DETAILED PROCESS VALVE SPECIFICATION SHEETS

CV05

GENERAL						
TYPE OF VALVE	SYMBOL	TYPE OF COMMODITY	OPERATING LIMITS		DESIGN LIMITS	
			PRESSURE (kPag)	TEMP. (°C)	PRESSURE (kPag)	TEMP. (°C)
Check Valve	**CV05**	Air	700	5-100	1400	120

TYPICAL SERVICE
Check valve for compressed air.

VALVE MATERIALS		VALVE DESCRIPTION	
ITEM	MATERIAL	Reference Document	Body Material: ASTM B62 MSS SP-80
Body	Bronze	Size Range	10 mm to 65 mm
Disc	Bronze	Rating	Class 150
Seats	Bronze	Valve Ends	Female Threads
Hinge pin, trim	Stainless Steel	Type of Disc	Swing Check Regular Port
Spring		Operator	
		Actuator	
		Lining	
		Coating	

NOTES

ACCEPTABLE PRODUCTS			
Newman Hattersly 47	Crane 137	Kitz No. 29	Jenkins 4475

DETAILED PROCESS VALVE SPECIFICATION SHEETS

CV06

GENERAL						
TYPE OF VALVE	SYMBOL	TYPE OF COMMODITY	OPERATING LIMITS		DESIGN LIMITS	
			PRESSURE (kPag)	TEMP. (°C)	PRESSURE (kPag)	TEMP. (°C)
Ball Check Valve	**CV06**	Liquid	600	5-30	850	60

TYPICAL SERVICE
Check valve for chemical feed lines.

VALVE MATERIALS		VALVE DESCRIPTION	
ITEM	MATERIAL	Reference Document	Material: ASTM D1784 (Grade A)
Body	PVC	Size Range	10 to 50 mm
Ball	PVC	Rating	Class 150
Seats	Viton	Valve Ends	Socket
Stop Ring	PVC	Type	Ball Check
End Connector	PVC	Pattern	Full Port
Nut	PVC	Face Ring	Viton

NOTES

ACCEPTABLE PRODUCTS			
Chemline BC	Fabco		

DETAILED PROCESS VALVE SPECIFICATION SHEETS

KV01

GENERAL						
TYPE OF VALVE	SYMBOL	TYPE OF COMMODITY	OPERATING LIMITS		DESIGN LIMITS	
			PRESSURE (kPag)	TEMP. (°C)	PRESSURE (kPag)	TEMP. (°C)
Knife Gate Valve	**KV01**	Liquid	600	5-30	850	50

TYPICAL SERVICE
Isolation valve for wastewater service.

VALVE MATERIALS		VALVE DESCRIPTION	
ITEM	MATERIAL	Reference Document	
Body	Cast Iron	Size Range	75 mm to 1000 mm
Disc	Stainless Steel	Rating	Class 125
Seats	Buna-N	Valve Ends	Lugged
Seals	Buna-N	Type of Disc	
Shaft	Stainless Steel	Operator	RS, Bonnetless (Note 1, 2), Handwheel
Wiper Ring	Reinforced PTFE	Actuator	
Pillars	Stainless Steel	Lining	
		Coating	

NOTES
1. See Section 15100.
2. Provide bonnet with stainless steel (304) stem extension for below grade and submerged services.

ACCEPTABLE PRODUCTS			
DeZurik Series L	Fabri-Valve Fig. 37R	Red Valve Series G, D	Orbe 10

DETAILED PROCESS VALVE SPECIFICATION SHEETS

NV01

GENERAL						
TYPE OF VALVE	SYMBOL	TYPE OF COMMODITY	OPERATING LIMITS		DESIGN LIMITS	
			PRESSURE (kPag)	TEMP. (°C)	PRESSURE (kPag)	TEMP. (°C)
Needle Valve	**NV01**	Liquid/Air	800	5-100	1000	140

TYPICAL SERVICE
Isolation valve for utility service.

