONNEY FORGE						
263													
270			ELL	5374114	3 - 8	ELL 90 DEG LR STD WT BW STL A234 WPB							
280			45L	5374120	3 - 8	ELL 45 DEG LR STD WT BW SMLS CARBON STEEL A234 WPB							
290			TEESTD	5374123	3 - 8	TEE STD WT BW SMLS CARBON STEEL A234 WPB							
300			REDCSD	5374125	3 - 4	REDUCER CONCENTRIC STD WT BW SMLS CARBON STEEL A234 WPB	4 - 6						
310			REDEST	5374126	3 - 6	REDUCER ECCENTRIC STD WT BW SMLS CARBON STEEL A234 WPB		SERVICE					
320			CAP	5374124	3 - 8	CAP STD WT BW SMLS CARBON STEEL A234 WPB		LUBE OIL : LU					
330			TEERED	5201110	3 - 6	TEE RED CS ASTM A234 GR WPB BW STD		FUEL OIL #2 : FO					
340													
350						***** PIPE FLANGES *****							
360													
370			SWF	5601735	1/2 - 2	FLG SW CLASS 150 RF STL STD BORE A105							
380			SOF	5597469	3 - 8	FLG SO 150# RF STL A105							
390			BLF	5615476	1/2 - 8	FLG BLIND 150# RF STL A105							
400						***** SWAGE NIPPLES *****							
410								MATERIAL: CARBON STEEL					
420								FLANGE RATING: 150 RF					
430		JA2	SWACBE	5543611	1/2 - 2	SWAGE CONCENTRIC SCH XS CARBON STEEL A234 GR WPB		TEMPERATURE RANGE: 0 / 50 C					
440		JA2	SWAEBE	5548701	1/2 - 2	BBE SWAGE ECCENTRIC XS CARBON STEEL A234 GR WPB BBE		COMMENT:					
			Sulphide Leach Project Fluor Chile - Minera Escondida 53232500 Antofagasta		CONSTRUCTION		Sulphide Leach Project						
					<2" SOCKET WELD 3" AND LARGER - BUTT WELD		CORR. ALLOW.  0.063 IN	DATE 14OCT04	BY ECQ	REV 1	SHEET 1 OF 2	PA 5	CLASS CSLF01




SEQ NO.	REV	NOTE NO.	ITEM NAME	ITEM CODE	SIZE RANGE / SMALL END SIZES	DESCRIPTION	REFERENCE / LARGE END SIZES	NOTES						
450						***** GASKETS *****	DURLON 9000	<div>SERVICE</div> <div>LUBE OIL : LU FUEL OIL #2 : FO</div> <div>MATERIAL: CARBON STEEL FLANGE RATING: 150 RF TEMPERATURE RANGE: 0 / 50 C COMMENT:</div>						
460														
470														
480			GASRF	5669790	1/2 - 8	GASKET 150# INORG.FILLERS W/PTFE 1/8" RF								
490			GASFF	5669788	1/2 - 8	GASKET 150# INORG.FILLERS W/PTFE 1/8" FF								
500														
510														
520						***** BOLTING *****								
530														
540			BOL	5675648	1/2 - 99	STUD-BOLT CHROME-MOLY ALLOY A193 GR B7 W/CS A194 GR 2H NUTS								
550			BOLMCS	5675631	1/2 - 99	MACH BOLT CS A307 GR B W/1 SEMI-FINISH HEAVY HEX. NUT								
560														
570						***** STRAINER *****								
580														
590			STRWYE	5902260	1/2 - 2	STRAINER WYE W/BLOWOFF CS W/316SS SCREEN SW CL600								
600			STRFLT	5904211	3 - 8	STRAINER FLAT PERF 5/16IN HOLES CS RF 150#								
610														
620						***** TEMPORARY STRAINER *****								
630														
640			STRCON	5762637	3 - 8	FLAT 1/8"HOLS 150% OPEN CS FF/RF 150%								
650														
660						***** SPECTABLE BLINDS *****								
670														
680			SPE	5749500	3 - 8	SPECTACLE BLIND 150# RF/FF STL								
690														
700						***** HOSE AND HOSE FITTINGS *****								
710														
720			HOS	5772003	1 1/2 - 4	H.PETRL.TRANS BUNA-N W/NEOPR.CVR BLK 150								
730			CLP	5755300	1 1/2 - 4	CLAMP HOSE SGL.BLT SPLT.BND MI LO/MEDPRS								
			Sulphide Leach Project Fluor Chile - Minera Escondida 53232500 Antofagasta			CONSTRUCTION	Sulphide Leach Project							
						<2" SOCKET WELD 3" AND LARGER - BUTT WELD	CORR. ALLOW. 0,063 IN	DATE 14OCT04	BY ECQ	REV 1	SHEET 2 OF 2	PA 5	CLASS CSLF01	

SEQ NO.	REV	NOTE NO.	ITEM NAME	ITEM CODE	SIZE RANGE / SMALL END SIZES	DESCRIPTION	REFERENCE / LARGE END SIZES	NOTES						
10		DL3				** SPECIAL PROVISIONS - SEE NOTE **		DL3 FOR NOMINAL WALL THICKNESSES GREATER THAN 0.5" (12.7 MM), THE MINIMUM TEMPERATURE OF THIS LINE CLASS IS HIGHER THAN -20°F (-29°C). SEE ASME B31.3 FIG. 323.2.2, CURVE B.  FF2 ALL FLANGE FACINGS SHALL HAVE A SPECIAL FINISH OF 125-250 RA.  JA2 SEAL-WELD ALL THREADED CONNECTIONS.  NC1 USE SW FULL COUPLING FOR LINE COUPLING ONLY. USE SOCKOLET OR SOCKETWELD TEE FOR SOCKETWELD BRANCH CONNECTIONS. SEE BRANCH CHART.  NN6 SHORT RADIUS ELBOWS ARE LIMITED TO 80% OF MAWP OF SAME SIZE AND PIPE SCHEDULE AND SHALL NOT BE USED WITHOUT APPROVAL BY THE LEAD PIPING MATERIALS ENGINEER.  NR2 SIZES IN SMALL END SIZES COLUMN ARE BRANCH SIZE OF OLETS OR TEES. SIZES IN LARGE END SIZES COLUMN ARE RUN PIPE SIZE OF OLETS OR TEES.  NR4 USE SWAGES WHERE SMALL END IS 2" OR SMALLER AND LARGE END IS 6" OR SMALLER. USE REDUCERS FOR SMALL END LARGER THAN 2".  PN1 ALL PIPE NIPPLES USED FOR BRANCHES OR INSTRUMENT CONNECTIONS BETWEEN THE HEADER OR VESSEL AND THE FIRST BLOCK VALVE SHALL BE SCHEDULE 160.  SB5 USE JACK SCREWS ONLY WHERE PIPING CAN NOT BE OPENED WITH FLANGE SPREADER.						
20		FF2				***** VALVES *****								
30														
40														
50			GAT	5062031	1/2 - 2	GA-12: GATE CL 1500 SW STL, F6/STELL SEATS SWB								
60		VU4	GATSW	5115441	1/2 - 2	GA-13: GATE CL 1500 SW x SCRDL STL,F6/STEL SEATS SWB								
70		VU3	GATFLG	5159284	1/2 - 2	GA-14: GATE CL 1500# RFSF STL,F6/STELLITED SEATS								
80			GATFLG	5159285	3 - 4	GA-15: GATE CL 1500# RFSF STL,F6/STELLITED SEATS								
90			GLOSW	5062690	1/2 - 2	GL-11: GLOBE CLASS 1500# OS&Y WB SW CS/STELLITED S&D								
100		VU3	GLO	5162351	1/2 - 2	GL-12: GLOBE 1500# RFSF STL,F6/STELLITED SEAT								
110			GLOFLG	5162352	3 - 4	GL-13: GLOBE 1500# RFSF STL,F6/STELLITED SEAT		***** PIPE *****						
120		VC2	CHESW	5063494	1/2 - 2	CH-27: CHECK CLASS 1500# SW CS/STELLITED S&D SWB								
130		VU3	CHEFLG	5165304	1/2 - 2	CH-28: CHECK CL 1500# RFSF STL,F6/STELLITED SEAT								
140			CHE	5165301	3 - 4	CH-29: CHECK CL 1500# RFSF STL,F6/STELLITED SEAT								
150														
160														
170														
180			PIP	5356037	1/2 - 1 1/2	PIPE SCH 160 SMLS CS A106-B PE								
190			PIP	5356238	2 - 4	PIPE SCH 160 SMLS CS API-5L-B BE								
200														
210		NR2				***** FITTINGS *****								
220								***** PIPE FLANGES *****						
230			ELL	5478301	1/2 - 2	ELL 90 DEG CLASS 6000# SW CS A105								
240			45L	5478302	1/2 - 2	ELL 45 DEG CLASS 6000# SW STL A105								
250		NC1	TEE	5478303	1/2 - 2	TEE CLASS 6000 SW STL A105								
260			CAPSW	5478304	1/2 - 2	CAP CLASS 6000# SW FORGED CARBON STEEL A105								
270		NC1	COU	5478305	1/2 - 2	COUPLING CLASS 6000# SW CARBON STEEL A105								
280					1/2 - 2	UNION - NONE - USE FLANGES								
290		UD6	CAPSCR	5490566	1/2 - 2	CAP CLASS 6000# SCREWED FORGED CARBON STEEL A105								
300		UD7	PLGSCR	5490670	1/2 - 2	PLUG HEX HEAD SCRDL STL A105								
310		PN1	PLGSW	5478115	1/2 - 2	PLUG ROUND HEAD SW STL A105								
320		NC1	SOL	5532831	1/2 - 2	SOCKOLET CLASS 6000 STL A105		SERVICE  HYDR.SYS. LOW PRESS.: LOX  MATERIAL: CARBON STEEL FLANGE RATING: 1500 RFSF TEMPERATURE RANGE: 0 / 50 C COMMENT:						
330		NC1	TOL	5514691	1/2 - 2	THREDOLET CLASS 6000# STL A105								
331			CAP	5478101	1/2 - 2	REDUCING INSERT TYPE 1 CL 6000# SW FORGED CS A105								
332														
340		UK1	WOL	5504555	1/2 - 2	WELDOLET SCH 160 FORGED CS A105								
350		UK2	EOT	5516851	1 - 1 1/2	ELBOLET SCH 160 STL A105								
360		UK5	LOT	5524851	1 - 1 1/2	LATROLET SCH 160 STL A105								
370		NN6	ELL	5374492	3 - 4	ELL 90 DEG LR SCH 160 BW STL A234 WPB								
380			45L	5374498	3 - 4	ELL 45 DEG LR SCH 160 SMLS CARBON STEEL A234 WPB								
390			TEE	5374501	3 - 4	TEE SCH 160 BW SMLS CARBON STEEL A234 WPB								
400			CAP	5374502	3 - 4	CAP SCH 160 BW SMLS CARBON STEEL A234 WPB								
410			REDCBW	5374503	3 - 4	RED CONC SCH 160 BW SMLS CARBON STEEL A234 WPB								
420			REDEBW	5374504	3 - 4	RED ECC SCH 160 BW SMLS CARBON STEEL A234 WPB								
430			WOL	5504555	3 - 4	WELDOLET SCH 160 FORGED CS A105								
440														
450		FF2				***** PIPE FLANGES *****								
460														
470			SWF	5602032	1/2 - 2	FLG SW CLASS 1500 RFSF STL A105 SCH 160 BLUE								
480			WNK	5555616	2 1/2 - 4	FLG WN 1500# RFSF STL 160 BORE A105 BLUE								
			Sulphide Leach Project Fluor Chile - Minera Escondida 53232500 Antofagasta			CONSTRUCTION		Sulphide Leach Project						
						1 1/2" & SMALLER-SW & THRD. 2 1/2" & LARGER - BUTTWELD		CORR. ALLOW. 0,062 IN	DATE 14OCT04	BY ECQ	REV 1	SHEET 1 OF 2	PA 5	CLASS CSLX06

SEQ NO.	REV	NOTE NO.	ITEM NAME	ITEM CODE	SIZE RANGE / SMALL END SIZES	DESCRIPTION	REFERENCE / LARGE END SIZES	NOTES							
490			BLF	5615526	1/2 - 4	FLG BLIND 1500# RFSF STL A105 BLUE		UD6	USE FOR UNVALVED CAPPED HYDROSTATIC TEST VENTS AND DRAINS.						
500								UD7	USE THREDOLET AND SCREWED PLUG ONLY FOR INSTRUMENT CONNECTIONS						
510		FF2				***** ORIFICE FLANGES *****		UK1	USE SCH 160 WELDOLET AND WELD NECK FLANGE SCH 160 BORE FOR TEMPERATURE INSTRUMENT CONNECTIONS.						
520			ORI	5623222	1/2 - 4	WN ORIFICE SET CLASS 1500# RFSF CARBON STEEL SCH 160 BORE		UK2	USE SCH 160 BUTTWELD END ELBOLET AND WELD NECK FLANGE SCH 160 BORE FOR TEMPERATURE INSTRUMENT CONNECTIONS.						
530						***** PIPE NIPPLES *****		UK5	USE SCH 160 BUTTWELD END LATROLET AND WELD NECK FLANGE SCH 160 BORE FOR TEMPERATURE INSTRUMENT CONNECTIONS IN VERTICAL LINES ONLY.						
540								VC2	INSTALL THESE CHECK VALVES IN THE HORIZONTAL POSITION ONLY.						
550		JA2	NIPTP	5541000	1/2 - 2	NIPPLE SCH 160 CARBON STEEL A106-B TOE-POE L=4 IN (100MM)		VU3	USE FLANGED VALVES AT EQUIPMENT NOZZLES ONLY.						
560		JA2	NIP	5540970	1/2 - 2	NIPPLE SCH 160 CARBON STEEL A106-B PBE L=4 IN		VU4	USE THIS VALVE FOR PRESSURE INSTRUMENT CONNECTIONS, VENTS AND DRAINS, AND ORIFICE TAP BLOCK VALVES.						
570		NR4				***** SWAGE NIPPLES *****									
580															
590			SWACBE	5543661	1/2 - 2 1/2	SWAGE CONCENTRIC SCH 160 CARBON STEEL A234 GR WPB BBE									
600		JA2	SWAEBE	5548751	1/2 - 2 1/2	SWAGE ECCENTRIC SCH 160 CARBON STEEL A234 GR WPB BBE									
610						***** GASKETS *****									
620															
630			GAS	5675531	1/2 - 4	GASKET 1500# 304 SS SPIRAL WOUND NON-ASB									
640						***** BOLTING *****									
650															
660															
670															
680			BOLS	5675648	1/4 - 99	STUD-BOLT CHROME-MOLY ALLOY A193 GR B7 W/CS A194 GR 2H NUTS									
690						***** STRAINERS *****									
700															
710															
720															
730			STR	5762450	1/2 - 2	Y-STRAINER 1500# SW STL,316 SCR .033 PR									
740						***** SPECTACLE BLINDS *****									
750															
760		SB5													
770															
780															
790			SPE	5749569	1/2 - 4	SPECTACLE BLIND 1500# RF STL									
800															
			Sulphide Leach Project Fluor Chile - Minera Escondida 53232500 Antofagasta			CONSTRUCTION  1 1/2" & SMALLER-SW & THRD. 2 1/2" & LARGER - BUTTWELD		Sulphide Leach Project  CORR. ALLOW. 0,062 IN							
								DATE 14OCT04	BY ECQ	REV 1	SHEET 2 OF 2	PA 5	CLASS CSLX06		


SEQ NO.	REV	NOTE NO.	ITEM NAME	ITEM CODE	SIZE RANGE / SMALL END SIZES	DESCRIPTION	REFERENCE / LARGE END SIZES	NOTES						
10						*****VALVE*****		JA2 SEAL-WELD ALL THREADED CONNECTIONS. VU7 USE THIS VALVE FOR PRESSURE INSTRUMENT CONNECTIONS.						
20														
30														
40		VU7	BALFLG	5303875	1/2 - 2	BA-07: BALL CL 150# RF ALLOY 20	ALOYCO							
50			CHEFLG	5163750	1/2 - 24	CH-09: CHECK SWING CL 150# RF HOR/VERT ALLOY 20	ALOYCO #377							
51			CHE	5292356	2 1/2 - 24	CH-36: CHECK 150# RF ALLOY 20 WAFER-TYPE								
60			DPHFLG	5311460	1/2 - 24	DP-02: DIAPHRAGM WEIR C/HYPALON DIAP.FF CL 150								
70			GATFLG	5156170	1/2 - 6	GA-02: GATE CL 150# RF OS&Y ALLOY 20 A351 CN7M	LADISH #8275							
71			GAT	5156170G	8 - 24	GA-02G: GATE CL 150# RF OS&Y ALLOY 20 A351 CN7M GEAR OP	LADISH #8275							
80			GLOFLG	5269776	2 1/2 - 10	GL-14: GLOBE 150# RF ALLOY 20								
90			GLOFLG	5218600	1/2 - 2	GL-15: GLOBE OS&Y ALLOY 20 RF CL 150 HWL OPR								
100						*****PIPE*****								
110														
120														
130			PIP	5356033	1/2 - 2	PIPE XS SMLS CS A106 B PE								
140			PIP	5356030	2 1/2 - 24	PIPE STD WT SMLS CS A106-B BE								
150						*****FITTINGS*****								
160														
170														
180			ELL	5478105	1/2 - 2	ELL 90 DEG CLASS 3000 SW CS A105	BONNEY FORGE							
190			45L	5478106	1/2 - 2	ELL 45 DEG CLASS 3000 SW STL A105	BONNEY FORGE							
200			TEE	5478107	1/2 - 2	TEE CLASS 3000 SW CARBON STEEL A105	BONNEY FORGE							
210			CAP	5478108	1/2 - 2	CAP CLASS 3000 SW FORGED CARBON STEEL A105								
220			COU	5478109	1/2 - 2	COUPLING CLASS 3000 SW STL A105								
230			COUHSW	5478114	1/2 - 2	HALF COUPLING CLASS 3000# SW CARBON STEEL A105								
240			SOL	5532671	1/2 - 2	SOCKOLET CLASS 3000 STL A105	BONNEY FORGE							
250			EOT	5516735	1/2 - 2	ELBOLET CLASS 3000# SW STL A105								
260			LOT	5524751	1/2 - 2	LATROLET CLASS 3000# SW STL A105								
270			UNI	5478111	1/2 - 2	UNION CLASS 3000 SW STL A105								
281			INS	5202115	1/2 - 2	REDUCING INSERT TYPE 1 CL 3000 SW CS A105								
290			ELL	5374114	2 1/2 - 24	ELL 90 DEG LR STD WT BW STL A234 WPB								
300			45L	5374120	2 1/2 - 24	ELL 45 DEG LR STD WT BW SMLS CARBON STEEL A234 WPB								
310			TEE	5374123	2 1/2 - 24	TEE STD WT BW SMLS CARBON STEEL A234 WPB								
320			TEEBW	5201110	2 1/2 - 24	TEE RED CS ASTM A234 GR WPB BW STD								
330			RED	5374125	2 1/2 - 24	REDUCER CONCENTRIC STD WT BW SMLS CARBON STEEL A234 WPB								
340			REDEBW	5374126	2 1/2 - 24	REDUCER ECCENTRIC STD WT BW SMLS CARBON STEEL A234 WPB								
350			LAT	5374133	2 1/2 - 24	LATERAL 45 DEG STD WT BW SMLS CS A234 WPB								
360			CAP	5374124	2 1/2 - 24	CAP STD WT BW SMLS CARBON STEEL A234 WPB								
370						*****PIPE FLANGES*****								
380														
390														
400			SWF	5601728	1/2 - 2	FLG SW CLASS 150 FF STL XS BORE A105								
410			SWFRF	5601738	1/2 - 2	FLG SW CLASS 150 RF STL XS BORE A105								
420			SOF	5597464	2 1/2 - 24	FLG SO 150# FF STL A105								
430			SOFRF	5597469	2 1/2 - 24	FLG SO 150# RF STL A105								
440			WNK	5554383	2 1/2 - 24	FLG WN 150# FF STL STD BORE A105								
450			WNKRF	5554402	2 1/2 - 24	FLG WN 150# RF STL STD BORE A105								
460			BLF	5615477	1/2 - 24	FLG BLIND 150# FF CS A105	KWH							
			Sulphide Leach Project Fluor Chile - Minera Escondida 53232500 Antofagasta			CONSTRUCTION		Sulphide Leach Project						
						2" & SMALLER - SW<math>\lt; r>\lt; n>3"								
								CORR. ALLOW.	DATE	BY	REV	SHEET	PA	CLASS
						0,0625 IN	14OCT04	ECQ	1	1 OF 2	5	CSSA01		


SEQ NO.	REV	NOTE NO.	ITEM NAME	ITEM CODE	SIZE RANGE / SMALL END SIZES	DESCRIPTION	REFERENCE / LARGE END SIZES	NOTES								
470			BLFRF	5615476	1/2 - 24	FLG BLIND 150# RF STL A105	DURLON 9000	<div>SERVICE</div> <div>SULPHURIC ACID : SA</div> <div>MATERIAL: CARBON STEEL FLANGE RATING: 150 RF TEMPERATURE RANGE: 0 / 50 C COMMENT:</div>								
480																
481																
511																
520																
530			ORI	5622523	2 - 2	WN ORIF SET CLASS 300# RF CARBON STEEL XS BORE A105										
540			ORI	5622520	2 1/2 - 24	WN ORIFICE SET CLASS 300# RF CARBON STEEL STD WEIGHT BORE A105										
550																
560																
570																
580	JA2		SWACBE	5543611	1/2 - 2	SWAGE CONCENTRIC SCH XS CARBON STEEL A234 GR WPB BBE										
590	JA2		SWA	5548701	1/2 - 2	SWAGE ECCENTRIC XS CARBON STEEL A234 GR WPB BBE										
600																
610																
620																
630			GASFF	5669788	1/2 - 24	GASKET 150# INORG.FILLERS W/PTFE 1/8" FF										
640			GASRF	5669790	1/2 - 24	GASKET 150# INORG.FILLERS W/PTFE 1/8" RF										
650																
660																
670																
680			BOLS	5675690	1/2 - 1 1/8	STUD-BOLT 316SS A193 B8M-2 W/A194-8M NUT										
690																
700																
710																
720			STRWYE	5762121	1/2 - 2	Y-STRAINER 600#SCRD ALLOY 20 .033 PERF										
730																
740																
750																
760			STR	5904207	1/2 - 8	STRAINER FLAT 150# RF CARBON STEEL										
770																
780																
790																
800			COVGAT	5751590	3 - 24	COVER VINYL FOR 150# FLGD GATE VALVE BON										
810			COVGLO	5751595	3 - 24	COVER VINYL FOR 150# FLGD GLOBE VALVE BO										
820			COVCHE	5751508	1/2 - 24	COVER VINYL FOR 150# SCRD/SW CHECK VALVE										
830			COVGLO	5751507	1/2 - 2	COVER VINYL FOR 150# SCRD/SW GLOBE VALVE										
840			COVPLU	5751506	3 - 12	COVER VINYL FOR 150# SCRD/SW PLUG VALVE										
850			COV	5751601	1/2 - 24	COVER VINYL FOR 150# WAFER TYPE CHECK VA										
860			COV150	5751570	1/2 - 24	COVER VINYL FOR 150# WN, SO, OR SW FLG										
870			COV300	5751580	1/2 - 24	COVER VINYL FOR 300# WN, SO, OR SW FLG										
			Sulphide Leach Project Fluor Chile - Minera Escondida 53232500 Antofagasta			CONSTRUCTION		Sulphide Leach Project								
						2" & SMALLER - SW<math>\lt r>\lt n>3" & LARGER - BUTT WELD		CORR. ALLOW.		DATE		BY	REV	SHEET	PA	CLASS
								0,0625 IN		14OCT04		ECQ	1	2 OF 2		5

SEQ NO.	REV	NOTE NO.	ITEM NAME	ITEM CODE	SIZE RANGE / SMALL END SIZES	DESCRIPTION	REFERENCE / LARGE END SIZES	NOTES						
10		AA1				***** SPECIAL PROVISIONS *****		AA1 RESPONSIBILITY OF MATERIAL & MTO WILL BE BY THE CONTRACTOR						
20						***** VALVES *****								
30														
40														
50			BAL	5058791	1/4 - 2	BA-18: BALL 400# SCR D BRONZE								
60			GLO	5000635	1/4 - 2	GL-16: GLOBE 200# SCREWED BRONZE ISRS-UB								
70			GAT	5115125	1/4 - 2	GA-18: GATE 125# SWP (200# WOG) INSIDE STEM BRONZ SOLDER JOINT								
80			CHESCR	5000770	1/4 - 2	CH-32: CHECK 200# SCREWED BRONZE								
90						***** TUBING *****								
100														
110														
120			TUBS	5670040	1/4 - 2	WATER SMLSS COPPER B88 SOFT TMPR TYPE K								
130			TUBH	5670041	1/4 - 2	WATER SMLSS COPPER B88 HARD TMPR TYPE K								
140						***** TUBE FITTINGS *****								
150														
160														
170			ELL	5672100	1/4 - 2	ELBOW 90 DG LR COPPER SOLDER JOINT C X C								
180			45L	5672111	1/4 - 2	ELBOW 45 DEG COPPER SOLDER JOINT C x C								
190			COUS	5672112	1/4 - 2	COUPLING W/STOP COPPER SOLDER JOINT C x C								
200			COU	5672121	1/4 - 2	COUPLING W/O STOP COPPER SOLDER JOINT C x C								
210			TEE	5672113	1/4 - 2	TEE COPPER SOLDER JOINT C x C x C								
220			CAP	5672114	1/4 - 2	CAP TUBE COPPER SOLDER JOINT								
230			PLG	5672115	1/4 - 2	PLUG FITTING COPPER SOLDER JOINT								
240			UNI	5672116	1/4 - 2	UNION COPPER SOLDER JOINT C x C								
250			UNIDBL	5672117	1/4 - 2	DOUBLE UNION COPPER JOINT FNPT X FNPT								
260						***** ADAPTER *****								
270														
280														
290			ADPFSJ	5672118	1/4 - 2	ADAPTER FEMAL COPPR SOLD R JOINT C X FNPT								
300			ADPMSJ	5672119	1/4 - 2	ADAPTER MALE COPPER SOLDER JOINT C x MNPT								
310						***** SOLDER AND FLUX *****								
320														
330														
340			SOL	5672120	1/4 - 2	LEAD FREE PASTE SOLDER 95%TIN;5%ANTIMONY								
350			PAS	5672125	1/4 - 2	ACID PASTE FLUX, 2 OZ. TIN CONTAINER								
351						***** EMERGENCY WASH EQUIPMENT *****								
352														
353	C													
354	C		SAF	5761535	1 1/2 - 1 1/2	SAFETY SHOWER, EYE/FACE WASH COMBINATION UNIT AND ELECTRICAL WATER HEATER	HAWS 8306							
						CONSTRUCTION		Sulphide Leach Project						
						ALL SIZES - SOLDER JOINT		CORR. ALLOW.	DATE	BY	REV	SHEET	PA	CLASS
								0	14OCT04	ECQ	1	1 OF 1	5	CUAW01





Sulphide Leach Project  
Fluor Chile - Minera Escondida  
53232500  
Antofagasta

SEQ NO.	REV	NOTE NO.	ITEM NAME	ITEM CODE	SIZE RANGE / SMALL END SIZES	DESCRIPTION	REFERENCE / LARGE END SIZES	NOTES						
10						*****VALVE*****								
20														
30														
40			BALFLG	5114960	1/2 - 4	BA-04: BALL 150# FF PVC/TEFLON SEAT/VITON SEAL LO	CHEMTROL TU							
50			BTF	5309236	3 - 6	BU-07: BUTTERFLY HP ECC DISC CL 150# 316SS, F LUG LO	KEYSTONE #362S							
60			BTF	5309238	8 - 24	BU-01: BUTTERFLY HP ECC DISC CL 150# 316SS F LUG GO	KEYSTONE #362S							
70			BTF	5309218	26 - 48	BU-18: BUTTERFLY HP ECC DISC CL 150# 316SS MSS FLUG GO	FLOW SEAL							
80			GAT	5165191	2 - 6	GA-23: GATE CL 900# OS&Y CS A216-WCB RF HWL	VELAN							
81			GAT	5165191G	8 - 24	GA-23G: GATE CL 900# OS&Y CS A216-WCB RF GEAR OP	VELAN							
90			CHE	5170000	3 - 24	CH-43: CHECK WAFER CL150# POLYPROPYLENE W/O DISC SPRING	NIBCO TYPE TU							
100						*****PIPE*****								
110														
120														
130			PIPBAR	5718801	2 - 12	PIPE FRP FILAMENT WOUND BELL & SPIGOT								
140			PIP	5718805	2 - 48	PIPE FRP FILAMENT WOUND PLAIN END								
150						*****FITTINGS*****								
160														
170														
180			ELL	5718811	2 - 12	ELL 90 DEG HAND MOLDED FRP PE								
190			ELL	5718821	14 - 48	ELL 90 DEG FILAMENT WOUND FRP PE								
200			45L	5718812	2 - 12	ELL 45 DEG HAND MOLDED FRP PE								
210			45L	5718822	14 - 48	ELL 45 DEG FILAMENT WOUND FRP PE								
220			TEE	5718813	2 - 12	TEE HAND MOLDED FRP PE								
230			TEE	5718823	14 - 48	TEE FILAMENT WOUND FRP PE								
240			RED	5718816	2 - 12	REDUCER CONCENTRIC HAND MOLDED FRP PE								
250			REDCON	5718826	14 - 48	REDUCER CONCENTRIC FILAMENT WOUND FRP PE								
260			REDECC	5718817	3 - 12	REDUCER ECCENTRIC HAND MOLDED FRP PE								
270			RED	5718827	14 - 48	REDUCER ECCENTRIC FILAMENT WOUND FRP PE								
280						*****PIPE FLANGES*****								
290														
300														
310			SWF	5718841	2 - 12	FLG SW 150# FF HAND MOLDED FRP								
320			SOF	5718850	8 - 48	BACK-UP FF SS 316L CL 150								
330			ADF	5718855	8 - 48	FLANGE ADAPTOR FRP CL 150								
340			BLFFF	5718845	2 - 48	FLG BLIND 150# FF HAND MOLDED FRP								
350			FLG	5718860	14 - 48	STUB FLANGE FRP CL 125 W/O-RING VITON SEAL	SMITH FIBERCAST							
360						***** BRANCHES *****								
370														
380														
390			SDLCS	5718819	1 - 12	SERVICE SADDLE HAND MOLDED SW END								
400						***** GASKETS *****								
410														
420														
430			GAS	5669787	1/2 - 24	GASKET 150# PTFE 1/8" MET/NON-MET FLG FF	GARLOCK							
440			GASRF	5669789	1/2 - 24	GASKET 150# PTFE 1/8" MET/NON-MET FLG RF								
450						*****BOLTING*****								
460														
470														
480			BOLCS	5675648	1/4 - 1 1/8	STUD-BOLT CHROME-MOLY ALLOY A193 GR B7 W/CS A194 GR 2H NUTS								
			Sulphide Leach Project Fluor Chile - Minera Escondida 53232500 Antofagasta			CONSTRUCTION	Sulphide Leach Project							
						ALL SIZES CEMENTED OR FLANGED	CORR. ALLOW. 0 IN	DATE 14OCT04	BY ECQ	REV 1	SHEET 1 OF 2	PA 5	CLASS FRPC01	


SEQ NO.	REV	NOTE NO.	ITEM NAME	ITEM CODE	SIZE RANGE / SMALL END SIZES	DESCRIPTION	REFERENCE / LARGE END SIZES	NOTES							
490			BOLSS	5675690	1/4 - 1 1/8	STUD-BOLT 316SS A193 B8M-2 W/A194-8M NUT	WELDFAST CL-100 DOW 470								
500			BOL	5675631	1/2 - 1 1/8	MACH BOLT CS A307 GR B W/1 SEMI-FINISH HEAVY HEX. NUT									
510			BOLMS	5675689	1/2 - 1 1/8	MACH BOLT 316 SS A193 GR B8M W/1 SEMI-FINISH HEAVY HEX. NUT									
520															
530						***** HOSE CONNECTIONS *****									
540			CPL	5764110	1/2 - 2	HOSE CONN. 2-LUG QUICK ACT. COUPLING 316L SW 150 PSIG									
550															
551						***** ADHESIVES *****									
552			ADHBS	5718851	1 - 12	ADHESIVE FOR FRP BELL & SPIGOT PIPE									
553			ADHBW	5718852	14 - 48	ADHESIVE RESIN FOR FRP BUTT WELD & WRAP JOINT									
								SERVICE							
								LEAN ELECTROLYTE : LE RICH ELECTROLYTE : RE POTABLE WATER : DW HYDROCL. ACID : HA TANKHOUSE CONDENSATE :CO SEA WATER SUPPLY : SWS							
								MATERIAL: FIBERGLASS FRP FLANGE RATING: 150 FF TEMPERATURE RANGE: 0 / 50 C COMMENT:							
			Sulphide Leach Project Fluor Chile - Minera Escondida 53232500 Antofagasta			CONSTRUCTION		Sulphide Leach Project							
						ALL SIZES CEMENTED OR FLANGED		CORR. ALLOW. 0 IN	DATE 14OCT04	BY ECQ	REV 1	SHEET 2 OF 2	PA 5	CLASS FRPC01	





SEQ NO.	REV	NOTE NO.	ITEM NAME	ITEM CODE	SIZE RANGE / SMALL END SIZES	DESCRIPTION	REFERENCE / LARGE END SIZES	NOTES										
10	1	VU1	BAL BALFLG	5058830 5114960	1/2 - 2 1/2 - 2	***** VALVES *****	NIBCO CHEMTROL TU	VU1 USE THIS VALVE FOR PRESSURE INSTRUMENT CONNECTIONS, VENTS AND DRAINS.										
20						BA-05: BALL BAR STOCK CS/TFE FNPT 500# WOG SWP												
30						BA-04: BALL 150# FF PVC/TEFLON SEAT/VITON SEAL LO												
40																		
50																*****PIPE*****		
60																		
70																		
80																		
90														PIPCSP	5850101	3 - 60	PIPE CORRUGATED BELL & SPIGOT SMOOTH INTERIOR HDPE D3350	ADS
100																		
110														WSH	5950000	11 3/4 - 11 3/4	WRAP-AROUND HEAT SHRINKABLE SLEEVE	RAYCHEM
120																	*****FITTINGS*****	
130																		
140																		
150														ELL	5850402	24 - 60	BEND 90 DEG FAB CORRUGATED SMOOTH INTERIOR HDPE D3350.	ADS
160														45E	5850403	24 - 60	BEND 45 DEG FAB. CORRUGATED SMOOTH INTERIOR HDPE D3350.	ADS
170														22E	5850401	24 - 60	BEND 22.5 DEG FAB. CORRUGATED SMOOTH INTERIOR HDPE D3350	ADS
180														TEE	5850215	24 - 60	TEE STRAIGHT CORRUGATED BELL X BELL X BELL HDPE D-3350	ADS
190														CAPSMT	5850404	24 - 60	CAP FABRICATED CORRUGATED SMOOTH INTERIOR HDPE D3350	ADS
200														SAD	5850405	24 - 60	SADDLE TEE FAB CORRUGATED SMOOTH INTERIOR HDPE D3350	ADS
210														END	5850305	24 - 60	END CAP FOR BELL END CORRUGATED PIPE HDPE D3350	ADS
220																	*****PIPE FLANGES*****	
230																		
240																		
250														SOF	5906111	48 - 60	BACK-UP FLG. CS CL 150# DRILL. MSS-SP44 F/POLYETH. FLG. ADAPT.	CPChem
260														SOF	5201111	24 - 42	BACK-UP FLG. ANSI CL 150# DRILL. CS F/ POLYETH. FLG. ADAPT.	CPChem
270														LJS	5905081	24 - 60	FLANGE ADAPTOR HDPE SDR 32.5	KWH
280																		
290																	***** GASKETS *****	
300																		
310																		
320														GASFF	5669787	24 - 42	GASKET 150# PTFE 1/8" MET/NON-MET FLG FF	GARLOCK
330														GASRF	5669792	48 - 60	GASKET 150# PTFE 1/8" MET/NON-MET MSS FF	GARLOCK
340																	*****BOLTING*****	
350																		
360																		
370														BOL	5675689	1/4 - 1 1/8	MACH BOLT 316 SS A193 GR B8M W/1 SEMI-FINISH HEAVY HEX. NUT	
380														BOLM	5675631	1/4 - 1 1/8	MACH BOLT CS A307 GR B W/1 SEMI-FINISH HEAVY HEX. NUT	
390														BOLS	5675690	1/2 - 1 1/8	STUD-BOLT 316SS A193 B8M-2 W/A194-8M NUT	
400														BOLSG	5675658	1/2 - 1 1/8	STUD-BOLT GALV CHROME-MOLY A193 GRADE B7	
410																	***** MANIFOLDS *****	
420																		
430																		
			Sulphide Leach Project Fluor Chile - Minera Escondida 53232500 Antofagasta			CONSTRUCTION	Sulphide Leach Project											
						BUTT FUSED	CORR. ALLOW. 0 IN	DATE 14OCT04	BY ECQ	REV 1	SHEET 1 OF 2	PA 5	CLASS PCAW21					


SEQ NO.	REV	NOTE NO.	ITEM NAME	ITEM CODE	SIZE RANGE / SMALL END SIZES	DESCRIPTION	REFERENCE / LARGE END SIZES	NOTES					
440	1		MK	3100-MK-08	60 - 60	PIEZA ESPECIAL (MANIFOLD) 3100-MK-08 : TELA FLEXIBLE CON PVC, PRESION INTERNA=3 PSIG. PIEZA ESPECIAL (MANIFOLD) 3100-MK-09 : TELA FLEXIBLE CON PVC, PRESION INTERNA=3 PSIG. PIEZA ESPECIAL (MANIFOLD) 3100-MK-10 : TELA FLEXIBLE CON PVC, PRESION INTERNA=3 PSIG. PIEZA ESPECIAL (MANIFOLD) 3100-MK-11 : TELA FLEXIBLE CON PVC, PRESION INTERNA=3 PSIG. PIEZA ESPECIAL (MANIFOLD) 3100-MK-13 : TELA FLEXIBLE CON PVC, PRESION INTERNA=3 PSIG.							
450	1		MKTPV	3100-MK-09	60 - 60								
460	1		MKF	3100-MK-10	60 - 60								
470	1		MKFLXT	3100-MK-11	60 - 60								
471	1		MKTF	3100-MK-13	60 - 60								
								SERVICE					
								HEAP AIR : AI					
								MATERIAL: CORRUG. HDPE 17@50 FLANGE RATING: 150 FF TEMPERATURE RANGE: 0 / 50 C COMMENT:					
			Sulphide Leach Project Fluor Chile - Minera Escondida 53232500 Antofagasta			CONSTRUCTION		Sulphide Leach Project					
						BUTT FUSED		CORR. ALLOW. 0 IN	DATE 14OCT04	BY ECQ	REV 1	SHEET 2 OF 2	PA 5

SEQ NO.	REV	NOTE NO.	ITEM NAME	ITEM CODE	SIZE RANGE / SMALL END SIZES	DESCRIPTION	REFERENCE / LARGE END SIZES	NOTES						
10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 201 202 203 210 220 230 240 250 260 270 280 281 282 283		VA9				*****PIPE*****		NH1 SIZES FOR FULL SIZE TEES ONLY. NR2 SIZES IN SMALL END SIZES COLUMN ARE BRANCH SIZE OF OLETS OR TEES. SIZES IN LARGE END SIZES COLUMN ARE RUN PIPE SIZE OF OLETS OR TEES. NR3 SIZES IN SMALL END SIZES COLUMN ARE BRANCH SIZE OF SADDLES. SIZES IN LARGE END SIZES COLUMN ARE RUN PIPE SIZE OF SADDLES. NR5 USE ONLY WITH SUPERVISOR AUTHORIZATION SIZES IN SMALL END SIZES COLUMN ARE BRANCH SIZE OF SADDLES. SIZES IN LARGE END SIZES COLUMN ARE RUN PIPE SIZE OF SADDLES. NT4 USE ONLY FOR JOINING SMALL BORE PIPES VA9 USE VALVES OF MATERIAL CLASS SMP C01.						
			PIP	5800101D	4 - 48	PIPE CORRUGATED HDPE D-3350 W/COUPLING	ADS							
		NR3				*****FITTINGS*****								
			ELLCOU	5850402	4 - 48	BEND 90 DEG FAB CORRUGATED SMOOTH INTERIOR HDPE D3350.	ADS							
			ELL	5850403	4 - 48	BEND 45 DEG FAB. CORRUGATED SMOOTH INTERIOR HDPE D3350.	ADS							
			ELLCOS	5850401	4 - 48	BEND 22.5 DEG FAB. CORRUGATED SMOOTH INTERIOR HDPE D3350	ADS							
			CAP	5850404	4 - 48	CAP FABRICATED CORRUGATED SMOOTH INTERIOR HDPE D3350	ADS							
		NH1	TEE	5850201	4 - 48	TEE STRAIGHT CORRUGATED SMOOTH INTERIOR HDPE D3350.	ADS							
			RED	5850406	4 - 48	REDUCER ECCENTRIC FAB CORRUGATED SMOOTH INTERIOR HDPE D3350	ADS							
		NR2	TEECOU	5850205	4 - 42	TEE RED FAB. CORRUGATED SMOOTH INTERIOR HDPE D3350	6 - 48							
			WYE	5850208	4 - 48	WYE (LAT. 45 DEG.) FAB. CORRUGATED SMOOTH INTERIOR HDPE D3350	ADS							
			WYERED	5850407	4 - 42	REDUCER WYE FAB CORRUGATED SMOOTH INTERIOR HDPE D3350	6 - 48							
		NR5	SDL	5850405	4 - 48	SADDLE TEE FAB CORRUGATED SMOOTH INTERIOR HDPE D3350	ADS							
		NT4	COU	5850210	3 - 12	SPLIT COUPLER SINGLE WALL CORRUGATED SMOOTH INTERIOR HDPE D3350	ADS							
			COUWT	5850301	10 - 36	BELL COUPLER WITH WATER TIGHT HDPE D3350	ADS							
			REDCBW	5850408	4 - 42	REDUCER CONCENTRIC FAB CORRUGATED SMOOTH INTERIOR HDPE D3350	6 - 48							
						*** FLANGED FITTING TO JOINT CORRUGATED PIPE ***								
			CUO	5850310	16 - 24	TRANSITION FITTING STUB-END FLGD HDPE SDR 32,5 PE 3408 X CORRUGATED PIPE	ADS							
						*****BRANCHES*****								
			SDLTHR	5712616	1/2 - 2 1/2	SERVICE SADDLE HDPE PIPE X SCR SCH 80 CS	4 - 48							
			SDLSCH	5712614	1/2 - 2 1/2	SERVICE SADDLE HDPE PIPE X SCR SCH 80 SS	4 - 48							
			SDLSCH	5712618	1/2 - 2 1/2	SERVICE SADDLE HDPE SDR 11 PIPE/SCRW HDPE	4 - 48							
						***** BOLTING *****								
			BOL	5675690	1/2 - 1 1/8	STUD-BOLT 316SS A193 B8M-2 W/A194-8M NUT								
			Sulphide Leach Project Fluor Chile - Minera Escondida 53232500 Antofagasta			CONSTRUCTION	Sulphide Leach Project							
						COUPLING	CORR. ALLOW. 0 IN		DATE 14OCT04	BY ECQ	REV 1	SHEET 1 OF 1	PA 5	CLASS PCPC25

