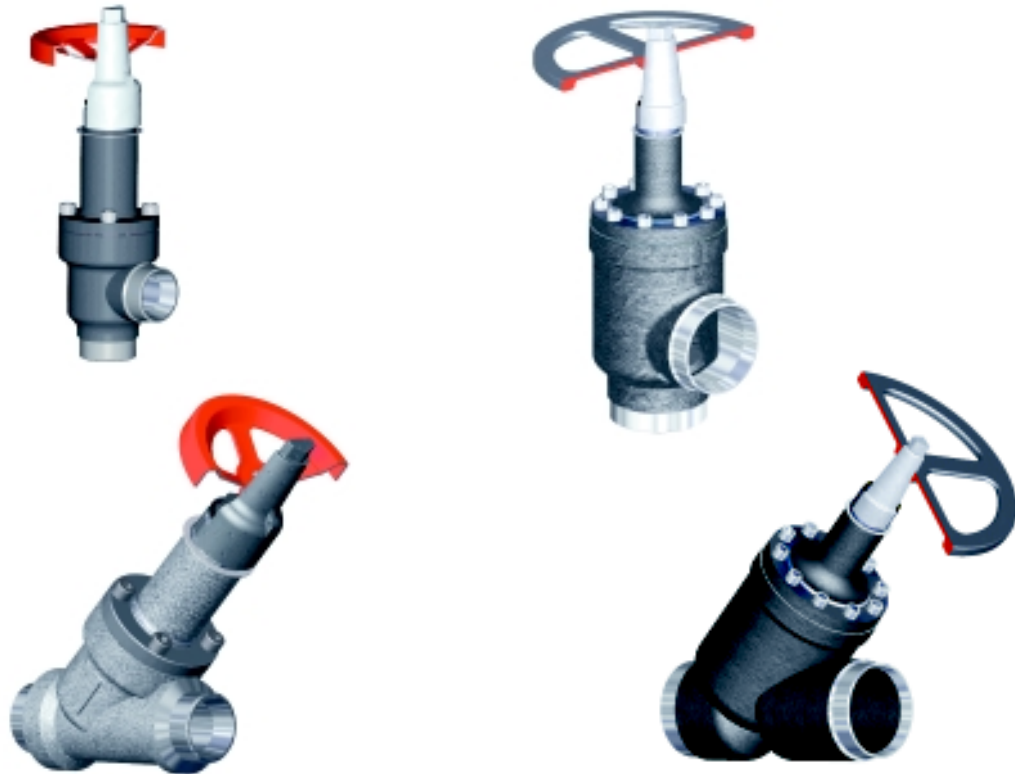




E160-800 SED/APR 99
FILE: EQUIPMENT MANUAL - SECTION 160
REPLACES: NOTHING (NEW INFORMATION)
DISTRIBUTION: 1, 1a, 1b, 1c, 4, 4b, 4c

Refrigerant Valves

Technical Data



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SPECIFICATIONS

Introduction

The design of the York Refrigeration Group hand shutoff valves is based on many years of experience, and an on-going product development ensures that the range of valves is continuously expanded and improved to keep its position as the quality benchmark at the industrial refrigeration industry.

Refrigerants

The valve series is applicable for all refrigerants and associated lubricants.

- Natural refrigerants R-717 and R-744 (carbon dioxide)
- Hydrocarbon refrigerants
- Fluorinated refrigerants, including newly developed ones such as R-410A

Reliability of Performance

Each valve part is carefully inspected ahead of assembling, and each valve assembly is for safety reasons pressure tested at a minimum of 1.5 times the DWP (Design Working Pressure). Finally each valve assembly is leakage tested at the designated DWP.

Pressure Range

The valve series is designed for a DWP of 580 psig (40 bar) over the entire temperature range.

Finite Element Modeling (FEM) was used for strength analysis.

The seal cap is designed to contain the DWP and incorporates an axial safety vent groove.

Temperature Range

As standard, the valve series is designed for applications within operating temperatures of -76 °F to 302 °F (-60 °C to 150 °C).

External Finish

As standard, the valve series is externally painted with a primer for protection against corrosion during shipment and storage. The water based primer is oxide red.