VALVE MATERIALS		VALVE DESCRIPTION	
ITEM	MATERIAL	Reference Document	(Note 1)
Body	Stainless Steel	Size Range	10 mm to 65 mm
Stem	Stainless Steel	Rating	Class 150, 600 psi
Seats	Stainless Steel	Valve Ends	Female threaded (Note 1)
Seals/Packing	PTFE	Type of Disc	Needle
Handle	Stainless Steel or Phenolic	Operator	Screwed Bonnet, Handwheel
		Actuator	
		Lining	
		Coating	

NOTES
1. Female threads to suit commodity piping.

ACCEPTABLE PRODUCTS			
Nupro JN Series	Anderson, Greenwood H Series	Lukenheimer 1733T	Parker FC-V12LNSS
ECI Series 2000 FFG	Century CM2-IF44BT		

DETAILED PROCESS VALVE SPECIFICATION SHEETS

PV01

GENERAL						
TYPE OF VALVE	SYMBOL	TYPE OF COMMODITY	OPERATING LIMITS		DESIGN LIMITS	
			PRESSURE (kPag)	TEMP. (°C)	PRESSURE (kPag)	TEMP. (°C)
Plug Valve	**PV01**	Liquid	600	5-30	850	50

TYPICAL SERVICE
On/Off valve for wastewater sludge.

VALVE MATERIALS		VALVE DESCRIPTION	
ITEM	MATERIAL	Reference Document	API 593, MSS SP-078 - (Note 1)
Body	Cast Iron	Size Range	75 mm to 600 mm
Plug	Cast Iron (see plug coating)	Rating	Class 150
Seats	Nickel	Valve Ends	FF Flanges
Seals	O-Rings, Buna-N, Acyionitrile-butadene	Type of Plug	Eccentric
Shaft	Steel	Operator	Square nut (Note 1)
Bearings	Stainless Steel	Actuator	
		Lining	Abrasion Resistant
		Plug Coating	Buna-N, Al-Clad, or Hycar, or chloro-sulfonyl polyethylene
		Coating	

NOTES
1. See Section 15100.

ACCEPTABLE PRODUCTS			
DeZurik Series PEC Eccentric	Dresser MH Series 820 X-Centric	Val-Matic Series 5800 Cam-Centric	Pratt Eccentric Plug
Clow Ful-Flo			

END OF SECTION

1. GENERAL

1.1 Quality Assurance

.1 Welding materials, fabrication standards and labour qualifications must conform to ANSI/ASME B31.1, ANSI B16.25, ASME Section IX, and the Provincial Board of Labour Regulations latest current editions.

.2 Use welders fully qualified and licensed by Provincial Authorities.

.3 Oil Piping: CSA Standard B139, Installation Code for Oil Burning Equipment (latest edition).

.4 Domestic Water, Drainage and Vent Piping: current Provincial and Municipal Codes.

.5 Non-specified pipe joining and pipe fitting methods such as T-drill and press fit are not permitted in any piping system covered under Division 15.

2. PRODUCTS

2.1 Pipe

	Service	Material
.1	Sanitary drainage, and vent, inside building, above ground	`DWV' copper, ASTM B306 Cast iron, CSA B70
.2	Sanitary drainage, and vent, inside building, below ground	Cast iron, CSA B70 PVC-DWV, CAN3B182
.3	Domestic water, above ground (inside building)	Type `L' hard copper, ASTM B88M
.4	Glycol heating to 120°C	Steel, Sch.40, ASTM A53, Grade B heating to 120°C
.5	Filtered Effluent Water	Refer to Process Specification Sections
.6	Equipment drains and overflows	Sch.40, galvanised steel, ASTM A120 Type `L' hard copper ASTM B88M
.7	Oil	Steel, Sch.40. ASTM A120
.8	Diesel engine exhaust Grade B	Steel, Sch.40, ASTM A53 UL Listed Insulated Position Pressure Piping System