SEQ NO.	REV	NOTE NO.	ITEM NAME	ITEM CODE	SIZE RANGE / SMALL END SIZES	DESCRIPTION	REFERENCE / LARGE END SIZES	NOTES						
10						*****VALVE*****		FU6 USE WHEN BOLTING TO BUTTERFLY VALVES NH1 SIZES FOR FULL SIZE TEES ONLY. NR3 SIZES IN SMALL END SIZES COLUMN ARE BRANCH SIZE OF SADDLES. SIZES IN LARGE END SIZES COLUMN ARE RUN PIPE SIZE OF SADDLES. VU1 USE THIS VALVE FOR PRESSURE INSTRUMENT CONNECTIONS, VENTS AND DRAINS.						
20														
30														
40		VU1	BALSCR	5058830	1/2 - 2	BA-05: BALL BAR STOCK CS/TFE FNPT 500# WOG SWP	NIBCO							
50			BALFLG	5300850	3 - 6	BA-19: BALL CL 150# FF RG.P.FIRE-SAF.CS/CS TRM/TFE								
60			GATSCR	5039577	1/2 - 2	GA-01: GATE CL 800# FNPT RP WB CS/13%CR TR/S.SEAT	SMITH #870-OOHO							
70			GAT	5156155	3 - 6	GA-03: GATE CL 150# FF OS&Y CAST STEEL HDWHL	VELAN							
80			GATFLG	5156155G	8 - 42	GA-03G: GATE CL 150# FF OS&Y CAST STEEL GEAR OP	VELAN							
90			GLOSCR	5000612	1/2 - 2	GL-02: GLOBE INSIDE STEM CI/SS TRIM FNPT 150# SWP								
100			GLO	5160480	3 - 10	GL-03: GLOBE OS&Y CS W/13%CR TRIM FF CL 150 HWL								
110			BTFFLG	5306825	3 - 6	BU-16: BUTTERFLY WAFER CI/316SS VITON ST 125# LEVER	KEYSTONE #100							
120			BTF	5306840	8 - 20	BU-21: BUTTERFLY TAP-LUG FF CS/SS VITON CL150 GO								
130			CHESCR	5001460	1/2 - 2	CH-07: CHECK SWING F.P. CS/SS SEAT FNPT CL 150	ALOYCO							
140			CHEWAF	5280772	3 - 20	CH-12: CHECK WAF CS/BUNA N SEAT RF CL 150	MUESCO-MUELLER							
150			KNF	5154060	3 - 6	KN-04: KNIFE GATE 75 PSI CWP FF DI W/VITON SEAT SUPER DUPLEX STEM HDWL OP	CLARKSON							
160			KNF	5154060G	8 - 24	KN-04G: KNIFE GATE 75 PSI CWP FF DI W/VITON SEAT SUPER DUPLEX STEM GO	CLARKSON							
161			KNFSD	5154060H	26 - 48	KN-04H: KNIFE 75 PSI CWP FF DI W/VITON SEAT SUPER DUPLEX STEM HYDR. ACTING CYL.	CLARKSON							
170			ARV	5001605	4 - 6	VE-20: AIR/VACUUM VALVE CL150 FF DI BODY SUPER DUPLEX FLOAT	APCO							
171						*****PIPE*****								
180														
190														
200			PIP	5905250	1 - 36	PIPE SDR 27.6 (90 PSI) HDPE PE100	DRISCOPLEX 8900							
210			PIP	5341106	40 - 42	PIPE SDR 19 (90 PSI) HDPE D-3035 PE3408	KWH							
220						*****FITTINGS*****								
230		NR3												
240														
250			90LMPE	5905600	2 - 8	ELL 90 DEG MOLDED HDPE SDR 27.6 (90 PSI) PE 100								
260			60LMPE	5905610	2 - 8	ELL 60 DEG MOLDED HDPE SDR 27.6 (90 PSI) PE 100								
270			45LMPE	5905620	2 - 8	ELL 45 DEG MOLDED HDPE SDR 27.6 (90 PSI) PE 100								
280			30LMPE	5905630	2 - 8	ELL 30 DEG MOLDED HDPE SDR 27.6 (90 PSI) PE 100								
290			22LMPE	5905640	2 - 8	ELL 22.5 DEG MOLDED HDPE SDR 27.6 (90 PSI) PE 100								
300			RED	5905650	2 - 8	RED CONC MOLDED HDPE SDR 27.6 (90 PSI) PE 100	CPCChem							
310			REDCPE	5905655	2 - 8	RED ECC MOLDED HDPE SDR 27.6 (90 PSI) PE 100								
320			CAPMPE	5905665	2 - 8	CAP MOLDED HDPE SDR 27.6 (90 PSI) PE 100								
330		NH1	TEE	5905675	2 - 8	TEE MOLDED HDPE SDR 27.6 (90 PSI) PE 100								
340			TEERPE	5905680	2 - 8	TEE RED MOLDED HDPE SDR 27.6 (90 PSI) PE 100								
350														
360			90LFPE	5905700	10 - 36	ELL 90 DEG FAB HDPE SDR 27.6 (90 PSI) PE 100								
370			90L	5441115	40 - 42	ELL 90 DEG FAB HDPE SDR 19 (90 PSI) D3035 PE3408	KWH							
380														
390			60LFPE	5905705	10 - 36	ELL 60 DEG FAB HDPE SDR 27.6 (90 PSI) PE 100								
400			60L	5443186	40 - 42	ELL 60 DEG FAB HDPE SDR 19 (90 PSI) D3035 P3408	KWH							
410														
420			45LFPE	5905710	10 - 36	ELL 45 DEG FAB HDPE SDR 27.6 (90 PSI) PE 100								
430			45L	5441122	40 - 42	ELL 45 DEG FAB HDPE SDR 19 (90 PSI) D3035 PE3408	KWH							
440														
450			30LFPE	5905715	10 - 36	ELL 30 DEG FAB HDPE SDR 27.6 (90 PSI) PE 100								
			Sulphide Leach Project Fluor Chile - Minera Escondida 53232500 Antofagasta			CONSTRUCTION	Sulphide Leach Project							
						BUTT FUSED	CORR. ALLOW. 0 IN	DATE 14OCT04	BY ECQ	REV 1	SHEET 1 OF 3	PA 5	CLASS PEAW58	

SEQ NO.	REV	NOTE NO.	ITEM NAME	ITEM CODE	SIZE RANGE / SMALL END SIZES	DESCRIPTION	REFERENCE / LARGE END SIZES	NOTES					
460			30L	5441123	40 - 42	ELL 30 DEG FAB HDPE SDR 19 (90 PSI) D3035 PE3408	KWH						
470													
480			22L	5905717	10 - 36	ELL 22.5 DEG FAB HDPE SDR 27.6 (90 PSI) PE 100	KWH						
490			22LFPE	5441132	40 - 42	ELL 22,5 DEG FAB HDPE SDR 19 (90 PSI) D3035 PE3408							
500													
510			LAT	5905720	10 - 36	LATERAL 45 DEG FAB HDPE SDR 27.6 (90 PSI) PE 100	KWH						
520			LAT45	5441130	40 - 42	LATERAL 45 DEG FAB HDPE SDR 19 (90 PSI) D3035 PE3408							
530													
540			ELLFPE	5905735	10 - 34	RED CONC FAB HDPE SDR 27.6 (90 PSI) PE 100	12 - 36						
560			CON	5441124	40 - 40	RED CONC FAB HDPE SDR 19 (90 PSI) D3035 PE3408	42 - 42						
561													
570			ELL	5905740	10 - 34	RED ECC FAB HDPE SDR 27.6 (90 PSI) PE 100	12 - 36						
580			ECC	5441125	40 - 40	RED ECC FAB HDPE SDR 19 (90 PSI) D3035 PE3408	42 - 42						
590													
600		NH1	TEE	5905745	10 - 36	TEE FAB HDPE SDR 27.6 (90 PSI) PE 100	KWH						
610			TEE	5443174	40 - 42	TEE FAB HDPE SDR 19 (90 PSI) D3035 PE 3408							
620													
630			REC	5905750	10 - 34	TEE RED FAB HDPE SDR 27.6 (90 PSI) PE 100	12 - 36						
640			TEERED	5441103	40 - 40	TEE RED FAB HDPE SDR 19 (90 PSI) D3035 PE 3408	42 - 42						
650													
660			WYE	5905760	4 - 36	WYE TRUE 45 DEG FAB HDPE SDR 27.6 (90 PSI) PE 100	KWH						
670			Y45BW	5443176	40 - 42	WYE TRUE 45 DEG FAB SDR 19 (90 PSI) D3035 PE 3408							
680													
690						*****PIPE FLANGES*****							
700													
710			LJS	5905770	1/2 - 36	FLANGE ADAPT. HDPE SDR 27.6 (90 PSI) PE100	CPCChem						
720		FU6	LJS11	5905775	1/2 - 36	FLANGE ADAPT. CHAMF HDPE SDR 27.6 (90 PSI) PE100							
721													
730			SOF	5201111	1/2 - 42	BACK-UP FLG. ANSI CL 150# DRILL. CS F/ POLYETH. FLG. ADAPT.	KWH						
740			BLFFF	5615477	1/2 - 42	FLG BLIND 150# FF CS A105							
750													
760													
770						***** AWWA FLANGES *****							
780													
790			SOFFF	5597410	8 - 42	FLG SO ANSI/AWWA C207 CL D (175-150 PSI) FF CS A105	SERVICE						
800			BLD	5597408	8 - 42	FLG BLIND ANSI/AWWA C207 CL D (175-150 PSI) FF CS A105							
810							FRESH WATER : FW HYDROCHLORIC ACID : HA POTABLE WATER : DW BRINE : BW DESALINATION WATER: DSW SEA WATER SUPPLY : SWS						
820						***** SPECTABLE & PADDLE BLINDS *****							
830													
840			SPE	5749496	3 - 42	SPECTACLE BLIND CL 150# RF CS A515 GR 70							
850			PADBLD	5749852	16 - 42	PADDLE BLIND CL 150 RF CS A515 GR 70							
860													
870						***** PADDLE SPACER *****							
880													
890			PADSPC	5749853	3 - 42	PADDLE SPACER CL 150 RF CS A515 GR 70	MATERIAL: HDPE SDR 27.6 (90#) FLANGE RATING: 150 FF TEMPERATURE RANGE: 0 / 50 C						
900													
910						***** GASKETS *****							
920													
930			GAS	5669787	1/2 - 42	GASKET 150# PTFE 1/8" MET/NON-MET FLG FF	GARLOCK						
			Sulphide Leach Project Fluor Chile - Minera Escondida 53232500 Antofagasta			CONSTRUCTION		Sulphide Leach Project					
						BUTT FUSED		CORR. ALLOW. 0 IN	DATE 14OCT04	BY ECQ	REV 1	SHEET 2 OF 3	PA 5


SEQ NO.	REV	NOTE NO.	ITEM NAME	ITEM CODE	SIZE RANGE / SMALL END SIZES	DESCRIPTION	REFERENCE / LARGE END SIZES	NOTES											
940 950 960 970			BOLS	5675648	1/8 - 99	*****BOLTING*****  STUD-BOLT CHROME-MOLY ALLOY A193 GR B7 W/CS A194 GR 2H NUTS	3 - 36 3 - 42												
980			BOLSSS	5675690	1/8 - 99	STUD-BOLT 316SS A193 B8M-2 W/A194-8M NUT													
990			BOLM	5675631	1/8 - 99	MACH BOLT CS A307 GR B W/1 SEMI-FINISH HEAVY HEX. NUT													
1000			BOLMS	5675689	1/8 - 99	MACH BOLT 316 SS A193 GR B8M W/1 SEMI-FINISH HEAVY HEX. NUT													
1010 1020 1030						*****BRANCHES*****													
1040			SDLSCR	5712658	1/2 - 2 1/2	SERVICE SADDLE HDPE SDR 27.6 (90 PSI) PIPE X SCR D FNPT													
1050			SDL	5712636	1/2 - 2 1/2	SERVICE SADDLE CS SCH 80 PIPE X SCR D FNPT													
1060 1070																			
														SERVICE					
														FRESH WATER : FW HYDROCHLORIC ACID : HA POTABLE WATER : DW BRINE : BW DESALINATION WATER: DSW SEA WATER SUPPLY : SWS					
							MATERIAL: HDPE SDR 27.6 (90#) FLANGE RATING: 150 FF TEMPERATURE RANGE: 0 / 50 C COMMENT:												
			Sulphide Leach Project Fluor Chile - Minera Escondida 53232500 Antofagasta			CONSTRUCTION		Sulphide Leach Project											
						BUTT FUSED		CORR. ALLOW. 0 IN	DATE 14OCT04	BY ECQ	REV 1	SHEET 3 OF 3	PA 5	CLASS PEAW58					


SEQ NO.	REV	NOTE NO.	ITEM NAME	ITEM CODE	SIZE RANGE / SMALL END SIZES	DESCRIPTION	REFERENCE / LARGE END SIZES	NOTES						
10						*****VALVE*****		FU6 USE WHEN BOLTING TO BUTTERFLY VALVES VA4 FOR ABOVE GROUND VALVE USE MATERIAL CLASS CSFP01. VU1 USE THIS VALVE FOR PRESSURE INSTRUMENT CONNECTIONS, VENTS AND DRAINS.						
20		VA4												
30														
40		VU1	BALSCR	5058893	1/2 - 3	BA-21: BALL 600# SCR D 316 SS/RTFE, FIRE SAFE LO	KENNEDY #701X KEYSTONE #362S KEYSTONE							
50			GATFLG	5153432	2 - 3	GA-19: GATE CL 125# FF CI/BR, OS&Y, UL/FM								
60			GATFLG	5156020	4 - 24	GA-21: GATE 175# CWP FF INSIDE STEM IBBT F/IND POST								
70			BTF	5309238	2 - 6	BU-01: BUTTERFLY HP ECC DISC CL 150# 316SS F LUG GO								
80			BTFWAF	5306725	4 - 16	BU-11: BUTTERFLY 150# WAFER CI POST IND UL/FM								
90			ARVFLG	5001491	2 - 6	VE-07: AIR/VACUUM VALVE CLASS 150 RF 316 SS/BUNA-N	DEMCO #NF-H DEMCO #NF-H							
100			BTF	5308128	18 - 36	BU-31: BUTTERFLY CL150# DI BUNA-N LIN LUG UL/FM GO								
110			BTF LGO	5308128HM	36 - 36	BU-31HM: BUTTERFLY CL150 DI BUNA-N LIN LUG UL/FM HYDR-MANUAL OP	CRANE #375 DUOCHECK U12HMP							
120			CHEFLG	5153805	6 - 6	CH-31: CHECK SWING 175# CWP FF HOR/VERT IBBM UL/FM								
130			CHEWAF	5280008	6 - 6	CH-10: CHECK WAF IBBM BUNA-N SEAL FF 250 UL/FM								
140						*****VALVE ACCESSORIES*****								
150														
160														
170			IND	5944600	4 - 12	INDIC POST VERT ADJ CI FLGD W/SQ OPR NUT	DRISCOPEX 8900							
180			ACC	5944720	4 - 24	BOX VALV TWO-PIECE SCR W TYPE W/WRENCH CI								
190						*****PIPE*****								
200														
210														
220			PIP	5905203	2 - 36	PIPE SDR 13.5 HDPE (180 PSI) PE 100								
230						*****FITTINGS*****								
240														
250														
260			90L	5905423	2 - 8	ELL 90 DEG MOLDED HDPE SDR 13.5 (180 PSI) PE 100		CPChem						
270			60L	5905523	2 - 8	ELL 60 DEG MOLDED HDPE SDR 13.5 (180 PSI) PE 100								
280			45L	5905533	2 - 8	ELL 45 DEG MOLDED HDPE SDR 13.5 (180 PSI) PE 100	CPChem							
290			30L	5905543	2 - 8	ELL 30 DEG MOLDED HDPE SDR 13.5 (180 PSI) PE 100								
300			CAPMPE	5905183	3/4 - 8	CAP MOLDED HDPE SDR 13.5 (180 PSI) PE 100	1 - 8 1 - 8							
310			RED	5905193	3/4 - 3	RED CONC MOLDED HDPE SDR 13.5 (180 PSI) PE 100								
320			REDMPE	5905293	3/4 - 3	RED ECC MOLDED HDPE SDR 13.5 (180 PSI) PE 100	CPChem 4 - 36							
330														
340			90LFPE	5905273	10 - 24	ELL 90 DEG FAB HDPE SDR 13.5 (180 PSI) PE 100	CPChem							
350			60LFPE	5905525	10 - 24	ELL 60 DEG FAB HDPE SDR 13.5 (180 PSI) PE 100								
360			45LFPE	5905535	10 - 24	ELL 45 DEG FAB HDPE SDR 13.5 (180 PSI) PE 100	CPChem							
370			30LFPE	5905545	10 - 24	ELL 30 DEG FAB HDPE SDR 13.5 (180 PSI) PE 100								
380			TEE	5905400	2 - 24	TEE FAB HDPE SDR 13.5 (180 PSI) PE 100	CPChem 4 - 36							
390			TEEFPE	5905410	3 - 24	TEE RED FAB HDPE SDR 13.5 (180 PSI) PE 100								
400			ELLFPE	5905430	10 - 24	LATERAL 45 DEG FAB HDPE SDR 13.5 (180 PSI) PE 100	12 - 36 12 - 36							
410			REDMPE	5905450	10 - 24	RED CONC FAB HDPE SDR 13.5 (180 PSI) PE 100								
420			REDEMP	5905470	10 - 24	RED ECC FAB HDPE SDR 13.5 (180 PSI) PE 100	4 - 36							
430						*****BRANCHES*****								
440														
450														
460			SDLSCR	5712638	1/2 - 2 1/2	SERVICE SADDLE HDPE SDR 13.5 (180 PSI) PIPE X SCR D FNPT	4 - 36							
470			SAD	5905186	3/4 - 1 1/2	SERVICE SADDLE MOLDED HDPE SDR 13.5 (180 PSI) PE 100								
480			SADMPE	5905205	2 - 6	BRANCH SADDLE MOLDED HDPE SDR 13.5 (180 PSI) PE 100								
490			SDR	5905490	3 - 12	SADDLE REDUCING TEE FAB HDPE SDR 13.5 (180 PSI) PE 100								
			Sulphide Leach Project Fluor Chile - Minera Escondida 53232500 Antofagasta			CONSTRUCTION	Sulphide Leach Project							
						BUTT FUSED	CORR. ALLOW. 0 IN	DATE 14OCT04	BY ECQ	REV 1	SHEET 1 OF 2	PA 5	CLASS PEFP53	


SEQ NO.	REV	NOTE NO.	ITEM NAME	ITEM CODE	SIZE RANGE / SMALL END SIZES	DESCRIPTION	REFERENCE / LARGE END SIZES	NOTES						
500								<div>SERVICE</div> <div>UNDER GROUND FIRE WATER : FP</div> <div>MATERIAL: HDPE SDR 13.5 (180#) FLANGE RATING: 150 RF TEMPERATURE RANGE: 0 / 50 C COMMENT:</div>						
510														
520														
530						*****PIPE FLANGES*****								
540														
550			LJS	5905493	1 - 24	FLANGE ADAPT. HDPE SDR 13.5 (180 PSI) PE100	CPChem							
560		FU6	LJSCHM	5905498	3 - 24	FLANGE ADAPT. HDPE SDR 13.5 (180 PSI) CHAMF 45 DEG PE 100								
570			SOF	5201111	1 - 24	BACK-UP FLG. ANSI CL 150# DRILL. CS F/ POLYETH. FLG. ADAPT.	CPChem							
580			SOFFS	5906120	1 - 24	BACK-UP FLG. 316L SS CL 150# DRILL. F/POLYETH. FLG. ADAPT.	CPChem							
590			BLF	5615476	3 - 24	FLG BLIND 150# RF STL A105								
600														
610						***** GASKETS *****								
620														
630			GAS	5669787	1 - 24	GASKET 150# PTFE 1/8" MET/NON-MET FLG FF	GARLOCK							
640			GAS	5669789	1 - 24	GASKET 150# PTFE 1/8" MET/NON-MET FLG RF								
650														
660						*****BOLTING*****								
670														
680			BOL	5675689	1/4 - 1 1/8	MACH BOLT 316 SS A193 GR B8M W/1 SEMI-FINISH HEAVY HEX. NUT								
690			BOLM	5675631	1/4 - 1 1/8	MACH BOLT CS A307 GR B W/1 SEMI-FINISH HEAVY HEX. NUT								
700			BOLSSS	5675690	1/2 - 1 1/8	STUD-BOLT 316SS A193 B8M-2 W/A194-8M NUT								
710			BOLS	5675658	1/2 - 1 1/8	STUD-BOLT GALV CHROME-MOLY A193 GRADE B7								
720														
730						*****FIRE HYDRANTS*****								
740														
750			HYD	5944610	4 - 6	HYDT FIRE DRY BARR.COMP TYPE CI FF UL/FM								
760			MON	5707876	4 - 6	MONITOR 150# FF BASE BRASS W/FOG NOZZLE								
761	1		MONTOR	5707876	4 - 6	MONITOR 150# FF BASE BRASS W/FOG NOZZLE								
770			CAB	5963600	1 1/2 - 1 1/2	CABINET FIRE HOSE & EXTINGUISHER SURFACE MOUNTED FNPT								
780			HHO	5943773	2 1/2 - 2 1/2	HOSE HOUSE COMPONENTS LEG SUPPORTED FOR FIRE HYDRANT								
			Sulphide Leach Project Fluor Chile - Minera Escondida 53232500 Antofagasta		CONSTRUCTION		Sulphide Leach Project							
					BUTT FUSED		CORR. ALLOW. 0 IN	DATE 14OCT04	BY ECQ	REV 1	SHEET 2 OF 2	PA 5	CLASS PEFP53	



SEQ NO.	REV	NOTE NO.	ITEM NAME	ITEM CODE	SIZE RANGE / SMALL END SIZES	DESCRIPTION	REFERENCE / LARGE END SIZES	NOTES						
10		VA9				***** VALVES *****		NR3 SIZES IN SMALL END SIZES COLUMN ARE BRANCH SIZE OF SADDLES. SIZES IN LARGE END SIZES COLUMN ARE RUN PIPE SIZE OF SADDLES. VA9 USE VALVES OF MATERIAL CLASS SMPCC01.						
20			BTF	5309238S	10 - 24	BU-38: BUTTERFLY HP ECC DISC CL150# 254 SMO F LUG GO	KEYSTONE #362S							
30			BTF	5306825	3 - 6	BU-16: BUTTERFLY WAFER CI/316SS VITON ST 125# LEVER	KEYSTONE #100							
40			BTFLUG	5309238SX	10 - 24	BU-38X: BUTTERFLY HP ECC DISC CL150# 254 SMO F LUG GO W/EXTENSION STEM	KEYSTONE #362S							
50						BU-38P: BUTTERFLY HP ECC DISC CL150# 254 SMO F LUG PNEU								
60			BTF	5309238SP	26 - 60	BU-39: BUTTERFLY HP ECC DISC 150# 254 SMO MSS FLUG GO	FLOW SEAL							
70			BTFLUG	5309239S	26 - 60	BU-39H: BUTTERFLY HP ECC DISC 150 254 SMO MSS FLUG	FLOW SEAL							
80			BTFLUH	5309239H	36 - 42	HYDR. OP.								
90			BTFLHP	5309239L	48 - 60	BU-39L: BUTTERFLY HP ECC DISC CL150 254 SMO MSS FLUG GO W/LIMIT SWITCH	DEZURIK							
100			BTFLHM	5309239LHM	48 - 60	BU-39LHM: BUTTERFLY HP ECC DISC CL150 254 SMO MSS FLUG HYDR-MANUAL W/LIMIT SWITCH	DEZURIK							
110						***** HYDRAULIC UNITS *****								
120														
130			HYD	5-BU39H-HYD	<No Size> - <No	HYDRAULIC UNIT TO BU-39H BUTTERFLY VALVE (IC=5309239H)								
140						***** PIPE *****								
150														
160														
161														
180			PIP	5905008	2 - 60	PIPE SDR 32.5 HDPE D-3035 PE3408	KWH							
190						*****FITTINGS*****								
200														
201														
202														
205			ELL	5905573	2 - 8	ELL 90 DEG MOLDED HDPE SDR 32.5 D-3035 PE3408	KWH							
210			ELLBW	5905047	10 - 60	ELL 90 DEG FAB HDPE SDR 32.5 D-3035 PE3408	KWH							
220	1		ELL60	5905020	10 - 60	ELL 60 DEG FAB HDPE SDR 32.5 D-3035 PE3408	KWH							
221														
225			45E	5905437	2 - 8	ELL 45 MOLDED HDPE SDR 32.5 D-3035 PE3408	KWH							
230			ELL	5905051	10 - 60	ELL 45 FAB HDPE SDR 32.5 D-3035 PE3408	KWH							
231														
240			CAP	5905059	10 - 60	CAP FAB HDPE SDR 32.5 D3035 PE3408	KWH							
241														
250			TEERED	5905052	10 - 54	TEE RED FAB HDPE SDR 32.5 D3035 PE3408	12 - 60							
251														
260			TEEBW	5905344	10 - 60	TEE FAB HDPE SDR 32.5 PE 3408 D-3261	KWH							
261														
270	1		REDCHD	5805052	10 - 54	RED CONC FAB HDPE SDR 32.5 D3035 PE3408	12 - 60							
271														
280	1		REDEHD	5806052	10 - 54	RED ECC FAB HDPE SDR 32.5 D3035 PE3408	12 - 60							
281														
290			LAT45	5441250	10 - 54	LATERAL RED 45 DEG FAB SDR 32.5 D3261 PE3408	12 - 60							
291														
300														
310						*****FLANGES*****								
320														
321														
330	1		SOF	5201111L	2 - 24	BACK-UP FLG. ANSI CL 150 DRILL. CS A216-WCB HOT DIPPED HDPE LINING	KWH							
			Sulphide Leach Project Fluor Chile - Minera Escondida 53232500 Antofagasta			CONSTRUCTION	Sulphide Leach Project							
						BUTT FUSED	CORR. ALLOW. 0	DATE 14OCT04	BY ECQ	REV 1	SHEET 1 OF 2	PA 5	CLASS PEPC21	


SEQ NO.	REV	NOTE NO.	ITEM NAME	ITEM CODE	SIZE RANGE / SMALL END SIZES	DESCRIPTION	REFERENCE / LARGE END SIZES	NOTES					
340	1		SOF	5201115L	26 - 60	BACK-UP FLG. ANSI B16.47 CL 150 DRILL. CS A216-WCB HOT DIPPED HDPE LINING	KWH						
350			LJS	5905081	2 - 60	FLANGE ADAPTOR HDPE SDR 32.5	KWH						
360	1		BLF	5621000L	2 - 60	FLG BLIND B16.47 CL150 FF CS A105 HOT DIPPED HDPE LINING	KWH						
370													
380						***** GASKETS *****							
390													
400			GAS	5669792	2 - 60	GASKET 150# PTFE 1/8" MET/NON-MET MSS FF	GARLOCK						
410													
420						***** BOLTING *****							
430													
440			BOLSS	5675690	1/4 - 99	STUD-BOLT 316SS A193 B8M-2 W/A194-8M NUT							
450			BOL	5675689	1/4 - 99	MACH BOLT 316 SS A193 GR B8M W/1 SEMI-FINISH HEAVY HEX. NUT							
460													
470													
480													
490			SPE	5749496	2 - 60	SPECTACLE BLIND CL 150# RF CS A515 GR 70							
								SERVICE					
								PREGNANT LEACH SOLUTION.: PLS GRAVITY RAFFINATE : R LOW GRADE SOLUTION : LGS					
								MATERIAL: HDPE DR 32.5 (50#) FLANGE RATING: 150 FF TEMPERATURE RANGE: 0 / 50 C COMMENT:					
			Sulphide Leach Project Fluor Chile - Minera Escondida 53232500 Antofagasta			CONSTRUCTION		Sulphide Leach Project					
						BUTT FUSED		CORR. ALLOW. 0	DATE 14OCT04	BY ECQ	REV 1	SHEET 2 OF 2	PA 5


SEQ NO.	REV	NOTE NO.	ITEM NAME	ITEM CODE	SIZE RANGE / SMALL END SIZES	DESCRIPTION	REFERENCE / LARGE END SIZES	NOTES						
10						*****VALVE*****		FU4 USE WITH E=1/8" HDPE BLIND FLANGE BETWEEN S.O FLG AND C.S. BLIND FLG. FU6 USE WHEN BOLTING TO BUTTERFLY VALVES VU1 USE THIS VALVE FOR PRESSURE INSTRUMENT CONNECTIONS, VENTS AND DRAINS.						
20														
30														
40		VU1	BALFLG	5309468	1/2 - 2	BA-20: BALL CL 300# RF 316 SS/RTFE, HDLE OP	MCCANNA #N30156							
50			B-26S	5308755S	2 - 6	BU-04: BUTTERFLY HP CL300# 254 SMO TRIM LUG LO	XOMOX							
60			B-27S	5308756S	8 - 24	BU-05: BUTTERFLY HP CL 300# 254 SMO TRIM GO LUG	XOMOX							
80			V-13S	5001496S	2 - 6	VE-11: AIR/VAC VALVE 300# RF 254 SMO								
90						*****PIPE*****								
100														
110														
120			PIP	5713410	2 - 24	PIPE HDPE SDR 9 (290 PSI) PE 100	DRISCOPLEX 8900	CPCChem						
130						*****FITTINGS*****								
140														
150														
160			ELL	5905325	2 - 24	ELL 90 DEG FAB HDPE SDR 9 (290 PSI) PE 100								
170			60L	5905330	2 - 24	ELL 60 DEG FAB HDPE SDR 9 (290 PSI) PE 100								
180			45L	5905335	2 - 24	ELL 45 DEG FAB HDPE SDR 9 (290 PSI) PE 100								
190			30L	5905340	2 - 24	ELL 30 DEG FAB HDPE SDR 9 (290 PSI) PE 100								
191			22L	5905345	2 - 24	ELL 22.5 DEG FAB HDPE SDR 9 (290 PSI) PE 100								
200			TEEFPE	5905347	2 - 24	TEE FAB HDPE SDR 9 (290 PSI) PE 100								
210			TEERFH	5905357	2 - 24	TEE RED FAB HDPE SDR 9 (290 PSI) PE 100		CPCChem						
220			REDBF	5905367	2 - 24	RED CONC FAB HDPE SDR 9 (290 PSI) PE 100								
221			REDEFH	5441117	2 - 24	RED ECC FAB HDPE SDR 9 (290 PSI) PE 100								
230			CAP	5905377	2 - 24	CAP FAB HDPE SDR 9 (290 PSI) PE 100								
240			LAT45H	5905387	4 - 24	LATERAL 45 DEG FAB HDPE SDR 9 (290 PSI) PE 100								
250						*****BRANCHES*****								
260														
270														
280			SDL	5712616	1/2 - 2 1/2	SERVICE SADDLE HDPE PIPE X SCR SCH 80 CS								
290			SDLSCR	5712614	1/2 - 2 1/2	SERVICE SADDLE HDPE PIPE X SCR SCH 80 SS							CPCChem	
300			SDLSCH	5712620	1/2 - 2 1/2	SERVICE SADDLE HDPE PIPE/SCRW HDPE								
310						*****PIPE FLANGES*****								
320														
330														
340		FU6	LJS	5905397	2 - 24	FLANGE ADAPT. HDPE SDR 9 (290 PSI) CHAMF PE 100	CPCChem							
350			LJS73	5905407	2 - 24	FLANGE ADAPT. HDPE SDR 9 (290 PSI) PE 100								
360			SOFFF	5201112	2 - 24	BACK-UP FLG. ANSI CL 300# DRILL. CS F/ POLYETH. FLG. ADAPT.	CPCChem							
361	1		SOF	5201112L	2 - 24	BACK-UP FLG. ANSI B16.5 CL 300 DRILL. CS A216-WCB HOT DIPPED HDPE LINING	KWH							
370			BLF	5616448	2 - 8	FLG BLIND 300# RF 316L SS A182		FU4						
380			BLF	5615497	10 - 24	FLG BLIND 300# RF FORGED CARBON STEEL A105								
391						***** GASKETS *****								
400														
410														
420			GAS	5669795	1/2 - 24	GASKET 300# PTFE 1/8" MET/NON-MET FLG RF								
430														
440														
450														
460														
470														
			Sulphide Leach Project Fluor Chile - Minera Escondida 53232500 Antofagasta			CONSTRUCTION	Sulphide Leach Project							
						BUTT FUSED	CORR. ALLOW. 0 IN	DATE 14SEP04	BY ECQ	REV 1	SHEET 1 OF 2	PA 5	CLASS PEPC51	

SEQ NO.	REV	NOTE NO.	ITEM NAME	ITEM CODE	SIZE RANGE / SMALL END SIZES	DESCRIPTION	REFERENCE / LARGE END SIZES	NOTES					
480 490 500 510 520 530 540 560			BOL  BOLS	5675689  5675690	1/4 - 1 1/8  1/2 - 1 1/8	*****BOLTING*****  MACH BOLT 316 SS A193 GR B8M W/1 SEMI-FINISH HEAVY HEX. NUT STUD-BOLT 316SS A193 B8M-2 W/A194-8M NUT							
								SERVICE					
								RAFFINATE : R					
								MATERIAL: HDPE SDR 9 (290#) FLANGE RATING: 300 RF TEMPERATURE RANGE: 0 / 50 C COMMENT:					
			Sulphide Leach Project Fluor Chile - Minera Escondida 53232500 Antofagasta			CONSTRUCTION		Sulphide Leach Project					
						BUTT FUSED		CORR. ALLOW. 0 IN	DATE 14SEP04	BY ECQ	REV 1	SHEET 2 OF 2	PA 5







SEQ NO.	REV	NOTE NO.	ITEM NAME	ITEM CODE	SIZE RANGE / SMALL END SIZES	DESCRIPTION	REFERENCE / LARGE END SIZES	NOTES						
10						*****VALVE*****		FU4 USE WITH E=1/8" HDPE BLIND FLANGE BETWEEN S.O FLG AND C.S. BLIND FLG. FU6 USE WHEN BOLTING TO BUTTERFLY VALVES NH1 SIZES FOR FULL SIZE TEES ONLY. NR3 SIZES IN SMALL END SIZES COLUMN ARE BRANCH SIZE OF SADDLES. SIZES IN LARGE END SIZES COLUMN ARE RUN PIPE SIZE OF SADDLES. VA5 FOR FW AND DW SERVICES USE VALVES OF MATERIAL CLASS PEAW58. VF1 FOR PLS,ILS,RAFFINATE AND CRUD USE VALVES OF MATERIAL CLASS SMPC01 OR SMPC03. VF9 USE THIS VALVE ONLY IN RAFFINATE, PLS, ILS OR CRUD. THESE VALVES HAVE INTEGRAL FLANGE SEALS. DO NOT USE GASKET VU1 USE THIS VALVE FOR PRESSURE INSTRUMENT CONNECTIONS, VENTS AND DRAINS.						
20		VF1												
30		VA5												
40			BAL	5114960	1/2 - 4	BA-04: BALL 150# FF PVC/TEFLON SEAT/VITON SEAL LO	CHEMTROL TU							
50			BALSCR	5058830	1/2 - 2	BA-05: BALL BAR STOCK CS/TFE FNPT 500# WOG SWP	NIBCO							
60		VU1	BALF	5300960	1/2 - 3	BA-15: BALL CL 150# FF 316 BODY & TRIM HDLE OP	NIBCO F510							
70			BALS	5058894	1/2 - 2	BA-01: BALL 600# WOG SCRD 316 SS/RTFE, HNDL OP	NIBCO T570CSR66							
80			BALSW	5303902	1/2 - 2	BA-10: BALL CL 150# SW 254 SMO ASTM S31254	COOPER							
90			BTFLUG	5309236	3 - 6	BU-07: BUTTERFLY HP ECC DISC CL 150# 316SS, F LUG LO	KEYSTONE #362S							
100			BTF	5309238	8 - 24	BU-01: BUTTERFLY HP ECC DISC CL 150# 316SS F LUG GO	KEYSTONE #362S							
110			BTFLUG	5309218	26 - 36	BU-18: BUTTERFLY HP ECC DISC CL 150# 316SS MSS FLUG GO	FLOW SEAL							
120		VF9	BTFSL	5308751S	2 - 6	BU-14: BUTTERFLY SEMI-LUG CL 150# 254 SMO LO	KEYSTONE							
130		VF9	B-21S	5308750S	8 - 24	BU-02: BUTTERFLY FULL LUG CLASS 150# 254 SMO GO	KEYSTONE							
140		VF9	B-30S	5308753S	26 - 48	BU-17: BUTTERFLY FULL LUG 150# 254 SMO MSS-SP 44 GO	KEYSTONE							
150			BTF	5309239S	26 - 60	BU-39: BUTTERFLY HP ECC DISC 150# 254 SMO MSS FLUG GO	FLOW SEAL							
160			BTFLUF	5309239H	36 - 42	BU-39H: BUTTERFLY HP ECC DISC 150 254 SMO MSS FLUG HYDR. OP.	FLOW SEAL							
170			BTFHML	5309239HM	36 - 36	BU-39HM: BUTTERFLY HP ECC DISC CL 150 254 SMO MSS FLUG HYDR-MANUAL OP.	FLOW SEAL							
180			BTFLU	5309239L	38 - 60	BU-39L: BUTTERFLY HP ECC DISC CL150 254 SMO MSS FLUG GO W/LIMIT SWITCH	DEZURIK							
190		VF9	CHEWAF	5291170	2 - 36	CH-02: CHECK 150# WAFER 254 SMO EXT SPRING & WT	KEYSTONE #815							
200			CHE	5290394	3 - 6	CH-37: CHECK 150# RF 316 SS WAFER-TYPE	DUO-CHECK							
210			CHEWF	5291172	8 - 36	CH-01: CHECK 150# WAFER 316SS EXT SPRING & WT	KEYSTONE #815							
211			GATBOX	5153435	4 - 24	GA-05: GATE CL 125 FF CI/BR, NRS, C/W VALVE BOX								
230			ARV	5001500	2 - 6	VE-05: AIR/VACUUM VALVE CL150# FF 316 SS/VITON	APCO							
240			ARVFLG	5001600	2 - 6	VE-06: AIR/VACUUM VALVE CL150# FF 254 SMO TEFLON	APCO							
250						***** VALVES FOR FIRE PROTECTION SYSTEM *****								
260														
270														
280			GAT	5156020	4 - 24	GA-21: GATE 175# CWP FF INSIDE STEM IBBT F/IND POST	KENNEDY #701X							
290			BTFHM	5308128HM	30 - 36	BU-31HM: BUTTERFLY CL150 DI BUNA-N LIN LUG UL/FM HYDR-MANUAL OP	DEMCO #NF-H							
300						*****PIPE*****								
310														
320														
330			PIP	5713405	1/2 - 36	PIPE HDPE SDR 17 (145 PSI) PE 100	DRISCOPLEX 8900							
340						***** FITTINGS SDR 17 *****								
350		NR3												
360														
370			90L	5905300	2 - 8	ELL 90 DEG MOLDED HDPE SDR 17 (145 PSI) PE 100	CPChem							
380			60L	5905310	2 - 8	ELL 60 DEG MOLDED HDPE SDR 17 (145 PSI) PE 100	CPChem							
390			45L	5905320	2 - 8	ELL 45 DEG MOLDED HDPE SDR 17 (145 PSI) PE 100	CPChem							
400			30L	5905331	2 - 8	ELL 30 DEG MOLDED HDPE SDR 17 (145 PSI) PE 100	CPChem							
410			22L	5905341	2 - 8	ELL 22.5 DEG MOLDED HDPE SDR 17 (145 PSI) PE 100	CPChem							
420			TEE	5905350	2 - 8	TEE MOLDED HDPE SDR 17 (145 PSI) PE 100	CPChem							
430			TER	5905360	1 1/2 - 6	TEE RED MOLDED HDPE SDR 17 (145 PSI) PE 100	3 - 8							
440			CAP	5905370	2 - 8	CAP MOLDED HDPE SDR 17 (145 PSI) PE 100	CPChem							
450			REDCBF	5905380	2 - 3	RED CONC MOLDED HDPE SDR 17 (145 PSI) PE 100	2 1/2 - 8							
460			RED	5905390	2 - 3	RED ECC MOLDED HDPE SDR 17 (145 PSI) PE 100	2 1/2 - 8							
470			LAT	5905795	2 - 8	LATERAL 45 DEG MOLDED HDPE SDR 17 (145 PSI) PE 100	2 - 8							
			Sulphide Leach Project Fluor Chile - Minera Escondida 53232500 Antofagasta			CONSTRUCTION								
						BUTT FUSED	CORR. ALLOW. 0 IN	DATE 14OCT04	BY ECQ	REV 1	SHEET 1 OF 3	PA 5	CLASS PEPC55	


SEQ NO.	REV	NOTE NO.	ITEM NAME	ITEM CODE	SIZE RANGE / SMALL END SIZES	DESCRIPTION	REFERENCE / LARGE END SIZES	NOTES					
480			SAD	5905195	2 - 10	BRANCH SADDLE MOLDED HDPE SDR 17 (145 PSI) PE 100	3 - 12						
490													
500			90LFPE	5905500	10 - 36	ELL 90 DEG FAB HDPE SDR 17 (145 PSI) PE 100	CPChem						
510			60LFPE	5905505	10 - 36	ELL 60 DEG FAB HDPE SDR 17 (145 PSI) PE 100	CPChem						
520			45LFPE	5905510	10 - 36	ELL 45 DEG FAB HDPE SDR 17 (145 PSI) PE 100	CPChem						
530			30LFPE	5905515	10 - 36	ELL 30 DEG FAB HDPE SDR 17 (145 PSI) PE 100	CPChem						
540			22LFPE	5905520	10 - 36	ELL 22.5 DEG FAB HDPE SDR 17 (145 PSI) PE 100	CPChem						
550			TEEFPE	5905555	10 - 36	TEE FAB HDPE SDR 17 (145 PSI) PE 100	CPChem						
560		NH1	TEERBF	5905560	10 - 32	TEE RED FAB SDR 17 (145 PSI) PE 100	12 - 36						
570			CAP	5905385	10 - 36	CAP FAB HDPE SDR 17 (145 PSI) PE 100	CPChem						
580			REDCBF	5905565	10 - 32	RED CONC FAB SDR 17 (145 PSI) PE 100	12 - 36						
590			REDEBF	5905570	10 - 36	RED ECC FAB SDR 17 (145 PSI) PE 100	12 - 42						
600			LAT	5905580	10 - 32	LATERAL 45 DEG FAB HDPE SDR 17 (145 PSI) PE 100	12 - 36						
610													
620						*****BRANCHES*****							
630													
640			SDLSS	5712614	1/2 - 2 1/2	SERVICE SADDLE HDPE PIPE X SCR SCH 80 SS	3/4 - 12						
650			SDLSCR	5712618	1/2 - 2 1/2	SERVICE SADDLE HDPE SDR 11 PIPE/SCRW HDPE	3/4 - 12						
660													
670						*****PIPE FLANGES*****							
680													
690													
700			LJS	5905495	2 - 60	FLANGE ADAPT. HDPE SDR 17 (145 PSI) PE100	CPChem						
710		FU6	LJSCHM	5905499	2 - 60	FLANGE ADAPT. HDPE SDR 17 (145 PSI) CHAMF 45 DEG PE 100	CPChem						
720			SOF	5201111	2 - 24	BACK-UP FLG. ANSI CL 150# DRILL. CS F/ POLYETH. FLG. ADAPT.	CPChem						
730			SOFFFM	5906111	26 - 60	BACK-UP FLG. CS CL 150# DRILL. MSS-SP44 F/POLYETH. FLG. ADAPT.	CPChem						
740			SOFFS	5906120	2 - 24	BACK-UP FLG. 316L SS CL 150# DRILL. F/POLYETH. FLG. ADAPT.	CPChem						
750			SOFFSS	5906121	26 - 60	BACK-UP FLG. 316L SS CL 150# DRILL. MSS-SP44 F/POLYETH. FLG. ADAPT.	CPChem						
760			BLF	5598520	1/2 - 8	FLG BLIND 150# FF 316 SS A182	KWH						
770		FU4	BLFFF	5615477	10 - 60	FLG BLIND 150# FF CS A105	KWH						
780		FU4	BLFMSS	5621000	26 - 60	FLG BLIND MSS 150# FF STL A105	KWH						
790													
800						***** GASKETS *****							
810													
820			GASFF	5669787	1/2 - 60	GASKET 150# PTFE 1/8" MET/NON-MET FLG FF	GARLOCK						
830			GASRF	5669792	26 - 60	GASKET 150# PTFE 1/8" MET/NON-MET MSS FF	GARLOCK						
840													
850						*****BOLTING*****							
860													
870			BOLSSS	5675690	1/4 - 1 7/8	STUD-BOLT 316SS A193 B8M-2 W/A194-8M NUT							
880			BOLMS	5675689	1/2 - 1 7/8	MACH BOLT 316 SS A193 GR B8M W/1 SEMI-FINISH HEAVY HEX. NUT							
890													
900						***** DRIP IRRIGATION *****							
910													
920			TTAPE	5860000	3/8 - 1 3/4	DRIP TAPE HEAVY DUTY WITH DUAL TURBULENT FLOW TRACK EMITTER	T-TAPE						
930			TTA	5860010	5/8 - 5/8	ADAPTER THREAD 3/4" MNPT X 5/8" SLEEVE FOR JOINT DRIP TAPE FLOW TRACK EMITTER	3/4 - 3/4						
			Sulphide Leach Project Fluor Chile - Minera Escondida 53232500 Antofagasta			CONSTRUCTION	Sulphide Leach Project						
						BUTT FUSED	CORR. ALLOW. 0 IN	DATE 14OCT04	BY ECQ	REV 1	SHEET 2 OF 3	PA 5	CLASS PEPC55




