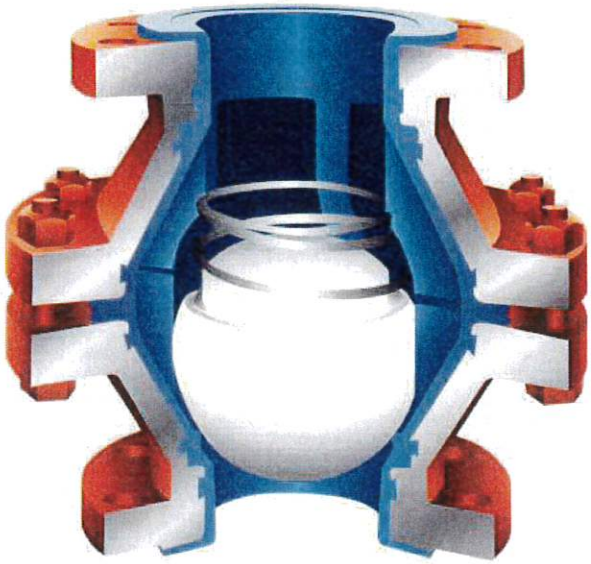
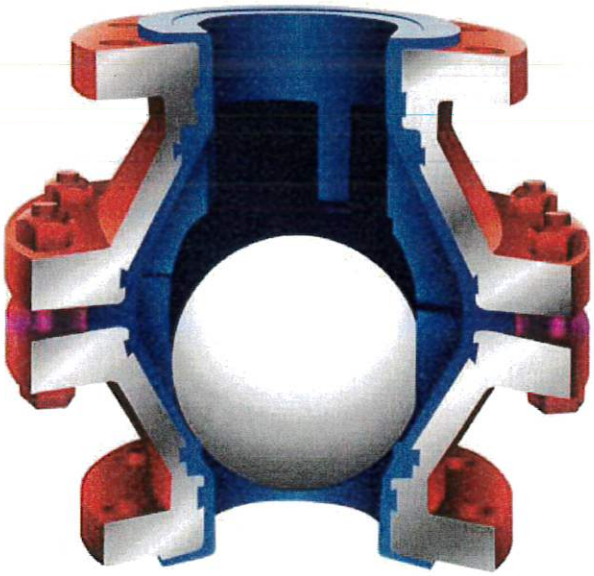
ChemValve®

MODEL 880S-150/300
SPRING ASSISTED
LINED BALL CHECK VALVE



MODEL 880-150
LINED BALL CHECK VALVE



ChemValve®

MODEL 880S CHOICE OF LINERS

Model 880S spring assisted ball check valve liner selection is dependent upon the application

Model 880S spring assisted ball check valves can be supplied with Polypropylene, PVDF-Kynar® (or equivalent), PFA or GRPFA. These are all melt processible resins which are injection molded into the valve body.

Liner selection should be based on the corrosion resistance of the plastic resin to the flowing media at service temperature and pressure. Please consult a corrosion chart for compatibility. Remember, there is no need to use a PFA lined valve when polypropylene will perform just as well.

PPL POLYPROPYLENE

Polypropylene is a thermoplastic resin exhibiting an excellent balance of corrosion resistance and economy. When injection molded into a Model 880S spring assisted ball check valve, it provides an excellent low cost product for many applications, as well as HCl applications, in the water and waste water treatment industry. The suitability of polypropylene is highly dependent on service temperature. Polypropylene is especially good in ambient temperature applications. This liner has been tested in 37% HCl and approved. The maximum temperature rating of the Model 880S polypropylene lined spring assisted ball check valve is 225 degrees F.

PVDF PVDF (Poly-vinylidene fluoride)

PVDF is a strong hard fluorocarbon resin which is thermally stable, non-toxic and has excellent chemical resistance. PVDF is especially well suited to weak corrosives and slurry service applications found in bleach-plants of pulp and paper mills. PVDF is the material of choice for chlorine and other halogen containing chemicals. The suitability of PVDF in a given corrosive serviceis highly dependent on temperature. In some-cases, PVDF can be substituted for a PFA lining. In abrasive applications, PVDF will work better than PFA, due to its resistance to erosion, provided it is chemically compatible with the service. The maximum temperature rating of the Model 880S PVDF lined spring assisted ball check valve is 275 degrees F.