2.2 Fittings and Joints

	Service	Material	Joint
.1	Sanitary drainage and vent inside building, above ground	Cast iron	Gasket clamp
		Wrought or Cast copper	Lead-free Solder
.2	Sanitary drainage and vent, inside building, below ground	Cast iron (hubless fitting)	Gasket & clamp
		PVC-DWV	Solvent weld
.3	Domestic water, above ground	Wrought copper, bronze	Lead free solder, brazed for pipes over 50 mm
		Cast bronze	Screwed
.4	Glycol heating 120°C	Banded malleable iron, 1033 kPa, up to 50 mm	Screwed
		Steel, same schedule as pipe, for sizes 50 mm and larger	Welded
		Wrought copper,	95-5 solder, brazed bronze, for pipes over 50 mm
		Cast brass	Screwed
		Cast bronze	Flare tube
.5	Filtered Effluent Water	Refer to Process Specification Sections	Refer to Process Specification Sections
.6	Equipment drains and overflows	Galvanised banded malleable iron	Screwed
		Wrought copper, bronze	50-50 solder
		Cast brass	Screwed
.7	Oil	Malleable iron, banded, 1033 kPa	Screwed
		Forged steel	Screwed

	Service	Material	Joint
		Forged steel, socket weld	Welded
		Steel, same schedule as pipe	Welded
		Cast bronze	Flared tube
.8	Diesel engine exhaust	Steel, same schedule as pipe, all sizes	Welded

.9 Use factory fabricated butt welded fittings for welded steel pipes.

.10 Use long radius elbows for steel and cast iron water piping, including grooved mechanical fittings.

2.3 Unions, Flanges and Couplings

.1 Size 50 mm and under: 1033 kPa malleable iron, bronze to iron ground joint unions for threaded ferrous piping, air tested for gas service, all bronze for copper piping.

.2 Sizes 65 mm and over: 1033 kPa forged steel welding neck flanges for ferrous piping, 1033 kPa bronze slip-on flanges for copper piping. Gaskets shall be 1.5 mm thick performed synthetic rubber bonded asbestos. Gaskets for gas service shall be synthetic rubber.

.3 Flange bolting: For systems up to 120°C, use carbon steel stud bolts, semi-flushed and heavy hex nuts, ASTM A307-GrB. For systems up to 215°C, use alloy steel bolts ASTM A193-GrB7, and semi-finished heavy hex nuts ASTM A194-Gr2H.

3. EXECUTION

3.1 Preparation

.1 Ream pipes and tubes. Clean off scale and dirt, inside and outside, before assembly. Remove welding slag or other foreign material from piping.

.2 Protect all steel pipes when stored on site from external conditions and ensure protective coating remains intact. If in the opinion of the Engineer, deterioration of the protective coating has instigated corrosion, all rust must be removed down to bare metal and prime coated with red oxide paint.

3.2 Connection

.1 Screw joint steel piping up to and including 40 mm. Weld piping 65 mm and larger, including branch connections. Screw or weld 50 mm piping for liquid systems, weld 50 mm piping for air and gas systems.

.2 Make screwed joints with full cut standard taper pipe threads with approved non-toxic joint compound applied to male threads only.

.3 Make joints for plain end pipe with gasket and clamp type mechanical fastener.

.4 Clamp cast iron water pipe at fittings with 20 mm rods and properly anchor and support.

.5 Use of grooved mechanical couplings and mechanical fasteners is not permitted.

.6 Use galvanised couplings with galvanised pipe.

.7 Make connections to equipment, specialty components, and branch mains with unions or flanges.

.8 Provide dielectric type connections wherever joining dissimilar metals in open systems. Brass adapters and valves are acceptable.

.9 Use insulating plastic spacers for copper pipe installation in metal studs.

3.3 Route and Grades

.1 Route piping in orderly manner and maintain proper grades. Install to conserve headroom and interfere as little as possible with use of space. Run exposed piping parallel to walls. Group piping wherever practical at common elevations. Install concealed pipes close to the building structure to keep furring to a minimum.

.2 Slope water piping 0.2% and provide hose bibb drains at low points.