SEQ NO.	REV	NOTE NO.	ITEM NAME	ITEM CODE	SIZE RANGE / SMALL END SIZES	DESCRIPTION	REFERENCE / LARGE END SIZES	NOTES						
940 950 960 970 980			ISM ISC	5ISMW 5ISCAS	2 - 20 2 - 20	***** THERMAL INSULATION *****  MINERAL WOOL THERMAL INSULATION CALCIUM SILICATE THERMAL INSULATION								
								SERVICE						
								RICH ELECTROLYTE: RE    DEMINER. WATER : RO LEAN ELECTROLYTE: LE    EXTRACT                : LIX RAFFINATE                : R    COBALT SULF                : CS LOADED ORGANIC        : LK    GUAR                        : GU BARREN ORGANIC        : BK    FRESH WATER               : FW SANITARY SEWER        : SS PREG. LEACH SOL.       : PLS CRUD                        : CR DRAIN                        : SD    POTABLE WATER : DW UNDERGROUND FIRE WATER: FD						
								MATERIAL:                HDPE SDR 17 (145#) FLANGE RATING:           150        FF TEMPERATURE RANGE:       0       /       50       C COMMENT:						
			Sulphide Leach Project Fluor Chile - Minera Escondida 53232500 Antofagasta			CONSTRUCTION		Sulphide Leach Project						
						BUTT FUSED		CORR. ALLOW. 0 IN	DATE 14OCT04	BY ECQ	REV 1	SHEET 3 OF 3	PA 5	CLASS PEPC55


SEQ NO.	REV	NOTE NO.	ITEM NAME	ITEM CODE	SIZE RANGE / SMALL END SIZES	DESCRIPTION	REFERENCE / LARGE END SIZES	NOTES					
10						*****VALVE*****							
20		VF1						FU4 USE WITH E=1/8" HDPE BLIND FLANGE BETWEEN S.O FLG AND C.S. BLIND FLG.					
30		VA5						FU6 USE WHEN BOLTING TO BUTTERFLY VALVES					
40		VU1	BALFLG	5300960	1/2 - 3	BA-15: BALL CL 150# FF 316 BODY & TRIM HDLE OP	NIBCO F510	NH1 SIZES FOR FULL SIZE TEES ONLY.					
41			BAL	5058894	1/2 - 2	BA-01: BALL 600# WOG SCRD 316 SS/RTFE, HNDL OP	NIBCO T570CSR66	NR3 SIZES IN SMALL END SIZES COLUMN ARE BRANCH SIZE OF SADDLES. SIZES IN LARGE END SIZES COLUMN ARE RUN PIPE SIZE OF SADDLES.					
50			BTF	5309236	3 - 6	BU-07: BUTTERFLY HP ECC DISC CL 150# 316SS, F LUG LO	KEYSTONE #362S	VA5 FOR FW AND DW SERVICES USE VALVES OF MATERIAL CLASS PEAW58.					
60			BTF	5309238	8 - 24	BU-01: BUTTERFLY HP ECC DISC CL 150# 316SS F LUG GO	KEYSTONE #362S	VF1 FOR PLS,ILS,RAFFINATE AND CRUD USE VALVES OF MATERIAL CLASS SMP01 OR SMP03.					
70			BTF	5309218	26 - 36	BU-18: BUTTERFLY HP ECC DISC CL 150# 316SS MSS FLUG GO	FLOW SEAL	VF9 USE THIS VALVE ONLY IN RAFFINATE, PLS, ILS OR CRUD. THESE VALVES HAVE INTEGRAL FLANGE SEALS. DO NOT USE GASKET					
110		VF9	B-22S	5308751S	2 - 6	BU-14: BUTTERFLY SEMI-LUG CL 150# 254 SMO LO	KEYSTONE	VU1 USE THIS VALVE FOR PRESSURE INSTRUMENT CONNECTIONS, VENTS AND DRAINS.					
120		VF9	B-21S	5308750S	8 - 24	BU-02: BUTTERFLY FULL LUG CLASS 150# 254 SMO GO	KEYSTONE						
130		VF9	B-30S	5308753S	26 - 48	BU-17: BUTTERFLY FULL LUG 150# 254 SMO MSS-SP 44 GO	KEYSTONE						
140		VF9	CHE	5291170	2 - 12	CH-02: CHECK 150# WAFER 254 SMO EXT SPRING & WT	KEYSTONE #815						
150			CHEWAF	5290394	3 - 6	CH-37: CHECK 150# RF 316 SS WAFER-TYPE	DUO-CHECK						
160			CHEWAF	5291172	8 - 36	CH-01: CHECK 150# WAFER 316SS EXT SPRING & WT	KEYSTONE #815						
170			ARV	5001500	2 - 6	VE-05: AIR/VACUUM VALVE CL150# FF 316 SS/VITON	APCO						
180			ARVFLG	5001600	2 - 6	VE-06: AIR/VACUUM VALVE CL150# FF 254 SMO TEFLON	APCO						
190						*****PIPE*****							
200													
210													
220			PIP	5713405	2 - 48	PIPE HDPE SDR 17 (145 PSI) PE 100	DRISCOPLEX 8900						
230						*****FITTINGS*****							
240		NR3											
250													
260			90L	5905300	2 - 8	ELL 90 DEG MOLDED HDPE SDR 17 (145 PSI) PE 100	CPChem						
261			60L	5905310	2 - 8	ELL 60 DEG MOLDED HDPE SDR 17 (145 PSI) PE 100	CPChem						
270			45L	5905320	2 - 8	ELL 45 DEG MOLDED HDPE SDR 17 (145 PSI) PE 100	CPChem						
280			30L	5905331	2 - 8	ELL 30 DEG MOLDED HDPE SDR 17 (145 PSI) PE 100	CPChem						
290			22L	5905341	2 - 8	ELL 22.5 DEG MOLDED HDPE SDR 17 (145 PSI) PE 100	CPChem						
291			TEE	5905350	2 - 8	TEE MOLDED HDPE SDR 17 (145 PSI) PE 100	CPChem						
292			TER	5905360	2 - 8	TEE RED MOLDED HDPE SDR 17 (145 PSI) PE 100	CPChem						
300			CAP	5905370	2 - 8	CAP MOLDED HDPE SDR 17 (145 PSI) PE 100	CPChem						
310			REDCBW	5905380	2 - 8	RED CONC MOLDED HDPE SDR 17 (145 PSI) PE 100	CPChem						
311			REDEBW	5905390	2 - 8	RED ECC MOLDED HDPE SDR 17 (145 PSI) PE 100	CPChem						
320			LATMPE	5905395	2 - 8	LATERAL 45 DEG SCH 80 SOCKET ENDS FAB PVC	CPChem						
330			BRASAD	5905195	2 - 8	BRANCH SADDLE MOLDED HDPE SDR 17 (145 PSI) PE 100	CPChem						
331			TEESAD	5905290	2 - 8	SERVICE SADDLE MOLDED HDPE SDR 17 (145 PSI) PE 100	CPChem						
340								SERVICE					
350			90LFPE	5905500	10 - 48	ELL 90 DEG FAB HDPE SDR 17 (145 PSI) PE 100	CPChem	RAFFINATE : R POTABLE WATER : DW					
351			60LFPE	5905505	10 - 48	ELL 60 DEG FAB HDPE SDR 17 (145 PSI) PE 100	CPChem	COBALT SULF : CS DEMIN WATER : RO					
360			45LFPE	5905510	10 - 48	ELL 45 DEG FAB HDPE SDR 17 (145 PSI) PE 100	CPChem	GUAR : GU FRESH WATER : FW					
380			30LFPE	5905515	10 - 48	ELL 30 DEG FAB HDPE SDR 17 (145 PSI) PE 100	CPChem						
390			22LFPE	5905520	10 - 48	ELL 22.5 DEG FAB HDPE SDR 17 (145 PSI) PE 100	CPChem	CRUD : CR EXTRACT : LIX					
400			TEEFPE	5905555	10 - 48	TEE FAB HDPE SDR 17 (145 PSI) PE 100	CPChem	DRAIN : SD POTABLE WATER : DW					
410		NH1	TEERBF	5905560	10 - 48	TEE RED FAB SDR 17 (145 PSI) PE 100	CPChem						
420			TEE	5905565	10 - 48	RED CONC FAB SDR 17 (145 PSI) PE 100	CPChem						
421			RED	5905570	10 - 48	RED ECC FAB SDR 17 (145 PSI) PE 100	CPChem						
430			LAT	5905795	10 - 48	LATERAL 45 DEG MOLDED HDPE SDR 17 (145 PSI) PE 100	CPChem						
440													
441													
442													
			Sulphide Leach Project Fluor Chile - Minera Escondida 53232500 Antofagasta			CONSTRUCTION	Sulphide Leach Project						
						BUTT FUSED	CORR. ALLOW. 0 IN	DATE 14OCT04	BY ECQ	REV 1	SHEET 1 OF 2	PA 5	CLASS PEPV55

SEQ NO.	REV	NOTE NO.	ITEM NAME	ITEM CODE	SIZE RANGE / SMALL END SIZES	DESCRIPTION	REFERENCE / LARGE END SIZES	NOTES					
443						*****BRANCHES*****		<div>SERVICE</div> <div>RAFFINATE : R      POTABLE WATER : DW COBALT SULF : CS      DEMIN WATER : RO GUAR : GU FRESH WATER : FW</div> <div>CRUD : CR      EXTRACT : LIX DRAIN : SD      POTABLE WATER : DW</div> <div>MATERIAL: HDPE SDR 17 (145#) FLANGE RATING: 150 FF TEMPERATURE RANGE: 0 / 50 C COMMENT:</div>					
450													
460													
461			SDL	5712616	1/2 - 2 1/2	SERVICE SADDLE HDPE PIPE X SCR SCH 80 CS							
480			SDLSS	5712614	1/2 - 2 1/2	SERVICE SADDLE HDPE PIPE X SCR SCH 80 SS	CPChem						
490			SDLSCR	5712618	1/2 - 2 1/2	SERVICE SADDLE HDPE SDR 11 PIPE/SCRW HDPE	CPChem						
500													
510													
520						*****PIPE FLANGES*****							
530													
540			LJS	5905495	2 - 48	FLANGE ADAPT. HDPE SDR 17 (145 PSI) PE100	CPChem						
550			LJSCHM	5905499	2 - 48	FLANGE ADAPT. HDPE SDR 17 (145 PSI) CHAMF 45 DEG PE 100	CPChem						
560			SOF	5201111	2 - 24	BACK-UP FLG. ANSI CL 150# DRILL. CS F/ POLYETH. FLG. ADAPT.	CPChem						
570			SOFFFM	5906111	26 - 48	BACK-UP FLG. CS CL 150# DRILL. MSS-SP44 F/POLYETH. FLG. ADAPT.	CPChem						
580			SOFFS	5906120	2 - 24	BACK-UP FLG. 316L SS CL 150# DRILL. F/POLYETH. FLG. ADAPT.	CPChem						
590			SOFFS	5906121	26 - 48	BACK-UP FLG. 316L SS CL 150# DRILL. MSS-SP44 F/POLYETH. FLG. ADAPT.	CPChem						
600			BLF	5598520	1/2 - 8	FLG BLIND 150# FF 316 SS A182	KWH						
610			BLFFF	5615477	10 - 24	FLG BLIND 150# FF CS A105	KWH						
620			BLFMSS	5621000	26 - 48	FLG BLIND MSS 150# FF STL A105	KWH						
630													
640						***** GASKETS *****							
650													
660			GASFF	5669787	1/2 - 48	GASKET 150# PTFE 1/8" MET/NON-MET FLG FF	GARLOCK						
670			GASRF	5669792	26 - 48	GASKET 150# PTFE 1/8" MET/NON-MET MSS FF	GARLOCK						
680													
690						*****BOLTING*****							
700													
710			BOLS	5675648	1/4 - 1 1/8	STUD-BOLT CHROME-MOLY ALLOY A193 GR B7 W/CS A194 GR 2H NUTS							
720			BOLSSS	5675690	1/4 - 1 1/8	STUD-BOLT 316SS A193 B8M-2 W/A194-8M NUT							
730			BOLM	5675631	1/2 - 1 1/8	MACH BOLT CS A307 GR B W/1 SEMI-FINISH HEAVY HEX. NUT							
740			BOLMS	5675689	1/2 - 1 1/8	MACH BOLT 316 SS A193 GR B8M W/1 SEMI-FINISH HEAVY HEX. NUT							
			Sulphide Leach Project Fluor Chile - Minera Escondida 53232500 Antofagasta			CONSTRUCTION	Sulphide Leach Project						
						BUTT FUSED	CORR. ALLOW. 0 IN	DATE 14OCT04	BY ECQ	REV 1	SHEET 2 OF 2	PA 5	CLASS PEPV55

SEQ NO.	REV	NOTE NO.	ITEM NAME	ITEM CODE	SIZE RANGE / SMALL END SIZES	DESCRIPTION	REFERENCE / LARGE END SIZES	NOTES						
10						*****PIPE*****		<div>SERVICE</div> <div>HEAP AIR : AI</div> <div>MATERIAL: COR.PERF. HDPE 17@50 FLANGE RATING: 150 FF TEMPERATURE RANGE: 0 / 50 C COMMENT:</div>						
20														
30														
40			PIP	5800101A	4 - 60	PIPE CORRUGATED PERFORATED HDPE WITH PROTECTION BLANKET. FIRST SECTION	ADS							
41			PIPPE	5800101B	4 - 60	PIPE CORRUGATED PERFORATED HDPE WITH PROTECTION BLANKET. SECOND SECTION	ADS							
42			PIPCPE	5800101C	4 - 60	PIPE CORRUGATED PERFORATED HDPE WITH PROTECTION BLANKET. THIRD SECTION	ADS							
60						*****FITTINGS*****								
70														
80														
90			ELL	5850402	4 - 60	BEND 90 DEG FAB CORRUGATED SMOOTH INTERIOR HDPE D3350.	ADS							
100			45E	5850403	4 - 60	BEND 45 DEG FAB. CORRUGATED SMOOTH INTERIOR HDPE D3350.	ADS							
110			22E	5850401	4 - 60	BEND 22.5 DEG FAB. CORRUGATED SMOOTH INTERIOR HDPE D3350	ADS							
120			TEE	5850215	4 - 60	TEE STRAIGHT CORRUGATED BELL X BELL X BELL HDPE D-3350	ADS							
130			CAPSMT	5850404	4 - 60	CAP FABRICATED CORRUGATED SMOOTH INTERIOR HDPE D3350	ADS							
140			SAD	5850405	4 - 60	SADDLE TEE FAB CORRUGATED SMOOTH INTERIOR HDPE D3350	ADS							
160			COU	5850301	4 - 60	BELL COUPLER WITH WATER TIGHT HDPE D3350	ADS							
170			END	5850305	4 - 60	END CAP FOR BELL END CORRUGATED PIPE HDPE D3350	ADS							
171						*****PIPE FLANGES*****								
180														
190														
200			SOF	5906111	26 - 60	BACK-UP FLG. CS CL 150# DRILL. MSS-SP44 F/POLYETH. FLG. ADAPT.	CPChem							
210			SOF	5201111	2 1/2 - 24	BACK-UP FLG. ANSI CL 150# DRILL. CS F/ POLYETH. FLG. ADAPT.	CPChem							
220			LJS	5905081	2 1/2 - 60	FLANGE ADAPTOR HDPE SDR 32.5	KWH							
230						***** GASKETS *****								
240														
250														
260			GASFF	5669787	1/2 - 60	GASKET 150# PTFE 1/8" MET/NON-MET FLG FF	GARLOCK							
270			GASRF	5669792	24 - 60	GASKET 150# PTFE 1/8" MET/NON-MET MSS FF	GARLOCK							
280						*****BOLTING*****								
290														
300														
310			BOL	5675689	1/4 - 1 1/8	MACH BOLT 316 SS A193 GR B8M W/1 SEMI-FINISH HEAVY HEX. NUT								
320			BOLM	5675631	1/4 - 1 1/8	MACH BOLT CS A307 GR B W/1 SEMI-FINISH HEAVY HEX. NUT								
330			BOLS	5675690	1/2 - 1 1/8	STUD-BOLT 316SS A193 B8M-2 W/A194-8M NUT								
340			BOLSG	5675658	1/2 - 1 1/8	STUD-BOLT GALV CHROME-MOLY A193 GRADE B7								
			Sulphide Leach Project Fluor Chile - Minera Escondida 53232500 Antofagasta			CONSTRUCTION	Sulphide Leach Project							
						BUTT FUSED	CORR. ALLOW. 0 IN	DATE 14OCT04	BY ECQ	REV 1	SHEET 1 OF 1	PA 5	CLASS PFAW21	


SEQ NO.	REV	NOTE NO.	ITEM NAME	ITEM CODE	SIZE RANGE / SMALL END SIZES	DESCRIPTION	REFERENCE / LARGE END SIZES	NOTES						
10						*****VALVE*****		NH1 SIZES FOR FULL SIZE TEES ONLY. NR2 SIZES IN SMALL END SIZES COLUMN ARE BRANCH SIZE OF OLETS OR TEES. SIZES IN LARGE END SIZES COLUMN ARE RUN PIPE SIZE OF OLETS OR TEES. NR3 SIZES IN SMALL END SIZES COLUMN ARE BRANCH SIZE OF SADDLES. SIZES IN LARGE END SIZES COLUMN ARE RUN PIPE SIZE OF SADDLES. NR5 USE ONLY WITH SUPERVISOR AUTHORIZATION SIZES IN SMALL END SIZES COLUMN ARE BRANCH SIZE OF SADDLES. SIZES IN LARGE END SIZES COLUMN ARE RUN PIPE SIZE OF SADDLES. VF5 THESE BUTTERFLY VALVES HAVE INTEGRAL FLANGE SEALS. DO NOT USE GASKETS. VU1 USE THIS VALVE FOR PRESSURE INSTRUMENT CONNECTIONS, VENTS AND DRAINS.						
20														
30														
40		VU1	BALFLG	5303900	1/2 - 2	BA-08: BALL CL 150# RF 254 SMO ASTM S31254	COOPER 115RF							
50		VF5	B-30S	5308753S	26 - 48	BU-17: BUTTERFLY FULL LUG 150# 254 SMO MSS-SP 44 GO	KEYSTONE							
60		VF5	B-21S	5308750S	8 - 24	BU-02: BUTTERFLY FULL LUG CLASS 150# 254 SMO GO	KEYSTONE							
70		VF5	B-22S	5308751S	3 - 6	BU-14: BUTTERFLY SEMI-LUG CL 150# 254 SMO LO	KEYSTONE							
110						*****PIPE*****								
120														
130														
140			PIP	5800101	4 - 48	PIPE CORRUGATED PERF. HDPE D-3350 W/COUPLING	ADS							
157			PIPCPP	5800101D	4 - 48	PIPE CORRUGATED HDPE D-3350 W/COUPLING	ADS							
158			PIPCP6	5800105	3 - 6	PIPE CORRUGATED W/8 PERF. C/6M HDPE D-3350 BELL AND SPIGOT AND PROTECTION BLANKET.	ADS							
159		NR3				*****FITTINGS*****								
160														
170														
180			ELL	5850402	4 - 48	BEND 90 DEG FAB CORRUGATED SMOOTH INTERIOR HDPE D3350.	ADS							
190			45E	5850403	4 - 48	BEND 45 DEG FAB. CORRUGATED SMOOTH INTERIOR HDPE D3350.	ADS							
200			22E	5850401	4 - 48	BEND 22.5 DEG FAB. CORRUGATED SMOOTH INTERIOR HDPE D3350	ADS							
201			15E	5850400	4 - 48	BEND 15 DEG FAB. CORRUGATED SMOOTH INTERIOR HDPE D3350	ADS							
210			CAP	5850404	4 - 60	CAP FABRICATED CORRUGATED SMOOTH INTERIOR HDPE D3350	ADS							
220			NH1	TEE	5850201	4 - 48	TEE STRAIGHT CORRUGATED SMOOTH INTERIOR HDPE D3350.	ADS						
230				RED	5850406	4 - 46	REDUCER ECCENTRIC FAB CORRUGATED SMOOTH INTERIOR HDPE D3350	6 - 48						
240		NR2	TEERED	5850205	4 - 46	TEE RED FAB. CORRUGATED SMOOTH INTERIOR HDPE D3350	6 - 48							
250			WYE	5850208	4 - 48	WYE (LAT. 45 DEG.) FAB. CORRUGATED SMOOTH INTERIOR HDPE D3350	ADS							
260			REDWYE	5850407	4 - 46	REDUCER WYE FAB CORRUGATED SMOOTH INTERIOR HDPE D3350	6 - 48							
270		NR5	SADTEE	5850405	4 - 36	SADDLE TEE FAB CORRUGATED SMOOTH INTERIOR HDPE D3350	ADS							
280			COU	5850210	4 - 24	SPLIT COUPLER SINGLE WALL CORRUGATED SMOOTH INTERIOR HDPE D3350	ADS							
300						*****PIPE FLANGES*****								
310														
320														
330			SOF	5906111	26 - 48	BACK-UP FLG. CS CL 150# DRILL. MSS-SP44 F/POLYETH. FLG. ADAPT.	CPCChem							
340			SOF	5201111	3 - 24	BACK-UP FLG. ANSI CL 150# DRILL. CS F/ POLYETH. FLG. ADAPT.	CPCChem							
350			LJS	5905281	3 - 48	FLANGE ADAPTOR CHAMF HDPE SDR 32.5 D-3035 PE3408	KWH							
360			LJSADP	5905081	3 - 48	FLANGE ADAPTOR HDPE SDR 32.5								
370														
371			BLF	5615476	1/2 - 24	FLG BLIND 150# RF STL A105								
372						***** GASKETS *****								
380														
390														
			Sulphide Leach Project Fluor Chile - Minera Escondida 53232500 Antofagasta			CONSTRUCTION		Sulphide Leach Project						
						BUTT FUSED		CORR. ALLOW. 0 IN	DATE 14OCT04	BY ECQ	REV 1	SHEET 1 OF 2	PA 5	CLASS PFPC25


SEQ NO.	REV	NOTE NO.	ITEM NAME	ITEM CODE	SIZE RANGE / SMALL END SIZES	DESCRIPTION	REFERENCE / LARGE END SIZES	NOTES					
400			GAS	5669787	1/2 - 36	GASKET 150# PTFE 1/8" MET/NON-MET FLG FF	GARLOCK						
430						*****BOLTING*****							
520			BOL	5675689	1/4 - 1 1/8	MACH BOLT 316 SS A193 GR B8M W/1 SEMI-FINISH HEAVY HEX. NUT							
530			BOLS	5675690	1/2 - 1 1/8	STUD-BOLT 316SS A193 B8M-2 W/A194-8M NUT							
540													
560													


SEQ NO.	REV	NOTE NO.	ITEM NAME	ITEM CODE	SIZE RANGE / SMALL END SIZES	DESCRIPTION	REFERENCE / LARGE END SIZES	NOTES													
10						*****VALVE*****		NH1 SIZES FOR FULL SIZE TEES ONLY. NT1 USE THESE FITTINGS FOR HYDROTEST VENTS, DRAINS AND INSTRUMENT CONNECTIONS ONLY. NT2 WELDED SYSTEM MUST BE APPLICATED INSIDE AND OUTSIDE OF CONNECTIONS IN ELECTROWINNING AREA.													
20																					
30																					
40			BALFLG	5114960	1/2 - 4	BA-04: BALL 150# FF PVC/TEFLON SEAT/VITON SEAL LO	CHEMTROL TU														
50			BALSW	5114993	1/2 - 4	BA-06: BALL SW 150# SCH 80 TRUE UNION PVC/VITON	CHEMTROL TU														
60			BTFWAF	5308832	3 - 6	BU-08: BUTTERFLY 150# PVC/VITON SEMI-LUG LO	ASAHI #75														
70			CHESW	5111904	1/2 - 4	CH-30: CHECK 150# SW PVC/VITON SCH 80 BALL TYPE															
80																					
90		NT2				*****PIPE*****															
100																					
110			PIP	5780101	2 - 12	PIPE PVC SDR 32.5 W/COUPLING GROOVED MALE END JOINT	YELOMINE														
120																					
130		NT2				*****FITTINGS*****															
140																					
150			CON	5780504	3/8 - 8	CONNECTOR THREADED W/ADAPTOR SCH 40 MIPT															
160			COU	5780501	2 - 12	COUPLING PVC SDR 32.5 GROOVED TFE GASKET	YELOMINE														
170			PLG	5780202	2 - 12	PLUG PVC SDR 32.5 GROOVED MALE JOINT															
180			RED	5780201	2 - 12	REDUCER CONC. PVC SDR 32.5 GROOVED MALE JOINT	YELOMINE														
190		NT1	TEE	5780206	2 - 12	TEE RED PVC SDR 32.5 GROOVED MALE JOINT	YELOMINE														
200		NH1	TEEGRO	5780205	2 - 12	TEE STRAIGHT PVC SDR 32.5 GROOVED MALE JOINT	YELOMINE														
210			ELL	5780203	2 - 12	ELBOW 45 DEG PVC SDR 32.5 GROOVED MALE JOINT															
220			ELLGRO	5780204	2 - 12	ELBOW 90 DEG PVC SDR 32.5 GROOVED MALE JOINT															
230			22B	5780207	2 - 12	SWEEP BEND 22.5 DEG PVC SDR 32.5 GROOVED MALE JOINT															
240			45B	5780228	2 - 12	SWEEP BEND 45 DEG PVC SDR 26 GROOVED MALE JOINT															
250			90B	5780229	2 - 12	SWEEP BEND 90 DEG PVC SDR 26 GROOVED MALE JOINT															
260																					
270						*****PIPE FLANGES*****															
280																					
290			ADF	5780402	2 - 12	FLANGE ADAPTOR FF 150 PSI CHMF PVC SDR 32.5 GROOVED MALE JOINT	YELOMINE														
300			ADFFF	5780401	2 - 12	FLANGE ADAPTOR FF 150 PSI PVC SDR 32.5 GROOVED MALE JOINT	YELOMINE														
310																					
320						***** GASKETS *****															
330																					
340			GAS	5669787	2 - 12	GASKET 150# PTFE 1/8" MET/NON-MET FLG FF	GARLOCK														
350			GASRF	5669789	2 - 12	GASKET 150# PTFE 1/8" MET/NON-MET FLG RF															
360																					
370						*****BOLTING*****															
380																					
390			BOL	5675648	1/4 - 1 1/8	STUD-BOLT CHROME-MOLY ALLOY A193 GR B7 W/CS A194 GR 2H NUTS															
400			BOLS	5675690	1/4 - 1 1/8	STUD-BOLT 316SS A193 B8M-2 W/A194-8M NUT															
401			BOLMS	5675689	1/4 - 1 3/4	MACH BOLT 316 SS A193 GR B8M W/1 SEMI-FINISH HEAVY HEX. NUT															
402																					
403						***** DRIP IRRIGATION *****															
404																					
405			TTA	5860000	3/8 - 1 3/4	DRIP TAPE HEAVY DUTY WITH DUAL TURBULENT FLOW TRACK EMITTER	T-TAPE														
406			ADA	5860010	5/8 - 5/8	ADAPTER THREAD 3/4" MNPT X 5/8" SLEEVE FOR JOINT DRIP TAPE FLOW TRACK EMITTER	3/4 - 3/4														
			Sulphide Leach Project Fluor Chile - Minera Escondida 53232500 Antofagasta			CONSTRUCTION	Sulphide Leach Project														
						BUTT FUSED	CORR. ALLOW. 0 IN								DATE 14OCT04	BY ECQ	REV 1	SHEET 1 OF 2	PA 5	CLASS PHPC21	


SEQ NO.	REV	NOTE NO.	ITEM NAME	ITEM CODE	SIZE RANGE / SMALL END SIZES	DESCRIPTION	REFERENCE / LARGE END SIZES	NOTES					





SEQ NO.	REV	NOTE NO.	ITEM NAME	ITEM CODE	SIZE RANGE / SMALL END SIZES	DESCRIPTION	REFERENCE / LARGE END SIZES	NOTES						
10						*****VALVE*****		NH1 SIZES FOR FULL SIZE TEES ONLY. NT1 USE THESE FITTINGS FOR HYDROTEST VENTS, DRAINS AND INSTRUMENT CONNECTIONS ONLY. NT2 WELDED SYSTEM MUST BE APPLICATED INSIDE AND OUTSIDE OF CONNECTIONS IN ELECTROWINNING AREA.						
20			BALFLG	5114960	1/2 - 4	BA-04: BALL 150# FF PVC/TEFLON SEAT/VITON SEAL LO	CHEMTROL TU							
30			BALSW	5114993	1/2 - 4	BA-06: BALL SW 150# SCH 80 TRUE UNION PVC/VITON	CHEMTROL TU							
40			BTFWAF	5308832	3 - 6	BU-08: BUTTERFLY 150# PVC/VITON SEMI-LUG LO	ASAHI #75							
50			CHESW	5111904	1/2 - 4	CH-30: CHECK 150# SW PVC/VITON SCH 80 BALL TYPE								
60						*****PIPE*****								
70		NT2												
80			PIP	5780102	2 - 12	PIPE PVC SDR 26 W/COUPLING GROOVED MALE END JOINT								
90						*****FITTINGS*****								
100		NT2												
110			CON	5780509	3/8 - 8	CONNECTOR THREADED W/ADAPTOR SCH 40 MIPT								
120			COU	5780505	2 - 12	COUPLING PVC SDR 26 GROOVED TFE GASKET								
130			PLG	5780222	2 - 12	PLUG PVC SDR 26 GROOVED MALE JOINT								
140			RED	5780221	2 - 10	REDUCER CONC. PVC SDR 26 GROOVED MALE JOINT	3 - 12							
150			TEE	5780226	2 - 10	TEE RED PVC SDR 26 GROOVED MALE JOINT	3 - 12							
160		NT1	TEEPVC	5780225	2 - 12	TEE STRAIGHT PVC SDR 26 GROOVED MALE JOINT								
170		NH1	22B	5780227	2 - 12	SWEEP BEND 22.5 DEG PVC SDR 26 GROOVED MALE JOINT								
180			45E	5780223	2 - 12	45 DEG ELLBOW PVC SDR 26 GROOVED C-L								
190			45B	5780228	2 - 12	SWEEP BEND 45 DEG PVC SDR 26 GROOVED MALE JOINT								
200			ELL	5780224	2 - 12	ELBOW 90 DEG PVC SDR 26 GROOVED MALE JOINT								
210			90B	5780229	2 - 12	SWEEP BEND 90 DEG PVC SDR 26 GROOVED MALE JOINT								
220						*****PIPE FLANGES*****								
230			FLG	5780407	2 - 12	FLANGE ADAP.PVC SDR 26 GROOVED/FF CHMF								
240			FLGADP	5780406	2 - 12	FLANGE ADAPTOR PVC SDR 26 GROOVED/FF								
250			BLF	5712856	1/2 - 12	FLANGE BLIND 150# FF PVC I D2467								
260						***** GASKETS *****								
270			GAS	5669787	2 - 12	GASKET 150# PTFE 1/8" MET/NON-MET FLG FF	GARLOCK							
280			GASRF	5669789	2 - 12	GASKET 150# PTFE 1/8" MET/NON-MET FLG RF								
290						*****BOLTING*****								
300														
310			BOL	5675690	1/4 - 1 1/8	STUD-BOLT 316SS A193 B8M-2 W/A194-8M NUT								
320			BOLMS	5675689	1/4 - 1 3/4	MACH BOLT 316 SS A193 GR B8M W/1 SEMI-FINISH HEAVY HEX. NUT								
330						***** DRIP IRRIGATION *****								
340			TTA	5860000	3/8 - 1 3/4	DRIP TAPE HEAVY DUTY WITH DUAL TURBULENT FLOW TRACK	T-TAPE							
350			ADA	5860010	5/8 - 5/8	EMITTER ADAPTER THREAD 3/4" MNPT X 5/8" SLEEVE FOR JOINT DRIP TAPE FLOW TRACK EMITTER	3/4 - 3/4							
360														
370														
380														
390														
400														
401														
402														
403														
404														
405														
406														
			Sulphide Leach Project Fluor Chile - Minera Escondida 53232500 Antofagasta			CONSTRUCTION	Sulphide Leach Project							
						BUTT FUSED	CORR. ALLOW. 0 IN	DATE 14OCT04	BY ECQ	REV 1	SHEET 1 OF 1	PA 5	CLASS PHPC22	

SEQ NO.	REV	NOTE NO.	ITEM NAME	ITEM CODE	SIZE RANGE / SMALL END SIZES	DESCRIPTION	REFERENCE / LARGE END SIZES	NOTES							
10						*****VALVE*****		NH1 SIZES FOR FULL SIZE TEES ONLY. NT1 USE THESE FITTINGS FOR HYDROTEST VENTS, DRAINS AND INSTRUMENT CONNECTIONS ONLY. NT2 WELDED SYSTEM MUST BE APPLICATED INSIDE AND OUTSIDE OF CONNECTIONS IN ELECTROWINNING AREA.							
20															
30															
40			BALFLG	5114960	1/2 - 4	BA-04: BALL 150# FF PVC/TEFLON SEAT/VITON SEAL LO	CHEMTROL TU CHEMTROL TU ASAHI #75								
50			BALSW	5114993	1/2 - 4	BA-06: BALL SW 150# SCH 80 TRUE UNION PVC/VITON									
60			BTFWAF	5308832	3 - 6	BU-08: BUTTERFLY 150# PVC/VITON SEMI-LUG LO									
70			CHESW	5111904	1/2 - 4	CH-30: CHECK 150# SW PVC/VITON SCH 80 BALL TYPE									
80						*****PIPE*****									
90		NT2													
100															
110			PIP	5780103	2 - 12	PIPE PVC SDR 21 W/COUPLING GROOVED MALE END JOINT									
120						*****FITTINGS*****									
130		NT2													
140															
150			CON	5780514	3/8 - 8	CONNECTOR THREADED W/ADAPTOR SCH 40 MIPT	GARLOCK								
160			COU	5780510	2 - 12	COUPLING PVC SDR 21 GROOVED TFE GASKET									
170			PLG	5780242	2 - 12	PLUG PVC SDR 21 GROOVED MALE JOINT									
180			RED	5780241	2 - 12	REDUCER CONC. PVC SDR 21 GROOVED MALE JOINT									
190		NT1	TEE	5780246	2 - 12	TEE RED PVC SDR 21 GROOVED MALE JOINT									
200		NH1	TEEPVC	5780245	2 - 12	TEE STRAIGHT PVC SDR 21 GROOVED MALE JOINT									
210			22B	5780247	2 - 12	SWEEP BEND 22.5 DEG PVC SDR 21 GROOVED MALE JOINT									
220			45E	5780243	2 - 12	45 DEG ELLBOW PVC SDR 21 GROOVED C-L									
230			45B	5780248	2 - 12	SWEEP BEND 45 DEG PVC SDR 21 GROOVED MALE JOINT									
240			ELL	5780244	2 - 12	ELBOW 90 DEG PVC SDR 21 GROOVED MALE JOINT									
250			90B	5780249	2 - 12	SWEEP BEND 90 DEG PVC SDR 21 GROOVED MALE JOINT									
260						*****PIPE FLANGES*****									
270															
280															
290			FLG	5780412	2 - 12	FLANGE ADAPTOR PVC SDR 21 GROOVED/FF CHAMFERED									
300			FLGADP	5780411	2 - 12	FLANGE ADAPTOR PVC SDR 21 GROOVED/FF									
310			BLF	5712856	1/2 - 8	FLANGE BLIND 150# FF PVC I D2467									
320						***** GASKETS *****									
330															
340															
350			GAS	5669787	2 - 12	GASKET 150# PTFE 1/8" MET/NON-MET FLG FF	SERVICE								
360			GASRF	5669789	2 - 12	GASKET 150# PTFE 1/8" MET/NON-MET FLG RF									
370						*****BOLTING*****									
380															
390								RAFFINATE : R							
400															
410			BOL	5675690	1/4 - 1 1/8	STUD-BOLT 316SS A193 B8M-2 W/A194-8M NUT									
411			BOLMS	5675689	1/4 - 1 1/8	MACH BOLT 316 SS A193 GR B8M W/1 SEMI-FINISH HEAVY HEX. NUT									
			Sulphide Leach Project Fluor Chile - Minera Escondida 53232500 Antofagasta			CONSTRUCTION		Sulphide Leach Project							
						BUTT FUSED		CORR. ALLOW. 0 IN	DATE 14OCT04	BY ECQ	REV 1	SHEET 1 OF 1	PA 5	CLASS PHPC23	

SEQ NO.	REV	NOTE NO.	ITEM NAME	ITEM CODE	SIZE RANGE / SMALL END SIZES	DESCRIPTION	REFERENCE / LARGE END SIZES	NOTES					
10						***** VALVES *****		DP1 USE MANUFACTURER'S DERATING CURVE TO DETERMINE ACTUAL RATING AT TEMPERATURES ABOVE THE BASELINE TEMPERATURE. FW1 ALL FLANGED JOINTS REQUIRE FLAT WASHERS UNDER BOLT HEAD AND NUTS. NR1 SIZES SHOWN IN SIZE COLUMNS ARE THE SMALL END OF REDUCERS AND THE BRANCH SIZE OF OLETS.					
20													
30													
40			GAT	5005302	1/2 - 3	GA-08: GATE API CL 800# SCRD STL, 316 TRIM	VOGT #12111						
50			GLO	5040231	1/2 - 3	GL-07: GLOBE 800# SCRD 316 SS	VOGT #12501						
60			BAL	5058894	1/2 - 2	BA-01: BALL 600# WOG SCRD 316 SS/RTFE, HNDL OP	NIBCO T570CSR66						
70			CHE	5006801	1/2 - 3	CH-22: CHECK 800# SCRD STL, 316 TRIM, HORIZ	VOGT #701-F8M						
80			BTF	5309240	2 - 4	BU-06: BUTTERFLY CL 150# 316 SS/VITON F LUG LO	KEYSTONE # 920						
90			BALSW	5114991	1/2 - 4	BA-17: BALL 150# CWP SF POLYPROPYLENE, HNDL OP	NIBCO TYPE SU						
100			CHESW	5111915	1/2 - 4	CH-23: CHECK-BALL H & V 150# CWP SOCKET FUS VITON SEALS POLYPROP BODY & BALL	NIBCO TYPE TU						
110						***** PIPE *****		RYAN HERCO					
120		DP1											
130													
140			PIP	5714105	1/2 - 4	PIPE SCH 80 SMLS POLYPROPYLENE							
150						***** FITTINGS *****							
160		NR1											
170													
180			ELL	5714500	1/2 - 4	ELL 90 DEG SCH 80 POLYPROPYLENE SOCKET FUSION	RYAN HERCO						
190			45L	5714505	1/2 - 4	ELL 45 DEG SCH 80 POLYPROPYLENE SOCKET FUSION	RYAN HERCO						
200			TEE	5714530	1/2 - 4	TEE SCH 80 POLYPROPYLENE SOCKET FUSION	RYAN HERCO						
210			CAP	5714540	1/2 - 4	CAP SCH 80 POLYPROPYLENE SOCKET FUSION	RYAN HERCO	RYAN HERCO					
220			COU	5714550	1/2 - 4	COUPLING SCH 80 POLYPROPYLENE SOCKET FUSION	RYAN HERCO						
230			UNI	5714560	1/2 - 4	UNION SCH 80 POLYPROPYLENE SOCKET FUSION	RYAN HERCO						
240			REDCSF	5714570	1/2 - 4	RED CONC SCH 80 POLYPROPYLENE SOCKET FUSION	RYAN HERCO						
250			REDSW	5714575	1/2 - 4	RED ECC SCH 80 POLYPROPYLENE SOCKET FUSION	RYAN HERCO						
260						***** PIPE FLANGES *****							
270		FW1											
280						***** GASKETS *****							
290			SWF	5714600	1/2 - 4	FLANGE 150# FF SCH 80 BORE POLYPROP SOCKET FUSION	RYAN HERCO						
300						***** BOLTING *****							
310								SERVICE  INSTRUMENT AIR : IA PLANT AIR : PA  MATERIAL: POLYPROPYLENE FLANGE RATING: 150 FF TEMPERATURE RANGE: 33 / 150 F COMMENT:					
320													
330			GAS	5664295	1/2 - 4	GASKET 150# FF NEOPRENE RUBBER 1/8" THK							
340													
350													
360													
370			BOLM	5675631	1/4 - 99	MACH BOLT CS A307 GR B W/1 SEMI-FINISH HEAVY HEX. NUT							
380						***** JOINT MATERIAL *****							
390						DO NOT CEMENT - USE HEAT FUSION							
400													
			Sulphide Leach Project Fluor Chile - Minera Escondida 53232500 Antofagasta			CONSTRUCTION	Sulphide Leach Project						
						ALL SIZES - SOCKET FUSION	CORR. ALLOW. 0 IN	DATE 14OCT04	BY ECQ	REV 1	SHEET 1 OF 1	PA 5	CLASS PPAW01