The valves are supplied with sealed connection ends. Plugs cover the bonnet fasteners.

Valve Identification

Each valve type is clearly marked with type, size and performance range.

Service and Spare Parts

The Baltimore Parts Center carries available stock of parts for the valve series.

Approvals

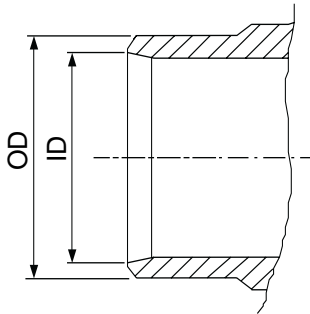
The valve series is approved by the major international classification authorities, e.q. TÜV, DNV, LR, SAQ, CRN, etc.

Standard Connections

The valve series is available with the following connections for field installation depending on the size:

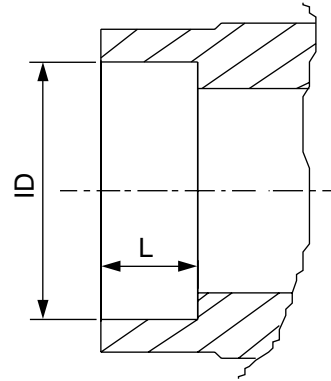
- Butt weld
- Socket weld
- Threaded end

**Butt-Weld Connection Details
ANSI B 16.10**



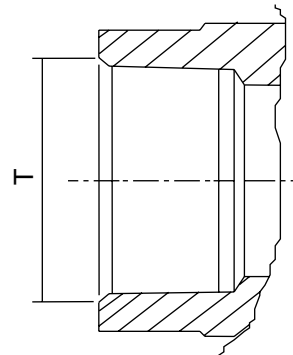
Valve size [inch]	Schedule	ID (inch)	OD (inch)
1/2"	80	0.681	0.839
3/4"	80	0.740	1.059
1"	80	0.984	1.327
1 1/4"	80	1.276	1.654
1 1/2"	80	1.496	1.902
2"	40	1.969	2.374
2 1/2"	40	2.469	2.874
3"	40	3.067	3.500
4"	40	4.028	4.500
5"	40	5.047	5.500
6"	40	6.079	6.626
8"	40	8.130	8.626

**Socket Weld Connection Details
ANSI B 16.11**



Valve size [inch]	ID (inch)	L (inch)
1/2"	0.866	0.394
3/4"	1.102	0.433
1"	1.358	0.591
1 1/4"	1.118	0.551
1 1/2"	1.969	0.630
2"	2.480	0.670

**Female Pipe Thread Connection Details
NPT, ANSI, ASME B 1.20.1**



Valve size (inch)	T (threads/inch)	Thread type
1/2"	14	NPT
3/4"	14	NPT
1"	11 1/2	NPT
1 1/4"	11 1/2	NPT
1 1/2"	11 1/2	NPT
2"	11 1/2	NPT

Installation

The valves can be installed in any position and flow direction.

When welding in the valve, it is recommended that the bonnet, seat holder (cone), and spindle be disassembled and removed. Gas welding requires disassembling of the valve and removal of the valve bonnet from the valve housing. TIG/GTAW, MIG/MAG or welding by stick electrode, SMAW,

do not require disassembling of the valve, but the valve seat must be in open position (not seated) during the welding procedure to protect the PTFE valve seat against excess heat.

Each butt-weld type valve is supplied with a tag showing the weld-in precautions as well as the necessary torque for the Allen screws at assembly.

	DN (65/80/100) = 60 Nm DN (2-1/2"/3"/4") = 44 lbft
	DN (125/150) = 140 Nm DN (5"/6") = 102 lbft DN (200) = 300 Nm DN (8") = 219 lbft

Stop Valves Type GV

Introduction

York Refrigeration Group has implemented a new standard within the industry with the 580 psig valve series. Constructed of steel bodies and bonnets, bolted together, these valves are designed for high system pressures and low operating temperatures.