.3 Equip low points with 20 mm drain valves and hose nipples.

.4 Provide air collection chambers with manual air vent at all high points of system. Collection chambers to be 25 mm dia. or line size whichever is greater and 150 mm high minimum. Square tees may only be used to assist with complete venting and draining.

.5 Make reductions in water pipes with eccentric reducing fittings installed to provide drainage and venting. Top flat for water.

.6 Grade horizontal drainage and vent piping 2% minimum, unless noted otherwise.

.7 Pipe the discharge from all relief valves, safety valves, vents, drains, equipment blowdowns, water columns and overflows to the glycol recovery tanks for the glycol heating system.

3.4 Installation

.1 Install piping to allow for expansion and contraction without unduly stressing pipe or equipment connected.

.2 Provide clearance for proper installation of insulation and for access to valves, air vents, drains and unions.

3.5 Welded Pipe Branch Connections

.1 Make branch connections according to the following schedule.

Legend:

T: Forged tee or reducing tee

S: Socolet

W: Weldolet

HEADER	BRANCH											
	15	T										
	20	T	T									
	25	T	T	T								
	30	T	T	T	T							
	40	T	T	T	T	T						
	50	S	S	S	T	T	T					
	65	S	S	S	S	T	T	T				
	75	S	S	S	S	S	T	T	T			
	100	S	S	S	S	S	T	T	T	T		
	150	S	S	S	S	S	W	T	T	T	T	
	200	S	S	S	S	S	W	W	W	T	T	T
		15	*20*	*25*	*30*	*40*	*50*	*65*	*75*	*100*	*150*	*200*

END OF SECTION

1. GENERAL

1.1 Scope

.1 Gate valves.

.2 Globe or angle valves.

.3 Ball valves.

.4 Check valves.

.5 Plug cocks.

.6 Eccentric plug valves.

.7 Butterfly valves.

.8 Drain valves.

.9 Hose bibbs.

.10 Strainers.

1.2 Manufacturer

.1 Provide valves of the same type by the same manufacturer throughout.

.2 Provide valves with manufacturer's name and pressure rating clearly marked on outside of body.

1.3 Shop Drawings

.1 Submit copies of valves "ordering schedule" for review before ordering valves.

.2 Submit detailed shop drawings clearly indicating make, model, size, pressure rating, materials of construction and intended service.

2. PRODUCTS

2.1 Domestic Cold Water System

.1 Ball Valves up to 50 mm: Brass body, chrome plated brass ball, threaded or solder ends, TFE seat and packing. 4134 kPa non-shock WOG rating. Threaded, Red-White Fig. 5044A. Solder joint, Red-White Fig. 5049A.

.2 Globe Valves up to 50 mm: Bronze body, screw over bonnet, threaded ends rating 1035 kPa steam, solder ends rating 2070 kPa water. Threaded, Red-White Fig. 221. Solder ends, Red-white Fig. 222.

Globe Valves 65 mm and over: Cast iron body, flanged ends, O.S. and Y, renewable bronze seat ring, renewable composition disc. Rating 860 kPa steam. 1380 kPa. Red-White Fig. 400.

.3 Butterfly Valves: Cast iron wafer full-lug body, 300 Series stainless steel shaft, bronze disc, replaceable EPDM seat, lever lock handle operator with multiple position lock plate for valve sizes to 100 mm, heavy duty gear handwheel operator with position indicator for valve sizes 150 mm and over. Minimum rating 1200 kPa, 121°C. Keystone F1000, F1020.

.4 Gate Valves up to 50 mm: Bronze body, inside screw, travelling stem, solid wedge, screw-in bonnet, threaded ends rating 860 kPa steam, solder ends rating 1380 kPa water. Threaded, Red-White Fig. 293. Solder ends, Red-White Fig. 299.

Gate Valves 65 mm and over: Cast iron body, bronze trim, O.S. and Y, rising stem, solid wedge, flanged ends, rating 860 kPa steam. Red-White Fig. 421.