SEQ NO.	REV	NOTE NO.	ITEM NAME	ITEM CODE	SIZE RANGE / SMALL END SIZES	DESCRIPTION	REFERENCE / LARGE END SIZES	NOTES				
10		NT2				***** PIPE *****		NT1 USE THESE FITTINGS FOR HYDROTEST VENTS, DRAINS AND INSTRUMENT CONNECTIONS ONLY.  NT2 WELDED SYSTEM MUST BE APPLICATED INSIDE AND OUTSIDE OF CONNECTIONS IN ELECTROWINNING AREA.				
20												
30												
40												
50		NT2	PIP	5322102	1 1/2 - 6	PRESSURE IPS-OD PLAIN END SCH 40						
60			PIPSEW	5322800	1 1/2 - 6	SEWER PVC ASTM D3034 B&S SDR 35						
70												
80							***** FITTINGS *****					
90			EL4	5422120	1 1/2 - 6	BEND 1/4(90)LNG SWEEP PVC SOCKT ENDS DWV						
100			EL4SW	5422121	1 1/2 - 6	BEND 1/4(90) PVC D2665 SOCKET ENDS DWV						
110			VTL	5422124	1 1/2 - 6	ELL VENT PVC ASTM D2665 SOCKET ENDS DW						
120			EL6SW	5422125	1 1/2 - 6	BEND 1/6(60) PVC D2665 SOCKET ENDS DWV						
130			EL8	5422126	1 1/2 - 6	BEND 1/8(45) PVC D2665 SOCKET ENDS DWV						
140			E16	5422128	1 1/2 - 6	BEND 1/16(22-1/2)PVC D2665 SOCKT END DWV						
150			COU	5422110	1 1/2 - 6	COUPLING STRAIGHT PVC D2665 SOCKET END DWV						
160			INRDSW	5422111	1 1/2 - 6	INCREASR/REDUCR PVC D2665 SOCKET END DWV						
170			BUSSW	5422112	1 1/2 - 6	BUSHG RED FLSH PVC D2665 SPGT X SOCK DWV						
180			TEERED	5422113	1 1/2 - 6	TEE RED.SANIT. PVC D2665 SOCKET ENDS DWV						
190			TEESW	5422114	1 1/2 - 6	TEE SANITARY PVC D2665 SOCKET ENDS DWV						
200			TEEVNT	5422115	1 1/2 - 6	TEE VENT PVC ASTM D2665 SOCKET ENDS DWV						
210			TEE	5422116	1 1/2 - 6	TEE-WYE SNGL LNG TURN PVC D2665 SOCK END						
220			WYE	5422117	1 1/2 - 6	WYE PVC ASTM D2665 SOCKET ENDS DWV						
230			WYEDB	5422130	1 1/2 - 6	WYE DOUBLE PVC ASTM D2665 SOCKT ENDS DWV						
240			CAP	5422131	1 1/2 - 6	CAP PIPE PVC ASTM D2665 SOCKET END DWV						
250			TRP	5422132	1 1/2 - 6	TRAP P PVC ASTM D2665 SOCKET ENDS DWV						
260			TEECLN	5422136	1 1/2 - 6	TEE CLEANOUT PVC D2665 SOCKET X FNPT DWV						
270			PLG	5422137	1 1/2 - 6	PLUG CLEANOUT PVC ASTM D2665 MNPT DWV						
280			WYERSW	5422138	1 1/2 - 6	WYE RED PVC ASTM D2665 SOCKET ENDS DWV						
290		NT1	SDLPVC	5712612	1 1/2 - 6	SADDLE PIPE X THREAD SCH 80 PVC						
300												
310							***** SOLVENT CEMENT *****					
320												
330			CEMMD	5422140	1/8 - 99	CEMNT SOLV MED BDY FAST SET F/PVC<=6"NPS						
340			CEMHV	5422141	1/8 - 99	CEMENT SOLV HVY BDY FAST SET F/PVC<=12"						
350			CEM	5422142	1/8 - 99	CEMENT SOLV XH BDY MED SET F/PVC<=24"NPS						
360			PRI	5422143	1/8 - 99	PRIMER FOR PVC & CPVC CEMENTS PURPLE						
								SERVICE				
								SANITARY SEWER : SS				
								MATERIAL: PVC FLANGE RATING: 150 FF TEMPERATURE RANGE: 0 / 50 C COMMENT:				
			Sulphide Leach Project Fluor Chile - Minera Escondida 53232500 Antofagasta			CONSTRUCTION	Sulphide Leach Project					
						SOCKET TYPE SOLVENT WELDED SYSTEM			CORR. ALLOW. 0	DATE 14OCT04	BY ECQ	REV 1

SEQ NO.	REV	NOTE NO.	ITEM NAME	ITEM CODE	SIZE RANGE / SMALL END SIZES	DESCRIPTION	REFERENCE / LARGE END SIZES	NOTES					
10						***** VALVES *****		HU1 USE ONLY FOR EW CELL ELECTROLYTE RETURN (NON-PRESSURE APPLICATION).					
20								NH1 SIZES FOR FULL SIZE TEES ONLY.					
30								NR2 SIZES IN SMALL END SIZES COLUMN ARE BRANCH SIZE OF OLETS OR TEES. SIZES IN LARGE END SIZES COLUMN ARE RUN PIPE SIZE OF OLETS OR TEES.					
40		VU3	BALFLG	5114960	1/2 - 4	BA-04: BALL 150# FF PVC/TEFLON SEAT/VITON SEAL LO	CHEMTROL TU						
50			BALSW	5114993	1/2 - 4	BA-06: BALL SW 150# SCH 80 TRUE UNION PVC/VITON	CHEMTROL TU						
60			BTFLUG	5309236	3 - 6	BU-07: BUTTERFLY HP ECC DISC CL 150# 316SS, F LUG LO	KEYSTONE #362S						
70	1		BTFTFE	5306827	3 - 6	BU-19: BUTFLY WAF CI/316SS TFE ST 125# LO	KEYSTONE #100						
80			BTFLUG	5309238	8 - 24	BU-01: BUTTERFLY HP ECC DISC CL 150# 316SS F LUG GO	KEYSTONE #362S						
90			BTF	5309218	26 - 36	BU-18: BUTTERFLY HP ECC DISC CL 150# 316SS MSS FLUG GO	FLOW SEAL	NT1 USE THESE FITTINGS FOR HYDROTEST VENTS, DRAINS AND INSTRUMENT CONNECTIONS ONLY.					
100	1		BTF	5306833	8 - 24	BU-03: BUTFLY WAF CI/316SS TEFLON ST 125# GO	KEYSTONE #100						
110			ARVFLG	5001500	2 - 6	VE-05: AIR/VACUUM VALVE CL150# FF 316 SS/VITON	APCO	NT2 WELDED SYSTEM MUST BE APPLICATED INSIDE AND OUTSIDE OF CONNECTIONS IN ELECTROWINNING AREA.					
120						***** VALVES FOR SPARGING AIR *****							
121	1					BU-19: BUTFLY WAF CI/316SS TFE ST 125# LO	KEYSTONE #100						
122			BTFFGE	5306827	3 - 6	BU-03: BUTFLY WAF CI/316SS TEFLON ST 125# GO	KEYSTONE #100	NU1					
123			BTFFED	5306833	8 - 24			NU4 SEALED CONNECTIONS WITH TRANSLUCENT SILICON.					
124		NT2				***** PIPE *****		VU3 USE FLANGED VALVES AT EQUIPMENT NOZZLES ONLY.					
130													
140													
150			PIP	5712400	1/2 - 30	PIPE SCH 80 SMLS PVC PE D1785 PVC1120							
160						***** FITTINGS *****							
170		NT2											
180													
190			ELLSW	5712700	1/2 - 8	ELL 90 DEG SCH 80 SW MOLDED PVC I D2467							
200			45LSW	5712701	1/2 - 8	ELL 45 DEG SCH 80 SW MOLDED PVC I D2467							
210		NH1	TEESW	5712702	1/2 - 8	TEE SCH 80 SW MOLDED PVC I D2467							
220		NR2	TEE	5712713	1/2 - 3	TEE RED SCH80 SOCKET ENDS MOLDED PVC I D2467	3/4 - 4						
230			CAPSW	5712703	1/2 - 8	CAP SOCKET ENDS SCH 80 MOLDED PVC I D2467							
240			COUSW	5712704	1/2 - 8	COUPLING SCH 80 SW MOLDED PVC I D2467							
250			BUS	5712706	1/2 - 4	BUSHING REDUCER SCH 80 SPIGOT X SW MOLDED PVC I							
260		NT1	BUSRST	5712709	1/2 - 4	BUSHING REDUCER SCH80 SOCKET X FNPT MOLDED PVC I							
270			REDCON	5712707	1/2 - 4	COUPLING REDUCER SCH 80 SW MOLDED PVC I							
280			PLG	5712610	1/2 - 4	PLUG HEX HD SCH80 NPT MOLDED PVC I D2467							
290			SDLLE	5712708	3/4 - 4	SADDLE PIPE X SOCKET SCH 80 PVC I D2467							
300			SDLSW	5712714	6 - 8	SADDLE PIPE X SOCKET 150 PSI FAB PVC I							
310			ELLSW	5712901	10 - 24	ELL 90 DEG SOCKET ENDS 150 PSI FAB PVC	IPEX						
320			45LSW	5712902	10 - 24	ELL 45 DEG SOCKET ENDS 150 PSI FAB PVC							
330			TEESW	5712903	10 - 24	TEE SOCKET ENDS 150 PSI FAB PVC							
340		NH1	TEERSW	5712908	2 - 22	REDUCING TEE SOCKET ENDS 150 PSI FAB PVC	3 - 24	LEAN ELECTROLYTE : LE					
350		NR2	CAPSW	5712904	10 - 24	CAP SOCKET ENDS SCH 80 FABRICATED PVC		RICH ELECTROLYTE : RE					
360			COUSW	5712905	10 - 24	COUPLING SOCKET ENDS 150 PSI FAB PVC		POTABLE WATER : DW					
370			REDECC	5712906	4 - 22	COUPLING REDUCER ECC SOCKET ENDS 150 PSI FAB PVC	6 - 24	HYDROCL. ACID : HA					
380			RED	5712907	4 - 22	COUPLING REDUCER CONC SOCKET ENDS 150 PSI FAB PVC	6 - 24	TANKHOUSE CONDENSATE : CO					
390			UNISW	5712705	1/2 - 4	UNION SCH 80 PVC SW		SPARGING AIR : AS					
400			TAD	5712715	1/2 - 6	TANK ADAPTER SOCKET X FIPT							
410			NIP	5713009	1/2 - 4	NIPPLE SCH 80 D-1785 PVC1120 TBE L=100MM							
420			NIPTOE	5713010	1/2 - 4	NIPPLE SCH 80 TOE-POE D-1785 PVC1120 L=100MM							
430			LAT	5905395	1/2 - 24	LATERAL 45 DEG SCH 80 SOCKET ENDS FAB PVC	CPChem						
440						***** FLANGES *****							
450													
460													
			Sulphide Leach Project Fluor Chile - Minera Escondida 53232500 Antofagasta			CONSTRUCTION	Sulphide Leach Project						
						SOCKET TYPE SOLVENT WELDED SYSTEM	CORR. ALLOW. 0	DATE 14OCT04	BY ECQ	REV 1	SHEET 1 OF 2	PA 5	CLASS PVPC01

SEQ NO.	REV	NOTE NO.	ITEM NAME	ITEM CODE	SIZE RANGE / SMALL END SIZES	DESCRIPTION	REFERENCE / LARGE END SIZES	NOTES							
470			SWF	5712825	1/2 - 14	FLANGE VANSTONE 150# SOCKET END SCH 80 BORE PVC I W/BACK-UP SS RING	GARLOCK								
480			LJFRF	5422001	16 - 24	VAN STONE W/STUB END PVC SPIGOT SCH 80 150#									
490			BLFFF	5712856	1/2 - 8	FLANGE BLIND 150# FF PVC I D2467									
500			BLFFF	5712857	10 - 24	FLANGE BLIND 150# FF FABRICATED CPVC									
510						***** GASKETS *****									
520															
530															
540			GASFF	5669787	1/2 - 24	GASKET 150# PTFE 1/8" MET/NON-MET FLG FF									
550			GASRF	5669789	1/2 - 24	GASKET 150# PTFE 1/8" MET/NON-MET FLG RF									
560						***** BOLTING *****									
570							IPEX711								
580															
590			BOL	5675690	1/4 - 1 1/8	STUD-BOLT 316SS A193 B8M-2 W/A194-8M NUT									
600			BOLMS	5675689	1/4 - 1 1/8	MACH BOLT 316 SS A193 GR B8M W/1 SEMI-FINISH HEAVY HEX. NUT									
610						***** SOLVENT CEMENT *****									
620															
630															
640			PRIMER	5712833	1/2 - 24	PRIMER FOR PVC SOLVENT CEMENT									
650			CEM	5712831	1/2 - 12	CEMENT SOLVENT PVC MEDIUM SETTING D2564									
660			CEMS	5712832	14 - 24	CEMENT SOLVENT PVC SLOW SETTING D2564									
670						*****HOSES & COUPLINGS*****	PETROFLEX								
680															
690															
700		NU4	HOSPVC	5755464	1/2 - 6	HOSE CHEM. TRANSLUCENT FLEXIBLE WALL PVC									
710		HU1	HOSR	5755470	1/2 - 6	HOSE CHEMICAL REINFORCED WALL									
720		HU1	HOSS	5755469	6 - 6	HOSE CHEMICAL SOFT WALL									
730		NU1	CLPCLM	5750500	1/2 - 2	HOSE CLAMP SINGLE BOLT 316 SS									
740		HU1	CLPCLM	5750501	6 - 6	HOSE CLAMP WORM GEAR SS									
750		NU1	HOS	5755466	1/2 - 4	HOSE GENERAL PURPOSE SYNTHETIC RUBBER									
760			NIPTB	5900300	3 - 4	TURN BACK HOSE NIPPLE 316 SS									
761						***** CONDENSATE TRAP *****									
762						CT-02: CONDENSATE TRAP 200# SCRD CI SEMI-AUTOM.									
763			CTR	5764124	1/2 - 3										
						SERVICE									
						LEAN ELECTROLYTE : LE									
						RICH ELECTROLYTE : RE									
						POTABLE WATER : DW									
						HYDROCL. ACID : HA									
						TANKHOUSE CONDENSATE : CO									
						SPARGING AIR : AS									
						MATERIAL: PVC									
						FLANGE RATING: 150 FF									
						TEMPERATURE RANGE: 0 / 50 C									
						COMMENT:									
			Sulphide Leach Project Fluor Chile - Minera Escondida 53232500 Antofagasta			CONSTRUCTION		Sulphide Leach Project							
						SOCKET TYPE SOLVENT WELDED SYSTEM		CORR. ALLOW. 0		DATE 14OCT04	BY ECQ	REV 1	SHEET 2 OF 2	PA 5	CLASS PVPC01





SEQ NO.	REV	NOTE NO.	ITEM NAME	ITEM CODE	SIZE RANGE / SMALL END SIZES	DESCRIPTION	REFERENCE / LARGE END SIZES	NOTES						
441			REDINS	5950225	1/2 - 2	REDUCING INSERT TYPE 1 CL 3000# SW 254SMO A403 UNS S31254								
450														
460			ELL	5950501	3 - 24	ELL 90 DEG LR SCH 5S BW 254SMO A403 UNSS31254-W	AVESTA							
470			ELLSR	5950508	3 - 24	ELL 90 DEG SR SCH 5S BW 254SMO A403 UNSS31254-W								
480			45L	5950502	3 - 24	ELL 45 DEG LR SCH 5S BW 254SMO A403 UNS S31254-W	AVESTA							
490			TEE	5950503	3 - 24	TEE SCH 5S BW 254SMO A403 UNS S31254-W	AVESTA							
500			CAP	5950504	3 - 24	CAP SCH 5S BW 254SMO A403 UNS S31254-W								
510			TEERED	5950214	3 - 24	TEE RED SCH 5S BW 254SMO A403 UNS S31254-W	AVESTA							
520			RED	5950505	3 - 24	REDUCER CONCENTRIC SCH 5S BW 254SMO A403 UNS S31254-W	AVESTA							
530			REDEBW	5950506	3 - 24	REDUCER ECCENTRIC SCH 5S BW 254SMO A403 UNS S31254-W								
540														
550			ELL	5950551	26 - 42	ELL 90 DEG LR 0.312" WALL BW 254SMO A403-W	AVESTA							
560			ELLSR	5950556	26 - 42	ELL 90 DEG SR 0.312" WALL BW 254SMO A403 UNS312-W								
570			45L	5950552	26 - 42	ELL 45 DEG LR 0.312" WALL BW 254SMO A403-W								
580			TEE	5950553	26 - 42	TEE 0.312" WALL BW 254SMO A403 UNS31254-W	AVESTA							
590			TEERED	5950554	26 - 42	TEE RED 0.312" WALL BW 254SMO A403 UNS31254-W								
600			CAP	5950555	26 - 42	CAP 0.312" WALL BW 254SMO A403 UNS312-W	AVESTA							
610			RED	5950557	26 - 42	REDUCER CONCENTRIC 0.312" WALL BW 254SMO A403 -W								
620			REDECC	5950558	26 - 42	REDUCER ECCENTRIC 0.312" WALL BW 254SMO A403-W								
630			45LBW	5950559	26 - 42	ELL 45 DEG SR 0.312" WALL BW 254SMO A403-W								
640														
650						***** NIPPLES *****								
660			NIP	5950801	1/4 - 2	NIPPLE SCH 40S 254SMO UNS S31254 TBE L=100MM								
670			NIPTOE	5950803	1/4 - 2	NIPPLE SCH 40S 254SMO UNS S31254 TOE L=100MM								
680														
690						*****PIPE FLANGES*****								
700														
710			SWF	5950601	1/2 - 2	FLG SW CLASS 150 RF 254SMO UNS S31254 40S BORE								
720			SOFRF	5950602	2 1/2 - 24	FLG SO 150# RF 254 SMO UNS S31254								
730			SOFFF	5598262	3 - 24	FLG SO 150# FF 304L SS								
740			SOF	5620927	26 - 42	FLG SO 150# FF 304L SS MSS-SP44								
750			LJF	5599576	3 - 42	FLG LAP JOINT 150# 316 SS								
760			BLFRF	5950603	1/2 - 2	FLG BLIND 150# RF 254SMO UNS S31254								
770			BLF	5950604	2 1/2 - 24	FLG BLD 150# RF A105 CS W/254SMO LINING								
780			BLFMSS	5950606	26 - 42	FLG BLIND 150# RF A105 W/254SMO MSS-SP44								
790			LJS	5950409	26 - 42	STUB END .312 WALL 254SMO UNS S31254-W								
800			LJSBW	5950408	3 - 24	STUB END SCH 5S 254SMO UNS S31254-W								
810														
820						*****SPECTABLE BLINDS*****								
830														
840			BLFRF	5950904	16 - 24	PAD BLIND CL 150 RF CS W/254SMO LINING								
850			PADMSS	5950607	26 - 42	PAD BLIND CL 150 FF CS W/254SMO MSS-SP 44								
860			SPEB	5950903	1 - 14	SPECTACLE BLIND 150# FF/RF 254SMO UNS S31254								
870			SPEDON	5950608	26 - 42	SPACER PAD CL 150 FF 254SMO MSS-SP44								
880			SPE	5950905	16 - 24	PAD SPACER CL 150 RF 254SMO UNS S31254								
890														
900						*****SWAGE NIPPLES*****								
910														
			Sulphide Leach Project Fluor Chile - Minera Escondida 53232500 Antofagasta			CONSTRUCTION	Sulphide Leach Project							
						2" & SMALLER - SW<2 1/2" & LARGER - BUTT WELD	CORR. ALLOW. 0 IN	DATE 14OCT04	BY ECQ	REV 1	SHEET 2 OF 3	PA 5	CLASS SMPC01	


SERVICE

PREGNANT LEACH SOLUTION : PLS  
RAFFINATE : R  
CRUD : CR  
SULFURIC ACID : SA

MATERIAL: 254 SMO  
FLANGE RATING: 150 RF  
TEMPERATURE RANGE: 0 / 50 C  
COMMENT:







SEQ NO.	REV	NOTE NO.	ITEM NAME	ITEM CODE	SIZE RANGE / SMALL END SIZES	DESCRIPTION	REFERENCE / LARGE END SIZES	NOTES					
10						*****VALVE*****							
20													
30													
40		NS1	BALFLG	5303901	1/2 - 2	BA-09: BALL CL 300# RF 254 SMO ASTM A312	COOPER 430RF	FA5 MATERIAL ONLY FOR MANIFOLDS					
50			BALSW	5303903	1/2 - 2	BA-11: BALL CL 300# SW 254 SMO ASTM S31254	COOPER	FS8 STUB ENDS MUST BE 12" IN LENGTH					
60			BUH	5308755S	3 - 6	BU-04: BUTTERFLY HP CL300# 254 SMO TRIM LUG LO	XOMOX	NR2 SIZES IN SMALL END SIZES COLUMN ARE					
70			BUHPG	5308756S	8 - 24	BU-05: BUTTERFLY HP CL 300# 254 SMO TRIM GO LUG	XOMOX	BRANCH SIZE OF OLETS OR TEES. SIZES IN					
80			BUHPP	5308756SP	20 - 24	BU-05P: BUTTERFLY HP CL 300# 254 SMO LUG PNEU	XOMOX	LARGE END SIZES COLUMN ARE RUN PIPE					
90			BUH	5308754S	26 - 48	BU-15: BUTTERFLY HP CL 300# 254 SMO GO MSS LUG	DEZURIK BHP	SIZE OF OLETS OR TEES.					
100			BUHPP	5308754SP	26 - 48	BU-15P: BUTTERFLY HP CL 300# 254 SMO MSS LUG PNEU		NS1 USE FOR INSTRUMENT CONNECTIONS					
110			GAT	5269520	1/2 - 24	GA-07: GATE CL 300# RF 254SMO W/TFE PACKING	COOPER 130RF	NS2 USE FOR VENTS AND DRAINS					
120			CHEFLG	5276836	1 - 2	CH-21: CHECK CL 300# RF 254 SMO UNS S31254 SWING	COOPER #330 RF	NT1 USE THESE FITTINGS FOR HYDROTEST					
130			C-14S	5291170S	2 1/2 - 24	CH-05: CHECK 300# WAFER 254 SMO EXT SPRING & WT		VENTS, DRAINS AND INSTRUMENT					
140		VC3	C-45S	5163448S	2 - 24	CH-04: CHECK SILENT 300# RF TFE 254SMO		CONNECTIONS ONLY.					
150			V-13S	5001496S	2 - 6	VE-11: AIR/VAC VALVE 300# RF 254 SMO		NT4 USE ONLY FOR JOINING SMALL BORE PIPES					
160								VC3 USE THESE VALVE ONLY IN LINES WITH					
170		FA5				*****PIPE*****		DESIGN PRESSURE BIGGER THAN 75 PSIG.					
180													
190			PIP	5950101	1/2 - 2	PIP SCH 40S SMLS 254SMO A312 UNS S31254 PE	AVESTA						
200			PIP	5950102	3 - 24	PIP SCH 10S EFW 254SMO A312 UNS S31254 BE	AVESTA						
210			PIP	5950104S	26 - 60	PIPE .625" WALL EFW 254SMO A358 UNS S31254 BE	AVESTA						
220													
230		FA5				*****FITTINGS*****							
240													
250			ELL	5950201	1/2 - 2	ELL 90 DEG LR CLASS 3000 SW 254SMO A403 S31254							
260			45LSW	5950202	1/2 - 2	ELL 45 DEG LR SW CLASS 3000 254SMO A403 UNS S31254							
270			TEE	5950203	1/2 - 2	TEE SW 3000# 254SMO A403 UNS S31254							
280			TEERED	5950207	1/2 - 2	TEE RED. SW 3000# 254SMO A403 UNS S31254							
290		NT4	COU	5480151	1/2 - 2	COUPLING CLASS 3000# SW 254 SMO SS							
300			RED	5950205	1/2 - 2	RED.CONC. SW CLASS 3000# FORGED 254SMO A403 UNS S31254							
310			REDEBW	5950206	1/2 - 2	RED. ECC. SW CLASS 3000# FORGED 254SMO A403 UNS S31254							
320			CAP	5950204	1/2 - 2	CAP SW CLASS 3000# FORGED 254SMO A403 UNS S31254							
330		NS1	SOC	5950217	1/2 - 2	SOCKOLET 3000# 254SMO A403 UNS S31254							
340		NT1	EOL	5950219	1/2 - 2	ELBOLET SCH 40S SCRD 254SMO A403 S31254							
350		NT1	EOLSW	5950220	1/2 - 2	ELBOLET SCH 40S SW 254SMO A403 S31254							
360			COUHSW	5480150	1/2 - 2	HALF COUPLING CLASS 3000# SW 254SMO							
370			COUFSC	5498651	1/2 - 2	COUPLING CL 3000# THRD FNPT 254 SMO SS							
380		NS2	TOL	5950222	1/2 - 2	THREDOLET CLASS 3000# 254SMO A403 UNS S31254							
390			UNI	5480146S	1/2 - 2	UNION CLASS 3000# SW 254 SMO SS							
400			REDINS	5950225	1/2 - 2	REDUCING INSERT TYPE 1 CL 3000# SW 254SMO A403 UNS S31254							
410													
420			ELLSR	5950403	3 - 24	ELL 90 DEG SR SCH10S BW 254SMO A403 UNSS31254-W	AVESTA						
430			ELL	5950401	3 - 24	ELL 90 DEG LR SCH10S BW 254SMO A403 UNSS31254-W	AVESTA						
440			45L	5950402	3 - 24	ELL 45 DEG LR SCH 10S BW 254SMO A403 UNS S31254-W	AVESTA						
450			TEE	5950213	3 - 24	TEE SCH 10S BW 254SMO A403 UNS S31254-W	AVESTA						
460			TEERED	5950212	3 - 24	TEE RED SCH 10S 254SMO A403 UNS S31254-W	AVESTA						
470			CAP	5950404	3 - 24	CAP SCH 10S BW 254SMO A403 UNS S31254-W							
			Sulphide Leach Project Fluor Chile - Minera Escondida 53232500 Antofagasta			CONSTRUCTION	Sulphide Leach Project						
						2" & SMALLER - SW<math>\lt; n>2\ 1/2"			CORR. ALLOW. 0 IN	DATE 14OCT04	BY ECQ	REV 1	SHEET 1 OF 3


SERVICE


PREGNANT LEACH SOLUTION : PLS  
RAFFINATE : R


MATERIAL: 254 SMO  
FLANGE RATING: 300 RF  
TEMPERATURE RANGE: 0 / 50 C  
COMMENT:

SEQ NO.	REV	NOTE NO.	ITEM NAME	ITEM CODE	SIZE RANGE / SMALL END SIZES	DESCRIPTION	REFERENCE / LARGE END SIZES	NOTES				
480			RED	5950405	3 - 24	REDUCER CONCENTRIC SCH 10S BW 254SMO A403 UNSS31254-W	AVESTA					
490			REDEBW	5950406	3 - 24	REDUCER ECCENTRIC SCH 10S BW 254SMO A403 UNS S31254-W	AVESTA					
500			ELL	5950556	26 - 60	ELL 90 DEG SR 0.312" WALL BW 254SMO A403 UNS312-W	AVESTA					
510			ELLBW	5950551	26 - 60	ELL 90 DEG LR 0.312" WALL BW 254SMO A403-W						
520			45L	5950552	26 - 60	ELL 45 DEG LR 0.312" WALL BW 254SMO A403-W						
530			45LBW	5950559	26 - 60	ELL 45 DEG SR 0.312" WALL BW 254SMO A403-W						
540			TEE	5950553	26 - 60	TEE 0.312" WALL BW 254SMO A403 UNS31254-W	AVESTA					
550			TEERBW	5950554	26 - 60	TEE RED 0.312" WALL BW 254SMO A403 UNS31254-W	AVESTA					
560			CAP	5950555	26 - 60	CAP 0.312" WALL BW 254SMO A403 UNS312-W						
570			RED	5950557	26 - 60	REDUCER CONCENTRIC 0.312" WALL BW 254SMO A403 -W						
580			REDECC	5950558	26 - 60	REDUCER ECCENTRIC 0.312" WALL BW 254SMO A403-W						
590						*****PIPE FLANGES*****	AVESTA					
600												
610												
620			SWF	5950611	1/2 - 2	FLG SW CLASS 300 RF 254SMO UNS S31254 40S BORE						
630	1		SOFRF	5950612	3 - 24	FLG SO 300# RF 254 SMO UNS S31254						
640			BLF	5950613	1/2 - 2	FLG BLIND CL 300 RF 254SMO A 312 UNS S31254						
650			BLFLIN	5950614	2 1/2 - 24	FLG BLIND CL 300 RF A105 CS W/254SMO LINING						
660			BLFRF	5950616	26 - 60	FLG BLIND CL 300 RF A105 W/254SMO MSS-SP44						
670		FS8	LJS	5950409	26 - 60	STUB END .312 WALL 254SMO UNS S31254-W						
680	1		LJSBW	5950407	3 - 24	STUB END SCH 10S 254SMO UNS S31254-W						
690	1		LJFFF	5599578	3 - 24	FLG LAP JOINT 300# 316 SS						
700	1		LJF	5599580	26 - 60	FLG LAP JOINT CL 300 MSS SP-44 316SS						
710			SPECBF	5950913	1/2 - 14	SPECTACLE BLIND CL 300 FF/RF 254SMO UNS S31254						
720			BLF	5950914	16 - 24	PAD BLIND CL 300 RF CS W/254SMO LINING						
730			PADBFF	5950617	26 - 60	PAD BLIND CL 300 RF CS W/254SMO MSS-SP-44						
740			SPE	5950618	26 - 60	PAD SPACER CL 300 RF 254SMO MSS-SP-44						
750			SPEDON	5950915	16 - 24	SPACER PAD CL 300 RF 254SMO UNS S31254						
760						*****PIPE NIPPLES*****						
770												
780												
790			NIPTBE	5950801	1/2 - 2	NIPPLE SCH 40S 254SMO UNS S31254 TBE L=100MM						
800			NIP	5950803	1/2 - 2	NIPPLE SCH 40S 254SMO UNS S31254 TOE L=100MM						
810			NIPTOE	5950805	1/2 - 2	NIPPLE SCH 40S 254SMO UNS S31254 TOE x POE L=100MM						
820						*****SWAGE NIPPLES*****						
830												
840												
850		NR2	SWA	5950901	1/2 - 2	SWAGE CONCENTRIC SCH 40S 254SMO UNS S31254 BBE						
860		NR2	SWACBE	5950902	1/2 - 2	SWAGE ECC SCH 40S 254SMO UNS S31254 BBE						
870						***** GASKETS *****						
880												
890												
900			GAS	5669799	1/2 - 40	GASKET 300# INORG.FILLERS W/PTFE 1/8" RF						
910						*****BOLTING*****						
920												
930												
940			BOL	5675689	1/2 - 1 1/8	MACH BOLT 316 SS A193 GR B8M W/1 SEMI-FINISH HEAVY HEX. NUT						
950			BOLS	5675690	1/2 - 1 1/8	STUD-BOLT 316SS A193 B8M-2 W/A194-8M NUT						
			Sulphide Leach Project Fluor Chile - Minera Escondida 53232500 Antofagasta			CONSTRUCTION	Sulphide Leach Project CORR. ALLOW. 0 IN DATE 14OCT04 BY ECQ REV 1 SHEET 2 OF 3 PA 5 CLASS SMPC03					
						2" & SMALLER - SW<r>n>2 1/2" & LARGER - BUTT WELD						


SEQ NO.	REV	NOTE NO.	ITEM NAME	ITEM CODE	SIZE RANGE / SMALL END SIZES	DESCRIPTION	REFERENCE / LARGE END SIZES	NOTES						
960 970 980 990 1000 1010 1020 1030 1040			STR	5762635	4 - 24	*****STRAINER*****  STRAINER 300# RF/FF 316 SS FLAT  ***** EXPANSION JOINT *****  EXPANSION JOINT REDUCER SINGLE ARCH TFE SS 316 RF 300# EXPANSION JOINT SINGLE ARCH TEFLON 254SMO RET.RINGS FF CLASS 300#								
								SERVICE						
								PREGNANT LEACH SOLUTION : PLS RAFFINATE : R						
								MATERIAL: 254 SMO FLANGE RATING: 300 RF TEMPERATURE RANGE: 0 / 50 C COMMENT:						
			Sulphide Leach Project Fluor Chile - Minera Escondida 53232500 Antofagasta			CONSTRUCTION		Sulphide Leach Project						
						2" & SMALLER - SW<r><n>2 1/2" & LARGER - BUTT WELD		CORR. ALLOW. 0 IN	DATE 14OCT04	BY ECQ	REV 1	SHEET 3 OF 3	PA 5	CLASS SMPC03

SEQ NO.	REV	NOTE NO.	ITEM NAME	ITEM CODE	SIZE RANGE / SMALL END SIZES	DESCRIPTION	REFERENCE / LARGE END SIZES	NOTES						
10		AA2				*****VALVE*****		AA2 FOR SULPHURIC ACID USE VALVES OF MATERIAL CLASS AG. FU4 USE WITH E=1/8" HDPE BLIND FLANGE BETWEEN S.O FLG AND C.S. BLIND FLG. NR2 SIZES IN SMALL END SIZES COLUMN ARE BRANCH SIZE OF OLETS OR TEES. SIZES IN LARGE END SIZES COLUMN ARE RUN PIPE SIZE OF OLETS OR TEES. NS1 USE FOR INSTRUMENT CONNECTIONS NT1 USE THESE FITTINGS FOR HYDROTEST VENTS, DRAINS AND INSTRUMENT CONNECTIONS ONLY. NT4 USE ONLY FOR JOINING SMALL BORE PIPES NT5 USE ONLY WITH SUPERVISOR AUTHORIZATION VC3 USE THESE VALVE ONLY IN LINES WITH DESIGN PRESSURE BIGGER THAN 75 PSIG. VE1 USE ONLY IN HOT WATER SYSTEM VE2 USE THIS VALVE ONLY IN FRESH WATER AND POTABLE WATER. VU1 USE THIS VALVE FOR PRESSURE INSTRUMENT CONNECTIONS, VENTS AND DRAINS.						
20														
30														
40		VU1	BALSCR	5058894	1/2 - 2	BA-01: BALL 600# WOG SCRD 316 SS/RTFE, HNDL OP	NIBCO T570CSR66							
50			BALFLR	5300968	1/2 - 2	BA-03: BALL CL 150# RF 316 BODY & TRIM HDLE OP								
60			BALFLG	5303875	1/2 - 4	BA-07: BALL CL 150# RF ALLOY 20	ALOYCO							
70			BAL	5114885	1/2 - 3	BA-16: BALL CL 300# SW 316 SS/RTFE, HNDL OPER	MCCANNA							
80			BTF	5309238	8 - 24	BU-01: BUTTERFLY HP ECC DISC CL 150# 316SS F LUG GO	KEYSTONE #362S							
81			BTFHML	5309238HM	20 - 24	BU-01HM: BUTTERFLY HP ECC DISC CL 300 316SS F LUG HYDR-MANUAL OP.	KEYSTONE #362S							
90			BTFUG	5309238P	20 - 24	BU-01P: BUTTERFLY HP ECC DISC CL 150# 316SS F LUG PNEU	KEYSTONE #362S							
100			BTF	5309218	26 - 36	BU-18: BUTTERFLY HP ECC DISC CL 150# 316SS MSS FLUG GO	FLOW SEAL							
101			BTFHML	5309218HM	30 - 30	BU-18HM: BUTTERFLY HP ECC DISC CL 150# 316SS MSS FLUG HYDR-MANUAL OP.	FLOW SEAL							
110		VE2	BTFUG	5309240	3 - 6	BU-06: BUTTERFLY CL 150# 316 SS/VITON F LUG LO	KEYSTONE # 920							
120			BTF	5309236	2 - 6	BU-07: BUTTERFLY HP ECC DISC CL 150# 316SS, F LUG LO	KEYSTONE #362S							
130		VE2	BTFUG	5309242	8 - 24	BU-09: BUTTERFLY CL 150# 316 SS/VITON F LUG GO	KEYSTONE # AR2							
140		VE2	BTFUG	5309250	26 - 36	BU-26: BUTTERFLY CL 150# 316 SS/VITON F LUG MSS-SP-44 GO	KEYSTONE							
150		VE1	BTFUGH	5309241	3 - 6	BU-27: BUTTERFLY WAF 250# 316 SS/TEFLON SEAT LO	KEYSTONE							
160			CHE	5111918	1/2 - 2	CH-15: CHECK HORIZ. LIFT API CLASS 200# SW 316L SS	ALOYCO #370							
180			CHEFLG	5163750	1/2 - 24	CH-09: CHECK SWING CL 150# RF HOR/VERT ALLOY 20	ALOYCO #377							
190			CHE	5290394	3 - 6	CH-37: CHECK 150# RF 316 SS WAFER-TYPE	DUO-CHECK							
200			CHEWAF	5291172	8 - 36	CH-01: CHECK 150# WAFER 316SS EXT SPRING & WT	KEYSTONE #815							
210		VC3	CHK	5163447	3 - 36	CH-18: CHECK SILENT CLASS 150 RF TFE 316								
220			GAT	5156170	1/2 - 6	GA-02: GATE CL 150# RF OS&Y ALLOY 20 A351 CN7M	LADISH #8275							
221			GAT	5156170G	8 - 24	GA-02G: GATE CL 150# RF OS&Y ALLOY 20 A351 CN7M GEAR OP	LADISH #8275							
230			GATFLG	5251858	2 - 24	GA-22: GATE CL 150# RF 316 SS HANDWHEEL OPERATOR	KITZ #150							
240			GLOFLG	5160587	1/2 - 3	GL-06: GLOBE 150# RF STL 316 SS TRIM								
250			ARVFLG	5001492	2 1/2 - 6	VE-12: AIR/VACUUM VALVE CL 300 RF 316 SS / BUNA-N								
260			ARVSCR	5001493	1/2 - 2	VE-08: AIR RELEASE VALVE 300# SCRD 316 SS / VITON								
270						*****PIPE*****								
280														
290														
300			PIPBAR	5365120	1/2 - 2	PIPE SCH 40S SMLS 316L SS A312 PE								
310			PIP	5365187	2 1/2 - 24	PIPE SCH 10S EFW 316L SS A312 BE								
320			PIP	5365212	26 - 48	PIPE .312 WALL EFW 316L SS A358 CLASS 1 BE								
335						*****FITTINGS*****								
340														
350														
360		NT1	EOT	5521055	1/2 - 2	ELBOLET CLASS 3000# SCRD 316L SS A182								
370		NT1	EOTSW	5521057	1/2 - 2	ELBOLET CLASS 3000# SW 316L SS A182								
380		NT1	LOT	5529072	1/2 - 2	LATROLET CLASS 3000# SW 316L SS								
390			SOL	5537071	1/2 - 2	SOCKOLET CLASS 3000# 316L SS A182	BONNEY FORGE							
400			NIP	5542135	1/2 - 2	NIPPLE SCH 80S 316L SS TBE A312 L=100MM								
410			NIPTOE	5542155	1/2 - 2	NIPPLE SCH 80S 316L SS TOE-POE A312 L=100MM								
420			SWACBE	5546562	1/2 - 1	SWAGE CONCENTRIC SCH 40S 316L SS BBE	1 1/2 - 2							
421			SWACBE	5546565	1/2 - 2	SWAGE CONCENTRIC SCH 10S x SCH40S 316L SS BOE x POE	2 1/2 - 3							
430			SWAEBE	5551652	1/2 - 1	SWAGE ECCENTRIC SCH 40S 316L SS BBE	1 1/2 - 2							
431			SWA	5551655	1/2 - 2	SWAGE ECCENTRIC SCH 10S x SCH40S 316L SS BOE x POE	2 1/2 - 3							
440			ELL	5480138	1/2 - 2	ELL 90 DEG CLASS 3000# SW FORGED 316L SS A182								
			Sulphide Leach Project Fluor Chile - Minera Escondida 53232500 Antofagasta			CONSTRUCTION		Sulphide Leach Project						
						2" & SMALLER - SW<2 1/2" & LARGER - BUTT WELD		CORR. ALLOW.	DATE	BY	REV	SHEET	PA	CLASS
								0 IN	14OCT04	ECQ	1	1 OF 3	5	SSPC01


SEQ NO.	REV	NOTE NO.	ITEM NAME	ITEM CODE	SIZE RANGE / SMALL END SIZES	DESCRIPTION	REFERENCE / LARGE END SIZES	NOTES					
450			45L	5480139	1/2 - 2	ELL 45 DEG CLASS 3000# SW 316L SS A182	BONNEY FORGE						
460			RED	5480153	1/2 - 2	REDUCER CONCENTRIC CLASS 3000# SW FORGED 316L SS							
470			REDECC	5480148	1/2 - 2	RED ECC CLASS 3000# SW FORGED 316L SS							
480			TEE	5480140	1/2 - 2	TEE CLASS 3000 SW 316L SS A182							
490		NR2	TEERSW	5480143	1/2 - 2	TEE RED CLASS 3000# SW 316L SS A182	3/4 - 3						
500			CAP	5480141	1/2 - 2	CAP CLASS 3000# SW FORGED 316L SS A182							
510		NT4	COU	5480142	1/2 - 2	COUPLING CLASS 3000# SW 316L SS A182	BONNEY FORGE						
511			RTE	5480145	1/2 - 1	REDUCING INSERT TYPE 1 CL 3000# SW 316L SS A182	1 1/2 - 2						
520			UNI	5480146	1/2 - 2	UNION CLASS 3000# SW 316L SS A182							
530		NT1	PLG	5498383	1/2 - 2	PLUG ROUND HEAD CLASS 3000# SCRD 316L SS A182							
540		NT5	COUHSW	5480149	1/2 - 2	HALF COUPLING CLASS 3000# SW 316L SS							
550		NS1	TOL	5515771	1/2 - 2	THREDOLET CLASS 3000# 316L SS A182	BONNEY FORGE						
560													
570													
580			ELL	5448852	3 - 10	ELL 90 DEG LR SCH10S BW 316L SS A403 WP316L							
590			SRL	5448853	3 - 10	ELL 90 DEG SR SCH10S 316L SS A403 WP316L							
600			45L	5448858	3 - 10	ELL 45 DEG LR SCH 10S BW 316L SS A403 WP316L							
610		NR2	TEE	5448861	3 - 10	TEE SCH 10S BW 316L SS A403 WP316L							
620		NR2	TEERBW	5448865	3 - 8	TEE RED SCH 10S BW 316L SS A403 WP316L	4 - 10						
630			CAP	5448862	3 - 24	CAP SCH 10S BW 316L SS A403 WP316L							
640			REDCBU	5448863	3 - 10	REDUCER CONCENTRIC SCH10S BW 316L SS A403 WP316L	4 - 12						
650			REDEB	5448864	3 - 12	REDUCER ECCENTRIC SCH 10S BW 316L SS A403 WP316L							
660			SRL	5450707	12 - 24	ELL 90 SR SCH 10S 316L SS A403 WP316L-W							
670			ELL	5450706	12 - 24	ELL 90 LR SCH 10S BW 316L SS A403 WP316L-W							
680			45L	5450712	12 - 24	ELL 45 DEG LR SCH 10S BW 316L SS A403 WP316L-W							
690		NR2	TEE	5450715	12 - 24	TEE SCH 10S BW 316L SS A403 WP316L-W							
700		NR2	TEERBD	5450716	12 - 22	TEE RED SCH 10S BW 316L SS A403 WP316L	14 - 24						
710			REDCBW	5450717	10 - 24	REDUCER CONCENTRIC SCH 10S BW 316L SS WP316L-W							
720			REDEBW	5450718	10 - 24	REDUCER ECCENTRIC SCH 10S BW 316L SS WP316L-W							
730			LAT	5900200	2 1/2 - 24	LATERAL SCH 10S BW 316L SS WP316L-W							
740			ELL	5451694	26 - 48	ELL 90 DEG LR 0.312" WALL BW 316L SS WP316L-W							
750			90L	5451712	26 - 48	ELL 90 DEG SR 0.312" WALL BW 316L SS WP316L-W							
760			45L	5451700	26 - 48	ELL 45 DEG LR 0.312" WALL BW 316L SS WP316L-W							
770			TEE	5451703	26 - 48	TEE 0.312" WALL BW 316L SS A403 WP316L-W							
780			TEEREB	5451711	26 - 46	TEE RED 0.312" WALL BW 316L SS A403 WP316L-W	28 - 48						
790			CAP	5451715	26 - 48	CAP 0.312" WALL BW 316L SS A403 WP316L-W							
800			RED	5451705	26 - 48	RED CONC 0.312" WALL BW 316L SS WP316L-W							
810			REDEBW	5451706	26 - 48	REDUCER ECCENTRIC 0.312" WALL BW 316L SS WP316L-W							
820			LAT	5900210	26 - 48	LATERAL 0.312" WALL BW 316L SS WP316L-W							
830													
840						*****PIPE FLANGES*****							
850													
860			SWF	5608701	1/2 - 2	FLG SW CLASS 150 RF 316L SS SCH40S BORE A182							
870			BLF	5616520	1/2 - 24	FLG BLIND 150# RF 316 SS A182							
880			BLF	5620993	26 - 48	FLG BLIND MSS 150# RF STL A105							
890			SOF	5598515	3 - 24	FLG SO 150# RF A182 GRADE F316L SS							
900			SOF	5620931	26 - 48	FLG SO 150# RF 316L SS A182 MSS SP-44							
910													
920						***** GASKETS *****							
930													
			Sulphide Leach Project Fluor Chile - Minera Escondida 53232500 Antofagasta			CONSTRUCTION	Sulphide Leach Project						
						2" & SMALLER - SW<2 1/2" & LARGER - BUTT WELD	CORR. ALLOW. 0 IN	DATE 14OCT04	BY ECQ	REV 1	SHEET 2 OF 3	PA 5	CLASS SSPC01