The valve series comprises:

- 1/2", 3/4", 1", 1 1/4", 1 1/2", 2", 2 1/2", 3", 4", 5", 6" and 8"

Design Specifications

The valves are designed specifically for refrigeration applications within the valve design rating, utilizing:

- Natural refrigerants R717, ammonia and R744, carbon dioxide
- Hydrocarbon refrigerants
- Halocarbon refrigerants, including the newly developed fluids such as R410A

The valve sizes are available in the following styles:

- Angle style
- Globe style

The stop valves series available with either:

- Handwheel
- Seal cap trim

The valve sizes from 1/2" to 2" are available with the following connections:

- ANSI: Butt weld
- ANSI: Socket weld
- ANSI: Threaded end, FPT

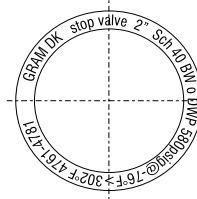
The valve sizes 2 1/2" to 8" are supplied with the following connections:

- ANSI: Butt weld

Valve Identification

The valve series is supplied with a stainless steel marking ring with engraved information for identification of the individual valve.

Sketch of Marking Ring



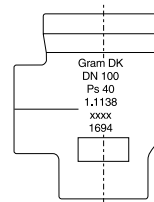
The engraved information comprises:

- Gram DK: Manufacturer - country of origin
- Stop valve: Valve type
- 2": Valve size
- Sch 40: Pipe schedule, ANSI B 16.10
- BW: Connection type, butt weld
- DWP 580 psig: Design working pressure
- @-76°F>302°F: Temperature range of operation
- 4761-4781: Internal product number

Marking of Materials

The raw steel cast material is marked as shown below for easy reference.

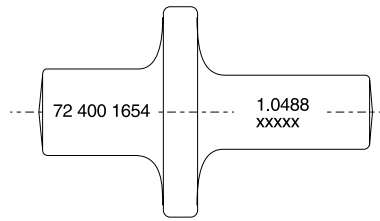
Valve Housing



The cast marking comprises:

- Gram DK: Manufacturer - country of origin
- DN 100: Valve size
- Ps 40: Design working pressure 40 bar
- 1.1138: Material
- XXXX: Charge number
- 1694: Internal product number

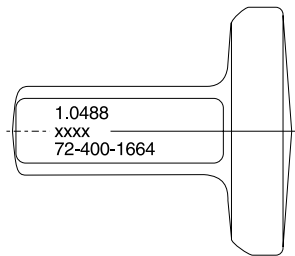
Valve Bonnet



The cast marking comprises:

- 1.0488: Material
- XXXX: Charge number
- 72 400 1654: Internal product number

Valve Cone



The cast marking comprises:

- 1.0488: Material
- XXXX: Charge number
- 72 400 1664: Internal product number

Gaskets

The valves are equipped with captive gaskets and seals. The valves have been machined to captivate gaskets and seals so that upon disassembly, these items will not be lost.

All gaskets are non-asbestos.

The bonnet gasket is specially designed to handle sealing against the high DWP while also providing exterior protection for the bonnet fasteners by extending to the outer edge of the valve.

Seats

Seats are made from superior carbon reinforced PTFE material. These provide better sealing, have longer life and are environmentally friendly. The seats are lead-free to eliminate toxic contamination of process food and service personnel.

The seats disc provides positive shutoff by self-aligning into a conical tapered valve seat. This also increases flow and prevents

contaminant accumulation. The disc is fully backed by the forged steel disc holder to provide even force while tightening.

A patented cone design prevents rotation as the valve is opened or closed (no internal balls needed to comply with seating regulations).

For maximum flow, the disc lifts to 70% of the branch connection. The resulting low pressure drop improves system efficiency.

A back seat fully seals against DWP for safe stem seal field service.

To prevent dirt and moisture from entering at the top of the spindle, an O-ring is installed.

Bonnet

The extended bonnet design provides adequate length for insulation. It also permits the marking ring to be visible for easy valve identification.