PFA (Perfluoroalkoxy)

PFA is a higher temperature resin with the same outstanding chemical inertness as PTFE. Due to its chemical composition, PFA retains a high amount of mechanical strength at elevated temperatures. The maximum temperature rating of the Model 880S PFA lined spring assisted ball check valve is 400 degrees F.

GRPFA Glass-Reinforced PFA

Glass reinforced PFA is a liner material which combines the corrosion resistance of PFA at elevated temperatures with enhanced abrasion resistance provided by glass fibers incorporated into the resin. GRPFA is unsurpassed in high temperature slurry applications where virgin PFA or PTFE lined valves cannot withstand erosion. The maximum temperature rating of the Model 880S GPPFA lined spring assisted ball check valve is 400 degrees F.

MODEL 880-Series CHOICE OF LINERS

Model 880-150 ball check valve liner selection is dependant upon the application

Model 880-150 ball check valves can be supplied with Polypropylene, PVDF-Kynar® (or equivalent), PFA or GRPFA. These are all melt processible resins which are injection molded into the valve body.

Liner selection should be based on the corrosion resistance of the plastic resin to the flowing media at service temperature and pressure. Please consult a corrosion chart for compatibility. Remember, there is no need to use a PFA lined valve when polypropylene will perform just as well.

PPL POLYPROPYLENE

Polypropylene is a thermoplastic resin exhibiting an excellent balance of corrosion resistance and economy. When injection molded into a Model 880-150 ball check valve, it provides an excellent low cost product for many applications, as well as HCl applications, in the water and waste water treatment industry. The suitability of polypropylene is highly dependent on service temperature. Polypropylene is especially good in ambient temperature applications. This liner has been tested in 37% HCl and approved. The maximum temperature rating of the Model 880S polypropylene lined spring assisted ball check valve is 225 degrees F.

PVDF PVDF (Poly-vinylidene fluoride)

PVDF is a strong hard fluorocarbon resin which is thermally stable, non-toxic and has excellent chemical resistance. PVDF is especially well suited to weak corrosives and slurry service applications found in bleach-plants of pulp and paper mills. PVDF is the material of choice for chlorine and other halogen contain-ing chemicals. The suitability of PVDF in a given corrosive service is highly dependent on temperature. In some-cases, PVDF can be substituted for a PFA lining. In abrasive applications, PVDF will work better than PFA, due to its resistance to erosion, provided it is chemically compatible with the service. The maximum temperature rating of the Model 880S PVDF lined spring assisted ball check valve is 275 degrees F.

PFA (Perfluoroalkoxy)

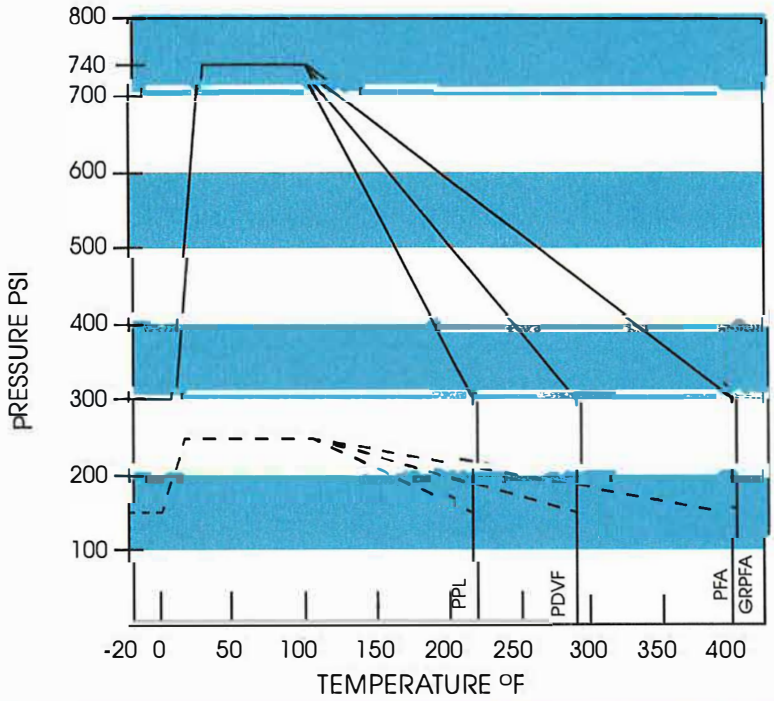
PFA is a higher temperature resin with the same outstanding chemical inertness as PTFE. Due to its chemical composition, PFA retains a high amount of mechanical strength at elevated temperatures. The maximum temperature rating of the Model 880S PFA lined spring assisted ball check valve is 400 degrees F.