SEQ NO.	REV	NOTE NO.	ITEM NAME	ITEM CODE	SIZE RANGE / SMALL END SIZES	DESCRIPTION	REFERENCE / LARGE END SIZES	NOTES					
940			GAS	5669788	1/2 - 24	GASKET 150# INORG.FILLERS W/PTFE 1/8" FF	DURLON 9000						
950			GASRF	5669790	1/2 - 48	GASKET 150# INORG.FILLERS W/PTFE 1/8" RF							
960						*****BOLTING*****							
970													
980													
990			BOL	5675689	1/4 - 1 1/8	MACH BOLT 316 SS A193 GR B8M W/1 SEMI-FINISH HEAVY HEX. NUT							
1000			BOLS	5675690	1/4 - 1 1/8	STUD-BOLT 316SS A193 B8M-2 W/A194-8M NUT							
1010						*****STRAINER*****							
1020													
1030													
1040			DUP	5904199	1/2 - 24	STRAINER DUPLEX BASKET SS 316L BODY FF 150#	HAWS 8306	SERVICE LEAN ELECTROLYTE : LE GUAR : GU RICH ELECTROLYTE : RE HYDROCL. ACID : HA DEMINER. WATER : RO COBALTE SULF. : CS POTABLE WATER : DW FC-1100 : FC HOT WATER : HW KEROS.(DILUENT) : K CAUSTIC SODA : CA SULPHURIC ACID : SA LOADED ORGANIC : LK BRINE : BW BARREN ORGANIC : BK BLOWER AIR : BA					
1050			STR	5762671	1/2 - 24	STRAINER 150# RF STL 316 SS BASKET							
1060			STRCON	5904204	3 - 24	STRAINER FLAT 316 SS RF/FF 150#							
1070			STRWYE	5763152	2 1/2 - 12	Y-STRAINER 150# RF 316, .033 PERF							
1080			STRWYE	5762402	1/2 - 2	Y-STRAINER 600# SW 316L SS .033 PERF							
1090						*****EXPANSION JOINT*****							
1100													
1110													
1120													
1130			EXP	5984760	1/2 - 48	EXPANSION JOINT SINGLE ARCH TEFLON 316 SS RET.RINGS RF CLASS150#							
1140	1		EXPJNT	5984770	1/2 - 48	EXPANSION JOINT SINGLE ARCH TEFLON 316 SS CL150							
1141						***** REFERENCE FOR BRANCHS IN PDS *****							
1150													
1160													
1170			RWELD	STUB-ON	3 - 48	BRANCH CONNECTION TYPE PIPE X PIPE							
1180						***** HOSE CONNECTIONS *****							
1190													
1200													
1210			HOS	5764100	1/2 - 2	HOSE CONN. 2-LUG QUICK ACT. COUPLING 316L PE 150 PSIG							
1220			HOSCPL	5764110	1/2 - 2	HOSE CONN. 2-LUG QUICK ACT. COUPLING 316L SW 150 PSIG							
1230						***** SAFETY SHOWER & EYE WASH *****							
1240													
1250													
1260			SAF	5761535	1 1/2 - 2	SAFETY SHOWER, EYE/FACE WASH COMBINATION UNIT AND ELECTRICAL WATER HEATER							
1270						***** INSULATION *****							
1280													
1290													
1300			ISM	5ISMW	4 - 20	MINERAL WOOL THERMAL INSULATION							
1310			ISC	5ISCAS	2 - 20	CALCIUM SILICATE THERMAL INSULATION							
			Sulphide Leach Project Fluor Chile - Minera Escondida 53232500 Antofagasta			CONSTRUCTION	Sulphide Leach Project						
						2" & SMALLER - SW<math>\leq 2\frac{1}{2}</math>" & LARGER - BUTT WELD	CORR. ALLOW. 0 IN	DATE 14OCT04	BY ECQ	REV 1	SHEET 3 OF 3	PA 5	CLASS SSPC01




SEQ NO.	REV	NOTE NO.	ITEM NAME	ITEM CODE	SIZE RANGE / SMALL END SIZES	DESCRIPTION	REFERENCE / LARGE END SIZES	NOTES						
10						*****VALVE*****		NR2 SIZES IN SMALL END SIZES COLUMN ARE BRANCH SIZE OF OLETS OR TEES. SIZES IN LARGE END SIZES COLUMN ARE RUN PIPE SIZE OF OLETS OR TEES. NS1 USE FOR INSTRUMENT CONNECTIONS NT1 USE THESE FITTINGS FOR HYDROTEST VENTS, DRAINS AND INSTRUMENT CONNECTIONS ONLY. NT4 USE ONLY FOR JOINING SMALL BORE PIPES NT5 USE ONLY WITH SUPERVISOR AUTHORIZATION NT6 USE FOR ACID INTERPLANT PIPELINE ONLY VC3 USE THESE VALVE ONLY IN LINES WITH DESIGN PRESSURE BIGGER THAN 75 PSIG. VU1 USE THIS VALVE FOR PRESSURE INSTRUMENT CONNECTIONS, VENTS AND DRAINS.						
20														
30														
40														
50		NS1	BALSW	5114885	1/2 - 2	BA-16: BALL CL 300# SW 316 SS/RTFE, HNDL OPER	MCCANNA							
60		VU1	BAL	5309468	1/4 - 2	BA-20: BALL CL 300# RF 316 SS/RTFE, HDLE OP	MCCANNA #N30156							
61			BALSCR	5058894	1/2 - 2	BA-01: BALL 600# WOG SCRD 316 SS/RTFE, HNDL OP	NIBCO T570CSR66							
			BTFLUG	5309238HM	20 - 24	BU-01HM: BUTTERFLY HP ECC DISC CL 300 316SS F LUG HYDR-MANUAL OP.	KEYSTONE #362S							
70			BTFLG	5309470	3 - 6	BU-28: BUTTERFLY HP CL 300# 316SS/RTFE TAP-LUG LO	KEYSTONE #372							
80			BTFLGO	5309471	8 - 24	BU-10: BUTTERFLY HP 300# 316SS LUG GO	KEYSTONE #372S							
90			BTF	5309471P	20 - 24	BU-10P: BUTTERFLY HP CL 300 316SS LUG PNEUM OP								
100			CHE	5290522	3 - 10	CH-38: CHECK CL 300 RF 316 SS, WAFER VITON								
110			CHEWAF	5291172S	12 - 36	CH-39: CHECK CL 300 WAFER 316SS EXT SPRING & WT	KEYSTONE #815							
120		VC3	CHK	5163447S	3 - 36	CH-40: CHECK SILENT CLASS 300# RF TFE 316	APCO SERIES 600							
130			G-33	5252236	2 - 6	GA-04: GATE CL 300 RF 316 SS HANDWHEEL OP	WARREN							
140			GATRF	5252236G	8 - 36	GA-04G: GATE 300# RF 316 SS GEAR OP	WARREN							
150			GAT	5269601	1/2 - 6	GA-27: GATE OS & Y CLASS 300 RF ALLOY 20 GR CN7M HANDWHEEL OP								
160			GAT	5269601G	8 - 12	GA-27G: GATE OS & Y CLASS 300 RF ALLOY 20 GR CN7M GEAR OP								
170			ARVFLG	5001492	2 - 6	VE-12: AIR/VACUUM VALVE CL 300 RF 316 SS / BUNA-N								
180			V-11S	5001493S	1/2 - 4	VE-09: AIR RELEASE VALVE 300# FNPT 316 SS/BUNA-N								
190			VAC	5001482	2 - 12	VE-14: AIR REL.& VAC.BRKR ALLOY 20 RF CL300								
191			COMBRF	5001498	2 - 6	VE-16: COMBINATION AIR VALVE CL 300 RF 316 SS / VITON								
200			ARV	5001466	1/2 - 3	VE-18: AIR RELEASE VALVE 600# FNPT 316 SS / VITON								
210			ARVSCR	5001510	1 - 3	VE-19: AIR RELEASE VALVE CL 300 RF 316 SS / VITON	APCO							
211						*****PIPE*****								
220														
230														
240			PIP	5365120	1/2 - 12	PIPE SCH 40S SMLS 316L SS A312 PE								
250			PIP	5365205	14 - 24	PIPE .375" WALL EFW 316/316L SS A312								
260		NT6	PIBBAR	5365187	1/2 - 6	PIPE SCH 10S EFW 316L SS A312 BE								
270						*****FITTINGS*****								
280														
290														
300			ELL	5480138	1/2 - 2	ELL 90 DEG CLASS 3000# SW FORGED 316L SS A182								
310			45L	5480139	1/2 - 2	ELL 45 DEG CLASS 3000# SW 316L SS A182	BONNEY FORGE							
320			RED	5480153	1/2 - 2	REDUCER CONCENTRIC CLASS 3000# SW FORGED 316L SS		SERVICE RICH ELECTROLYTE : RE						
330			REDECC	5480148	1/2 - 2	RED ECC CLASS 3000# SW FORGED 316L SS								
340			TEE	5480140	1/2 - 2	TEE CLASS 3000 SW 316L SS A182								
350		NR2	TEERED	5480143	1/2 - 2	TEE RED CLASS 3000# SW 316L SS A182								
360			CAP	5480141	1/2 - 2	CAP CLASS 3000# SW FORGED 316L SS A182								
370		NT4	COU	5480142	1/2 - 2	COUPLING CLASS 3000# SW 316L SS A182	BONNEY FORGE							
380			UNI	5480146	1/2 - 2	UNION CLASS 3000# SW 316L SS A182								
390		NT1	PLG	5498383	1/2 - 2	PLUG ROUND HEAD CLASS 3000# SCRD 316L SS A182								
400		NT5	COUHSW	5480149	1 - 2	HALF COUPLING CLASS 3000# SW 316L SS								
410		NS1	TOL	5515771	1 - 2	THREDOLET CLASS 3000# 316L SS A182	BONNEY FORGE	MATERIAL: 316L STAINLESS STEEL FLANGE RATING: 300 RF TEMPERATURE RANGE: 0 / 50 C COMMENT:						
420		NT1	EOT	5521055	1/2 - 2	ELBOLET CLASS 3000# SCRD 316L SS A182								
430		NT1	EOTSW	5521057	1/2 - 2	ELBOLET CLASS 3000# SW 316L SS A182								
440		NT1	LOT	5529072	1/2 - 2	LATROLET CLASS 3000# SW 316L SS								
450			SOL	5537071	1/2 - 2	SOCKOLET CLASS 3000# 316L SS A182	BONNEY FORGE							
			Sulphide Leach Project Fluor Chile - Minera Escondida 53232500 Antofagasta			CONSTRUCTION		Sulphide Leach Project						
						2" & SMALLER - SW<rp>n>2 1/2" & LARGER - BUTT WELD		CORR. ALLOW. 0 IN		DATE 14OCT04	BY ECQ	REV 1	SHEET 1 OF 2	PA 5



SEQ NO.	REV	NOTE NO.	ITEM NAME	ITEM CODE	SIZE RANGE / SMALL END SIZES	DESCRIPTION	REFERENCE / LARGE END SIZES	NOTES												
460			NIP	5542132	1/2 - 2	NIPPLE SCH 40S 316L SS TBE A312 L=100MM	14 -	<div>SERVICE</div> <div>RICH ELECTROLYTE : RE</div> <div>MATERIAL: 316L STAINLESS STEEL FLANGE RATING: 300 RF TEMPERATURE RANGE: 0 / 50 C COMMENT:</div>												
470			NIPTOE	5542142	1/2 - 2	NIPPLE SCH 40S 316L SS TOE-POE A312 L=100MM														
480			SWA	5546562	1/2 - 2	SWAGE CONCENTRIC SCH 40S 316L SS BBE														
490			SWAEBE	5551652	1/2 - 2	SWAGE ECCENTRIC SCH 40S 316L SS BBE														
500			ELL	5450992	3 - 12	ELL 90 LR SCH 40S BW 316/316L SS A403-W														
510			45L	5450998	3 - 12	ELL 45 DEG LR SCH 40S BW 316/316L SS A403-W														
520		NR2	TEE	5451001	3 - 12	TEE SCH 40S BW 316/316L SS A403-W														
530			RTE	5448870	3 - 12	TEE RED SCH 40S BW 316L SS A403 WP316L														
540			CAP	5449148	3 - 12	CAP SCH 40S BW 316L SS A403 WP316L														
550			RED	5451003	3 - 12	RED CONC SCH 40S BW 316/316L SS A403-W														
560			REDEBW	5451004	3 - 12	RED ECC SCH 40S BW 316/316L SS A403-W														
570			ELL	5451720	14 - 24	ELL 90 DEG LR 0.375" WALL BW 316/316L A403-W														
580			45L	5451726	14 - 24	ELL 45 DEG LR 0.375" WALL BW 316/316L SS A403-W														
590			TEEBW	5451729	14 - 24	TEE 0.375" WALL BW 316/316L SS A403-W														
600			RTE	5451725	14 - 24	TEE RED 0.375" WALL BW 316L SS A403 WP316L-W														
610			CAP	5449894	14 - 24	CAP 0.375" WALL BW 316/316L SS A403														
620			REDCBW	5451731	14 - 24	RED CONC 0.375" WALL BW 316/316L SS A403-W														
630			REDEBW	5451732	14 - 24	RED ECC 0.375" WALL BW 316/316L SS A403-W														
640						*****PIPE FLANGES*****														
650																				
660																				
670			BLF	5616529	1/2 - 24	FLG BLIND 300# RF 316/316L SS														
680			SOF	5598440	1/2 - 24	FLG SO 300# RF A182 GRADE F316 SS														
690						***** GASKETS *****														
700																				
710																				
720			GAS	5669799	1/2 - 24	GASKET 300# INORG.FILLERS W/PTFE 1/8" RF														
730						*****BOLTING*****														
740																				
750																				
760			BOL	5675689	1/4 - 1 1/8	MACH BOLT 316 SS A193 GR B8M W/1 SEMI-FINISH HEAVY HEX. NUT														
770			BOLS	5675690	1/4 - 1 1/8	STUD-BOLT 316SS A193 B8M-2 W/A194-8M NUT														
			Sulphide Leach Project Fluor Chile - Minera Escondida 53232500 Antofagasta			CONSTRUCTION								Sulphide Leach Project						
						2" & SMALLER - SW<r>n>2 1/2" & LARGER - BUTT WELD								CORR. ALLOW.		DATE	BY	REV	SHEET	PA
								0 IN		14OCT04	ECQ	1	2 OF 2	5	SSPC03					

SEQ NO.	REV	NOTE NO.	ITEM NAME	ITEM CODE	SIZE RANGE / SMALL END SIZES	DESCRIPTION	REFERENCE / LARGE END SIZES	NOTES						
10						*****VALVE*****		NR2 SIZES IN SMALL END SIZES COLUMN ARE BRANCH SIZE OF OLETS OR TEES. SIZES IN LARGE END SIZES COLUMN ARE RUN PIPE SIZE OF OLETS OR TEES. NS1 USE FOR INSTRUMENT CONNECTIONS NT1 USE THESE FITTINGS FOR HYDROTEST VENTS, DRAINS AND INSTRUMENT CONNECTIONS ONLY. NT5 USE ONLY WITH SUPERVISOR AUTHORIZATION VC3 USE THESE VALVE ONLY IN LINES WITH DESIGN PRESSURE BIGGER THAN 75 PSIG. VU1 USE THIS VALVE FOR PRESSURE INSTRUMENT CONNECTIONS, VENTS AND DRAINS.						
20														
30														
40			BALSW	5114885	1/2 - 2	BA-16: BALL CL 300# SW 316 SS/RTFE, HNDL OPER	MCCANNA							
50		VU1	BALSCR	5058894	1/2 - 2	BA-01: BALL 600# WOG SCRD 316 SS/RTFE, HNDL OP	NIBCO T570CSR66							
60			BTFLG	5309470	3 - 6	BU-28: BUTTERFLY HP CL 300# 316SS/RTFE TAP-LUG LO	KEYSTONE #372							
70			BTFLUG	5309471	8 - 24	BU-10: BUTTERFLY HP 300# 316SS LUG GO	KEYSTONE #372S							
80			GAT	5252236	2 - 6	GA-04: GATE CL 300 RF 316 SS HANDWHEEL OP	WARREN							
81			GAT	5252236G	8 - 24	GA-04G: GATE 300# RF 316 SS GEAR OP	WARREN							
90			G-33	5252240	20 - 24	GA-25: GATE 300# RF 316 SS GEAR OP								
100			CHE	5290522	3 - 6	CH-38: CHECK CL 300 RF 316 SS, WAFER VITON								
110		VC3	CHEWAF	5291172S	8 - 24	CH-39: CHECK CL 300 WAFER 316SS EXT SPRING & WT	KEYSTONE #815							
120			CHK	5163447S	3 - 24	CH-40: CHECK SILENT CLASS 300# RF TFE 316	APCO SERIES 600							
130			ARVFLG	5001492	2 - 6	VE-12: AIR/VACUUM VALVE CL 300 RF 316 SS / BUNA-N								
140			V-11S	5001493S	1/2 - 1 1/2	VE-09: AIR RELEASE VALVE 300# FNPT 316 SS/BUNA-N								
150						*****PIPE*****								
160														
170														
180			PIP	5365120	1/2 - 12	PIPE SCH 40S SMLS 316L SS A312 PE								
190			PIP	5365206	14 - 24	PIPE .500 WALL EFW 316/316L SS A312								
200						*****FITTINGS*****								
210														
220														
230			ELL	5480138	1/2 - 2	ELL 90 DEG CLASS 3000# SW FORGED 316L SS A182	BONNEY FORGE							
240			45L	5480139	1/2 - 2	ELL 45 DEG CLASS 3000# SW 316L SS A182								
250			RED	5480153	1/2 - 2	REDUCER CONCENTRIC CLASS 3000# SW FORGED 316L SS								
260			REDECC	5480148	1/2 - 2	RED ECC CLASS 3000# SW FORGED 316L SS	BONNEY FORGE							
270			TEE	5480140	1/2 - 2	TEE CLASS 3000 SW 316L SS A182								
280	NR2		TEERED	5480143	1/2 - 2	TEE RED CLASS 3000# SW 316L SS A182								
290			CAP	5480141	1/2 - 2	CAP CLASS 3000# SW FORGED 316L SS A182	BONNEY FORGE							
300			CAPSW	5497650	1/2 - 2	CAP CLASS 3000# SCREWED FNPT FORGED 316L SS A182								
310	NR2		COU	5480142	1/2 - 2	COUPLING CLASS 3000# SW 316L SS A182								
320			UNI	5480146	1/2 - 2	UNION CLASS 3000# SW 316L SS A182	BONNEY FORGE							
330	NT1		PLG	5498383	1/2 - 2	PLUG ROUND HEAD CLASS 3000# SCRD 316L SS A182								
340	NT5		COUHSW	5480149	1/2 - 2	HALF COUPLING CLASS 3000# SW 316L SS								
350	NS1		TOL	5515771	1 - 2	THREDOLET CLASS 3000# 316L SS A182	BONNEY FORGE							
360	NT1		EOT	5521055	1/2 - 2	ELBOLET CLASS 3000# SCRD 316L SS A182	SERVICE  RICH ELECTROLYTE : RE          MATERIAL: 316L STAINLESS STEEL FLANGE RATING: 300 RF TEMPERATURE RANGE: 0 / 50 C COMMENT:							
370	NT1		EOTSW	5521057	1/2 - 2	ELBOLET CLASS 3000# SW 316L SS A182								
380	NT1		LOT	5529072	1/2 - 2	LATROLET CLASS 3000# SW 316L SS								
390			SOL	5537071	1/2 - 2	SOCKOLET CLASS 3000# 316L SS A182								
400			NIP	5542135	1/2 - 2	NIPPLE SCH 80S 316L SS TBE A312 L=100MM								
410			NIPTOE	5542155	1/2 - 2	NIPPLE SCH 80S 316L SS TOE-POE A312 L=100MM								
420			SWA	5546562	1/2 - 2	SWAGE CONCENTRIC SCH 40S 316L SS BBE								
430			SWAEBE	5551652	1/2 - 2	SWAGE ECCENTRIC SCH 40S 316L SS BBE								
440			ELLBW	5450992	3 - 12	ELL 90 LR SCH 40S BW 316/316L SS A403-W								
450			45LBW	5450998	3 - 12	ELL 45 DEG LR SCH 40S BW 316/316L SS A403-W								
460	NR2		TEE	5451001	3 - 12	TEE SCH 40S BW 316/316L SS A403-W								
470			TEERBW	5451005	3 - 12	TEE RED SCH 40S BW 316/316L SS A403-W								
480			CAP	5449148	3 - 12	CAP SCH 40S BW 316L SS A403 WP316L								
490			RED	5451003	3 - 12	RED CONC SCH 40S BW 316/316L SS A403-W								
			Sulphide Leach Project Fluor Chile - Minera Escondida 53232500 Antofagasta			CONSTRUCTION		Sulphide Leach Project						
						2" & SMALLER - SW<2 1/2" & LARGER - BUTT WELD		CORR. ALLOW.	DATE	BY	REV	SHEET	PA	CLASS
								0 IN	14OCT04	ECQ	1	1 OF 2	5	SSSP03

SEQ NO.	REV	NOTE NO.	ITEM NAME	ITEM CODE	SIZE RANGE / SMALL END SIZES	DESCRIPTION	REFERENCE / LARGE END SIZES	NOTES					
500			REDEBW	5451004	3 - 12	RED ECC SCH 40S BW 316/316L SS A403-W		<div></div> <div>SERVICE</div> <div>RICH ELECTROLYTE : RE</div> <div>MATERIAL: 316L STAINLESS STEEL FLANGE RATING: 300 RF TEMPERATURE RANGE: 0 / 50 C COMMENT:</div>					
510			ELL	5451742	14 - 24	ELL 90 DEG LR 0.500 WALL BW 316/316L A403-W							
520			45LBW	5451748	14 - 24	ELL 45 DEG 0.500" WALL BW 316/316L SS A403-W							
530			TEE	5451751	14 - 24	TEE 0.500" WALL BW 316/316L SS A403-W							
540			TEERBW	5451755	14 - 24	TEE REDUCING .500" WALL BW 316/316L SS A403-W							
550			CAP	5449938	14 - 24	CAP 0.500" WALL BW 316/316L SS A403							
560			RED	5451753	14 - 24	REDUCER CONCENTRIC 0.500" WALL BW 316/316L SS A403-W							
570			REDEBW	5451754	14 - 24	RED ECC 0.500" WALL BW 316/316L SS A403-W							
580						*****PIPE FLANGES*****							
590													
600													
610			BLF	5616529	2 - 24	FLG BLIND 300# RF 316/316L SS							
620			BLFRF	5615497	2 - 24	FLG BLIND 300# RF FORGED CARBON STEEL A105							
630			SOF	5598440	2 - 24	FLG SO 300# RF A182 GRADE F316 SS							
640						***** GASKETS *****							
650													
660													
670			GAS	5669799	2 - 24	GASKET 300# INORG.FILLERS W/PTFE 1/8" RF							
680						*****BOLTING*****							
690													
700													
710			BOL	5675689	1/4 - 1 1/8	MACH BOLT 316 SS A193 GR B8M W/1 SEMI-FINISH HEAVY HEX. NUT							
720			BOLS	5675690	1/4 - 1 1/8	STUD-BOLT 316SS A193 B8M-2 W/A194-8M NUT							
			Sulphide Leach Project Fluor Chile - Minera Escondida 53232500 Antofagasta			CONSTRUCTION							
						2" & SMALLER - SW<math>\leq 2\frac{1}{2}</math>" & LARGER - BUTT WELD	CORR. ALLOW. 0 IN	DATE 14OCT04	BY ECQ	REV 1	SHEET 2 OF 2	PA 5	CLASS SSSP03

## Fluor Chile - Minera Escondida

Sulphide Leach Project

53232500

Antofagasta

ITEM CODE	ABBREVIATED DESCRIPTION	PURCHASE DESCRIPTION	REFERENCES	PR
PRIME: 5 Piping				
5058894	BA-01: BALL 600# WOG SCRD 316 SS/RTFE, HNDL OP	TAG BA-01 ITEM - BALL VALVE RATING - ANSI CLASS 600 SCREWED OPERATOR - HANDLE OPERATED MATERIAL BODY & BONNET - 316 STAINLESS STEEL CASTINGS - ASTM-A351, GRADE CF8M FORGINGS - ASTM-A182, GRADE F316 SEATS - REINFORCED TEFLON TRIM - 316 STAINLESS STEEL REFERENCE - NIBCO T-570-CS-R66 OR AUTHORIZED SUBSTITUTE	NIBCO T570CSR66	<input checked="" type="checkbox"/>
5002530	BA-02: BALL CL 300 FR-SFE.REG.P.CS/SS TR/TFE SW	TAG BA-02 VALVE, BALL, FIRE-SAFE, REGULAR PORT, TOP ENTRY, BACKSEATED STEM (BLOWOUT PROOF), QUARTER TURN OPERATION, HAND LEVER ACTUATOR. MATERIAL: BODY & BONNET : CARBON STEEL, CAST, PER ASTM A216 GRADE WCE BALL & STEM : 316 STAINLESS STEEL SEATS & SEALS : TFE, CERAMIC FILLED SOCKET WELD ENDS PER ANSI B16.11; ANSI CLASS 300 REFERENCE: CRANE OR APPROVED EQUAL	CRANE	<input checked="" type="checkbox"/>
5300968	BA-03: BALL CL 150# RF 316 BODY & TRIM HDLE OP	TAG BA-03 ITEM - BALL VALVE RATING - ANSI CLASS 150# FLANGED, RAISED FACE OPERATOR - HANDLE OPERATED MATERIAL BODY & COVER - ASTM A276 TYPE 316 CASTINGS - 316 STAINLESS STEEL SEATS & SEALS - REINFORCED TFE TRIM - 316 STAINLESS STEEL REFERENCE - NIBCO F 510 OR AUTHORIZED SUBSTITUTE		<input type="checkbox"/>
5114960	BA-04: BALL 150# FF PVC/TEFLON SEAT/VITON SEAL LO	TAG BA-04 ITEM - BALL VALVE, TRUE UNION RATING - 150 PSI @ 73.5 °F ENDS - FLANGED, FF, BOLT PATTERN PER B16.5 OPERATOR - HANDLE OPERATED MATERIAL BODY & BALL - PVC ASTM D-1784 CLASS 12454-B SEATS - TEFLON SEAL - VITON "O" RING REFERENCE - CHEMTROL F45TB-V OR AUTHORIZED SUBSTITUTE	CHEMTROL TU	<input checked="" type="checkbox"/>

## Fluor Chile - Minera Escondida

Sulphide Leach Project

53232500

Antofagasta

ITEM CODE	ABBREVIATED DESCRIPTION	PURCHASE DESCRIPTION	REFERENCES	PR
PRIME: 5 Piping				
5058830	BA-05: BALL BAR STOCK CS/TFE FNPT 500# WOG SWP	TAG BA-05 VALVE, BALL, FIRE-SAFE, BAR STOCK, ONE PIECE BODY, END ENTRY, BLOWOUT PROOF STEM QUARTER TURN OPERATION, HAND LEVER ACTUATOR. MATERIAL: BODY : CARBON STEEL BALL & STEM : CARBON STEEL SEATS & SEALS : TFE, REINFORCED THREADED, FEMALE NPT, ENDS PER ANSI B2.1; 500 PSIG WOG MAXIMUM WORKING PRESSURE; UL LISTED FOR LP GASES. REFERENCE: NIBCO T560-CSR-66/FS OR APPROVED EQUAL	NIBCO	<input checked="" type="checkbox"/>
5114993	BA-06: BALL SW 150# SCH 80 TRUE UNION PVC/VITON	TAG BA-06 ITEM - BALL VALVE, TRUE UNION RATING - 150 PSI @ 73.5 °F ENDS - SOCKET WELD (SCH 80) OPERATOR - HANDLE OPERATED MATERIAL BODY & BALL - PVC ASTM D-1784 CLASS 12454-B SEATS - TEFLON SEAL - VITON "O" RING REFERENCE - CHEMTROL U45TB-V (2" & SMALLER), CHEMTROL S45TB-V (3" & LARGER); OR AUTHORIZED SUBSTITUTE	CHEMTROL TU	<input checked="" type="checkbox"/>
5303875	BA-07: BALL CL 150# RF ALLOY 20	TAG BA-07 ITEM - BALL VALVE, TOP ENTRY RATING - ANSI CLASS 150# FLANGED, RAISED FACE OPERATOR - HANDLE OPERATED MATERIAL BODY & BALL - ALLOY 20 CASTINGS - ASTM-A351 GRADE CN7M SOLUTION HEAT TREATED SEATS & SEALS - TEFLON-TFE REFERENCE - ALOYCO OR AUTHORIZED SUBSTITUTE	ALOYCO	<input checked="" type="checkbox"/>
5303900	BA-08: BALL CL 150# RF 254 SMO ASTM S31254	TAG BA-08 ITEM - BALL VALVE RATING - ANSI CLASS 150# FLANGED, RAISED FACE OPERATOR - HANDLE OPERATED STANDARD - ASME B16.5 MATERIAL - STAINLESS STEEL BODY & BALL - 254 SMO ASTM A312 UNS S31254 CASTINGS - 254 SMO ASTM A312 UNS S31254 FORGINGS - 254 SMO ASTM A312 UNS S31254 SEATS & SEALS - TEFLON-TFE REFERENCE - COOPER 115RF OR AUTHORIZED SUBSTITUTE	COOPER 115RF	<input checked="" type="checkbox"/>



## Antofagasta

Search Specification: ABBREVIATED DESCRIPTION Begins with BA- or ABBREVIATED DESCRIPTION Begins with BU- or ABBREVIATED DESCRIPTION Begins with CH- or ABBREVIATED DESCRIPTION Begins with DP- or ABBREVIATED DESCRIPTION Begins with GA- or ABBREVIATED DESCRIPTION Begins with GL- or ABBREVIATED DESCRIPTION Begins with KN- or ABBREVIATED DESCRIPTION Begins with MB- or ABBREVIATED DESCRIPTION Begins with PH- or ABBREVIATED DESCRIPTION Begins with VE-  
Sort Specification: Abbreviated Description and Item Code

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## Fluor Chile - Minera Escondida

Sulphide Leach Project

53232500

Antofagasta

ITEM CODE	ABBREVIATED DESCRIPTION	PURCHASE DESCRIPTION	REFERENCES	PR
PRIME: 5 Piping				
5058825	BA-13: BALL 400# SCRCD CS HDLE OP UL/FM	TAG BA-13 ITEM - BALL VALVE, TWO PIECE BOLTED BODY UL AND FM APPROVED PORT - FULL PORT RATING - 400 CWP ENDS - SCREWED OPERATOR - HANDLE OPERATED MATERIAL BODY - CARBON STEEL CASTINGS - ASTM A216 GRADE WCB FORGINS - ASTM A105 BALL - 316 SS SEAT - REINFORCED TFE STEM SEAL - TEFLON REFERENCE - NIBCO	JAMESBURY	<input checked="" type="checkbox"/>
5114881	BA-14: BALL CL 300# SW 316 SS, HDLE OPR	TAG BA-14 ITEM - BALL VALVE, TOP ENTRY, FIRE SAFE RATING - ANSI CLASS 300 SOCKETWELD OPERATOR - HANDLE OPERATED MATERIAL BODY - 316 STAINLESS STEEL CASTINGS - ASTM-A351, GRADE CF8M SEATS - REINFORCED TFE TRIM - 316 STAINLESS STEEL REFERENCE - APOLLO #SS-J3-BO OR AUTHORIZED SUBSTITUTE	APOLLO	<input checked="" type="checkbox"/>
5300960	BA-15: BALL CL 150# FF 316 BODY & TRIM HDLE OP	TAG BA-15 ITEM - BALL VALVE RATING - ANSI CLASS 150# FLANGED, FLAT FACE OPERATOR - HANDLE OPERATED MATERIAL BODY & COVER - ASTM A276 TYPE 316 CASTINGS - 316 STAINLESS STEEL SEATS & SEALS - REINFORCED TFE TRIM - 316 STAINLESS STEEL REFERENCE - NIBCO F 510 OR AUTHORIZED SUBSTITUTE	NIBCO F510	<input checked="" type="checkbox"/>
5114885	BA-16: BALL CL 300# SW 316 SS/RTFE, HNDL OPER	TAG BA-16 ITEM - BALL VALVE, TOP ENTRY RATING - ANSI CLASS 300# SOCKET WELD OPERATOR - HANDLE OPERATED MATERIAL BODY & BONNET - 316 STAINLESS STEEL CASTINGS - ASTM-A351, GRADE CF8M FORGINGS - ASTM-A182, GRADE F316 SEATS - REINFORCED TEFLON TRIM - 316 STAINLESS STEEL REFERENCE - MCCANNA #S303-6L-R-S6 OR AUTHORIZED SUBSTITUTE	MCCANNA	<input checked="" type="checkbox"/>
5114991	BA-17: BALL 150# CWP SF POLYPROPYLENE, HNDL OP	TAG BA-17 ITEM - BALL VALVE, SINGLE UNION OPERATOR - HANDLE OPERATED RATING - 150 CWP SOCKET FUSION MATERIAL BODY & TRIM - POLYPROPYLENE SEATS - TEFLON SEALS - VITON	NIBCO TYPE SU	<input checked="" type="checkbox"/>

## Fluor Chile - Minera Escondida

Sulphide Leach Project

53232500

Antofagasta

ITEM CODE	ABBREVIATED DESCRIPTION	PURCHASE DESCRIPTION	REFERENCES	PR
PRIME: 5 Piping				
5058791	BA-18: BALL 400# SCRD BRONZE	TAG BA-18 ITEM - BALL VALVE, END ENTRY RATING - 400 CWP ENDS - SCREWED OPERATOR - HANDLE OPERATED MATERIAL BODY - CAST BRONZE, ASTM-B62 STEM - BRONZE, BLOW OUT PROOF SEATS & SEALS - REINFORCED TEFLON BALL - BRONZE, CHROME PLATED REFERENCE - APOLLO #70-100 SERIES OR AUTHORIZED SUBSTITUTE		<input type="checkbox"/>
5300850	BA-19: BALL CL 150# FF RG.P.FIRE-SAF.CS/CS TRM/TFE	TAG BA-19 VALVE, BALL, FIRE-SAFE, REGULAR PORT, TOP ENTRY, BACKSEATED STEM (BLOWOUT PROOF), QUARTER TURN OPERATION, HAND LEVER ACTUATOR. RATING - ANSI CLASS 150# FLANGED, FLAT FACE, PER ANSI B16.5 MATERIAL: BODY & BONNET: CARBON STEEL, CAST, PER ASTM A216 GRADE WCB BALL & STEM : CARBON STEEL SEATS & SEALS: TFE, CERAMIC FILLED REFERENCE: NIBCO F510-CS-R-25 OR APPROVED EQUAL		<input type="checkbox"/>
5309468	BA-20: BALL CL 300# RF 316 SS/RTFE, HDLE OP	TAG BA-20 ITEM - BALL VALVE, END ENTRY OPERATOR - HANDLE OPERATED RATING - ANSI CLASS 300# FLANGED, RAISED FACE MATERIAL BODY - 316 STAINLESS STEEL CASTINGS - ASTM-A351, GRADE CF8M SEATS & SEALS - REINFORCED TFE TRIM - 316 STAINLESS STEEL REFERENCE - MCCANNA #N301-S6-R-S6 OR AUTHORIZED SUBSTITUTE	MCCANNA #N30156	<input checked="" type="checkbox"/>
5058893	BA-21: BALL 600# SCRD 316 SS/RTFE, FIRE SAFE LO	TAG BA-21 ITEM - BALL VALVE, TOP ENTRY, FIRE SAFE RATING - ANSI CLASS 600 SCREWED OPERATOR - HANDLE OPERATED MATERIAL: BODY & BONNET - 316 STAINLESS STEEL CASTINGS - ASTM-A351, GRADE CF8M FORGINGS - ASTM-A182, GRADE F316 SEATS - REINFORCED TEFLON TRIM - 316 STAINLESS STEEL REFERENCE - MCCANNA #A602-S6-F-S6 OR AUTHORIZED SUBSTITUTE		<input type="checkbox"/>
5059215	BA-22: BALL 600# THRD FNPT END ENTRY CS/RTFE,HNDL OP	TAG BA-22 ITEM - BALL VALVE, END ENTRY RATING - ANSI CLASS 600 OPERATOR - HANDLE OPERATED ENDS - THREADED (FEMALE NPT) MATERIAL BODY - CARBON STEEL CASTING - ASTM A-216 GRADE WCB SEATS - REINFORCED TEFLON TRIM - CARBON STEEL REFERENCE - MCCANNA #F602-CS-R-CS OR AUTHORIZED SUBSTITUTE		<input type="checkbox"/>



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PRIME: 5 Piping				
5058800	BA-23: BALL CL 150# FNPT 254 SMO ASTM S31254	TAG BA-23 ITEM - BALL VALVE, SCREWED FNPT RATING - ANSI CLASS 150# OPERATOR - HANDLE OPERATED STANDARD - ASME B16.11 MATERIAL - STAINLESS STEEL BODY - 254 SMO ASTM A312 UNS S31254 CASTINGS - 254 SMO ASTM A312 UNS S31254 TRIM - 254 SMO ASTM A312 UNS S31254 SEATS & SEALS - TEFLON-TFE REFERENCE - COOPER OR AUTHORIZED SUBSTITUTE		<input type="checkbox"/>
5309238	BU-01: BUTTERFLY HP ECC DISC CL 150# 316SS F LUG GO	TAG BU-01 BUTTERFLY VALVE, ECCENTRIC DISC, HIGH PERFORMANCE TYPE - FULL LUG TYPE BODY RATING - CLASS 150# OPERATOR - GEAR DRILLS - PER ANSI/ASME B16.5 MATERIAL: BODY - 316 STAINLESS STEEL CASTINGS - ASTM-A351, GRADE CF8M OR FORGINGS - ASTM-A182, GRADE F316 TRIM - 316 STAINLESS STEEL SEAL - REINFORCED TEFLON REFERENCE - KEYSTONE #362S OR AUTHORIZED SUBSTITUTE	KEYSTONE #362S	<input checked="" type="checkbox"/>
5309238HM	BU-01HM: BUTTERFLY HP ECC DISC CL 300 316SS F LUG HYDR-MANUAL OP.	TAG BU-01HM BUTTERFLY VALVE, ECCENTRIC DISC, HIGH PERFORMANCE TYPE - FULL LUG TYPE BODY RATING - CLASS 300 OPERATOR - HYDRAULIC - MANUAL (SEE NOTE 1) DRILLS - PER ANSI/ASME B16.5 MATERIAL: BODY - 316 STAINLESS STEEL CASTINGS - ASTM-A351, GRADE CF8M OR FORGINGS - ASTM-A182, GRADE F316 TRIM - 316 STAINLESS STEEL SEAL - REINFORCED TEFLON REFERENCE - KEYSTONE #362S OR AUTHORIZED SUBSTITUTE NOTE 1: HEAVE DUTY QUARTER TURN HYDRAULIC-MANUAL ACTUATOR TYPE H RANGE OF ROTORK FLUID SYSTEM OR APPROVED EQUAL. MATERIAL: BODY : DUCTILE IRON 60-40-18 YOKE : DUCTILE IRON 80-55-06	KEYSTONE #362S	<input checked="" type="checkbox"/>

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PRIME: 5 Piping				
5309238P	BU-01P: BUTTERFLY HP ECC DISC CL 150# 316SS F LUG PNEU	TAG: BU-01P BUTTERFLY VALVE, ECCENTRIC DISC, HIGH PERFORMANCE TYPE - FULL LUG TYPE BODY RATING - CLASS 150# OPERATOR - PNEUMATIC DOUBLE ACTING CYLINDER DRILLS - PER ANSI/ASME B16.5 MATERIAL: BODY - 316 STAINLESS STEEL CASTINGS - ASTM-A351, GRADE CF8M OR FORGINGS - ASTM-A182, GRADE F316 TRIM - 316 STAINLESS STEEL SEAL - REINFORCED TEFLON REFERENCE - KEYSTONE #362S OR AUTHORIZED SUBSTITUTE	KEYSTONE #362S	<input checked="" type="checkbox"/>
5308750S	BU-02: BUTTERFLY FULL LUG CLASS 150# 254 SMO GO	TAG: BU-02 ITEM - BUTTERFLY VALVE, FULL-LUG TYPE RATING - CLASS 150# OPERATOR - GEAR OPERATED STANDARD - ANSI/ASME B16.5 MATERIAL BODY - 254 SMO STAINLESS STEEL  DISC - 254 SMO STAINLESS STEEL SEAT - TFE REFERENCE - KEYSTONE OR APPROVED EQUAL	KEYSTONE	<input checked="" type="checkbox"/>
5306833	BU-03: BUTFLY WAF CI/316SS TEFLON ST 125# GO	TAG BU-03 VALVE, BUTTERFLY, DRIP-TIGHT BONDED RESILIENT LINER, WORM GEAR ACTUATOR, SELF-LOCKING, WITH POSITION INDICATOR & AD- JUSTABLE LIMIT STOPS. BODY: CAST IRON PER ASTM A126 CLASS B DISC: 316 STAINLESS STEEL STEM: 316 STAINLESS STEEL SEAT: TEFLON WAFER BODY COMPATABLE WITH 125# FLAT/RAISED FACE FLANGE PER ANSI B16.34 REFERENCE: KEYSTONE #100 OR APPROVED EQUAL	KEYSTONE #100	<input checked="" type="checkbox"/>
5308755S	BU-04: BUTTERFLY HP CL300# 254 SMO TRIM LUG LO	TAG: BU-04 ITEM - BUTTERFLY VALVE, ECCENTRIC DISC  HIGH PERFORMANCE TYPE - FULL LUG TYPE BODY RATING - ANSI CLASS 300 OPERATOR - HANDLE OPERATED DRILLS - PER ANSI B16.5 MATERIAL BODY - 254 SMO SUPER STAINLESS STEEL CASTINGS - ASTM-A351, GRADE CF8M OR FORGINGS - ASTM-A182, GRADE F316 TRIM - 254 SMO SUPER STAINLESS STEEL SEAL - REINFORCED TEFLON REFERENCE - XOMOX OR APPROVED EQUAL	XOMOX	<input checked="" type="checkbox"/>