Spindle

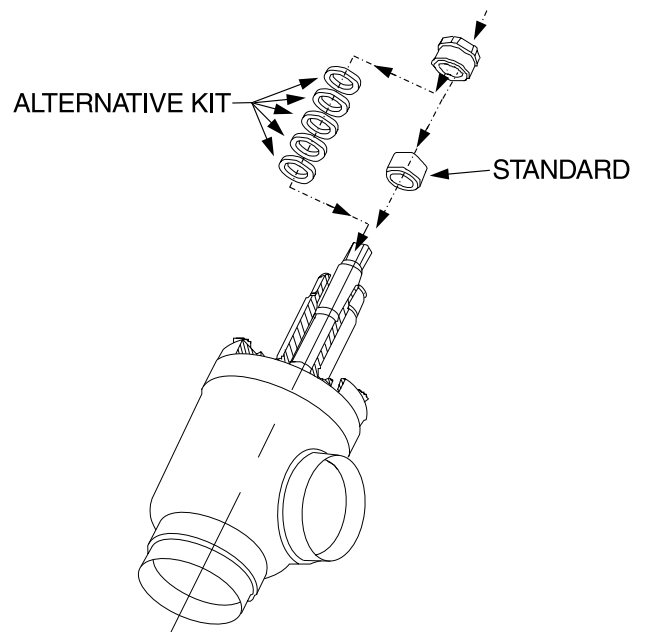
The spindle is made from high strength stainless steel to provide maximum corrosion resistance and durability.

Trapezoidal threads provide high strength with excellent tolerance to dirt.

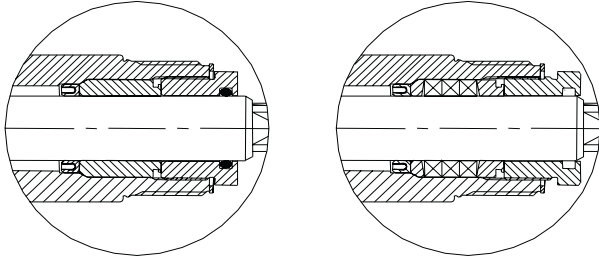
The rising spindle provides visual indication of relative disc position.

Spindle Sealing Principles

As standard, all hand valves are supplied with a stuffing box consisting of a spring loaded U-sleeve PTFE type spindle seal, a bushing and a packing screw containing an O-ring, as shown below. The O-ring is intended only to protect the spindle and the seal from penetration by external contamination.



As an alternative to the standard spindle sealing principles, the bushing may be replaced by a graphite type stuffing box as shown. This spindle seal assembly is available for each size valve as a spare part kit.



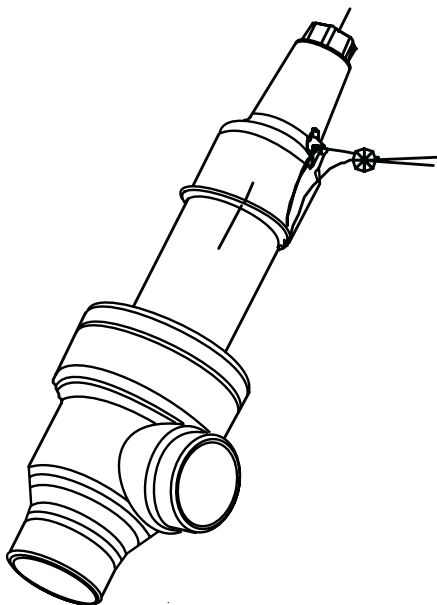
Standard spindle seal

Alternative spindle seal

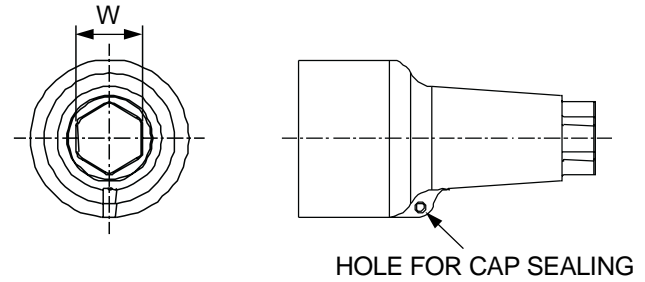
The spring loaded U-sleeve, bushing or stainless steel packing kit, packing screw and O-ring combine for the industry's best leak-free stem seal design.