.5 Swing Check Valves up to 50 mm: Bronze body, screw-in cap, replaceable disc, 860 kPa steam rating. Threaded, Red-White Fig. 236. Solder ends, Red-White Fig. 237.

Swing Check Valves 65 mm 2½ in. and over: Cast iron body, regrind-renew swing check, bolted cover, flanged ends, bronze disc and seat ring, rating 860 kPa steam. Red-White Fig. 435.

.6 Silent Check Valves for Pump Discharge:

Up to 50 mm: Bronze body, SS stem, 316 SS spring, Teflon disc and seat ring, 430 SS seat screw, threaded ends. 1380 kPa water. Val Matic VM-S1400.

65 mm and over: Wafer style, cast iron body, 316 SS seat, plug, spring and bushing. ANSI Class 125. Val Matic, Series 1400.

2.2 Domestic Hot Water System

.1 Valves to be used in the hot water section of the system shall be exactly as specified in the cold water section with one exception, that all composition disc valves shall be fitted with discs suitable for hot water.

2.3 Domestic Water System Hose Bibbs

.1 Bronze body globe valve, renewable composition disc, threaded inlet, "garden hose" thread outlet, rating 2070 kPa water.

Bronze or red brass, replaceable hexagonal disc, hose thread spout.

2.4 Glycol heating system

.1 Ball Valves up to 50 mm: Brass body, chrome plated brass ball, threaded or solder ends, TFE seat and packing. 4134 kPa non-shock WOG rating. Threaded, Red-White Fig. 5044A. Solder joint, Red-White Fig. 5049A.

.2 Globe Valves up to 50 mm: Bronze body, screw over bonnet, threaded ends rating 1035 kPa steam, solder ends rating 2070 kPa water. Threaded, Red-White Fig. 221. Solder ends, Red-white Fig. 222.

Globe Valves 65 mm and over: Cast iron body, flanged ends, O.S. and Y, renewable bronze seat ring, renewable composition disc. Rating 860 kPa steam. 1380 kPa water. Red-White Fig. 400.

.3 Butterfly Valves: Cast iron wafer full-lug body, 300 Series stainless steel shaft, bronze disc, replaceable EPDM seat, lever lock handle operator with multiple position lock plate for valve sizes to 100 mm, heavy duty gear handwheel operator with position indicator for valve sizes 150 mm and over. Minimum rating 1200 kPa, 121°C. Keystone F1000, F1020.

.4 Gate Valves up to 50 mm: Bronze body, inside screw, travelling stem, solid wedge, screw-in bonnet, threaded ends rating 860 kPa steam, solder ends rating 1380 kPa water. Threaded, Red-White Fig. 293. Solder ends, Red-White Fig. 299.

Gate Valves 65 mm and over: Cast iron body, bronze trim, O.S. and Y, rising stem, solid wedge, flanged ends, rating 860 kPa steam. Red-White Fig. 421.

.5 Swing Check Valves up to 50 mm: Bronze body, screw-in cap, replaceable disc, 860 kPa steam rating. Threaded, Red-White Fig. 236. Solder ends, Red-White Fig. 237.

Swing Check Valves 65 mm and over: Cast iron body, regrind-renew swing check, bolted cover, flanged ends, bronze disc and seat ring, rating 860 kPa steam. Red-White Fig. 435.

.6 Silent Check Valves for Pump Discharge:

Up to 50 mm: Bronze body, SS stem, 316 SS spring, Teflon disc and seat ring, 430 SS seat screw, threaded ends. 1380 kPa water. Val Matic VM-S1400.

65 mm and over: Wafer style, cast iron body, 316 SS seat, plug, spring and bushing. ANSI Class 125. Val Matic, Series 1400.