GRPFA Glass-Reinforced PFA

Glass reinforced PFA is a liner material which combines the corrosion resistance of PFA at elevated tempera-tures with enhanced abrasion resistance provided by glass fibers incorporated into the resin. GRPFA is unsurpassed in high temperature slurry applications where virgin PFA or PTFE lined valves cannot withstand erosion. The maximum temperature rating of the Model 880S GPPFA lined spring assisted ball check valve is 400 degrees F.

ChemValve®

MODEL 880S PRESSURE - TEMPERATURE CURVES



MAX SERVICE TEMPERATURE	
PPL	225°F (107°C)
PVDF	275°F (135°C)
PFA	400°F (204°C)
GRPFA	400°F (204°C)

TEMPERATURE CURVES KEY
880S-300: ———
880S-150: - - - - - - - - -

MODEL 880S INSTALLATION RECOMMENDATIONS

1. This valve can be installed in any orientation within the piping system - vertical or horizontal and flow up or flow down.
2. For applications where the check valve is installed for use on the downstream side of a centrifugal pump, it is recommended that there is a minimum of five pipe diameters of straight pipe run before the inlet to the check valve.
3. For applications in lines that are for mixing, we recommmend that the complete service conditions be reviewed by the factory.

MODEL 880S ENGINEERING DATA

MODEL 880S-150 MATERIALS	
PART	MATERIAL
Body	Ductile Iron*
Ball	Solid PTFE
Spring	Hastalloy C-276**
Bolting	Grade 5 alloy Steel

* All Cast Ductile Iron is ASTM-A395
** Other high alloy spring materials and an FEP encapsulation of the spring is available.

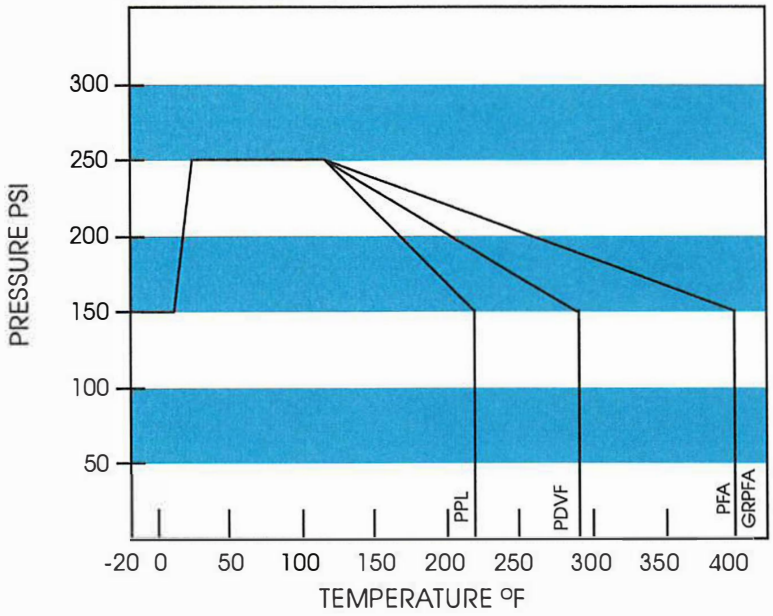
Techincal Description

Pressure Class: ANSI CL 150 / CL 300 (DIN Std. Optional)
Size Range: CL 150: 1" to 8" (25mm-200mm)
Size Range: CL 300: 1" to 6" (25mm-150mm)
End Connection: Raised face flanged
Liner Material: PPL, PVDF, PFA, GRPFA
Liner Thickness: Minimum .125" Rated for Full Vacuum
External Protection: Waterbased Acrylic Urethane Other Coatings Available