Cap Safety Sealing

All hand valves supplied with seal cap trim may be sealed for security reasons to avoid unintended adjustments. By use of a wire, applied through the hole on the side of the seal cap and the hole in the marking ring, a lead seal can be used.

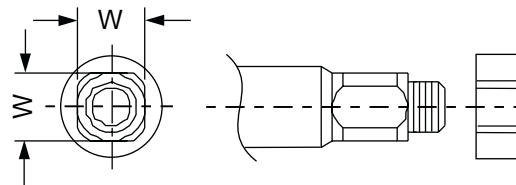


Tools



Seal Caps

Valve size (inch)	Keywidth W (mm)
1/2"	19
3/4"	19
1"	20
1 1/4"	20
1 1/2"	20
2"	20
2 1/2"	24
3"	24
4"	32
5"	36
6"	36
8"	50

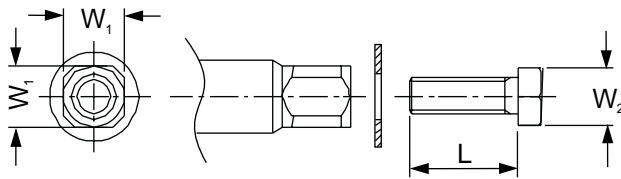
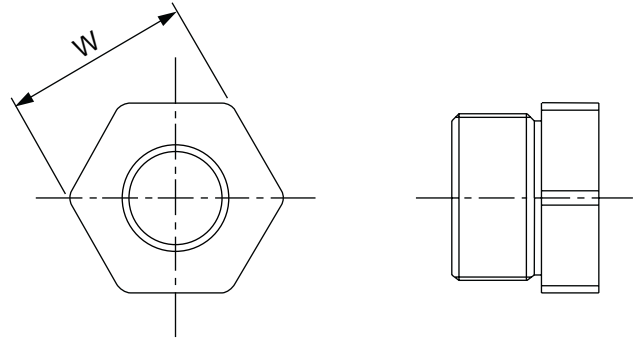


Spindle Drives, 1/2" to 2"

Valve size (inch)	Key width W (mm)
1/2"	7.8
3/4"	7.8
1"	10.8
1 1/4"	10.8
1 1/2"	10.8
2"	10.8

Spindle Drives, 2 1/2" to 8"

Valve size (inch)	Key width W_1 (mm)
2 1/2"	14
3"	14
4"	18
5"	24
6"	24
8"	28

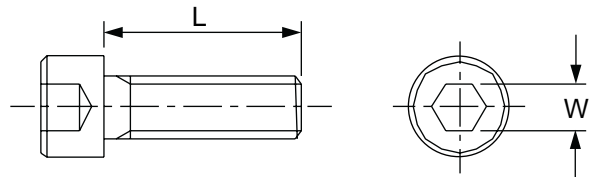


Hexagon Screws and Washers

Valve size (inch)	Washer size (mm)	Thread type (mm)	Length L (mm)	Key width W_2 (mm)
2 1/2"	8	M8	16	13
3"	8	M8	16	13
4"	12	M12	25	19
5"	16	M16	30	24
6"	16	M16	30	24
8"	16	M16	30	24

Packing Screws

Valve size (inch)	Key width W (mm)
1/2"	19
3/4"	19
1"	27
1 1/4"	27
1 1/2"	27
2"	27
2 1/2"	36
3"	36
4"	41
5"	46
6"	46
8"	60



Bonnet (Allen) Screws

Valve size (inch)	Qty	Thread L (mm)	Length W (mm)	Key width (mm)
1/2"	4	M6	20	5
3/4"	4	M6	20	5
1"	4	M8	25	6
1 1/4"	4	M8	25	6
1 1/2"	6	M8	25	6
2"	6	M8	25	6
2 1/2"	6	M12	35	10
3"	8	M12	35	10
4"	10	M12	35	10
5"	8	M16	45	14
6"	10	M16	45	14
8"	12	M20	60	17