.7 Eccentric Plug Valves: Cast iron body with resilient faced cast iron plug, bolted bonnet, stainless steel bearings, nickel seat. Multiple packing ring, stem seal and resilient plug facing materials suitable for hot water/glycol service to 121°C. Valve ends threaded up to 50 mm, flanged 65 mm and over. Lever operator with adjustable open position memory stop up to 100 mm valves, heavy duty gear reducer handwheel operator with adjustable open position memory stop for valves 150 mm and over. Rating 1210 kPa water at 121°C. DeZurik Series 100.

.8 Terminal Heat Transfer Unit Valves up to 30 mm: Heavy pattern brass body radiator valve, wheel handle, rising stem, inside screw, renewable composition swivel disc, straight or angle globe, threaded or union ends, positive back seating. Dahl Series 11040.

Terminal Heat Transfer Unit Valves 40 mm and over: Bronze gate valves, threaded ends up to 50 mm, cast iron gate valves, flanged ends, valve sizes 65 mm and over. Red-White Fig. 421.

.9 Terminal Heat Transfer Unit Balancing Valves up to 30 mm: Removable cap key, screw set memory bonnet for balancing, brass body, rising stem, inside screw, renewable composition swivel disc, straight or angle globe, threaded or union ends, positive back seating. Dahl Series 13000-M.

Terminal Heat Transfer Unit Balancing Valves 40 mm and over: Eccentric plug valve, as described above.

.10 Drain Valves up to 50 mm: Brass 2 piece body ball valve, blowout proof stem, Teflon seats, forged brass chrome palted ball, hose end connection with cap and chain by male IP, 4200 kPa water, oil, gas rating, Red-White Fig. 5046.

Terminal unit brass T-body drain valve, wheel handle, ground body-bonnet joint, renewable disc, brass chain, forged brass gasketted cap. Working pressure 1725 kPa at 121°C. Dahl 21.616.

.11 Circuit Balancing Valves: Suitable for throttling. All metal parts non-ferrous, die cast non-porous copper alloy. Flow measuring accuracy ±2%. Positive shut-off, drain connection with cap. Memory balancing feature. Fittings for connection of portable differential pressure meter. Bell & Gosset circuit setter.

2.5 Fuel Oil System

.1 Gate Valves up to 50 mm: Bronze body, inside screw, travelling stem, solid wedge, screw-in bonnet, threaded ends rating 860 kPa steam. Red-White Fig. 293.

.2 Check Valves up to 50 mm: Bronze body and disc, regrinding swing check, screw-in cap, threaded ends, rating 860 kPa steam. Red-White Fig. 236.

2.6 Valve Operators

.1 Provide suitable hand wheels for gate, globe or angle, radiation and drain valves and inside hose bibbs.

.2 Provide one plug cock wrench for every ten plug cocks sized 50 mm and smaller, minimum of one. Provide each plug cock sized 65 mm and larger with a wrench, with set screw.

.3 Provide valves larger than 100 mm located more than 2.1 m from floor in equipment rooms with chain operated sheaves. Extend chains to 1.5 m above floor and hook to clips to arrange to clear walking aisles.

2.7 Strainers

.1 Size 50 mm and under: Screwed brass or iron body, Y pattern with 0.75 mm stainless steel perforated screen.

.2 Size 65 mm to 100 mm: Flanged iron body, Y pattern with 1 mm stainless steel perforated screen.

.3 Size 125 mm and larger: Flanged iron body, Y pattern with 3 mm stainless steel perforated screen.

.4 Screen free area shall be minimum three times area of inlet pipe.

3. EXECUTION

3.1 Installation and Application

.1 Install valves with stem upright or horizontal, not inverted.

.2 Provide threaded lug type butterfly valves for equipment isolation service. Provide wafer or threaded lug type valves for zone shut-off service.

.3 Use eccentric plug valves in water systems for throttling/balancing service.

.4 Use memory radiator balancing valves in glycol systems terminal heat transfer unit balancing service.

.5 Provide drain valves at main shut-off valves, low points of piping and apparatus and terminal units.

.6 Size drain lines and drain valves equal to size of apparatus drain connection.

.7 For pipe sizes 20 mm and over, minimum drain size to be 20 mm

.8 Provide hose thread connection with cap and chain for 20 mm drain valves located in ceiling and public areas.