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PRIME: 5 Piping				
5308756S	BU-05: BUTTERFLY HP CL 300# 254 SMO TRIM GO LUG	TAG BU-05 ITEM - BUTTERFLY VALVE, ECCENTRIC DISC  HIGH PERFORMANCE TYPE - FULL LUG TYPE BODY RATING - ANSI CLASS 300# OPERATOR - GEAR OPERATED DRILLS - PER ANSI B16.5 MATERIAL BODY - 254 SMO SUPER STAINLESS STEEL CASTINGS - ASTM-A351, GRADE CF8M OR FORGINGS - ASTM-A182, GRADE F316 TRIM - 254 SMO SUPER STAINLESS STEEL SEAL - REINFORCED TEFLON REFERENCE - XOMOX OR APPROVED EQUAL	XOMOX	<input checked="" type="checkbox"/>
5308756SP	BU-05P: BUTTERFLY HP CL 300# 254 SMO LUG PNEU	TAG BU-05P ITEM - BUTTERFLY VALVE, ECCENTRIC DISC  HIGH PERFORMANCE TYPE - FULL LUG TYPE BODY RATING - ANSI CLASS 300# OPERATOR - PNEUMATIC DOUBLE ACTING CYLINDER DRILLS - PER ANSI B16.5 MATERIAL BODY - 254 SMO SUPER STAINLESS STEEL CASTINGS - ASTM-A351, GRADE CF8M OR FORGINGS - ASTM-A182, GRADE F316 TRIM - 254 SMO SUPER STAINLESS STEEL SEAL - REINFORCED TEFLON REFERENCE - XOMOX OR APPROVED EQUAL	XOMOX	<input checked="" type="checkbox"/>
5309240	BU-06: BUTTERFLY CL 150# 316 SS/VITON F LUG LO	TAG BU-06 ITEM - BUTTERFLY VALVE, RESILIENT SEATED, FULL LUG TYPE BODY RATING - CLASS 150# OPERATOR - LEVER OPERATED STANDARD - ANSI/ASME B16.5 MATERIAL: BODY - 316 STAINLESS STEEL ASTM-A351, GRADE CF8M DISC - 316 STAINLESS STEEL SHAFT - 316 STAINLESS STEEL SEAT - VITON REFERENCE - KEYSTONE #920	KEYSTONE # 920	<input checked="" type="checkbox"/>

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PRIME: 5 Piping				
5309236	BU-07: BUTTERFLY HP ECC DISC CL 150# 316SS, F LUG LO	TAG BU-07 BUTTERFLY VALVE, ECCENTRIC DISC, HIGH PERFORMANCE TYPE - FULL LUG TYPE BODY RATING - CLASS 150# OPERATOR - LEVER MATERIAL: BODY - 316 STAINLESS STEEL CASTINGS - ASTM-A351, GRADE CF8M OR FORGINGS - ASTM-A182, GRADE F316 TRIM - 316 STAINLESS STEEL SEAL - REINFORCED TEFLON REFERENCE - KEYSTONE #362S OR AUTHORIZED SUBSTITUTE	KEYSTONE #362S	<input checked="" type="checkbox"/>
5308832	BU-08: BUTTERFLY 150# PVC/VITON SEMI-LUG LO	TAG BU-08 ITEM - BUTTERFLY VALVE, SEMI-LUG BODY RATING - 150 PSI @ 73 F OPERATOR - GEAR OPERATOR MATERIAL BODY - POLYVINYL CHLORIDE ASTM D1784 CLASS 12454B DISC - POLYPROPYLENE TYPE 1 OR PVC 1 SHAFT - 316 STAINLESS STEEL SEAT - VITON ALL METALLIC PARTS - 316 STAINLESS STEEL REFERENCE - ASAHI #75, CHEMTROL OR AUTHORIZED SUBSTITUTE	ASAHI #75	<input checked="" type="checkbox"/>
5309242	BU-09: BUTTERFLY CL 150# 316 SS/VITON F LUG GO	TAG BU-09 ITEM - BUTTERFLY VALVE, RESILIENT SEATED, FULL LUG TYPE BODY RATING - CLASS 150# OPERATOR - ENCLOSED WORM GEAR OPERATOR STANDARD - ANSI/ASME B16.5 MATERIAL BODY - 316 STAINLESS STEEL ASTM-A351, GRADE CF8M DISC - 316 STAINLESS STEEL SHAFT - 316 STAINLESS STEEL SEAT - VITON BUSHING - REINFORCED TEFLON REFERENCE - KEYSTONE # AR2	KEYSTONE # AR2	<input checked="" type="checkbox"/>
5309471	BU-10: BUTTERFLY HP 300# 316SS LUG GO	TAG BU-10 ITEM - BUTTERFLY VALVE, ECCENTRIC DISC HIGH PERFORMANCE TYPE - LUG TYPE BODY RATING - ANSI CLASS 300 FLANGED, RAISED FACE OPERATOR - GEAR OPERATED MATERIAL BODY - 316 STAINLESS STEEL CASTINGS - ASTM-A351, GRADE CF8M OR FORGINGS - ASTM-A182, GRADE F316 TRIM - 316 STAINLESS STEEL SEAL - REINFORCED TEFLON REFERENCE - KEYSTONE# 372S OR AUTHORIZED SUBSTITUTE	KEYSTONE #372S	<input checked="" type="checkbox"/>

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PRIME: 5 Piping				
5309471P	BU-10P: BUTTERFLY HP CL 300 316SS LUG PNEUM OP	TAG BU-10P ITEM - BUTTERFLY VALVE, ECCENTRIC DISC HIGH PERFORMANCE TYPE - LUG TYPE BODY RATING - ANSI CLASS 300 FLANGED, RAISED FACE OPERATOR - DOUBLE ACTING PNEUMATIC OPERATOR MATERIAL BODY - 316 STAINLESS STEEL CASTINGS - ASTM-A351, GRADE CF8M OR FORGINGS - ASTM-A182, GRADE F316 TRIM - 316 STAINLESS STEEL SEAL - REINFORCED TEFLON REFERENCE - KEYSTONE# 372S OR AUTHORIZED SUBSTITUTE		<input type="checkbox"/>
5306725	BU-11: BUTTERFLY 150# WAFER CI POST IND UL/FM	ITEM - BUTTERFLY VALVE, WAFER TYPE BODY, RESILIENT SEATED, FURNISHED WITH EXTENSION STEM AND POST INDICATOR, UL AND FM APPROVED OPERATOR - MANUAL WORM GEAR, TOTALLY ENCLOSED MATERIAL BODY - CAST IRON ASTM-A126, CLASS B DISC - CAST AUSTENITIC IRON ASTM-A436, TYPE 1 SEAT - BUNA-N SHAFT - 304 STAINLESS STEEL LENGHT OF POST INDICATOR - APPROX. 2 MTS. NOTES - VALVE SHALL BE SUITABLE FOR 150 PSIG AT 175 F REFERENCE - PRATT PIVA OR AUTHORIZED SUBSTITUTE	KEYSTONE	<input checked="" type="checkbox"/>
5308870	BU-12: BUTTERFLY HP CL 150# CS/VITON TAP-LUG LO	TAG BU-12 ITEM - BUTTERFLY VALVE, RESILIENT SEATED, HIGH PERFORMANCE, TAPPED LUG TYPE BODY RATING - ANSI CLASS 150, FLAT FACE SERRATED TYPE - BI-DIRECTIONAL DEAD END SERVICE OPERATOR - LEVER MATERIAL BODY - CARBON STEEL ASTM A216 GRADE WCB DISC - 316 STAINLESS STEEL SHAFT - 316 STAINLESS STEEL SEAT - VITON STANDARD - ANSI B16.34, API 607 REFERENCE - KEYSTONE FIG. 372	KEYSTONE #362	<input checked="" type="checkbox"/>



# Project Bulk/Assembly Purchase Catalog

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ITEM CODE	ABBREVIATED DESCRIPTION	PURCHASE DESCRIPTION	REFERENCES	PR
PRIME: 5 Piping				
5306830	BU-13: BUTFLY WAF CI/316SS BUNA-N ST 125# GO	TAG BU-13 VALVE, BUTTERFLY, DRIP-TIGHT BONDED RESILIENT LINER, WORM GEAR ACTUATOR, SELF-LOCKING, WITH POSITION INDICATOR & AD- JUSTABLE LIMIT STOPS. BODY: CAST IRON PER ASTM A126 CLASS B DISC: 316 STAINLESS STEEL STEM: 316 STAINLESS STEEL SEAT: BUNA-N WAFFER BODY COMPATABLE WITH 125# FLAT/RAISED FACE FLANGE PER ANSI B16.34 REFERENCE: KEYSTONE #100 OR APPROVED EQUAL		<input type="checkbox"/>
5308751S	BU-14: BUTTERFLY SEMI-LUG CL 150# 254 SMO LO	TAG: BU-14 ITEM - BUTTERFLY VALVE, SEMI-LUG TYPE RATING - CLASS 150# OPERATOR - LEVER OPERATED STANDARD - ANSI B16.5 MATERIAL: BODY - 254 SMO DISC & STEM - 254 SMO CASTINGS - ASTM A182 REFERENCE - KEYSTONE	KEYSTONE	<input checked="" type="checkbox"/>
5308754S	BU-15: BUTTERFLY HP CL 300# 254 SMO GO MSS LUG	TAG BU-15 ITEM - BUTTERFLY VALVE, ECCENTRIC DISC HIGH PERFORMANCE TYPE - FULL LUG TYPE BODY RATING - ANSI CLASS 300# OPERATOR - GEAR OPERATED STANDARDS - MSS-SP 44 MATERIAL BODY - 254 SMO SUPER STAINLESS STEEL CASTINGS - ASTM-A351, GRADE CF8M OR FORGINGS - ASTM-A182, GRADE F316 TRIM - 254 SMO SUPER STAINLESS STEEL SEAL - REINFORCED TEFLON REFERENCE - DEZURIK BHP	DEZURIK BHP	<input checked="" type="checkbox"/>

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ITEM CODE	ABBREVIATED DESCRIPTION	PURCHASE DESCRIPTION	REFERENCES	PR
PRIME: 5 Piping				
5308754SP	BU-15P: BUTTERFLY HP CL 300# 254 SMO MSS LUG PNEU	TAG BU-15P ITEM - BUTTERFLY VALVE, ECCENTRIC DISC HIGH PERFORMANCE TYPE - FULL LUG TYPE BODY RATING - ANSI CLASS 300# OPERATOR - PNEUMATIC DOUBLE ACTING CYLINDER STANDARDS - MSS-SP 44 MATERIAL BODY - 254 SMO SUPER STAINLESS STEEL CASTINGS - ASTM-A351, GRADE CF8M OR FORGINGS - ASTM-A182, GRADE F316 TRIM - 254 SMO SUPER STAINLESS STEEL SEAL - REINFORCED TEFLON REFERENCE -		<input type="checkbox"/>
5306825	BU-16: BUTTERFLY WAFER CI/316SS VITON ST 125# LEVER	TAG BU-16 VALVE, BUTTERFLY, DRIP-TIGHT BONDED RESILIENT LINER, HAND LEVER OPERATOR WITH NOTCH PLATE HANDLE ASSEMBLY AND POSI- TIONING CAP. BODY: CAST IRON PER ASTM A126 CLASS B DISC: 316 STAINLESS STEEL STEM: 316 STAINLESS STEEL SEAT: VITON WAFER BODY COMPATABLE WITH 125# FLAT/RAISED FACE FLANGE PER ANSI B16.34 REFERENCE: KEYSTONE #100 OR APPROVED EQUAL	KEYSTONE #100	<input checked="" type="checkbox"/>
5308753S	BU-17: BUTTERFLY FULL LUG 150# 254 SMO MSS-SP 44 GO	TAG: BU-17 ITEM - BUTTERFLY VALVE, FULL LUG RATING - CLASS 150 OPERATOR - GEAR OPERATED STANDARD - MSS-SP 44 MATERIAL: BODY - 254 SMO DISC - 254 SMO CASTINGS - REFERENCE -	KEYSTONE	<input checked="" type="checkbox"/>
5308753P	BU-17P: BUTTERFLY FULL LUG 150# 254 SMO MSS-SP 44 PO	TAG: BU-17P ITEM - BUTTERFLY VALVE, FULL LUG RATING - CLASS 150 OPERATOR - PNEUMATIC OPERATED STANDARD - MSS-SP 44 MATERIAL: BODY - 254 SMO DISC - 254 SMO CASTINGS - REFERENCE -	KEYSTONE	<input checked="" type="checkbox"/>

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PRIME: 5 Piping				
5309218	BU-18: BUTTERFLY HP ECC DISC CL 150# 316SS MSS FLUG GO	TAG BU-18 BUTTERFLY VALVE, ECCENTRIC DISC, HIGH PERFORMANCE TYPE - FULL LUG TYPE BODY RATING - CLASS 150# OPERATOR - GEAR STANDARD - MSS-SP 44 MATERIAL: BODY - 316 STAINLESS STEEL CASTINGS - ASTM-A351, GRADE CF8M OR FORGINGS - ASTM-A182, GRADE F316 TRIM - 316 STAINLESS STEEL SEAL - REINFORCED TEFLON REFERENCE - FLOW SEAL OR AUTHORIZED SUBSTITUTE	FLOW SEAL	<input checked="" type="checkbox"/>
5309239	BU-18: BUTTERFLY HP ECC DISC CL 150# 316SS MSS FLUG GO	TAG BU-18 BUTTERFLY VALVE, ECCENTRIC DISC, HIGH PERFORMANCE TYPE - FULL LUG TYPE BODY RATING - CLASS 150# OPERATOR - GEAR STANDARD - MSS-SP 44 MATERIAL: BODY - 316 STAINLESS STEEL CASTINGS - ASTM-A351, GRADE CF8M OR FORGINGS - ASTM-A182, GRADE F316 TRIM - 316 STAINLESS STEEL SEAL - REINFORCED TEFLON REFERENCE - FLOW SEAL OR AUTHORIZED SUBSTITUTE	FLOW SEAL	<input checked="" type="checkbox"/>
5309218HM	BU-18HM: BUTTERFLY HP ECC DISC CL 150# 316SS MSS FLUG HYDR-MANUAL OP.	TAG BU-18HM BUTTERFLY VALVE, ECCENTRIC DISC, HIGH PERFORMANCE TYPE - FULL LUG TYPE BODY RATING - CLASS 150# OPERATOR - HYDRAULIC - MANUAL (SEE NOTE 1) STANDARD - MSS-SP 44 MATERIAL: BODY - 316 STAINLESS STEEL CASTINGS - ASTM-A351, GRADE CF8M OR FORGINGS - ASTM-A182, GRADE F316 TRIM - 316 STAINLESS STEEL SEAL - REINFORCED TEFLON REFERENCE - FLOW SEAL OR AUTHORIZED SUBSTITUTE  NOTE 1: HEAVE DUTY QUARTER TURN HYDRAULIC-MANUAL ACTUATOR TYPE H RANGE OF ROTORK FLUID SYSTEM OR APPROVED EQUAL. MATERIAL: BODY : DUCTILE IRON 60-40-18 YOKE : DUCTILE IRON 80-55-06	FLOW SEAL	<input checked="" type="checkbox"/>





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PRIME: 5 Piping				
5308871	BU-22: BUTTERFLY HP CL 150# CS/BUNA-N TAP-LUG GO	TAG BU-22 ITEM - BUTTERFLY VALVE, RESILIENT SEATED, HIGH PERFORMANCE, TAPPED LUG TYPE BODY RATING - ANSI CLASS 150, FLAT FACE SERRATED TYPE - BI-DIRECTIONAL DEAD END SERVICE OPERATOR - ENCLOSED WORM GEAR MATERIAL BODY - CARBON STEEL ASTM A216 GRADE WCB DISC - 316 STAINLESS STEEL SHAFT - 316 STAINLESS STEEL SEAT - BUNA-N STANDARD - ANSI B16.34, API 607 REFERENCE - KEYSTONE FIG. 372		<input type="checkbox"/>
5308872	BU-23: BUTTERFLY CLASS 150# CS/BUNA-N TAP-LUG LO	TAG BU-23 ITEM - BUTTERFLY VALVE, RESILIENT SEATED, TAPPED LUG TYPE BODY RATING - ANSI CLASS 150, FLAT FACE SERRATED TYPE - BI-DIRECTIONAL DEAD END SERVICE OPERATOR - LEVER MATERIAL BODY - CARBON STEEL ASTM A216 GRADE WCB DISC - 316 STAINLESS STEEL SHAFT - 316 STAINLESS STEEL SEAT - BUNA-N STANDARD - ANSI B16.34, API 607 REFERENCE - KEYSTONE # 372	KEYSTONE #AR2	<input checked="" type="checkbox"/>
5308873	BU-24: BUTTERFLY CLASS 150# CS/BUNA-N TAP-LUG GO	TAG BU-24 ITEM - BUTTERFLY VALVE, RESILIENT SEATED, TAPPED LUG TYPE BODY RATING - ANSI CLASS 150, FLAT FACE SERRATED TYPE - BI-DIRECTIONAL DEAD END SERVICE OPERATOR - ENCLOSED WORM GEAR MATERIAL BODY - CARBON STEEL ASTM A216 GRADE WCB DISC - 316 STAINLESS STEEL SHAFT - 316 STAINLESS STEEL SEAT - BUNA-N STANDARD - ANSI B16.34, API 607 REFERENCE - KEYSTONE # 372		<input type="checkbox"/>
5309244	BU-25: BUTTERFLY CLASS 150# 316 SS/BUNA-N DOUBLE FLGD FF MSS-SP-44 GO	TAG BU-25 ITEM - BUTTERFLY VALVE, RESILIENT SEATED, DOUBLE FLANGED FLAT FACE RATING - CLASS 150# OPERATOR - ENCLOSED WORM GEAR DRILLS - PER MSS-SP 44 MATERIAL: BODY - 316 STAINLESS STEEL DISC - 316 STAINLESS STEEL SEAT - BUNA-N, DOVETAILED SHAFT - 316 OR 416 STAINLESS STEEL REFERENCE - NEWDWLL		<input type="checkbox"/>



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Search Specification: ABBREVIATED DESCRIPTION Begins with BA- or ABBREVIATED DESCRIPTION Begins with BU- or ABBREVIATED DESCRIPTION Begins with CH- or ABBREVIATED DESCRIPTION Begins with DP- or ABBREVIATED DESCRIPTION Begins with GA- or ABBREVIATED DESCRIPTION Begins with GL- or ABBREVIATED DESCRIPTION Begins with KN- or ABBREVIATED DESCRIPTION Begins with MB- or ABBREVIATED DESCRIPTION Begins with PH- or ABBREVIATED DESCRIPTION Begins with VE-  
Sort Specification: Abbreviated Description and Item Code



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Search Specification: ABBREVIATED DESCRIPTION Begins with BA- or ABBREVIATED DESCRIPTION Begins with BU- or ABBREVIATED DESCRIPTION Begins with CH- or ABBREVIATED DESCRIPTION Begins with DP- or ABBREVIATED DESCRIPTION Begins with GA- or ABBREVIATED DESCRIPTION Begins with GL- or ABBREVIATED DESCRIPTION Begins with KN- or ABBREVIATED DESCRIPTION Begins with ND- or ABBREVIATED DESCRIPTION Begins with PH- or ABBREVIATED DESCRIPTION Begins with VE-  
Sort Specification: Abbreviated Description and Item Code

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PRIME: 5 Piping				
5308128HM	BU-31HM: BUTTERFLY CL150 DI BUNA-N LIN LUG UL/FM HYDR-MANUAL OP	TAG BU-31HM ITEM - BUTTERFLY VALVE TYPE - LONG NECK TAPPED LUG TYPE BODY, RESILIENT SEATED, UL/FM APPROVED OPERATOR - HYDRAULIC-MANUAL (SEE NOTE 1) RATING - ANSI CLASS 150 MATERIAL: BODY - DUCTILE IRON CASTINGS - ASTM-A536 DISC - NICKEL PLATED DUCTILE IRON STEM - 416 STAINLESS STEEL BACK-UP RING - PHENOLIC SEAT - BUNA-N REFERENCE - DEMCO #NF-H LUG OR AUTHORIZED SUBSTITUTE NOTE 1: HEAVE DUTY QUARTER TURN HYDRAULIC-MANUAL ACTUATOR TYPE H RANGE OF ROTORK FLUID SYSTEM OR APPROVED EQUAL. MATERIAL: BODY : DUCTILE IRON 60-40-18 YOKE : DUCTILE IRON 80-55-06	DEMCO #NF-H	<input checked="" type="checkbox"/>
5308850	BU-32: BUTTERFLY TAP-LUG CI/SS DISC/STEM BUNA-N SEAT 125# LO	TAG BU-32 VALVE, BUTTERFLY, DRIP TIGHT, BONDED RESILIENT LINER, HAND LEVER OPERATOR WITH NOTCH PLATE HANDLE ASSEMBLY AND POSITIONING CAP. MATERIAL: BODY : CAST IRON PER ASTM A126 CLASS B DISC & STEM : 316 STAINLESS STEEL SEAT : BUNA-N TAPPED LUG BODY, COMPATABLE WITH 150#, RAISED FACE ANSI FLANGES; CLASS 125 PER ANSI B16.34 REFERENCE: ABZ FIG 102-967 OR APPROVED EQUAL		<input type="checkbox"/>
5308855	BU-33: BUTTERFLY TAP-LUG CI/SS DISC/STEM BUNA-N 125# GO	TAG BU-33 VALVE, BUTTERFLY, DRIP TIGHT, BONDED RESILIENT LINER, WORM GEAR OPERATOR, SELF LOCKING, WITH POSITION INDICATOR, ADJUSTABLE LIMIT STOPS. MATERIAL: BODY : CAST IRON PER ASTM A126 CLASS B DISC & STEM : 316 STAINLESS STEEL SEAT : BUNA-N TAPPED LUG BODY, COMPATABLE WITH 150#, RAISED FACE ANSI FLANGES; CLASS 125 PER ANSI B16.34 REFERENCE: ABZ FIG 102-967 (TO 12" ONLY) ABZ FIG 202-967 (14"-18") KEYSTONE FIG AR2 (20"-24") OR APPROVED EQUAL		<input type="checkbox"/>

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ITEM CODE	ABBREVIATED DESCRIPTION	PURCHASE DESCRIPTION	REFERENCES	PR
PRIME: 5 Piping				
5308830	BU-34: BUTTERFLY TAP-LUG FF CI/DI BUNA-N DISC 175# ULFM	TAG BU-34 VALVE, BUTTERFLY, DRIP-TIGHT TAPPED LUG BODY, COMPATABLE WITH ANSI CLASS 150 FLAT FACE FLANGES, WITH UL VALVE TOP PLATE, REPLACEABLE RESILIENT SEAT, HANDWHEEL OPERATED MANUAL GEAR ACTUATOR WITH LOCKING DEVICE AND FLAG TYPE POSITION INDICATOR WITH STEM EXTENSION. MATERIAL: BODY : CAST IRON PER ASTM A48 DISC : ALUMINUM BRONZE STEM : 316 STAINLESS STEEL SEAT : BUNA-N, METAL REINFORCED MAX. WORKING PRESSURE: 175 PSIG UL LISTED FOR FIRE PROTECTION SERVICE REFERENCE: GRINNELL SERIES 800 FP OR APPROVED EQUAL  NOTE 1: VALVE TO BE SUPPLIED WITH POST INDICATOR OF LENGTH SPECIFIED		<input type="checkbox"/>
5308882	BU-36: BUTTERFLY HP CLASS 300# CS/BUNA-N TAP-LUG GO	TAG BU-36 ITEM - BUTTERFLY VALVE, RESILIENT SEATED,  HIGH PERFORMANCE, TAPPED LUG TYPE BODY RATING - ANSI CLASS 300, FLAT FACE SERRATED TYPE - BI-DIRECTIONAL DEAD END SERVICE OPERATOR - ENCLOSED WORM GEAR MATERIAL BODY - CARBON STEEL ASTM A216 GRADE WCB DISC - 316 STAINLESS STEEL SHAFT - 316 STAINLESS STEEL SEAT - BUNA-N STANDARD - ANSI B16.34, API 607 REFERENCE - KEYSTONE FIG. 172		<input type="checkbox"/>
5309236S	BU-37: BUTTERFLY HP ECC DISC CL 150# 254 SMO F LUG LO	TAG BU-37 BUTTERFLY VALVE, ECCENTRIC DISC, HIGH PERFORMANCE TYPE - FULL LUG TYPE BODY RATING - CLASS 150# OPERATOR - LEVER MATERIAL: BODY - 254 SMO SUPER STAINLESS STEEL CASTINGS - ASTM-A351, GRADE CF8M OR FORGINGS - ASTM-A182, GRADE F316 TRIM - 254 SMO SUPER STAINLESS STEEL SEAL - REINFORCED TEFLON REFERENCE - KEYSTONE VALVE	KEYSTONE #362S	<input checked="" type="checkbox"/>

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PRIME: 5 Piping				
5309238S	BU-38: BUTTERFLY HP ECC DISC CL150# 254 SMO F LUG GO	TAG BU-38 BUTTERFLY VALVE, ECCENTRIC DISC, HIGH PERFORMANCE TYPE - FULL LUG TYPE BODY RATING - CLASS 150# OPERATOR - GEAR DRILLS - PER ANSI/ASME B16.5 MATERIAL: BODY - 254 SMO SUPER STAINLESS STEEL CASTINGS - ASTM-A351, GRADE CF8M OR FORGINGS - ASTM-A182, GRADE F316 TRIM - 254 SMO SUPER STAINLESS STEEL SEAL - REINFORCED TEFLON REFERENCE - KEYSTONE #362S OR AUTHORIZED SUBSTITUTE	KEYSTONE #362S	<input checked="" type="checkbox"/>
5309238SP	BU-38P: BUTTERFLY HP ECC DISC CL150# 254 SMO F LUG PNEU	TAG BU-38P BUTTERFLY VALVE, ECCENTRIC DISC, HIGH PERFORMANCE TYPE - FULL LUG TYPE BODY RATING - CLASS 150# OPERATOR - PNEUMATIC DOUBLE ACTING CYLINDER DRILLS - PER ANSI/ASME B16.5 MATERIAL: BODY - 254 SMO SUPER STAINLESS STEEL CASTINGS - ASTM-A351, GRADE CF8M OR FORGINGS - ASTM-A182, GRADE F316 TRIM - 254 SMO SUPER STAINLESS STEEL SEAL - REINFORCED TEFLON REFERENCE - KEYSTONE #362S OR AUTHORIZED SUBSTITUTE		<input type="checkbox"/>
5309238SX	BU-38X: BUTTERFLY HP ECC DISC CL150# 254 SMO F LUG GO W/EXTENSION STEM	TAG BU-38X BUTTERFLY VALVE, ECCENTRIC DISC, HIGH PERFORMANCE TYPE - FULL LUG TYPE BODY RATING - CLASS 150# OPERATOR - GEAR WITH EXTENSION STEM (SEE NOTE 1) DRILLS - PER ANSI/ASME B16.5 MATERIAL: BODY - 254 SMO SUPER STAINLESS STEEL CASTINGS - ASTM-A351, GRADE CF8M OR FORGINGS - ASTM-A182, GRADE F316 TRIM - 254 SMO SUPER STAINLESS STEEL SEAL - REINFORCED TEFLON REFERENCE - KEYSTONE #362S OR AUTHORIZED SUBSTITUTE  NOTE 1: THIS VALVE MUST INCLUDE EXTENSOR STEM LENGTH: 1,3m	KEYSTONE #362S	<input checked="" type="checkbox"/>

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PRIME: 5 Piping				
5309239S	BU-39: BUTTERFLY HP ECC DISC 150# 254 SMO MSS FLUG GO	TAG BU-39 BUTTERFLY VALVE, ECCENTRIC DISC, HIGH PERFORMANCE TYPE - FULL LUG TYPE BODY RATING - CLASS 150# OPERATOR - GEAR STANDARD - MSS-SP 44 MATERIAL: BODY - 254 SMO STAINLESS STEEL CASTINGS - ASTM-A351, GRADE CF8M OR FORGINGS - ASTM-A182, GRADE F316 TRIM - 254 SMO STAINLESS STEEL SEAL - REINFORCED TEFLON REFERENCE - FLOW SEAL OR AUTHORIZED SUBSTITUTE	FLOW SEAL	<input checked="" type="checkbox"/>
5309239H	BU-39H: BUTTERFLY HP ECC DISC 150 254 SMO MSS FLUG HYDR. OP.	TAG BU-39H BUTTERFLY VALVE, ECCENTRIC DISC, HIGH PERFORMANCE TYPE - FULL LUG TYPE BODY RATING - CLASS 150 OPERATOR - HYDRAULIC STANDARD - MSS-SP 44 MATERIAL: BODY - 254 SMO STAINLESS STEEL CASTINGS - ASTM-A351, GRADE CF8M OR FORGINGS - ASTM-A182, GRADE F316 TRIM - 254 SMO STAINLESS STEEL SEAL - REINFORCED TEFLON REFERENCE - FLOW SEAL OR AUTHORIZED SUBSTITUTE	FLOW SEAL	<input checked="" type="checkbox"/>
5302939H	BU-39H: BUTTERFLY HP ECC DISC CL 150 254 SMO MSS FLUG HYDR. OP.	TAG BU-39H BUTTERFLY VALVE, ECCENTRIC DISC, HIGH PERFORMANCE TYPE - FULL LUG TYPE BODY RATING - CLASS 150 OPERATOR - HYDRAULIC STANDARD - MSS-SP 44 MATERIAL: BODY - 254 SMO STAINLESS STEEL CASTINGS - ASTM-A351, GRADE CF8M OR FORGINGS - ASTM-A182, GRADE F316 TRIM - 254 SMO STAINLESS STEEL SEAL - REINFORCED TEFLON REFERENCE - FLOW SEAL OR AUTHORIZED SUBSTITUTE	FLOW SEAL	<input checked="" type="checkbox"/>





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Search Specification: ABBREVIATED DESCRIPTION Begins with BA- or ABBREVIATED DESCRIPTION Begins with BU- or ABBREVIATED DESCRIPTION Begins with CH- or ABBREVIATED DESCRIPTION Begins with DP- or ABBREVIATED DESCRIPTION Begins with GA- or ABBREVIATED DESCRIPTION Begins with GL- or ABBREVIATED DESCRIPTION Begins with KN- or ABBREVIATED DESCRIPTION Begins with ND- or ABBREVIATED DESCRIPTION Begins with PE- or ABBREVIATED DESCRIPTION Begins with VE- or ABBREVIATED DESCRIPTION Begins with

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ITEM CODE	ABBREVIATED DESCRIPTION	PURCHASE DESCRIPTION	REFERENCES	PR
PRIME: 5 Piping				
5309239LHM	BU-39LHM: BUTTERFLY HP ECC DISC CL150 254 SMO MSS FLUG HYDR-MANUAL W/LIMIT SWITCH	<p>TAG BU-39LHM</p> <p>BUTTERFLY VALVE, HYDRAULIC-MANUAL WITH LIMIT SWITCH</p> <p>ECCENTRIC DISC, HIGH PERFORMANCE</p> <p>TYPE - FULL LUG TYPE BODY</p> <p>RATING - CLASS 150</p> <p>OPERATOR - HYDRAULIC-MANUAL WITH LIMIT SWITCH (SEE NOTE 1)</p> <p>STANDARD - MSS-SP 44</p> <p>MATERIAL:</p> <p>BODY - 254 SMO STAINLESS STEEL</p> <p>CASTINGS - ASTM-A351, GRADE CF8M OR</p> <p>FORGINGS - ASTM-A182, GRADE F316</p> <p>TRIM - 254 SMO STAINLESS STEEL</p> <p>SEAL - REINFORCED TEFLON</p> <p>REFERENCE - FLOW SEAL OR AUTHORIZED SUBSTITUTE</p> <p>NOTE 1:</p> <p>HEAVE DUTY QUARTER TURN</p> <p>HYDRAULIC-MANUAL ACTUATOR TYPE H RANGE OF ROTORK FLUID SYSTEM OR APPROVED EQUAL.</p> <p>MATERIAL:</p> <p>BODY : DUCTILE IRON 60-40-18</p> <p>YOKE : DUCTILE IRON 80-55-06</p> <p>LIMIT SWITCH:</p> <p>1-LIMIT SWITCH FOR OPEN STATUS</p> <p>INDICATION:</p> <p>-MECHANIC SNAP CONTACT TYPE</p> <p>-DRY CONTACT SPDT</p> <p>-VOLTAGE 120 VAC</p> <p>-MAX. CURRENT 10A</p> <p>-HOUSING NEMA 4X</p> <p>-ELECTRIC CONDUIT CONNECTION 1/2" NPT</p> <p>2-LIMIT SWITCH FOR CLOSE STATUS</p> <p>INDICATION:</p> <p>-MECHANIC SNAP CONTACT TYPE</p> <p>-DRY CONTACT SPDT</p> <p>-VOLTAGE 120 VAC</p> <p>-MAX. CURRENT 10A</p> <p>-HOUSING NEMA 4X</p> <p>-ELECTRIC CONDUIT CONNECTION 1/2" NPT</p>	DEZURIK	<input checked="" type="checkbox"/>
5309239SP	BU-39P: BUTTERFLY HP ECC DISC CL 150 254 SMO MSS F LUG PNEU	<p>TAG BU-39P</p> <p>BUTTERFLY VALVE, ECCENTRIC DISC, HIGH PERFORMANCE</p> <p>TYPE - FULL LUG TYPE BODY</p> <p>RATING - CLASS 150</p> <p>OPERATOR - PNEUMATIC DOUBLE ACTING CYLINDER</p> <p>STANDARD - MSS-SP 44</p> <p>MATERIAL:</p> <p>BODY - 254 SMO STAINLESS STEEL</p> <p>CASTINGS - ASTM-A351, GRADE CF8M OR</p> <p>FORGINGS - ASTM-A182, GRADE F316</p> <p>TRIM - 254 SMO STAINLESS STEEL</p> <p>SEAL - REINFORCED TEFLON</p> <p>REFERENCE - FLOW SEAL OR AUTHORIZED SUBSTITUTE</p>		<input type="checkbox"/>

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PRIME: 5 Piping				
5291172	CH-01: CHECK 150# WAFER 316SS EXT SPRING & WT	TAG CH-01 ITEM - CHECK VALVE, WAFER TYPE, WITH EXTERNAL SPRING AND WEIGHT RATING - ANSI CLASS 150 FLAT FACE SERRATED MATERIAL BODY - 316 STAINLESS STEEL CASTING - ASTM A351, GRADE CF8M SEAT - BUNA-N DISC - 316 STAINLESS STEEL GLAND FOLLOWER - 316 STAINLESS STEEL SPRING & SHAFT - 316 STAINLESS STEEL STANDARD - ANSI B16.34 REFERENCE - KEYSTONE FIG 815	KEYSTONE #815	<input checked="" type="checkbox"/>
5291170	CH-02: CHECK 150# WAFER 254 SMO EXT SPRING & WT	TAG CH-02 ITEM - CHECK VALVE, WAFER TYPE, WITH EXTERNAL SPRING AND WEIGHT RATING - ANSI CLASS 150 FLAT FACE SERRATED MATERIAL BODY - 254 SMO STAINLESS STEEL CASTING - ASTM A351, GRADE CF8M SEAT - BUNA-N DISC - 254 SMO STAINLESS STEEL GLAND FOLLOWER - 254 SMO STAINLESS STEEL SPRING & SHAFT - 316 STAINLESS STEEL STANDARD - ANSI B16.34 REFERENCE - KEYSTONE FIG 815	KEYSTONE #815	<input checked="" type="checkbox"/>
5163440S	CH-03: CHECK SILENT CLASS 150 RF 254 SMO	TAG: CH-03 ITEM - CHECK SILENT VALVE, GLOBE STYLE PLUG OF THE VALVE MUST BE CENTER GUIDED AT BOTH ENDS WITH A THRU INTEGRAL SHAFT AND SPRING LOADED FOR GUARANTEED SILENT SHUT-OFF OPERATION. THE SPRING MUST BE HELICAL OR CONICAL. THE SEAT AND PLUG SHALL BE HAND REPLACEABLE IN THE FIELD FOR EASY OF MAINTENANCE. THE FLOW AREA THRU THE BODY SHALL BE 10% GRATER THAN THE CROSS SECTIONAL AREA OF THE EQUIVALENTE PIPE SIZE. ALL MATERIAL OF CONSTRUCTION SHALL BE CERTIFIED IN WRITING TO CONFORM TO ASTM SPECIFICATION. FLANGED RAISED FACE ENDS PER ANSI 16.5 RATING - CLASS 150 MATERIALS: BODY - 254 SMO STAINLESS STEEL DISC & TRIM - 254 SMO STAINLESS STEEL REFERENCE - VALVE AND PRIMER CORPORATION APCO SERIES 600, OR AUTHORIZED SUBSTITUTE	APCO SERIES 600	<input checked="" type="checkbox"/>

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ITEM CODE	ABBREVIATED DESCRIPTION	PURCHASE DESCRIPTION	REFERENCES	PR
PRIME: 5 Piping				
5163448S	CH-04: CHECK SILENT 300# RF TFE 254SMO	TAG: CH-04 ITEM - CHECK SILENT VALVE, GLOBE STYLE PLUG OF THE VALVE MUST BE CENTER GUIDED AT BOTH ENDS WITH A THRU INTEGRAL SHAFT AND SPRING LOADED FOR GUARANTEED SILENT SHUT-OFF OPERATION. THE SPRING MUST BE HELICAL OR CONICAL. THE SEAT AND PLUG SHALL BE HAND REPLACEABLE IN THE FIELD FOR EASY OF MAINTENANCE. THE FLOW AREA THRU THE BODY SHALL BE 10% GRATER THAN THE CROSS SECTIONAL AREA OF THE EQUIVALENTE PIPE SIZE. ALL MATERIAL OF CONSTRUCTION SHALL BE CERTIFIED IN WRITING TO CONFORM TO ASTM SPECIFICATION. FLANGED RAISED FACE ENDS PER ANSI 16.5 RATING - CLASS 300 PER ANSI 16.34 MATERIAIALS: BODY - 254 SMO STAINLESS STEEL DISC & TRIM - 254 SMO STAINLESS STEEL REFERENCE - VALVE AND PRIMER CORPORATION APCO SERIES 618, OR AUTHORIZED SUBSTITUTE		<input type="checkbox"/>
5291170S	CH-05: CHECK 300# WAFER 254 SMO EXT SPRING & WT	TAG CH-05 ITEM - CHECK VALVE, WAFER-TYPE, WITH EXTERNAL SPRING AND WEIGHT RATING - ANSI CLASS 300 MATERIAL BODY - 254 SMO STAINLESS STEEL CASTINGS - ASTM-A351, GRADE CF8M SEAT - BUNA-N DISC - 254 SMO STAINLESS STEEL SPRINGS - 316 STAINLESS STEEL GLAND FOLLOWER - 254 SMO STAINLESS STEEL SHAFT - 254 SMO STAINLESS STEEL REFERENCE -		<input type="checkbox"/>
5001460	CH-07: CHECK SWING F.P. CS/SS SEAT FNPT CL 150	TAG CH-07 VALVE, CHECK, SWING, FULL PORT, SCREWED CAP, REPLACEABLE SEAT, STANDARD PIN. MATERIAL: BODY & CAP: CARBON STEEL, CAST DISC : CARBON STEEL SEAT : STAINLESS STEEL O-RING : TEFLON THREADED, FEMALE NPT, ENDS PER ANSI B2.1; CLASS 150 PER ANSI B16.34. REFERENCE : TOM WHEATLEY VALVE CO KF SERIES/WHEATLEY #831 OR APPROVED EQUAL.	ALOYCO	<input checked="" type="checkbox"/>

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ITEM CODE	ABBREVIATED DESCRIPTION	PURCHASE DESCRIPTION	REFERENCES	PR
PRIME: 5 Piping				
5002280	CH-08: CHECK SWING HOR/VERT CS/SS TRIM SW CL800	TAG: CH-08 VALVE, CHECK, SWING, HORIZONTAL OR VERTICAL MOUNT, REGULAR PORT, WELDED SEAT INSERT. MATERIAL: BODY: CARBON STEEL, FORGED, PER ASTM A105 DISC: 13%CR STAINLESS STEEL (AISI 410) SEAT: 309 STAINLESS STEEL DEPOSIT SOCKET WELD ENDS (SCH 80 BORE)PER ANSI B16.11 CLASS 800 PER ANSI B16.34. REFERENCE: HENRY VOGT MACHINE CO SWS-74 OR APPROVED EQUAL	VOGT SWS-74	<input checked="" type="checkbox"/>
5163750	CH-09: CHECK SWING CL 150# RF HOR/VERT ALLOY 20	TAG CH-09 VALVE, CHECK, SWING, HORIZONTAL OR VERTICAL MOUNT, BOLTED BONNET, INTEGRAL SEAT. MATERIAL: BODY & BONNET:ALLOY 20, CAST, PER ASTM A351 GRADE CN7M DISC: ALLOY 20 SEAT: INTEGRAL BONNET GASKET: COMPRESSED NON ASBESTOS (SEE NOTE 1) FLANGED,RAISED FACE,ENDS PER ANSI B16.5; CLASS 150# PER ANSI B16.34 REFERENCE: CRANE/ALOYCO #377SP-CN7M OR APPROVED EQUAL. NOTE 1: TFE BASED BONNET GASKET MATERIAL IS NOT ACCEPTABLE.	ALOYCO #377	<input checked="" type="checkbox"/>
5280008	CH-10: CHECK WAF IBBM BUNA-N SEAL FF 250 UL/FM	TAG CH-10 VALVE, CHECK, WAFER BODY, SPLIT DISC, SPRING LOADED, WITH ELASTOMER SEAT. MATERIAL: BODY: CAST IRON PER ASTM A216 CLASS B DISC: ALUMINUM BRONZE, CAST, TRIM: 316 STAINLESS STEEL SEAT: BUNA-N FLAT FACE ENDS; 250 PSIG CWP MAXIMUM WORKING PRESSURE. REFERENCE: TRW MISSION U12HMP OR APPROVED EQUAL NOTE 1: UL LISTED FOR FIRE PROTECTION SERVICE. REFERENCE: DUOCHECK U12-HMP	DUOCHECK U12HMP	<input checked="" type="checkbox"/>

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ITEM CODE	ABBREVIATED DESCRIPTION	PURCHASE DESCRIPTION	REFERENCES	PR
PRIME: 5 Piping				
5004210	CH-11: CHECK SWING CL 150# RF CS W/13%CR SS TRIM	TAG: CH-11 VALVE, CHECK, SWING, HORIZONTAL OR VERTICAL MOUNT, BOLTED BONNET, INTEGRALLY WELDED OR SCREWED & TACK WELDED SEAT RING. MATERIAL: BODY & BONNET: CARBON STEEL, CAST, PER ASTM A216, GRADE WCB, DISC & SEAT: 13%CR STAINLESS STEEL OR STELLITED (NO. 6) CARBON STEEL, BONNET GASKET: COMPRESSED NON-ASBESTOS. FLANGED, RAISED FACE, ENDS PER ANSI B16.5; CLASS 150# PER ANSI B16.34; REFERENCE: WM POWELL CO #1561A OR APPROVED EQUAL	POWELL #1561A	<input checked="" type="checkbox"/>
5280772	CH-12: CHECK WAF CS/BUNA N SEAT RF CL 150	TAG CH-12 VALVE CHECK WAFER BODY. SPLIT DISC (EACH PLATE INDEPENDENTLY SPRING LOADED), WITH ELASTOMER SEAT BONDED TO BODY MATERIAL: BODY : CARBON STEEL DISC & TRIM : 316 STAINLESS STEEL SEAT : BUNA-N RAISED FACE ENDS PER ANSI B16.5;CLASS 150 PER ANSI B16.34 REFERENCE: MUESCO-MUELLER	MUESCO-MUELLER	<input checked="" type="checkbox"/>
5163745	CH-14: CHECK 150# RF WAFER, CS/ 316 TRIM BUNA-N	TAG CH-14 ITEM - CHECK VALVE, DUAL PLATE WAFER-TYPE RATING - ANSI CLASS 150 FLANGED, RAISED FACE MATERIAL BODY - CARBON STEEL CLOSURE PLATES - CARBON STEEL CASTINGS - ASTM-A216, GRADE WCB SEATING SURFACES - BUNA-N SPRINGS - 316 STAINLESS STEEL HINGE PIN - 316 STAINLESS STEEL STOP PIN - 316 STAINLESS STEEL PIN RETAINERS - 316 STAINLESS STEEL LUG BEARINGS - TEFLON-GLASS FILLED REFERENCE - DUO-CHEK #G15SMF OR AUTHORIZED SUBSTITUTE		<input type="checkbox"/>
5111918	CH-15: CHECK HORIZ. LIFT API CLASS 200# SW 316L SS	TAG CH-15 ITEM - CHECK VALVE, HORIZONTAL LIFT, BOLTED COVER, RETAINING GASKET RATING - API CLASS 200# ENDS - SOCKETWELDED MATERIAL: BODY & COVER - 316L STAINLESS STEEL CASTINGS - ASTM-A351, GRADE CF3M OF FORGINGS - ASTM-A182, GRADE F316L TRIM - 316 STAINLESS STEEL REFERENCE - CRANE-ALOYCO #370 OR AUTHORIZED SUBSTITUTE	ALOYCO #370	<input checked="" type="checkbox"/>