Size	CL 150 CV VALUE	CL 300 CV VALUE
1	38	40
1.5	86	90
2	190	200
3	309	325
4	380	400
6	594	625
8	1,000	-

Model 880S Size	Typical Cracking Pressure (psi; horizontal)	Typical Cracking Pressure (psi; flow up/check down)
1"	0.1 - 0.2	0.2 - 0.3
1.5"	0.2 - 0.3	0.5 - 0.6
2"	0.2 - 0.3	0.8 - 0.9
3"	0.4 - 0.5	1.8 - 2.2
4"	0.5 - 0.6	2.8 - 3.3
6"	0.5 - 0.6	5.0 - 6.0
8"	0.65 - 0.75	9.0 - 10.0

MODEL 880-150 PRESSURE - TEMPERATURE CURVES



MAX SERVICE TEMPERATURE	
PPL	225°F (107°C)
PVDF	275°F (135°C)
PFA	400°F (204°C)
GRPFA	400°F (204°C)

MODEL 880-150 INSTALLATION RECOMMENDATIONS

1. The preferred Installation orientation is flow up - check down. For other orientations, please see the ChemValve® Model 880S-150 spring assisted fully lined ball check valve.
2. For applications where the check valve is installed for use on the downstream side of a centrifugal pump, it is recommended that there be 10 pipe diameters of straight pipe run before the inlet to the check valve.
3. For applications In lines that are for mixing, we recommmend the use of the ChemValve® Model 880S-150 spring assisted fully lined ball.

MODEL 880-150 ENGINEERING DATA

MODEL 880-150 MATERIALS	
PART	MATERIAL
Body	Ductile Iron*
Ball	Solid PTFE
Bolting	Grade 5 alloy Steel

* All Cast Ductile Iron is ASTM-A395

Techincal Description

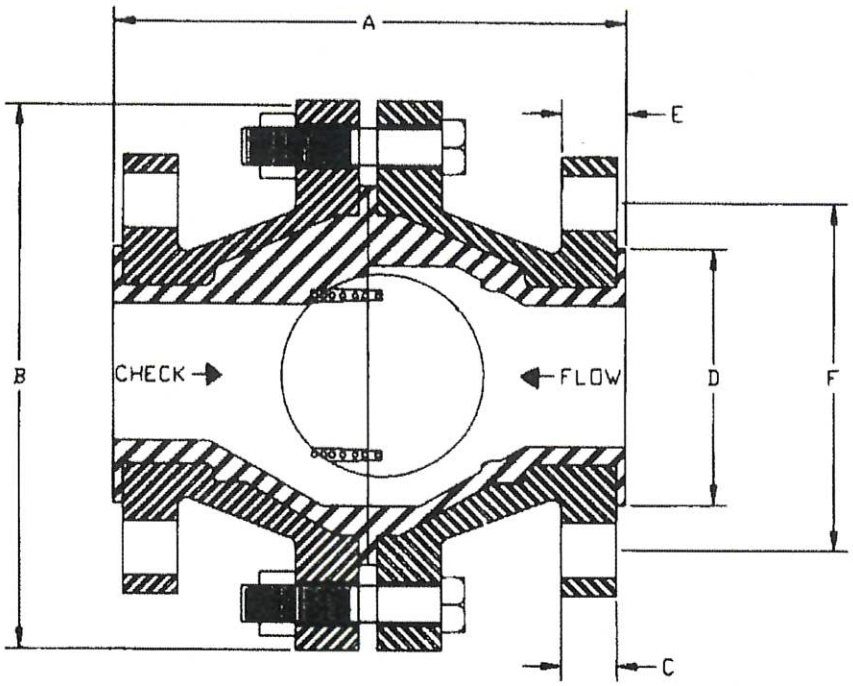
Pressure Class: ANSI CL 150
(DIN Std. Optional)
Size Rance: 1" to 6" (25mm-150mm)
End Connection: Raised face flanged
Liner Material: PPL, PVDF, PFA, GRPFA
Liner Thickness: Minimum .125"
Rated for Full Vacuum
External Protection: Waterbased Acrylic Urethane
Other Coatings Available

Size	CV VALUE
1	40
1.5	90
2	200
3	325
4	400
6	625

Model 880 Size	Pressure Drop Limit in the Check Direction (psi)	Typical Cracking Pressure (psi; flow up/check down)
1"	70	0.1 - 0.2
1.5"	65	0.1 - 0.2
2"	60	0.15 - 0.25
3"	55	0.25 - 0.35
4"	50	0.3 - 0.4
6"	40	0.5 - 0.6

Most manufacturers of fully lined ball check valves (including ChemValve) use a solid PTFE ball. If the pressure drop across the valve is too high the force on the ball will cause it to be indented by the seat sealing surface. Because the ball is free to rotate its orientation will change over repeated operations. Eventually an indented area of the ball will fall across the seat sealing surface, creating a leak path with a high velocity flow which can enlarge the leak and further damage the valve. Therefore ChemValve publishes pressure drop limits; these limits are general and apply to similar designs by other manufacturers. Because the pressure drop limit for an 8" valve is only 30 psi, ChemValve does not offer a model 8" 880-150 with a free floating ball; ChemValve does offer a spring-assisted 8" 880S-150 model.