.9 Provide male NPT nipples with threaded pipe cap for drain sizes over 20 mm where not piped directly to floor drains.

.10 Provide valved drain and hose connections off the bottom of all strainers.

END OF SECTION

1. GENERAL

1.1 Scope

.1 Glycol mixing/charging tank, fill pump.

.2 Propylene glycol solution.

.3 Manual and automatic air vents.

.4 Air separators.

.5 Relief valves and fittings.

.6 By-pass filter.

.7 Quantity meters.

1.2 Quality Assurance

.1 Thoroughly check system and make necessary corrections if system continually loses solution.

.2 Perform tests determining strength of glycol solution before system is turned over to the Owner. Provide test prior to end of guarantee and replenish as required. Provide written test results for review.

1.3 Submittals

.1 Provide shop drawings for all equipment in this section.

2. PRODUCTS

2.1 Manual Air Vents

.1 Provide manual air vents with 25 mm or line diameter pipe which ever is greater to form air collection chamber. Collection chamber to be 150 mm high.

2.2 Air Separators

.1 Provide centrifugal type with 861 kPa WSP steel tank, galvanised steel 5 mm perforated strainer, perforated stainless steel air collector tube and drain connection.

2.3 Relief Valves

.1 Provide ASME rated direct spring loaded type, lever operated non-adjustable factory set discharge pressure as indicated.

2.4 Quantity Meters

.1 Refer to Section 15070.

2.5 Glycol Solution

.1 Refer to Section 15090.

2.6 Bypass Filter

.1 Unit to consist of cartridge filter, flow indicator, flow control valves and filter cartridges. Cartridge filter; stainless steel shell of single centre bolt construction with cast nick-plated brass head, drain plug and air vent. Flow indicator - cast bronze body with two sight glasses of high temper, thermo shock-resistant glass and nylon rotor on stainless steel pin.

Flow Control Valves: Cast Bronze Globe Valves, 25 mm Female NPT Thread.

Filter cartridges: 10 each of 10 micron retention, and 20 micron retention.

Manufacturer: Guthrie Hydroniclean System.

2.7 Chemical Pot Feeder

.1 150 mm diameter x 550 mm long feeder, suitable for 861 kPa operating pressure complete with isolation valves on 20 mm inlet and outlet lines. 20 mm drain valve 40 mm fill complete with filling funnel.

2.8 Expansion Tank

.1 Provide glycol expansion tanks as described in Section 15130.

3. EXECUTION

3.1 Air Vents

.1 Provide manual type at system high points and convection type heating units.

.2 Where large air quantities can accumulate, provide enlarged air collection standpipe.

3.2 Air Separator

.1 Provide on suction side of system circulation pump and connect to expansion tank.

3.3 Relief Valve

.1 Provide relief valves on pressure tanks, low pressure side of reducing valves, heating convertors, expansion tanks and where indicated.

.2 Drain relief valve to glycol collection tanks. Do not waste glycol to floor drains.

.3 System relief valve capacity shall equal make-up pressure reducing valve capacity. Equipment relief valve capacity shall exceed input rating of connected equipment.

.4 Where one line vents several relief valves, cross sectional areas shall exceed sum of individual vent areas.

3.4 Quantity Meters

.1 Install where indicated on drawings complete with isolation valves and line size bypass.

3.5 Bypass Filter

.1 Install between pump's suction and discharge. Provide isolation valves and sight glass as indicated.

3.6 Chemical Pot Feeder

.1 Install one chemical pot feeder for each glycol system.

3.7 Glycol Charging Tank

.1 Provide one glycol charging tank for each glycol system.

3.8 Expansion Tanks

.1 Provide air lines, checks, charging valves and pressure gauges for expansion tanks and glycol fill tanks. Charging valves to be piped to 1200 mm above finished floor.

3.9 Installation

.1 Do necessary piping to complete installation as shown on the drawings specified.