# Project Bulk/Assembly Purchase Catalog

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ITEM CODE	ABBREVIATED DESCRIPTION	PURCHASE DESCRIPTION	REFERENCES	PR
PRIME: 5 Piping				
5280758	CH-16: CHECK 150# RF STL, WAFER-TYPE	TAG CH-16 ITEM - CHECK VALVE, DUAL PLATE WAFER-TYPE RATING - ANSI CLASS 150 FLANGED, RAISED FACE MATERIAL BODY - CARBON STEEL OR 410 STAINLESS CASTINGS - ASTM-A216 WCB OR A351 CA15 CLOSURE PLATES - 410 STAINLESS STEEL SEATING SURFACES - 410 STAINLESS STEEL SPRING - INCONEL-X HINGE PIN - 410 STAINLESS STEEL STOP PIN - 410 STAINLESS STEEL PIN RETAINERS - 410 STAINLESS STEEL LUG BEARINGS - 410 STAINLESS STEEL REFERENCE - DUO-CHEK #G15SPF-169 OR #G15EPF-9 OR AUTHORIZED SUBSTITUTE	DUOCHECK G15SPF	<input checked="" type="checkbox"/>
5276835	CH-16: CHECK CL 150# RF 254 SMO UNS S31254 SWING	TAG CH-16 ITEM - CHECK VALVE, SWING TYPE, BOLTED CAP RATING - ANSI CLASS 150# FLANGED, RAISED FACE STANDARD - ASME B16.5 MATERIAL - STAINLESS STEEL BODY & CAP - 254 SMO ASTM A312 UNS S31254 CASTINGS - 254 SMO ASTM A312 UNS S31254 TRIM - 254 SMO ASTM A312 UNS S31254 BONNET GASKET - TEFLON REFERENCE - COOPER #315RF OR AUTHORIZED SUBSTITUTE		<input type="checkbox"/>
5163446S	CH-17: CHECK 150# RF 254 SMO HORIZ	TAG CH-17		<input type="checkbox"/>



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ITEM CODE	ABBREVIATED DESCRIPTION	PURCHASE DESCRIPTION	REFERENCES	PR
PRIME: 5 Piping				
5163447	CH-18: CHECK SILENT CLASS 150 RF TFE 316	TAG CH-18 VALVE SILENT CHECK, GLOBE STYLE PLUG OF THE VALVE MUST BE CENTER GUIDED AT BOTH ENDS WITH A THRU INTEGRAL SHAFT AND SPRING LOADED FOR GUARANTEED SILENT SHUT-OFF OPERATION. THE SPRING MUST BE HELICAL OR CONICAL . THE SEAT AND PLUG SHALL BE HAND REPLACEABLE IN THE FIELD FOR EASE OF MAINTENANCE. THE FLOW AREA THRU THE BODY SHALL BE 10% GREATER THAN THE CROSS-SECTIONAL AREA OF THE EQUIVALENT PIPE SIZE. ALL MATERIALS OF CONSTRUCTION SHALL BE CERTIFIED IN WRITING TO CONFORM TO A.S.T.M. SPECIFICATIONS. MATERIALS: BODY : 316 STAINLESS STEEL DISC AND TRIM : 316 STAINLESS STEEL LINNING : TEFLON EXTERIOR PAINT: PHENOLIC PRIMER RED OXIDE, FDA APPROVED FOR EXTREMELY CORROSIVE ENVIRONMENT. FLANGED RAISED FACE ENDS PER ANSI B16.5 CLASS 150 PER ANSI B16.34 REFERENCE: VALVE AND PRIMER CORPORATION APCO SERIES 600, OR APPROVED EQUAL.		<input type="checkbox"/>
5163814S	CH-19: CHECK 300# RF 254 SMO HORIZ	TAG CH-19 ITEM - CHECK VALVE, BOLTED CAP TYPE - HORIZONTAL, LIFT TYPE RATING - ANSI CLASS 300 FLANGED, RAISED FACE MATERIAL BODY & CAP - 254 SMO CASTINGS - ASTM-A216, GRADE WCB STANDARDS - FLANGES TO BE DRILLED TO ASME B16.5 REFERENCE -		<input type="checkbox"/>



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ITEM CODE	ABBREVIATED DESCRIPTION	PURCHASE DESCRIPTION	REFERENCES	PR
PRIME: 5 Piping				
5163815S	CH-20: CHECK 300# RF 254 SMO VERTICAL	TAG CH-20 ITEM - CHECK VALVE TYPE - VERTICAL RATING - ANSI CLASS 300 FLANGED, RAISED FACE MATERIAL BODY & CAP - CARBON STEEL, LINED CASTINGS - ASTM-A216, GRADE WCB LINING - PTFE TEFLON STANDARDS - FLANGES TO BE DRILLED TO ASME B16.5 REFERENCE - DOW #356-PTFE OR AUTHORIZED SUBSTITUTE		<input type="checkbox"/>
5276836	CH-21: CHECK CL 300# RF 254 SMO UNS S31254 SWING	TAG CH-21 ITEM - CHECK VALVE, SWING TYPE, BOLTED CAP RATING - ANSI CLASS 300# FLANGED, RAISED FACE STANDARD - ANSI B16.5 MATERIAL - STAINLESS STEEL BODY & CAP - 254 SMO ASTM A312 UNS S31254 CASTINGS - 254 SMO ASTM A312 UNS S31254 TRIM - 254 SMO ASTM A312 UNS S31254 BONNET GASKET - TEFLON REFERENCE - COOPER #330RF OR AUTHORIZED SUBSTITUTE	COOPER #330 RF	<input checked="" type="checkbox"/>
5006801	CH-22: CHECK 800# SCRDL STL, 316 TRIM, HORIZ	TAG CH-22 ITEM - CHECK VALVE TYPE - HORIZONTAL LIFT TYPE, BOLTED CAP RATING - API CLASS 800 SCREWED MATERIAL BODY & BONNET - CARBON STEEL FORGINGS - ASTM-A105 TRIM - 316 STAINLESS STEEL REFERENCE - VOGT #701-F8M OR AUTHORIZED SUBSTITUTE	VOGT #701-F8M	<input checked="" type="checkbox"/>
5111915	CH-23: CHECK-BALL H & V 150# CWP SOCKET FUS VITON SEALS POLYPROP BODY & BALL	TAG CH-23 ITEM - CHECK VALVE, COMBINATION HORIZONTAL & VERTICAL BALL TYPE, UNION BODY RATING - 150 CWP SOCKET FUSION MATERIAL BODY & BALL - POLYPROPYLENE SEALS - VITON	NIBCO TYPE TU	<input checked="" type="checkbox"/>
5063592	CH-24: CHECK CLASS 2500# SW CS/STELLITED S&D SWB	TAG CH-24 ITEM - CHECK VALVE, COMBINATION HORIZONTAL AND VERTICAL PISTON TYPE, SEAL WELDED BONNET RATING - CLASS 2500# ENDS - SOCKETWELDED MATERIAL: BODY & BONNET - CARBON STEEL FORGINGS - ASTM-A105 TRIM - F6 WITH STELLITED SEAT & DISC REFERENCE - EDWARD #66174 OR AUTHORIZED SUBSTITUTE		<input type="checkbox"/>

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ITEM CODE	ABBREVIATED DESCRIPTION	PURCHASE DESCRIPTION	REFERENCES	PR
PRIME: 5 Piping				
5281566	CH-25: CHECK WAFER TYPE DUAL PLATE CLASS 2500# CS	TAG CH-25 ITEM - CHECK VALVE, DUAL PLATE WAFER-TYPE RATING - ANSI CLASS 2500# FLANGED MATERIAL BODY - CARBON STEEL CASTINGS - ASTM-A216, GRADE WCB CLOSURE PLATES - 410 STAINLESS STEEL SEATING SURFACES - 410 STAINLESS STEEL SPRINGS - INCONEL-X HINGE PIN - 316 STAINLESS STEEL STOP PIN - 316 STAINLESS STEEL PIN RETAINERS - 316 STAINLESS STEEL LUG BEARINGS - 316 STAINLESS STEEL REFERENCE - DUO-CHEK #G250SPR-169 OR AUTHORIZED SUBSTITUTE		<input type="checkbox"/>
5315916	CH-26: CHECK 2500# BW STL,F6/STELL S&D SCH 160	TAG CH-26 ITEM - CHECK VALVE, SEAL WELDED BONNET TYPE - COMBINATION HORIZONTAL AND VERTICAL SPRING LOADED PISTON RATING - ANSI CLASS 2500 BUTTWELD MATERIAL BODY & BONNET - CARBON STEEL FORGINGS - ASTM-A105 TRIM - F6 WITH STELLITED SEAT & DISC REFERENCE - EDWARD #66178 OR AUTHORIZED SUBSTITUTE		<input type="checkbox"/>
5063494	CH-27: CHECK CLASS 1500# SW CS/STELLITED S&D SWB	TAG CH-27 ITEM - CHECK VALVE, WELDED CAP, Y-PATTERN SEAL WELDED BONNET TYPE - COMBINATION HORIZONTAL AND VERTICAL SPRING LOADED PISTON TYPE RATING - CLASS 1500# ENDS - SOCKETWELDED MATERIAL BODY & CAP - CARBON STEEL FORGINGS - ASTM-A105 TRIM - F6 WITH STELLITED SEAT & DISC REFERENCE - EDWARD #36174 OR AUTHORIZED SUBSTITUTE		<input type="checkbox"/>
5165304	CH-28: CHECK CL 1500# RFSF STL,F6/STELLITED SEAT	TAG CH-28 ITEM - CHECK VALVE, LIFT TYPE, BOLTED CAP RATING - ANSI CLASS 1500# FLANGED FACING - RAISED FACE, WITH SPECIAL FINISH 125-250 MICROINCH RA MATERIAL BODY & BONNET - CARBON STEEL FORGINGS - ASTM-A105 TRIM - F6 WITH STELLITED SEAT REFERENCE - VOGT #15593 OR AUTHORIZED SUBSTITUTE		<input type="checkbox"/>

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ITEM CODE	ABBREVIATED DESCRIPTION	PURCHASE DESCRIPTION	REFERENCES	PR
PRIME: 5 Piping				
5165301	CH-29: CHECK CL 1500# RFSF STL,F6/STELLITED SEAT	TAG CH-29 ITEM - CHECK VALVE, SWING TYPE, BOLTED CAP WITH INTERNAL SWING ARM RATING - ANSI CLASS 1500# FLANGED FACING - RAISED FACE, WITH SPECIAL FINISH 125-250 MICROINCH RA MATERIAL BODY & CAP - CARBON STEEL CASTINGS - ASTM-A216, GRADE WCB OR FORGINGS - ASTM-A105 TRIM - F6 WITH STELLITED SEAT REFERENCE - PACIFIC #1584-U OR AUTHORIZED SUBSTITUTE		<input type="checkbox"/>
5111904	CH-30: CHECK 150# SW PVC/VITON SCH 80 BALL TYPE	TAG CH-30 ITEM - CHECK VALVE, TRUE-UNION, BALL TYPE RATING - 150 PSI @ 73 F ENDS - SOCKET WELD MATERIAL BODY & BALL - PVC ASTM D1748 CLASS 12454-B SEATS - TEFLON SEAL - VITON "O" RING REFERENCE - CHEMTROL BC SERIES(U45BC-V OR S45BC-V) OR AUTHORIZED SUBSTITUTE		<input type="checkbox"/>
5153805	CH-31: CHECK SWING 175# CWP FF HOR/VERT IBBM UL/FM	TAG CH-31 VALVE, CHECK, SWING, HORIZONTAL OR VERTICAL MOUNT, BOLTED BONNET, SCREWED SEAT RING. MATERIAL: BODY & BONNET: CAST IRON PER ASTM A126 CL B DISC & SEAT: BRONZE BONNET GASKET: COMPRESSED NON-ASBESTOS FLANGED, FLAT FACE, PER ANSI B16.1; 175 PSIG CWP MAXIMUM WORKING PRESSURE. REFERENCE: CRANE #375 OR APPROVED EQUAL NOTE 1: UL & FM LISTED FOR FIRE PROTECTION SERVICE	CRANE #375	<input checked="" type="checkbox"/>
5000770	CH-32: CHECK 200# SCREWED BRONZE	TAG CH-32 ITEM - CHECK VALVE TYPE - SWING TYPE, SCREWED BONNET RATING - MSS CLASS 200 ENDS - SCREWED MATERIAL BODY & BONNET - BRONZE ASTM-B61 REFERENCE - CRANE #36 OR AUTHORIZED SUBSTITUTE		<input type="checkbox"/>

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PRIME: 5 Piping				
5280012	CH-33: CHECK SWING HOR/VERT ALL IRON FF 125#	TAG CH-33 VALVE, CHECK, SWING, HORIZONTAL OR VERTICAL MOUNT, BOLTED BONNET, INTEGRAL SEAT. MATERIAL: BODY & BONNET: CAST IRON PER ASTM A126 CL B DISC: CAST IRON BONNET GASKET: COMPRESSED NON-ASBESTOS FLANGED, FLAT FACE, ENDS PER ANSI B16.1; 125 PSIG WOG RATING. REFERENCE: WM POWELL CO #1259 OR APPROVED EQUAL		<input type="checkbox"/>
5291503	CH-34: CHECK 300# WAFER 316SS EXT SPRING & WT	TAG CH-34 ITEM - CHECK VALVE, WAFER TYPE, WITH EXTERNAL SPRING AND WEIGHT RATING - ANSI CLASS 300 FLAT FACE SERRATED MATERIAL BODY - 316 STAINLESS STEEL CASTING - ASTM A351, GRADE CF8M SEAT - BUNA-N DISC - 316 STAINLESS STEEL GLAND FOLLOWER - 316 STAINLESS STEEL SPRING & SHAFT - 316 STAINLESS STEEL STANDARD - ANSI B16.34 REFERENCE - CHECK RITE SA-1-1		<input type="checkbox"/>
5291502	CH-35: CHECK CL 300# RF WAFER, NON-SLAM, CS/BUNA-N	TAG CH-35 ITEM - CHECK VALVE, DUAL PLATE WAFER-TYPE RATING - ANSI CLASS 300 FLANGED, RAISED FACE MATERIAL BODY - CARBON STEEL CLOSURE PLATES - CARBON STEEL CASTINGS - ASTM-A216, GRADE WCB SEATING SURFACES - BUNA-N SPRINGS - 316 STAINLESS STEEL HINGE PIN - 316 STAINLESS STEEL STOP PIN - 316 STAINLESS STEEL PIN RETAINERS - 316 STAINLESS STEEL LUG BEARINGS - TEFLON-GLASS FILLED REFERENCE - DUO-CHEK #G30SMF OR AUTHORIZED SUBSTITUTE		<input type="checkbox"/>

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PRIME: 5 Piping				
5292356	CH-36: CHECK 150# RF ALLOY 20 WAFER-TYPE	ITEM - CHECK VALVE, DUAL PLATE, WAFER-TYPE RATING - ANSI CLASS 150 FLANGED, RAISED FACE MATERIAL BODY - ALLOY 20 CASTINGS - ASTM-A351, GRADE CN7M SOLUTION HEAT TREATED CLOSURE PLATES - ALLOY 20 SEATING SURFACES - INTEGRAL SPRINGS - INCONEL-X HINGE PIN - ALLOY 20 STOP PIN - ALLOY 20 PIN RETAINERS - ALLOY 20 LUG BEARINGS - ALLOY 20 REFERENCE - DUO-CHEK #G15FPF-9 OR AUTHORIZED SUBSTITUTE		<input type="checkbox"/>
5290394	CH-37: CHECK 150# RF 316 SS WAFER-TYPE	ITEM - CHECK VALVE, DUAL PLATE WAFER-TYPE RATING - ANSI CLASS 150 FLANGED, RAISED FACE MATERIAL BODY - 316 STAINLESS STEEL CASTINGS - ASTM-A351, GRADE CF8M CLOSURE PLATES - 316 STAINLESS STEEL SEATING SURFACES - INTEGRAL SPRINGS - INCONEL-X HINGE PIN - 316 STAINLESS STEEL STOP PIN - 316 STAINLESS STEEL PIN RETAINERS - 316 STAINLESS STEEL LUG BEARINGS - 316 STAINLESS STEEL REFERENCE - DUO-CHEK #G15CPF-9 OR AUTHORIZED SUBSTITUTE	DUO-CHECK	<input checked="" type="checkbox"/>
5290522	CH-38: CHECK CL 300 RF 316 SS, WAFER VITON	ITEM - CHECK VALVE, DUAL PLATE WAFER-TYPE RATING - ANSI/ASME CLASS 300 MATERIAL BODY - 316 STAINLESS STEEL CASTINGS - ASTM-A351, GRADE CF8M CLOSURE PLATES - 316 STAINLESS STEEL SEATING SURFACES - VITON SPRINGS - 316 STAINLESS STEEL HINGE PIN - 316 STAINLESS STEEL STOP PIN - 316 STAINLESS STEEL PIN RETAINERS - 316 STAINLESS STEEL LUG BEARINGS - 316 STAINLESS STEEL REFERENCE - DUO-CHEK #G30CMF OR APPROVED SUBSTITUTE		<input type="checkbox"/>

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PRIME: 5 Piping				
5291172S	CH-39: CHECK CL 300 WAFER 316SS EXT SPRING & WT	TAG CH- ITEM - CHECK VALVE, WAFER TYPE, WITH EXTERNAL SPRING AND WEIGHT RATING - ANSI CLASS 300 FLAT FACE SERRATED MATERIAL BODY - 316 STAINLESS STEEL CASTING - ASTM A351, GRADE CF8M SEAT - BUNA-N DISC - 316 STAINLESS STEEL GLAND FOLLOWER - 316 STAINLESS STEEL SPRING & SHAFT - 316 STAINLESS STEEL STANDARD - ANSI B16.34 REFERENCE - KEYSTONE FIG 815	KEYSTONE #815	<input checked="" type="checkbox"/>
5163447S	CH-40: CHECK SILENT CLASS 300# RF TFE 316	TAG CH-40 VALVE SILENT CHECK, GLOBE STYLE PLUG OF THE VALVE MUST BE CENTER GUIDED AT BOTH ENDS WITH A THRU INTEGRAL SHAFT AND SPRING LOADED FOR GUARANTEED SILENT SHUT-OFF OPERATION. THE SPRING MUST BE HELICAL OR CONICAL . THE SEAT AND PLUG SHALL BE HAND REPLACEABLE IN THE FIELD FOR EASE OF MAINTENANCE. THE FLOW AREA THRU THE BODY SHALL BE 10% GREATER THAN THE CROSS-SECTIONAL AREA OF THE EQUIVALENT PIPE SIZE. ALL MATERIALS OF CONSTRUCTION SHALL BE CERTIFIED IN WRITING TO CONFORM TO A.S.T.M. SPECIFICATIONS. MATERIALS: BODY : 316 STAINLESS STEEL DISC AND TRIM : 316 STAINLESS STEEL LINING : TEFLON EXTERIOR PAINT: PHENOLIC PRIMER RED OXIDE, FDA APPROVED FOR EXTREMELY CORROSIVE ENVIRONMENT. FLANGED RAISED FACE ENDS PER ANSI B16.5 CLASS 300 PER ANSI B16.34 REFERENCE: VALVE AND PRIMER CORPORATION APCO SERIES 600, OR APPROVED EQUAL.	APCO SERIES 600	<input checked="" type="checkbox"/>

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PRIME: 5 Piping				
5290394S	CH-41: CHECK 150# RF 254 SMO WAFER-TYPE	ITEM - CHECK VALVE, DUAL PLATE WAFER-TYPE RATING - ANSI CLASS 150 FLANGED, RAISED FACE MATERIAL BODY - 254 SMO STAINLESS STEEL CASTINGS - ASTM-A351, GRADE CF8M CLOSURE PLATES - 254 SMO STAINLESS STEEL SEATING SURFACES - INTEGRAL SPRINGS - INCONEL-X HINGE PIN - 254 SMO STAINLESS STEEL STOP PIN - 254 SMO STAINLESS STEEL PIN RETAINERS - 254 SMO STAINLESS STEEL LUG BEARINGS - 254 SMO STAINLESS STEEL REFERENCE - DUO-CHEK #G15CPF-9 OR AUTHORIZED SUBSTITUTE		<input type="checkbox"/>
5163445	CH-42: CHECK SILENT CL 900# RF TFE CS A216-WCB	TAG CH-42 VALVE SLANTING DISC CHECK VALVE, CL 900 CHECK SLANTING TYPE TWO PIECES SEALED WITH AN O-RING. EACH BODY HAF MUST HAVE AN ACCESS COVERED HOLE FOR INTERNAL INSPECTION AND DISC. ALL MATERIALS OF CONSTRUCTION SHALL BE CERTIFIED IN WRITING TO CONFORM TO A.S.T.M. SPECIFICATIONS. MATERIALS: BODY : CARBON STEEL ASTM A216 GRADE WCB DISC : ASTM A-216 WCB BODY SEAT RING: STAINLESS STEEL ASTM A351 CF8M PIVOT PIN BUSHUNG : STAINLESS STEEL ASTM A269 T304 FLANGED RAISED FACE ENDS PER ANSI B16.5 CLASS 900 PER ANSI B16.34 REFERENCE: VALVE AND PRIMER CORPORATION APCO SERIES 800 HIGH PRESSURE, OR APPROVED EQUAL.	APCO SERIES 600	<input checked="" type="checkbox"/>
5170000	CH-43: CHECK WAFER CL150# POLYPROPYLENE W/O DISC SPRING	CHECK VALVE, TYPE - WAFER WITHOUT DISC SPRING TO INSTALL BETWEEN ANSI/ASME B16.5 STANDARD FLANGES RATING - CLASS 150# MATERIAL: BODY - POLYPROPYLENE DISC SEAL - BUNA-N REFERENCE: FABCO PLASTICS OR APPROVED EQUAL	NIBCO TYPE TU	<input checked="" type="checkbox"/>

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PRIME: 5 Piping				
5163437	CH-44: CHECK SWING CL 900# RF CS W/13%CR SS TRIM	TAG: CH-44 ITEM - CHECK VALVE, SWING TYPE, BOLTED CAP RATING - ASME CLASS 900 FLANGED, RAISED FACE MATERIAL BODY & CAP - CARBON STEEL CASTINGS - ASTM-A216, GRADE WCB OR FORGINGS - ASTM-A105 TRIM - F6 CAP GASKET - SPIRAL WOUND 304/TEFLON REFERENCE - POWEL OR AUTHORIZED SUBSTITUTE	POWELL #1561A	<input checked="" type="checkbox"/>
5280760	CH-45: CHECK 75 PSI CWP FF SUPER DUPLEX BODY , SPRING WAFER-TYPE	TAG CH-45 ITEM - CHECK VALVE, DUAL PLATE WAFER-TYPE RATING - 75 PSI CWP TO MATCH FLAT FACE ANSI B16.5 FLANGES (SIZES 1/2" TO 3") AND FLAT FACE ANSI/AWWA C207 CLASS D FLANGES (SIZES 4" TO 42") MATERIAL BODY - SUPER DUPLEX SEAT - EPDM SPRING - SUPER DUPLEX HINGE PIN - SUPER DUPLEX STOP PIN - SUPER DUPLEX PIN RETAINERS - SUPER DUPLEX LUG BEARINGS - SUPER DUPLEX SERVICE: SEA WATER REFERENCE - GOODWIN FIG. N°9ANPF-II TYPE BR OR AUTHORIZED SUBSTITUTE	GOODWIN 9ANFP11	<input checked="" type="checkbox"/>



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PRIME: 5 Piping				
5163450	CH-46: CHECK SWING PIGGABLE CL 900 RF CS A216 GR WCC	<p>TAG: CH-46</p> <p>ITEM: CHECK VALVE, HORIZONTAL SWING TYPE, BOLTED BONNET, FULL OPENING, PIGGABLE, COMPLETE WITH CARBON STEEL CLAPPER/TRIM WITH 316 SS OVERLAY ON CLAPPER FACE, CARBON STEEL INTEGRAL BODY SEAT, WITH 316 SS OVERLAY ON SEAT FACE AND 90 DUROMETER, PEROXIDE CURED BUNA-N SEALS.</p> <p>VALVE EQUIPED WITH DOUBLE EXTENDED SHAFT, PRESSURE BALANCED, THROUGH A TYPE "T" GLAND WITH WORM GEAR OPERATOR TO LOCK VALVE IN THE OPEN POSITION AND A ROTARY HYDRAULIC SLAM RETARDER.</p> <p>RATING: ANSI/ASME CLASS 900 FLANGED, RAISED FACE PER API-6D MONOGRAMMED AND MEETS THE LATEST EDITION OF NACE, MR-0175</p> <p>MATERIAL:</p> <ul style="list-style-type: none"> <li>BODY &amp; CAP - CARBON STEEL</li> <li>CASTINGS - ASTM-A216, GRADE WCC</li> <li>CLAPPER - ASTM A515 GRADE 70</li> <li>CLAPPER SEAL - BUNA N</li> <li>CLAPPER ARM - ASTM-A216, GRADE WCC</li> <li>CLAPPER ARM PIN - TYPE 316 SS</li> <li>SEAT - ASTM A515 GRADE 70</li> </ul> <p>REFERENCE: TOM WHEATLEY FIGURE #54 AND/WITH WHEATLY MINI-SLAM II ROTARY HYDRAULIC SLAM RETARDER. OR AUTHORIZED SUBSTITUTE</p>		<input type="checkbox"/>
5311460	DP-02: DIAPHRAGM WEIR CI/HYPALON DIAP.FF CL 150	<p>TAG DP-02</p> <p>VALVE, DIAPHRAGM, WEIR TYPE, STRAIGHT BODY, BOLTED BONNET, UNLINED, INDICATING STEM WITH TRAVEL STOP, HANDWHEEL OPERATED</p> <p>MATERIAL:</p> <ul style="list-style-type: none"> <li>BODY : CAST IRON PER ASTM A48</li> <li>DIAPHRAGM : TEFLON OR FLUOROCARBON (VITON, FLUOREL)</li> </ul> <p>FLANGED, FLAT FACE, ENDS PER ANSI B16.1</p> <p>CLASS 125/150 DRILLING (SEE MANUFACTURER'S RATING FOR MAXIMUM ALLOWABLE PRESSURE TEMPERATURE AND SIZE)</p> <p>REFERENCE : ITT GRINNELL # 2431-3-C OR APPROVED EQUAL</p>		<input type="checkbox"/>

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PRIME: 5 Piping				
5309980	DP-03: DIAPHRAGM WEIR CI/NATURAL RUBBR THD 150#	TAG DP-03 VALVE, DIAPHRAGM, WEIR TYPE, STRAIGHT BODY, BOLTED BONNET, UNLINED, INDICATING STEM WITH TRAVEL STOP, HANDWHEEL OPERATED. MATERIAL: BODY : CAST IRON PER ASTM A126 CL B DIAPHRAGM : EPDM THREADED ENDS PER ANSI B16.1 MAX. WORKING PRESSURE = 150 PSIG REFERENCE: MCCANNA X-2901-2-38 OR APPROVED EQUAL		<input type="checkbox"/>
5039577	GA-01: GATE CL 800# FNPT RP WB CS/13%CR TR/S.SEAT	TAG GA-01 BONNET, BOLTED GLAND, RISING STEM-STATIONARY HAND- WHEEL,SOLID OR FLEXIBLE WEDGE DISC,RENEWABLE SEATS MATERIAL: BODY & BONNET : CARBON STEEL DISC & STEM : 13%CR STAINLESS STEEL SEAT : 13%CR SS, STELLITED (N26) PACKING : BRAIDED NON ASBESTOS THREADED,FEMALE NPT,ENDS PER ANSI B2.1 CLASS 800 PER ANSI B16.34,VALVE MUST BE CONFORM TO API 602 REFERENCE: SMITH VALVE CORP.#870-OOHO OR APPROVED EQUAL	SMITH #870-OOHO	<input checked="" type="checkbox"/>
5156170	GA-02: GATE CL 150# RF OS&Y ALLOY 20 A351 CN7M	TAG GA-02 VALVE,GATE,OUTSIDE SCREW & YOKE,BOLTED BONNET & GLAND,RISING STEM STATIONARY HANDWHEEL, SOLID WEDGE DISC, INTEGRAL SEAT. MATERIAL: BODY & BONNET:ALLOY 20, CAST, PER ASTM A351 GRADE CN7M PACKING : BRAIDED NON ASBESTOS FLANGED, RAISED FACE, ENDS PER ANSI B16.5 CLASS 150# PER ANSI B16.34 REFERENCE: LADISH CO # 8275 OR APPROVED EQUAL. GRAFOIL+BRAIDED GRAPHITE PACKING OR APPROVED EQUAL	LADISH #8275	<input checked="" type="checkbox"/>

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PRIME: 5 Piping				
5156170G	GA-02G: GATE CL 150# RF OS&Y ALLOY 20 A351 CN7M GEAR OP	TAG GA-02G VALVE, GATE, OUTSIDE SCREW & YOKE, BOLTED BONNET & GLAND, SOLID WEDGE DISC, INTEGRAL SEAT. OPERATOR : GEAR MATERIAL: BODY & BONNET: ALLOY 20, CAST, PER ASTM A351 GRADE CN7M PACKING : BRAIDED NON ASBESTOS FLANGED, RAISED FACE, ENDS PER ANSI B16.5 CLASS 150# PER ANSI B16.34 REFERENCE: LADISH CO # 8275 OR APPROVED EQUAL. GRAFOIL+BRAIDED GRAPHITE PACKING OR APPROVED EQUAL	LADISH #8275	<input checked="" type="checkbox"/>
5156155	GA-03: GATE CL 150# FF OS&Y CAST STEEL HDWHL	TAG GA-03 VALVE, GATE OUTSIDE SCREW & YOKE, BOLTED BONNET & GLAND, RISING STEM - STATIONARY HANDWHEEL, SOLID WEDGE DISC, SCREWED & TACK WELDED SEAT RINGS. MATERIAL: BODY AND BONNET: CARBON STEEL, CAST PER ASTM A216, GRADE WCB. DISC & SEAT: 13% CR STAINLESS STEEL (AISI 410) OR STELLITED (N <sub>2</sub> 6) CARBON STEEL STEM : 13% CR STAINLESS STEEL. PACKING : FLEXIBLE GRAPHITE PACKING RINGS BETWEEN RETAINING RINGS OF INTER-BRAIDED GRAPHITE FILAMENT BONNET GASKET: COMP NON-ASBESTOS OR SOFT IRON FLANGED FLAT FACE, ENDS PER ANSI B16.5, CLASS 150# PER ANSI B16.34, VALVE MUST CONFORM TO API 600. REFERENCE: VELAN WITH JOHN CRANE #237 + 1625GF GRAFOIL + BRAIDED GRAPHITE PACKING OR APPROVED EQUAL.	VELAN	<input checked="" type="checkbox"/>

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PRIME: 5 Piping				
5156155G	GA-03G: GATE CL 150# FF OS&Y CAST STEEL GEAR OP	TAG GA-03G VALVE, GATE OUTSIDE SCREW & YOKE, BOLTED BONNET & GLAND, RISING STEM - SOLID WEDGE DISC, SCREWED & TACK WELDED SEAT RINGS. OPERATOR : GEAR MATERIAL: BODY AND BONNET: CARBON STEEL, CAST PER ASTM A216, GRADE WCB. DISC & SEAT: 13% CR STAINLESS STEEL (AISI 410) OR STELLITED (N <sub>2</sub> 6) CARBON STEEL STEM : 13% CR STAINLESS STEEL. PACKING : FLEXIBLE GRAPHITE PACKING RINGS BETWEEN RETAINING RINGS OF INTER-BRAIDED GRAPHITE FILAMENT BONNET GASKET: COMP NON-ASBESTOS OR SOFT IRON FLANGED FLAT FACE, ENDS PER ANSI B16.5, CLASS 150# PER ANSI B16.34, VALVE MUST CONFORM TO API 600. REFERENCE: VELAN WITH JOHN CRANE #237 + 1625GF GRAFOIL + BRAIDED GRAPHITE PACKING OR APPROVED EQUAL.	VELAN	<input checked="" type="checkbox"/>
5252236	GA-04: GATE CL 300 RF 316 SS HANDWHEEL OP	TAG GA-04 ITEM - GATE VALVE, OS&Y-BB, SPLIT WEDGE RATING - ASME CLASS 300 FLANGED, RAISED FACE OPERATOR - HANDWHEEL MATERIAL BODY & BONNET - 316 STAINLESS STEEL CASTINGS - ASTM-A351, GRADE CF8M OR FORGINGS - ASTM-A182, GRADE F316 TRIM - 316 STAINLESS STEEL REFERENCE - WARREN VALVE FIG. N° 1306 OR APPROVED SUBSTITUTE	WARREN	<input checked="" type="checkbox"/>
5252236G	GA-04G: GATE 300# RF 316 SS GEAR OP	TAG GA-04G ITEM - GATE VALVE, OS&Y-BB, SPLIT WEDGE RATING - ASME CLASS 300 FLANGED, RAISED FACE OPERATOR - GEAR MATERIAL BODY & BONNET - 316 STAINLESS STEEL CASTINGS - ASTM-A351, GRADE CF8M OR FORGINGS - ASTM-A182, GRADE F316 TRIM - 316 STAINLESS STEEL REFERENCE - WARREN VALVE FIG. N° 1306 OR APPROVED SUBSTITUTE	WARREN	<input checked="" type="checkbox"/>



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PRIME: 5 Piping				
5269520	GA-07: GATE CL 300# RF 254SMO W/TFE PACKING	TAG GA-07 ITEM - GATE VALVE, OS&Y-BB RATING - ANSI CLASS 300# FLANGED, RAISED FACE STANDARD - ASME B16.5 MATERIAL - STAINLESS STEEL BODY & BONNET - 254 SMO ASTM A312 UNS S31254 CASTINGS - 254 SMO ASTM-A312 UNS S31254 TRIM - 254 SMO ASTM A312 UNS S31254 PACKING - TEFLON REFERENCE - COOPER 130RF OR AUTHORIZED SUBSTITUTE	COOPER 130RF	<input checked="" type="checkbox"/>
5269520G	GA-07G: GATE CL 300# RF 254SMO W/TFE PACKING GEAR OP	TAG GA-07G ITEM - GATE VALVE, OS&Y-BB RATING - ANSI CLASS 300# FLANGED, RAISED FACE STANDARD - ASME B16.5 MATERIAL - STAINLESS STEEL BODY & BONNET - 254 SMO ASTM A312 UNS S31254 CASTINGS - 254 SMO ASTM-A312 UNS S31254 TRIM - 254 SMO ASTM A312 UNS S31254 PACKING - TEFLON OPERATOR - GEAR REFERENCE - COOPER 130RF OR AUTHORIZED SUBSTITUTE	COOPER 130RF	<input checked="" type="checkbox"/>
5005302	GA-08: GATE API CL 800# SCRD STL, 316 TRIM	TAG GA-08 ITEM - GATE VALVE, OS&Y - BB RATING - API CLASS 800 SCREWED MATERIAL BODY & BONNET - CARBON STEEL FORGINGS - ASTM-A105 TRIM - 316 STAINLESS STEEL REFERENCE - VOGT #12111-F8M OR AUTHORIZED SUBSTITUTE	VOGT #12111	<input checked="" type="checkbox"/>
5313021	GA-09: GATE CLASS 2500# OS&Y PSB BW SCH160 CS/STELLITED S&D	TAG GA-09 ITEM - GATE VALVE, OS&Y-PRESSURE SEAL BONNET RATING - ANSI CLASS 2500# ENDS - BUTTWELDED BORE - SCHEDULE 160 MATERIAL: BODY & BONNET - CARBON STEEL CASTINGS - ASTM-A216 GRADE WCB OR FORGINGS - ASTM-A105 TRIM - F6 WITH STELLITED SEATS & DISC REFERENCE - PACIFIC #55525-7-WE(160) OR AUTHORIZED SUBSTITUTE		<input type="checkbox"/>

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PRIME: 5 Piping				
5312966	GA-10: GATE CL 2500# BW STL,F6/STEL S&D XXS BR PSB	TAG GA-10 ITEM - GATE VALVE, OS&Y-PRESSURE SEAL BONNET RATING - ANSI CLASS 2500# BUTTWELDED BORE - DOUBLE EXTRA STRONG MATERIAL BODY & BONNET - CARBON STEEL CASTINGS - ASTM-A216 GRADE WCB OF FORGINGS - ASTM-A105 TRIM - F6 WITH STELLITED SEATS & DISC REFERENCE - PACIFIC #55525-7-WE(XXS) OR AUTHORIZED SUBSTITUTE		<input type="checkbox"/>
5313037	GA-11: GATE CLASS 2500# BW SCH 140 CARBON STEEL F6/STELLITED S&D PSB	TAG GA-11 ITEM - GATE VALVE, OS&Y-PRESSURE SEAL BONNET RATING - ANSI CLASS 2500# ENDS - BUTTWELDED BORE - SCHEDULE 140 MATERIAL: BODY & BONNET - CARBON STEEL CASTINGS - ASTM-A216, GRADE WCB OR FORGINGS - ASTM-A105 TRIM - F6 WITH STELLITED SEATS & DISC REFERENCE - PACIFIC #55525-7-WE(140) OR AUTHORIZED SUBSTITUTE		<input type="checkbox"/>
5062031	GA-12: GATE CL 1500 SW STL, F6/STEL SEATS SWB	TAG GA-12 ITEM - GATE VALVE, OS&Y-SEAL WELDED BONNET RATING - ANSI CLASS 1500 SOCKETWELD MATERIAL BODY & BONNET - CARBON STEEL FORGINGS - ASTM-A105 TRIM - F6 WITH STELLITED SEATS REFERENCE - VOGT #SW-15801 OR AUTHORIZED SUBSTITUTE		<input type="checkbox"/>
5115441	GA-13: GATE CL 1500 SW x SCRDL STL,F6/STEL SEATS SWB	TAG GA-13 ITEM - GATE VALVE, OS&Y-SEAL WELDED BONNET RATING - ANSI CLASS 1500 ENDS - SOCKETWELD X SCREWED MATERIAL BODY & BONNET - CARBON STEEL FORGINGS - ASTM-A105 TRIM - F6 WITH STELLITED SEATS REFERENCE - VOGT #TSW-15801 OR AUTHORIZED SUBSTITUTE		<input type="checkbox"/>
5159284	GA-14: GATE CL 1500# RFSF STL,F6/STELLITED SEATS	TAG GA-14 ITEM - GATE VALVE, OS&Y-BB RATING - ANSI CLASS 1500# FLANGED FACING - RAISED FACE, WITH SPECIAL FINISH 125-250 MICROINCH RA MATERIAL BODY & BONNET - CARBON STEEL FORGINGS - ASTM-A105 TRIM - F6 WITH STELLITED SEATS REFERENCE - VOGT #15373 OR AUTHORIZED SUBSTITUTE		<input type="checkbox"/>



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ITEM CODE	ABBREVIATED DESCRIPTION	PURCHASE DESCRIPTION	REFERENCES	PR
PRIME: 5 Piping				
5159285	GA-15: GATE CL 1500# RFSF STL,F6/STELLITED SEATS	TAG GA-15 ITEM - GATE VALVE, OS&Y-BB RATING - ANSI CLASS 1500# FLANGED FACING - RAISED FACE, WITH SPECIAL FINISH 125-250 MICROINCH RA MATERIAL BODY & BONNET - CARBON STEEL CASTINGS - ASTM-A216, GRADE WCB OR FORGINGS - ASTM-A105 TRIM - F6 WITH STELLITED SEATS REFERENCE - PACIFIC #1550-U OR AUTHORIZED SUBSTITUTE		<input type="checkbox"/>
5000774	GA-16: GATE CL 200# (175# CWP) FNPT OS&Y BRONZE HDWL UL/FM	TAG GA-16 VALVE, GATE, OUTSIDE SCREW & YOKE, SCREWED BONNET & GLAND, RISING STEM - STATIONARY HANDWHEEL SOLID WEDGE DISC, INTEGRAL SEATS. MATERIAL: BODY: BRONZE PER ASTM B61 DISC: BRONZE PER ASTM B61 THREADED, FEMALE NPT, ENDS PER ANSI B2.1 CLASS 200# (175 PSIG CWP FOR FIRE PROTECTION SERVICE). REFERENCE: CRANE #459 OR APPROVED EQUAL NOTE 1: VALVE MUST BE UL LISTED & FM APPROVED FOR FIRE PROTECTION SERVICE.	CRANE #459	<input checked="" type="checkbox"/>
5156030	GA-17: GATE 175# CWP FF OS&Y IBBT HDWL UL/FM	TAG GA-17 VALVE, GATE, OUTSIDE SCREW & YOKE, BOLTED BONNET & GLAND, RISING STEM - STATIONARY HANDWHEEL, SOLID WEDGE DISC, SCREWED SEAT RINGS. MATERIAL: BODY & BONNET: CAST IRON PER ASTM A126 CL B DISC, STEM, & SEATS: BRONZE PACKING: BRAIDED NON-ASBESTOS BONNET GASKET: COMPRESSED NON-ASBESTOS FLANGED, FLAT FACE, ENDS PER ANSI B16.1; 175 PSIG CWP RATING. REFERENCE: KENNEDY 4701 OR APPROVED EQUAL NOTE 1: VALVE MUST BE UL LISTED AND FM APPROVED FOR FIRE PROTECTION SERVICE.		<input type="checkbox"/>