MODEL 880-150/880S-150
SPRING ASSISTED
LINED BALL CHECK VALVE



	Nominal valve size	A	B	C Approx.	D	E Approx.	F No Holes ANSI	F Bolt Hole Diam. ANSI	F Bolt Circle Diam. ANSI	Approx. Weight VALVE	Approx. Weight BALL
	1"	6"	5.5"	0.56"	2"	0.69"	4	0.63"	3.13"	12	.17
	1.5"	7"	6.5"	0.69"	2.88"	0.81"	4	0.63"	3.88"	22	.44
	2"	7"	7.5"	0.75"	3.63"	0.88"	4	0.75"	4.75"	29	.87
	3"	8"	9.25"	1"	5"	1.13"	4	0.75"	6"	50	2.44
	4"	10.5"	11.75"	1"	6.19"	1.19"	8	0.75"	7.5"	86	5.84
	6"	15.5"	17.37"	1.06"	8.5"	1.25"	8	0.88"	9.5"	196	18.9
*	8"	20.4"	21.00"	1.25	10.6"	1.5"	8	0.88"	11.75"	380	40.0

* 880S-150 ONLY

ENGINEERING DATA

MODEL 880S MATERIALS	
PART	MATERIAL
Body	Steel
Ball	Solid PTFE
Spring	Hastalloy C-276**
Boltin	B7 Alloy Steel

* All steel is ASTM-A576-GR-1018 or ASTM-A36
** Other high alloy spring materials and an FEP encapsulation of the spring is also available.

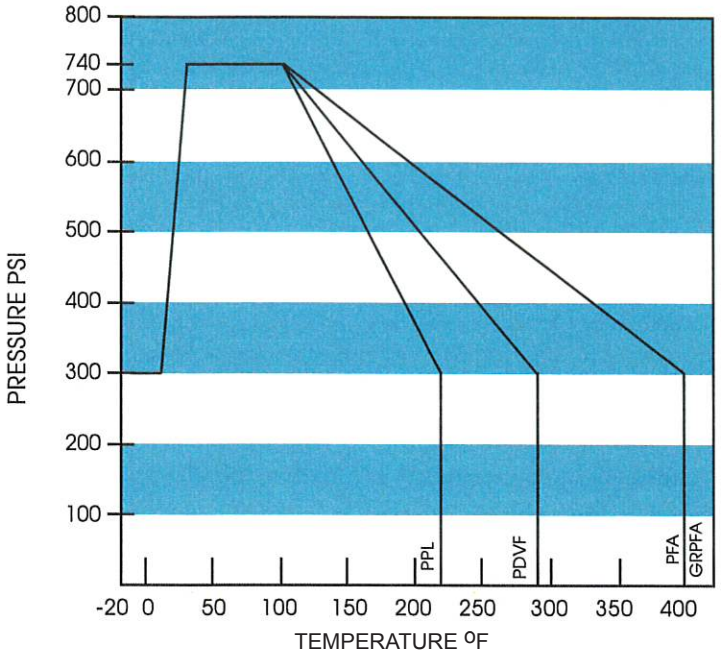
Techincal Description

Pressure Class: ANSI Cl 300
(DIN Std. Optional)
Size Rance: 1" to 6" (25mm-150mm)
End Connection: Raised face flanged
Liner Material: PPL, PVDF, FEP, PFA, GRPFA
Liner Thickness: Minimum .125"
Rated for Full Vacuum
External Protection: Waterbased Acrylic Urethane
Other Coatings Available