.2 Thoroughly clean and flush system before antifreeze solution is added.

.3 Manually feed glycol to system through make-up line with pressure regulator.

.4 Provide one extra 170 L drum of premixed glycol solution, at turn over of the building to owner.

END OF SECTION

EXPANSION COMPENSATION

1. GENERAL

1.1 Scope

.1 Flexible pipe connections.

.2 Expansion joints and compensators in pipe systems.

.3 Pipe loops, offsets, and swing joints.

1.2 Reference Standard

.1 Conform to current Standards of "Expansion Joint Manufacturers Association" and manufacturer's recommendations.

1.3 Shop Drawings

.1 Provide shop drawings for all equipment in this section.

.2 Flexible pipe connector shop drawing data shall include maximum allowable temperature and pressure rating, overall face-to-face length, live length, hose wall thickness, hose convolutions per 300 mm and per assembly, fundamental frequency of assembly, braid structure and total number of wires in braid.

.3 Expansion joint shop drawings shall include maximum allowable temperature and pressure rating, and maximum expansion compensation.

1.4 Inspection

.1 Provide inspection services by flexible pipe manufacturer's representative for final installation and certify installation is in accordance with manufacturer's recommendations and connectors are performing satisfactorily.

2. PRODUCTS

2.1 Flexible Pipe Connectors

.1 Flexible Rubber Spools: Neoprene twin sphere connector of molded multiple plys of nylon tire cord fabric and neoprene, rated for 1035 kPa at 120°C. Union end connections for sizes 50 mm and under; floating galvanised ductile iron flanges for sizes over 50 mm

.2 Spherical Rubber Spools: Neoprene single sphere elbow connector, construction and service rating same as 2.1.1. above.

.3 Braided Spools for Copper Piping: Stainless steel inner core and braid braized to copper tube ends, suitable for 1035 kPa at 120°C.

.4 Braided Spools for Steel Piping: Stainless steel inner core and braid welded to steel pipe nipples, threaded for pipe up to 50 mm diameter, flanged for 65 mm diameter pipe and over. Suitable for service at 1035 kPa at 120°C.

2.2 Expansion Joints

.1 Copper Piping: Laminated stainless steel bellows brazed to copper tube ends, internal guide, stainless steel external shroud. Suitable for 1035 kPa at 260°C.

.2 Steel Piping up to 100 mm: Laminated stainless steel bellows welded to steel pipe nipples. Anti-torque device and threaded ends for sizes to 50 mm, flanged ends for sizes 65 mm and over. Internal guide and carbon steel shroud suitable for 1035 kPa at 260°C.

.3 Steel Piping 100 mm and over: Guided externally pressurised laminated stainless steel bellows, flanged ends, internal guide tube and ring, external shroud and guide ring. Suitable for 1035 kPa at 260°C.

2.3 Pipe Guides

.1 Four finger "spider" inside a guiding sleeve formed of two halves suitable for clamping onto pipe.

.2 Guided sleeve formed of two parts, suitable to be bolted to supporting structure.

.3 Guide length to be minimum 300 mm.

3. EXECUTION

3.1 Application

.1 Provide flexible pipe connectors on pipes connected to equipment supported by vibration isolation and where indicated on the drawing.

.2 Provide structural work and equipment required to control expansion and contraction of piping, loops, pipe offsets, and swing joints and provide expansion joints where indicated or required. Where deemed necessary by the engineer the contractor shall, at his own cost, employ a structural consultant to design pipe anchors to control piping expansion and contraction.

.3 Provide pipe guides as required to ensure correct pipe alignment for expansion joints.

3.2 Installation

.1 Install flexible connectors at right angles to displacement. Install one end immediately adjacent to isolated equipment and anchor other end.

.2 Rigidly anchor pipe to building structure at points shown, and where necessary provide pipe guides so that movement takes place along axis of pipe only.

.3 Install flexible connectors and expansion joints in accordance with manufacturer's instructions.

.4 Do not compress or expand connector during installation.

END OF SECTION