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PRIME: 5 Piping				
5115125	GA-18: GATE 125# SWP (200# WOG) INSIDE STEM BRONZ SOLDER JOINT	TAG GA-18 VALVE, GATE, INSIDE SCREW, NON-RISING STEM & HANDWHEEL SCREWED BONNET, UNION GLAND FLEXIBLE WEDGE DISC, INTEGRAL SEATS. MATERIAL: BODY: BRONZE, CAST, PER ASTM B62 DISC: BRONZE, CAST, PER ASTM B62 SOLDER JOINT ENDS PER ANSI B16.18; 125 PSIG SWP (200 PSIG WOG) RATING. REFERENCE: CRANE #1320 OR APPROVED EQUAL		<input type="checkbox"/>
5153432	GA-19: GATE CL 125# FF CI/BR, OS&Y, UL/FM	TAG GA-19 ITEM - GATE VALVE, OS&Y-BB RATING - ANSI CLASS 125# FLANGED, FLAT FACE MATERIAL BODY & BONNET - CAST IRON ASTM-A126, CLASS B TRIM - BRONZE REFERENCE - MUELLER A2073 OR AUTHORIZED SUBSTITUTE		<input type="checkbox"/>
5156020	GA-21: GATE 175# CWP FF INSIDE STEM IBBT F/IND POST	TAG GA-21 VALVE GATE, INSIDE STEM, BOLTED BONNET, NON-RISING STEM, DOUBLE DISC, PARALLEL SEATS, WITH FLANGE FOR INDICATOR POST AND 2IN SQUARE OPERATING NUT. MATERIAL: BODY & BONNET: CAST IRON PER ASTM A126 CL B DISC: CAST IRON WITH BRONZE FACING SEAT: BRONZE STEM: MAGNESIUM BRONZE FLANGED, FLAT FACE, ENDS PER ANSI B16.1; 175# CWP RATING; VALVE TO BE UL/FM LISTED FOR FIRE PROTECTION SERVICE. REFERENCE: KENNEDY VALVE MFG CO. INC. FIG 701X OR APPROVED EQUAL NOTE 1: VALVE TO BE SPECIFIED WITH POST INDICATOR OF LENGTH SPECIFIED	KENNEDY #701X	<input checked="" type="checkbox"/>
5251858	GA-22: GATE CL 150# RF 316 SS HANDWHEEL OPERATOR	ITEM - GATE VALVE, OS&Y-BB, SOLID WEDGE RATING - ANSI CLASS 150# FLANGED, RAISED FACE OPERATOR - HANDWHEEL MATERIAL BODY & BONNET - 316 STAINLESS STEEL CASTINGS - ASTM-A351, GRADE CF8M OR FORGINGS - ASTM-A182, GRADE F316 TRIM - 316 STAINLESS STEEL REFERENCE - KITZ #150-UMAM OR AUTHORIZED SUBSTITUTE	KITZ #150	<input checked="" type="checkbox"/>



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PRIME: 5 Piping				
5165191	GA-23: GATE CL 900# OS&Y CS A216-WCB RF HWL	TAG G-23 VALVE, GATE OUTSIDE SCREW & YOKE, BOLTED BONNET & GLAND, RISING STEM - STATIONARY HANDWHEEL, SOLID WEDGE DISC, SCREWED & TACK WELDED SEAT RINGS. MATERIAL: BODY AND BONNET: CARBON STEEL, CAST PER ASTM A216, GRADE WCB. DISC & SEAT: 13% CR STAINLESS STEEL (AISI 410) OR STELLITED (N° 6) CARBON STEEL STEM : 13% CR STAINLESS STEEL. PACKING : FLEXIBLE GRAPHITE PACKING RINGS BETWEEN RETAINING RINGS OF INTER- BRAIDED GRAPHITE FILAMENT BONNET GASKET: COMP NON-ASBESTOS OR SOFT IRON FLANGED RAISED FACE, ENDS PER ANSI B16.5, CLASS 900# PER ANSI B16.34, VALVE MUST CONFORM TO API 600. REFERENCE: VELAN WITH JOHN CRANE #237 + 1625GF GRAFOIL + BRAIDED GRAPHITE PACKING OR APPROVED EQUAL.	VELAN	<input checked="" type="checkbox"/>

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PRIME: 5 Piping				
5165191G	GA-23G: GATE CL 900# OS&Y CS A216-WCB RF GEAR OP	TAG GA-23G VALVE, GATE OUTSIDE SCREW & YOKE, BOLTED BONNET & GLAND, RISING STEM - STATIONARY HANDWHEEL, SOLID WEDGE DISC, SCREWED & TACK WELDED SEAT RINGS. OPERATOR : GEAR MATERIAL: BODY AND BONNET: CARBON STEEL, CAST PER ASTM A216, GRADE WCB. DISC & SEAT: 13% CR STAINLESS STEEL (AISI 410) OR STELLITED (N° 6) CARBON STEEL STEM : 13% CR STAINLESS STEEL. PACKING : FLEXIBLE GRAPHITE PACKING RINGS BETWEEN RETAINING RINGS OF INTER- BRAIDED GRAPHITE FILAMENT BONNET GASKET: COMP NON-ASBESTOS OR SOFT IRON FLANGED RAISED FACE, ENDS PER ANSI B16.5, CLASS 900# PER ANSI B16.34, VALVE MUST CONFORM TO API 600. REFERENCE: VELAN WITH JOHN CRANE #237 + 1625GF GRAFOIL + BRAIDED GRAPHITE PACKING OR APPROVED EQUAL.	VELAN	<input checked="" type="checkbox"/>
5252240	GA-25: GATE 300# RF 316 SS GEAR OP	TAG GA-25 ITEM - GATE VALVE, OS&Y-BB, SPLIT WEDGE RATING - ASME CLASS 300 FLANGED, RAISED FACE OPERATOR - ENCLOSED BEVEL GEAR OPERATOR MATERIAL BODY & BONNET - 316 STAINLESS STEEL CASTINGS - ASTM-A351, GRADE CF8M OR FORGINGS - ASTM-A182, GRADE F316 TRIM - 316 STAINLESS STEEL REFERENCE - WARREN VALVE FIG. N° 1306 OR APPROVED SUBSTITUTE		<input type="checkbox"/>



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PRIME: 5 Piping				
5156868	GA-26: GATE 300# RF STL, F6/STELLITED SEATS TFE PACKG	ITEM - GATE VALVE, OS&Y-BB RATING - ASME CLASS 300 FLANGED, RAISED FACE MATERIAL BODY & BONNET - CARBON STEEL CASTINGS - ASTM-A216, GRADE WCB OR FORGINGS - ASTM-A105 TRIM - F6 WITH STELLITED SEATS PACKING - TEFLON BONNET GASKET - SPIRAL WOUND 304/TEFLON  REFERENCE - POWELL 3003 OR AUTHORIZED  SUBSTITUTE	POWELL 3003	<input checked="" type="checkbox"/>
5156868G	GA-26G: GATE 300# RF STL, F6/STELLITED SEATS TFE PACKG GEAR OP	TAG GA-26G ITEM - GATE VALVE, OS&Y-BB RATING - ASME CLASS 300 FLANGED, RAISED FACE OPERATOR - GEAR MATERIAL BODY & BONNET - CARBON STEEL CASTINGS - ASTM-A216, GRADE WCB OR FORGINGS - ASTM-A105 TRIM - F6 WITH STELLITED SEATS PACKING - TEFLON BONNET GASKET - SPIRAL WOUND 304/TEFLON  REFERENCE - POWELL 3003 OR AUTHORIZED  SUBSTITUTE	POWELL 3003	<input checked="" type="checkbox"/>
5156868HM	GA-26HM: GATE 300# RF STL, F6/STELLITED SEATS TFE HYDR-MANUAL OP.	ITEM - GATE VALVE, OPERATOR - HYDRAULIC - MANUAL (SEE NOTE 1) RATING - ASME CLASS 300 FLANGED, RAISED FACE MATERIAL BODY & BONNET - CARBON STEEL CASTINGS - ASTM-A216, GRADE WCB OR FORGINGS - ASTM-A105 TRIM - F6 WITH STELLITED SEATS PACKING - TEFLON BONNET GASKET - SPIRAL WOUND 304/TEFLON  REFERENCE - POWELL 3003 OR AUTHORIZED  SUBSTITUTE NOTE 1: HEAVE DUTY QUARTER TURN HYDRAULIC-MANUAL ACTUATOR TYPE H RANGE OF ROTORK FLUID SYSTEM OR APPROVED EQUAL. MATERIAL: BODY : DUCTILE IRON 60-40-18 YOKE : DUCTILE IRON 80-55-06	POWELL 3003	<input checked="" type="checkbox"/>



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PRIME: 5 Piping				
5000612	GL-02: GLOBE INSIDE STEM CI/SS TRIM FNPT 150# SWP	TAG GL-02 VALVE, GLOBE, INSIDE STEM, UNION BONNET, RISING STEM & HANDWHEEL, PLUG DISC, THREADED SEAT RING, RENEWABLE DISC & SEAT. MATERIAL: BODY: CAST IRON PER ASTM A126 CLASS B PLUG & SEAT RING: STAINLESS STEEL THREADED, FEMALE NPT, ENDS PER ANSI B2.1; 150 PSIG SWP (250 PSIG WOG) RATING. REFERENCE: CRANE 254 XR OR APPROVED EQUAL		<input type="checkbox"/>
5160480	GL-03: GLOBE OS&Y CS W/13%CR TRIM FF CL 150 HWL	TAG GL-03 VALVE, GLOBE, OUTSIDE SCREW & YOKE, BOLTED BONNET & GLAND, RISING STEM & HANDWHEEL, GUIDED DISC, INTEGRALLY WELDED OR SCREWED & TACK WELDED SEAT RING. MATERIAL: BODY & BONNET: CARBON STEEL, CAST, PER ASTM A216, GRADE WCB DISC & SEAT: 13%CR STAINLESS STEEL(AISI 410) OR STELLITED (NO. 6) CARBON STEEL STEM: 13%CR STAINLESS STEEL PACKING: FLEXIBLE GRAPHITE PACKING RINGS BETWEEN RETAINING RINGS OF INTERBRAIDED GRAPHITE FILAMENT BONNET GASKET: CORRUGATED SOFT IRON FLANGED, FLAT FACE, ENDS PER ANSI B16.5; CLASS 150 PER ANSI B16.34; VALVE MUST CONFORM TO API 600. REFERENCE: VELAN VALVE CORP Fxx-0074C-02TY WITH JOHN CRANE #237 + 1625GF GRAFOIL + BRAIDED GRAPHITE PACKING OR APPROVED EQUAL NOTE 1: TFE BASED BONNET GASKET MATERIAL IS NOT ACCEPTABLE.		<input type="checkbox"/>

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PRIME: 5 Piping				
5004110	GL-04: GLOBE OS&Y CS W/13%CR TRIM RF CL 150 HWL	TAG: GL-04 VALVE, GLOBE, OUTSIDE SCREW & YOKE, BOLTED BONNET & GLAND, RISING STEM & HANDWHEEL, GUIDED DISC, INTEGRALLY WELDED OR SCREWED & TACK WELDED SEAT RING. MATERIAL: BODY & BONNET: CARBON STEEL, CAST, PER ASTM A216, GRADE WCB DISC & SEAT: 13%CR STAINLESS STEEL(AISI 410) OR STELLITED (NO. 6) CARBON STEEL STEM: 13%CR STAINLESS STEEL PACKING: FLEXIBLE GRAPHITE PACKING RINGS BETWEEN RETAINING RINGS OF INTERBRAIDED GRAPHITE FILAMENT BONNET GASKET: CORRUGATED SOFT IRON FLANGED, RAISED FACE, ENDS PER ANSI B16.5; CLASS 150 PER ANSI B16.34; VALVE MUST CONFORM TO API 600. REFERENCE: VELAN VALVE CORP Fxx-0074C-02TY WITH JOHN CRANE #237 + 1625GF GRAFOIL + BRAIDED GRAPHITE PACKING OR APPROVED EQUAL NOTE 1: TFE BASED BONNET GASKET MATERIAL IS NOT ACCEPTABLE.		<input type="checkbox"/>
5002184	GL-05: GLOBE REG BB CS/13%CR TRIM STL SW CL 800	TAG : GL-05 VALVE GLOBE, REGULAR PORT, OUTSIDE SCREW & YOKE, BOLTED BONNET & GLAND, RISING STEM & HANDWHEEL, LOOSE DISC. MATERIAL: BODY & BONNET: CARBON STEEL, FORGED, PER ASTM A105. DISC & STEM : 13%CR STAINLESS STEEL SEAT: 13%CR STAINLESS STEEL, STELLITED (NO 6) PACKING : BRAIDED NON-ASBESTOS SOCKET WELD ENDS (SCH 80 BORE) PER ANSI B16.11 CLASS 800 PER ANSI B16.34. REFERENCE : HENRY VOGT MACHINE CO SW-12141 OR APPROVED EQUAL	VOGT SW-12141	<input checked="" type="checkbox"/>

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PRIME: 5 Piping				
5160587	GL-06: GLOBE 150# RF STL 316 SS TRIM	TAG GL-06 ITEM - GLOBE VALVE, OS&Y-BB RATING - ANSI CLASS 150 FLANGED, RAISED FACE MATERIAL BODY & BONNET - CARBON STEEL CASTINGS - ASTM-A216, GRADE WCB OR FORGINGS - ASTM-A105 TRIM - 316 STAINLESS STEEL REFERENCE - STOCKHAM #15-GPF-W12 OR AUTHORIZED SUBSTITUTE		<input type="checkbox"/>
5040231	GL-07: GLOBE 800# SCRD 316 SS	TAG GL-07 ITEM - GLOBE VALVE, OS&Y-BB RATING - API CLASS 800 SCREWED MATERIAL BODY & BONNET - 316 STAINLESS STEEL FORGINGS - ASTM-A182, GRADE F316 TRIM - 316 STAINLESS STEEL REFERENCE - VOGT #12501 OR AUTHORIZED SUBSTITUTE	VOGT #12501	<input checked="" type="checkbox"/>
5062790	GL-08: GLOBE CLASS 2500# OS&Y WB SW CS/STELLITED S&D	TAG GL-08 ITEM - GLOBE VALVE, OS&Y-SEAL WELDED BONNET RATING - CLASS 2500# ENDS - SOCKETWELDED MATERIAL: BODY & BONNET - CARBON STEEL FORGINGS - ASTM-A105 TRIM - F6 WITH STELLITED SEAT & DISC REFERENCE - EDWARD #66124 OR AUTHORIZED SUBSTITUTE		<input type="checkbox"/>
5062791	GL-09: GLOBE CLASS 2500# OS&W WB SW CARBON STEEL ASME-SA105 F6/STELLITED S&D	TAG GL-09 ITEM - GLOBE VALVE, OS&Y-SEAL WELDED BONNET RATING - CLASS 2500# ENDS - SOCKETWELDED MATERIAL: BODY & BONNET - CARBON STEEL FORGINGS - ASME-SA105 TRIM - F6 WITH STELLITED SEAT & DISC REFERENCE - EDWARD #66124 OR AUTHORIZED SUBSTITUTE		<input type="checkbox"/>
5162821	GL-10: GLOBE CLASS 2500# OS&Y-BB RJ CS/STELLITED S&D	TAG GL-10 ITEM - GLOBE VALVE, OS&Y-BB RATING - ANSI CLASS 2500# FLANGED, RING JOINT FA MATERIAL BODY & BONNET - CARBON STEEL CASTINGS - ASTM-A216, GRADE WCB OR FORGINGS - ASTM-A105 TRIM - F6 WITH STELLITED SEAT & DISC REFERENCE - PACIFIC #2560-7-RJ OR AUTHORIZED SUBSTITUTE		<input type="checkbox"/>





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Search Specification: ABBREVIATED DESCRIPTION Begins with BA- or ABBREVIATED DESCRIPTION Begins with BU- or ABBREVIATED DESCRIPTION Begins with CH- or ABBREVIATED DESCRIPTION Begins with DP- or ABBREVIATED DESCRIPTION Begins with GA- or ABBREVIATED DESCRIPTION Begins with GL- or ABBREVIATED DESCRIPTION Begins with KN- or ABBREVIATED DESCRIPTION Begins with ND- or ABBREVIATED DESCRIPTION Begins with PE- or ABBREVIATED DESCRIPTION Begins with VE- or ABBREVIATED DESCRIPTION Begins with



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PRIME: 5 Piping				
5218600	GL-15: GLOBE OS&Y ALLOY 20 RF CL 150 HWL OPR	TAG GL-15 VALVE,GLOBE,OUTSIDE SCREW & YOKE,BOLTED BONNET & GLAND,RISING STEM & HANDWHEEL, GUIDED DISC, INTEGRAL SEAT. MATERIAL: BODY & BONNET:ALLOY 20, CAST, PER ASTM A351  GRADE CN7M DISC & STEM: ALLOY 20 SEAT: INTEGRAL PACKING: FLEXIBLE GRAPHITE PACKING RINGS  BETWEEN RETAINING RINGS OF INTERBRAIDED GRAPHITE FILAMENT CLASS 150 PER ANSI B16.34 REFERENCE: CRANE/ALOYCO #317SP-CN7M OR APPROVED EQUAL. WITH JOHN CRANE #237 +  1625GF GRAFOIL+BRAIDED GRAPHITE PACKING OR APPROVED EQUAL NOTE 1: TFE BASED BONNET GASKET MATERIAL IS NOT ACCEPTABLE ACCEPTABLE.		<input type="checkbox"/>
5000635	GL-16: GLOBE 200# SCREWED BRONZE ISRS-UB	TAG GL-16 ITEM - GLOBE VALVE, ISRS-UB RATING - MSS CLASS 200 ENDS - SCREWED MATERIAL BODY & BONNET - BRONZE ASTM-B61 REFERENCE - CRANE #212P OR AUTHORIZED SUBSTITUTE		<input type="checkbox"/>

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PRIME: 5 Piping				
5160479	GL-17: GLOBE OS&Y CS W/316SS TRIM RF 150# HDWHL	TAG GL-17 VALVE, GLOBE, OUTSIDE SCREW & YOKE, BOLTED BONNET & GLAND, RISING STEM & HANDWHEEL, GUIDED DISC, INTEGRALLY WELDED OR SCREWED & TACK WELDED SEAT RING (SEE NOTE 1). MATERIAL: BODY & BONNET: CARBON STEEL, CAST PER ASTM A216, GRADE WCB DISC & SEAT : 316 STAINLESS STEEL STEM : 316 STAINLESS STEEL PACKING : BRAIDED NON-ASBESTOS BONNET GASKET: COMPRESSED NON-ASBESTOS FLANGED, RAISED FACE, ENDS PER ANSI B16.5; CLASS 150 PER ANSI B16.34; VALVE MUST CONFORM TO API 600. REFERENCE: WM POWELL CO. # 1531FE OR APPROVED EQUAL. NOTE 1: SEAT RINGS SHALL BE LUGLESS. PORT SHALL BE FREE OF PROTUBERANCES WICH COULD INTERFERE WITH PASSAGE OF HOT TAP CUTTER THRU OPEN VALVE.		<input type="checkbox"/>
5154050	KN-02: KNIFE GATE TAP LUG CL 300# CWP CS-304SS HANDWHEEL OP	TAG: KN-02 VALVE, KNIFE GATE, BI-DIRECTIONAL, HANDWHEEL OPERATED REPLACEABLE DOUBLE ELASTOMER SLEEVE & SEAT, RISING STEM FULL LUG TAPPED FLANGE BODY TO ANSI CLASS 300# MATERIAL: BODY : CARBON STEEL GATE : 304 SS STEM : 304 SS LINER & SEAT: EPDM-HTP REFERENCE: L & M M145 OR APPROVED EQUAL		<input type="checkbox"/>
5154050G	KN-02G: KNIFE GATE TAP LUG CL 300# CWP CS-304SS GEAR OP	TAG: KN-02G VALVE, KNIFE GATE, BI-DIRECTIONAL, GEAR OPERATED REPLACEABLE DOUBLE ELASTOMER SLEEVE & SEAT, RISING STEM FULL LUG TAPPED FLANGE BODY TO ANSI CLASS 300# MATERIAL: BODY : CARBON STEEL GATE : 304 SS STEM : 304 SS LINER & SEAT: EPDM-HTP REFERENCE: L & M M145 OR APPROVED EQUAL		<input type="checkbox"/>

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PRIME: 5 Piping				
5154055	KN-03: KNIFE GATE WAF 150 PSI CWP FF CI W/304 WP RESIL SEAT HDWL	TAG: KN-03 ITEM - KNIFE GATE VALVE RATING - 150 CWP, WAFER TYPE OPERATOR - HANDWHEEL MATERIAL BODY & CHEST - CAST IRON LINING - 304 SS ALL WETTED PARTS PACKING - TEFLON SUITABLE FOR A PH RANGE OF 0 TO 12 STEM - 304 STAINLESS STEEL RESILIENT SEAT- MFRS STANDARD W/TEFLON SEAT REFERENCE - L & M MODEL: M145 OR AUTHORIZED SUBSTITUTE	L & M M145	<input checked="" type="checkbox"/>
5154055G	KN-03G: KNIFE GATE TAP-LUG 150 PSI CWP FF CI W/304 WP RESIL SEAT GEAR OP	TAG: KN-03G ITEM - KNIFE GATE VALVE RATING - 150 CWP, TAP-LUG TYPE OPERATOR - GEAR MATERIAL BODY & CHEST - CAST IRON LINING - 304 SS ALL WETTED PARTS PACKING - TEFLON SUITABLE FOR A PH RANGE OF 0 TO 12 STEM - 304 STAINLESS STEEL RESILIENT SEAT- MFRS STANDARD W/TEFLON SEAT REFERENCE - L & M MODEL: M145 OR AUTHORIZED SUBSTITUTE	L & M M145	<input checked="" type="checkbox"/>
5154060	KN-04: KNIFE GATE 75 PSI CWP FF DI W/VITON SEAT SUPER DUPLEX STEM HDWL OP	TAG: KN-04 ITEM - KNIFE GATE VALVE RATING - 75 PSI CWP, FLAT FACE FLANGED TYPE TO MATCH WITH ANSI B16.5 FLAT FACE FLANGES (SIZES 0.5 TO 3) AND ANSI/AWWA C207 CLASS D FLAT FACE FLANGES (SIZES 4 TO 42) OPERATOR - HANDWHEEL MATERIAL BODY & CHEST - DUCTIL IRON LINING - EPDM PACKING - TEFLON SUITABLE FOR A PH RANGE OF 0 TO 12 STEM - SUPER DUPLEX GATE - SUPER DUPLEX RESILIENT SEAT- VITON SERVICE: SEA WATER REFERENCE - CLARKSON CLKMC-0113-US OR AUTHORIZED SUBSTITUTE	CLARKSON	<input checked="" type="checkbox"/>



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PRIME: 5 Piping				
5154060G	KN-04G: KNIFE GATE 75 PSI CWP FF DI W/VITON SEAT SUPER DUPLEX STEM GO	TAG: KN-04G ITEM - KNIFE GATE VALVE RATING - 75 PSI CWP, FLAT FACE FLANGED TYPE TO MATCH WITH ANSI B16.5 FLAT FACE FLANGES (SIZES 0.5 TO 3) AND ANSI/AWWA C207 CLASS D FLAT FACE FLANGES (SIZES 4 TO 42) OPERATOR - GEAR MATERIAL BODY & CHEST - DUCTIL IRON LINING - EPDM PACKING - TEFLON SUITABLE FOR A PH RANGE OF 0 TO 12 STEM - SUPER DUPLEX GATE - SUPER DUPLEX RESILIENT SEAT- VITON SERVICE: SEA WATER REFERENCE - CLARKSON CLKMC-0113-US OR AUTHORIZED SUBSTITUTE	CLARKSON	<input checked="" type="checkbox"/>
5154060H	KN-04H: KNIFE 75 PSI CWP FF DI W/VITON SEAT SUPER DUPLEX STEM HYDR. ACTING CYL.	TAG: KN-04H ITEM - KNIFE GATE VALVE RATING - 75 PSI CWP, FLAT FACE FLANGED TYPE TO MATCH WITH ANSI B16.5 FLAT FACE FLANGES (SIZES 0.5 TO 3) AND ANSI/AWWA C207 CLASS D FLAT FACE FLANGES (SIZES 4 TO 42) OPERATOR - HYDRAULIC ACTING CYLINDER MATERIAL BODY & CHEST - DUCTIL IRON LINING - EPDM PACKING - TEFLON SUITABLE FOR A PH RANGE OF 0 TO 12 STEM - SUPER DUPLEX GATE - SUPER DUPLEX RESILIENT SEAT- VITON SERVICE: SEA WATER REFERENCE - CLARKSON CLKMC-0113-US OR AUTHORIZED SUBSTITUTE	CLARKSON	<input checked="" type="checkbox"/>
5054475	PC-01: PINCH FULL ROUND ENCLOSED CI/GUM RUB.BODY FF 150#	TAG: PC-01 VALVE, PINCH, FULL ROUND CONFIGURATION, ENCLOSED CONSTRUCTION OUTSIDE SCREW & YOKE, RISING STEM & HANDWHEEL MATERIAL: HOUSING: CAST IRON BODY: GUM RUBBER FLANGED, FLAT FACE, ANSI B16.5 CLASS 150# DRILLING; 150 PSIG CWP RATING. REFERENCE: RED VALVE SERIES 70 OR APPROVED EQUAL		<input type="checkbox"/>



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## Fluor Chile - Minera Escondida

Sulphide Leach Project

53232500

Antofagasta

ITEM CODE	ABBREVIATED DESCRIPTION	PURCHASE DESCRIPTION	REFERENCES	PR
PRIME: 5 Piping				
5001470	VE-01: VENT WTER CS/SS FLT BUNA SEAT FNPT CL150	TAG VE-01 VALVE VENT WATER, AIR RELEASE, FLOAT OPERATED; MATERIAL: BODY & COVER: CAST IRON PER ASTM A126 GR B FLOAT : STAINLESS STEEL SEAT : BUNA-N NEEDLE & LINKAGE: STAINLESS STEEL CLASS 150 CONNECTIONS: FNPT INLET & OULET REFERENCE: APCO VALVE AND PRIMER CORPORATION BULLETIN 600 MODEL #200A		<input type="checkbox"/>



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ITEM CODE	ABBREVIATED DESCRIPTION	PURCHASE DESCRIPTION	REFERENCES	PR
PRIME: 5 Piping				
5001475	VE-02: AIR REL. & VAC.BRK CI/SS TRM FNPT CL150	<p>TAG VE-02 VALVE, AIR RELEASE &amp; VACUUM BRAKER, SINGLE BODY, DOUBLE ORIFICE TO ALLOWS LARGE VOLUMES OF AIR TO ESCAPE OUT THE LARGE ORIFICE WHEN FILLING A PIPELINE AND CLOSES WHEN LIQUID ENTERS THE VALVE. DURING LARGE ORIFICE CLOSURE, THE SMALL AIR RELEASE ORIFICE WILL OPEN TO ALLOW SMALL POCKETS OF AIR TO ESCAPE AUTOMATICALLY AND INDEPENDENTLY OF THE LARGE ORIFICE. THE LARGE ORIFICE SHALL ALSO ALLOW LARGE VOLUMES OF AIR TO ENTER DURING PIPELINE DRAINAGE TO BREAK THA VACUUM. THE BODY INLET MUST BE BAFFLED TO PROTECT THE LOWER FLOAT FROM DIRECT FORCES OF RUSHING AIR AND WATER TO PREVENT PREMATURE VALVE SHUT-OFF. THE TOP LARGE ORIFICE PLUG OR FLOAT MUST BE PROTECTED IN SIMILAR MANNER FOR THE SAME PURPOSE. BUNA-N SEAT MUST BE FASTENED TO THE VALVE COVER, WITHOUT DISTORTION, FOR DROP TIGHT SHUT-OFF. THE FLOATS SHALL BE HEAVY STAINLESS STEEL, HERMETICALLY SEALED; DESIGNED TO WITHSTAND 1000 PSI. THE TOP PLUG OR FLOAT SHALL BE CENTER GUIDED THRU HEX BUSHINGS FOR POSITIVE SHUT-OFF. VALVE EXTERIOR TO BE PAINTED WITH RED OXIDE PHENOLIC PRIMER PAINT AS ACCEPTED BY THE FDA FOR USE IN CONTACT WITH POTABLE WATER. ALL MATERIALS OF CONSTRUCTION SHALL BE CERTIFIED IN WRITING TO CONFORM TO A.S.T.M.</p> <p>MATERIALS:</p> <p>BODY AND COVER: CAST IRON PER ASTM A126 GR B FLOAT : STAINLESS STEEL ASTM 24C NEEDLE &amp; SEAT : BUNA-N PLUG : BRONZE ASTM B124 LEVERAGE FRAME: CAST IRON PER ASTM A126 GR B MAX.WORKING PRESSURE: 150 PSIG THREADED FNPT PER ANSI B2.1 REFERENCE: APCO VALVE &amp; PRIMER CORPORATION</p> <p>FOR 1" DIA. MODEL 143C FOR 2" DIA. MODEL 145C OR APPROVED EQUAL.</p>		<input type="checkbox"/>



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ITEM CODE	ABBREVIATED DESCRIPTION	PURCHASE DESCRIPTION	REFERENCES	PR
PRIME: 5 Piping				
5001480	VE-03: AIR REL.& VAC.BRKR CI/316 SS TR.FF CL150	<p>TAG VE-03 VALVE, AIR RELEASE &amp; VACUUM BRAKER, DUPLEX BODY, SHALL BE HEAVILY DESIGNED CAST IRON TO ALLOW LARGES VOLUMES OF AIR TO ESCAPE THRU THE ORIFICE WHEN FILLING THE PIPELINE AND SHALL SHUT-OFF WATER TIGHT, WHEN THE WATER ENTERS THE VALVE. THE AIR VALVE SHALL PERMIT LARGE VOLUMES OF AIR TO ENTER THE ORIFICE WHEN THE PIPELINE IS BEING DRAINED TO PREVENT VACUUM FROM FORMING AND WATER COLUMN SEPARATION. THE VALVE SHALL CONSIST OF A BODY, COVER, BAFFLE, FLOAT AND SEAT. THE BAFFLE WILL BE AN INTEGRAL PART OF THE BODY, DE- SIGNED TO PROTECT THE FLOAT FROM DIRECT CONTACT OF THE RUSHING AIR AND SLUGS OF WATER TO PREVENT A FALSE SHUT-OFF. THE SEAT SHALL BE BUNA-N, FASTENED INTO THE VALVE COVER, WITHOUT DISTORTI- ON, AND BE EASILY REPLACED. THE FLOAT SHALL BE STAINLESS STEEL HERMETICALLY SEALED TO WITHSTAND 1000 PSI AND BE CENTER GUIDED AT EACH END FOR POSITIVE SEATING. THE AUTOMATIC AIR RELEASE VALVE SHALL BE DESIG- NED TO OPERATE UNDER PRESSURE TO ALLOW ENTRAPPED AIR INSIDE THE PIPELINE TO ESCAPE AND THEN SHUT- OFF TO PREVENT WATER ESCAPING, THEN WILL STAY CLOSED UNTIL MORE AIR ACCUMULATES AND THE OPENING CYCLE WILL REPEAT AUTOMATICALLY. THE AIR RELEASE VALVE FLOAT SHALL BE HEAVY STAINLESS STEEL HERMETICALLY SEALED TO WITHSTAND 1000 PSI. MATERIALS: VALVE BODIES : CAST IRON PER ASTM A126 GR B SHAFTS : STAINLESS STEEL ASTM 270 SEATS : BUNA-N FLOATS : STAINLESS STEEL ASTM 240 EXTERIOR PRIMER: PHENOLIC PRIMER RED OXIDE, FDA APPROVED FOR POTABLE WATER</p>		<input type="checkbox"/>





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Search Specification: ABBREVIATED DESCRIPTION Begins with BA- or ABBREVIATED DESCRIPTION Begins with BU- or ABBREVIATED DESCRIPTION Begins with CH- or ABBREVIATED DESCRIPTION Begins with DP- or ABBREVIATED DESCRIPTION Begins with GA- or ABBREVIATED DESCRIPTION Begins with GL- or ABBREVIATED DESCRIPTION Begins with KN- or ABBREVIATED DESCRIPTION Begins with ND- or ABBREVIATED DESCRIPTION Begins with PE- or ABBREVIATED DESCRIPTION Begins with VE- or ABBREVIATED DESCRIPTION Begins with

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ITEM CODE	ABBREVIATED DESCRIPTION	PURCHASE DESCRIPTION	REFERENCES	PR
PRIME: 5 Piping				
5001491	VE-07: AIR/VACUUM VALVE CLASS 150 RF 316 SS/BUNA-N	TAG VE-07 ITEM - AIR AND VACUUM VALVE RATING - 250 PSI MAXIMUM WORKING PRESSURE ENDS - ANSI CLASS 150 RAISED FACE FLANGED MATERIAL BODY - 316 STAINLESS STEEL FLOAT - 316 STAINLESS STEEL TRIM - 316 STAINLESS STEEL SEAT - BUNA-N BOLTING - 316 STAINLESS STEEL STANDARD - ANSI B16.5 REFERENCE - APCO SERIES 150 (4" AND LARGER), APCO SERIES 140 (3" AND SMALLER), OR AUTHORIZED SUBSTITUTE		<input type="checkbox"/>
5001493	VE-08: AIR RELEASE VALVE 300# SCRD 316 SS / VITON	TAG VE-08 ITEM - AIR RELEASE VALVE RATING - 300 PSIG MAXIMUM WORKING PRESSURE ENDS - FEMALE PIPE THREAD (NPT) MATERIAL BODY - 316 STAINLESS STEEL FLOAT - 316 STAINLESS STEEL TRIM - 316 STAINLESS STEEL SEAT & SEAL - VITON BOLTING - 316 STAINLESS STEEL STANDARD - ANSI B1.20.1 REFERENCE - APCO MODEL 50 OR AUTHORIZED SUBSTITUTE		<input type="checkbox"/>
5001493S	VE-09: AIR RELEASE VALVE 300# FNPT 316 SS/BUNA-N	TAG: VE-09 AIR RELEASE VALVE, MATERIAL BODY - 316 STAINLESS STEEL FLOAT - 316 STAINLESS STEEL TRIM - 316 STAINLESS STEEL SEAT - BUNA-N RATING : 300 PSIG WORKING PRESS. ENDS : THREADED FNPT PER ANSI B2.1 REFERENCE : APCO SERIES #200A		<input type="checkbox"/>



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ITEM CODE	ABBREVIATED DESCRIPTION	PURCHASE DESCRIPTION	REFERENCES	PR
PRIME: 5 Piping				
5001495	VE-10: AIR/VAC.VALVE CLASS 150 RF 254 SMO TEFLON	TAG VE-10 ITEM - AIR AND VACUUM VALVE RATING - 250 PSI MAXIMUM WORKING PRESSURE ENDS - ANSI CLASS 150 RAISED FACE FLANGED MATERIAL BODY - 254 SMO ASTM A312 UNS S31254 FLOAT - 254 SMO ASTN A312 UNS S31254 TRIM - 254 SMO ASTM A312 UNS S31254 SEAT - TEFLON BOLTING - 316 STAINLESS STEEL STANDARD - ANSI B16.5 REFERENCE - APCO SERIES 150 (4" AND LARGER), APCO SERIES 140 (3" AND SMALLER), OR AUTHORIZED SUBSTITUTE		<input type="checkbox"/>
5001496S	VE-11: AIR/VAC VALVE 300# RF 254 SMO	TAG VE-11 ITEM - AIR AND VACUUM VALVE RATING - CLASS 300 ENDS - FLANGED RAISED FACE PER ANSI/ASME B16.5 MATERIAL BODY - 254 SMO ASTM A312 UNS S31254 FLOAT - 254 SMO ASTN A312 UNS S31254 TRIM - 254 SMO ASTM A312 UNS S31254 SEAT - TEFLON BOLTING - 316 STAINLESS STEEL STANDARD - ANSI B16.5 REFERENCE - APCO VALVES OR AUTHORIZED SUBSTITUTE		<input type="checkbox"/>
5001492	VE-12: AIR/VACUUM VALVE CL 300 RF 316 SS / BUNA-N	TAG VE-12 ITEM - AIR AND VACUUM VALVE RATING - CLASS 300 ENDS - FLANGED RAISED FACE MATERIAL BODY - 316 STAINLESS STEEL FLOAT - 316 STAINLESS STEEL TRIM - 316 STAINLESS STEEL SEAT - BUNA-N BOLTING - 316 STAINLESS STEEL STANDARD - ANSI B16.5 REFERENCE - APCO SERIES 150 (4" AND LARGER), APCO SERIES 140 (3" AND SMALLER), OR AUTHORIZED SUBSTITUTE		<input type="checkbox"/>



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ITEM CODE	ABBREVIATED DESCRIPTION	PURCHASE DESCRIPTION	REFERENCES	PR
PRIME: 5 Piping				
5001494	VE-13: COMBINATION AIR VALVE CLASS 300 RF DI/SS/BUNA	<p>TAG VE-13</p> <p>ITEM - COMBINATION AIR AND VACUUM VALVE</p> <p>RATING - CLASS 300</p> <p>ENDS - RAISED FACE FLANGED PER ANSI ASME B16.5</p> <p>MATERIAL</p> <p>BODY - DUCTILE IRON ASTM A-395</p> <p>FLOAT - 316 STAINLESS STEEL</p> <p>TRIM - BRONZE</p> <p>SEAT - BUNA-N</p> <p>STANDARD - ANSI B16.5</p> <p>REFERENCE - APCO SERIES 1800 (4" AND LARGER), APCO SERIES 140C (3" AND SMALLER), OR AUTHORIZED SUBSTITUTE</p>		<input type="checkbox"/>



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ITEM CODE	ABBREVIATED DESCRIPTION	PURCHASE DESCRIPTION	REFERENCES	PR
PRIME: 5 Piping				
5001482	VE-14: AIR REL.& VAC.BRKR ALLOY 20 RF CL300	<p>TAG VE-14 VALVE, AIR RELEASE &amp; VACUUM BRAKER, DUPLEX BODY, SHALL BE HEAVILY DESIGNED CAST IRON TO ALLOW LARGES VOLUMES OF AIR TO ESCAPE THRU THE ORIFICE WHEN FILLING THE PIPELINE AND SHALL SHUT-OFF WATER TIGHT, WHEN THE WATER ENTERS THE VALVE. THE AIR VALVE SHALL PERMIT LARGE VOLUMES OF AIR TO ENTER THE ORIFICE WHEN THE PIPELINE IS BEING DRAINED TO PREVENT VACUUM FROM FORMING AND WATER COLUMN SEPARATION. THE VALVE SHALL CONSIST OF A BODY, COVER, BAFFLE, FLOAT AND SEAT. THE BAFFLE WILL BE AN INTEGRAL PART OF THE BODY, DE- SIGNED TO PROTECT THE FLOAT FROM DIRECT CONTACT OF THE RUSHING AIR AND SLUGS OF WATER TO PREVENT A FALSE SHUT-OFF. THE SEAT SHALL BE BUNA-N, FASTENED INTO THE VALVE COVER, WITHOUT DISTORTI- ON, AND BE EASILY REPLACED. THE FLOAT SHALL BE STAINLESS STEEL HERMETICALLY SEALED TO WITHSTAND 1000 PSI AND BE CENTER GUIDED AT EACH END FOR POSITIVE SEATING. THE AUTOMATIC AIR RELEASE VALVE SHALL BE DESIG- NED TO OPERATE UNDER PRESSURE TO ALLOW ENTRAPPED AIR INSIDE THE PIPELINE TO ESCAPE AND THEN SHUT- OFF TO PREVENT WATER ESCAPING, THEN WILL STAY CLOSED UNTIL MORE AIR ACCUMULATES AND THE OPENING CYCLE WILL REPEAT AUTOMATICALLY. THE AIR RELEASE VALVE FLOAT SHALL BE HEAVY STAINLESS STEEL HERMETICALLY SEALED TO WITHSTAND 1000 PSI. MATERIALS: VALVE BODIES : ALLOY 20 CAST PER ASTM A351 GR CN7M SHAFTS : ALLOY 20 SEATS : VITON FLOATS : ALLOY 20</p> <p>MAX.WORKING PRESSURE: 150 PSIG FLANGED RAISED FACE PER ANSI B16.5 CLASS 300 REFERENCE: APCO VALVE &amp; PRIMER CORPORATION</p>		<input type="checkbox"/>

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5001497	VE-15: COMBINATION AIR VALVE CL 900 RF 316 SS / VITON	TAG VE-15 ITEM - COMBINATION AIR AND VACUUM VALVE RATING - CLASS 900 ENDS - FLANGED RAISED FACE PER ANSI/ASME B16.5 MATERIAL BODY - 316 STAINLESS STEEL FLOAT - 316 STAINLESS STEEL TRIM - 316 STAINLESS STEEL SEAT & SEAL - VITON BOLTING - 316 STAINLESS STEEL STANDARD - ANSI B1.20.1 PRESSURE OPERATIONAL RANGE:1-1600 PSI REFERENCE - APCO SERIES 1800 (4" AND LARGER), APCO SERIES 140C (3" AND SMALLER), OR AUTHORIZED SUBSTITUTE		<input type="checkbox"/>
5001498	VE-16: COMBINATION AIR VALVE CL 300 RF 316 SS / VITON	TAG VE-16 ITEM - COMBINATION AIR AND VACUUM VALVE RATING - CLASS 300 ENDS - FLANGED RAISED FACE PER ANSI/ASME B16.5 MATERIAL BODY - 316 STAINLESS STEEL FLOAT - 316 STAINLESS STEEL TRIM - 316 STAINLESS STEEL SEAT & SEAL - VITON BOLTING - 316 STAINLESS STEEL PRESSURE OPERATIONAL RANGE:1-600 PSI CAPACITY: REFERENCE - APCO SERIES 1800 (4" AND LARGER), APCO SERIES 140C (3" AND SMALLER), OR AUTHORIZED SUBSTITUTE		<input type="checkbox"/>
5001505	VE-17: AIR RELEASE VALVE CL 900 RF 316 SS / VITON	TAG VE-17 ITEM - AIR RELEASE VALVE RATING - CLASS 900 ENDS - FLANGED RAISED FACE PER ANSI/ASME B16.5 MATERIAL BODY - 316 STAINLESS STEEL FLOAT - 316 STAINLESS STEEL TRIM - 316 STAINLESS STEEL SEAT & SEAL - VITON BOLTING - 316 STAINLESS STEEL PRESSURE OPERATIONAL RANGE:1-1600 PSI REFERENCE - APCO SERIES 200A OR AUTHORIZED SUBSTITUTE	APCO	<input checked="" type="checkbox"/>

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ITEM CODE	ABBREVIATED DESCRIPTION	PURCHASE DESCRIPTION	REFERENCES	PR
PRIME: 5 Piping				
5001466	VE-18: AIR RELEASE VALVE 600# FNPT 316 SS / VITON	TAG VE-18 ITEM - AIR RELEASE VALVE RATING - 600 PSIG MAXIMUM WORKING PRESSURE ENDS - FEMALE PIPE THREAD (NPT) MATERIAL BODY - 316 STAINLESS STEEL FLOAT - 316 STAINLESS STEEL TRIM - 316 STAINLESS STEEL SEAT & SEAL - VITON BOLTING - 316 STAINLESS STEEL STANDARD - ANSI B1.20.1 REFERENCE - APCO VALVES OR AUTHORIZED SUBSTITUTE		<input type="checkbox"/>
5001510	VE-19: AIR RELEASE VALVE CL 300 RF 316 SS / VITON	TAG VE-19 ITEM - AIR RELEASE VALVE RATING - CLASS 300 ENDS - FLANGED RAISED FACE PER ANSI/ASME B16.5 MATERIAL BODY - 316 STAINLESS STEEL FLOAT - 316 STAINLESS STEEL TRIM - 316 STAINLESS STEEL SEAT & SEAL - VITON BOLTING - 316 STAINLESS STEEL PRESSURE OPERATIONAL RANGE:1-740 PSI REFERENCE - APCO SERIES 200A OR AUTHORIZED SUBSTITUTE	APCO	<input checked="" type="checkbox"/>
5001605	VE-20: AIR/VACUUM VALVE CL150 FF DI BODY SUPER DUPLEX FLOAT	TAG VE-20 ITEM - AIR AND VACUUM VALVE RATING - 250 PSI MAXIMUM WORKING PRESSURE ENDS - ANSI CLASS 150 FLAT FACE FLANGE MATERIAL BODY - DUCTIL IRON LINING - EPDM FLOAT - SS A391 SUPER-DUPLEX BOLTING - 316 STAINLESS STEEL STANDARD - ANSI B16.5 REFERENCE - APCO SERIES 150 (4" AND LARGER), OR AUTHORIZED SUBSTITUTE	APCO	<input checked="" type="checkbox"/>