Size	CV VALUE
1	38
1.5	86
2	190
3	309
4	380
6	594

Model 880S Size	Typical Cracking Pressure (psi; horizontal)	Typical Cracking Pressure (psi; flow up/check down)
1"	0.1 - 0.2	0.2 - 0.3
1.5"	0.2 - 0.3	0.5 - 0.6
2"	0.2 - 0.3	0.8 - 0.9
3"	0.4 - 0.5	1.8 - 2.2
4"	0.5 - 0.6	2.8 - 3.3
6"	0.5 - 0.6	5.0 - 6.0

PRESSURE - TEMPERATURE CURVES



MAX SERVICE TEMPERATURE	
PPL	225°F (107°C)
PVDF	275°F (135°C)
PFA	400°F (204°C)
GRPFA	400°F (204°C)

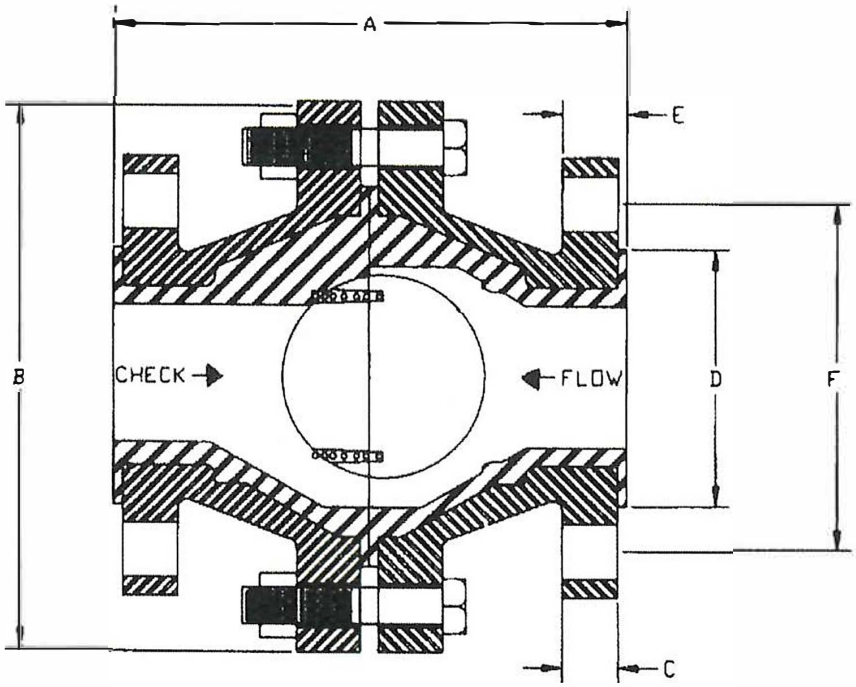
INSTALLATION RECOMMENDATIONS

1. This valve can be installed in any orientation within the piping system - vertical or horizontal and flow up or flow down.

2. For applications where the check valve is installed for use on the downstream side of a centrifugal pump, it is recommended that there is a minimum of five pipe diameters of straight pipe run before the inlet to the check valve.

3. For applications in lines that are for mixing, we recommmend that the complete service condition be reviewed by the factory.

MODEL 880S-300
SPRING ASSISTED
LINED BALL CHECK VALVE



PARTS NUMBER	Nominal valve size	A	B	C Approx.	D	E Approx.	F			Approximate Weight	
							Number of Holes	Bolt Hole Diameter	Bolt Circle Diameter	VALVE	BALL
880S-300	1"	6.00"	5.5"	0.70"	2.25"	0.89"	4	0.75"	3.50"	Approx. 20	.17
880S-300	1.5"	8.50"	6.5"	0.88"	2.88"	1.05"	4	0.88"	4.50"	Approx. 30	.44
880S-300	2"	8.80"	7.5"	0.95"	3.63"	1.13"	8	0.75"	5.00"	Approx. 60	.87
880S-300	3"	10.00"	10.00"	1.20"	5.00"	1.32"	8	0.875"	6.63"	Approx. 80	2.44
880S-300	4"	11.75"	11.75"	1.50"	6.19"	1.50"	8	0.875"	7.875"	Approx. 110	5.84
880S-300	6"	16.63"	17.38"	1.44"	8.50"	1.75"	12	0.875"	10.63"	Approx. 250	18.9

Tolerances: A and B = ±0.125" - All Others = 0.063

website: www.chemvalve.com

27850 Commercial Park Drive
Tomball, Texas 77375

PH: (281) 357-0101
(800) 879-3720
email: sales@chemvalve.com