Survey of Executions

Valve size (inch)	Valve style		Butt weld		Socket weld		Screw end	
	Angle	Globe	Handwheel	Seal cap	Handwheel	Seal cap	Handwheel	Seal cap
1/2"	+	+	+	+	+	+	+	+
3/4"	+	+	+	+	+	+	+	+
1"	+	+	+	+	+	+	+	+
1 1/4"	+	+	+	+	+	+	+	+
1 1/2"	+	+	+	+	+	+	+	+
2"	+	+	+	+	+	+	+	+
2 1/2"	+	+	+	+	N/A	N/A	N/A	N/A
3"	+	+	+	+	N/A	N/A	N/A	N/A
4"	+	+	+	+	N/A	N/A	N/A	N/A
5"	+	+	+	+	N/A	N/A	N/A	N/A
6"	+	+	+	+	N/A	N/A	N/A	N/A
8"	+	+	+	+	N/A	N/A	N/A	N/A

Capacity Ratings

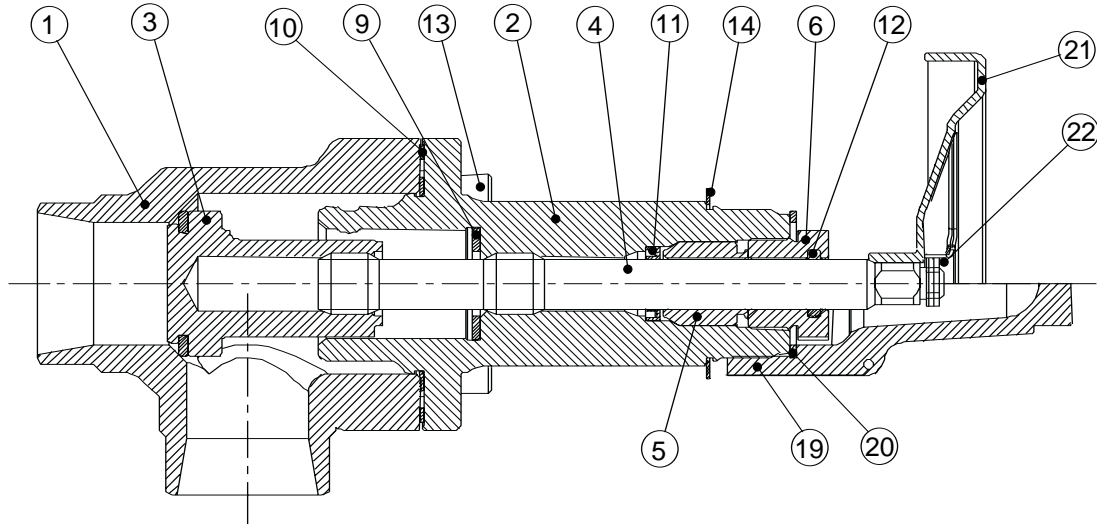
Type	DWP (psig)	C _v (GPM)	Rated liquid capacities, (TR)			Rated suction gas capacities, (TR)		
			R717	R22	R134a	R717	R22	R134a
1/2"	580	6.4	150	35	25	10	5	5
3/4"	580	12.3	290	60	50	20	10	5
1"	580	21.6	508	108	82	32	12	8
1 1/4"	580	35	824	174	133	52	20	13
1 1/2"	580	57	1,340	285	217	85	32	22
2"	580	82	1,920	407	310	138	46	31
2 1/2"	580	170	3,980	845	645	250	95	65
3"	580	239	5,605	1,190	905	355	140	95
4"	580	412	9,675	2,055	1,570	615	245	160
5"	580	632	4,325	3,155	2,405	935	355	245
6"	580	936	6,360	4,645	3,540	1,380	525	355
8"	580	1,619	10,980	8,035	6,125	2,385	910	610

Note: C_v is the flow of water through the valve measured in US-gallons/min at a pressure drop of 1 psig.

Capacities are indicated at evaporating temperature = 14°F, condensing temperature = 77°F, and Dp = 1.45 psig.

Specification of Materials

1/2", 3/4", 1", 1 1/4", 1 1/2" and 2"



Survey of Materials

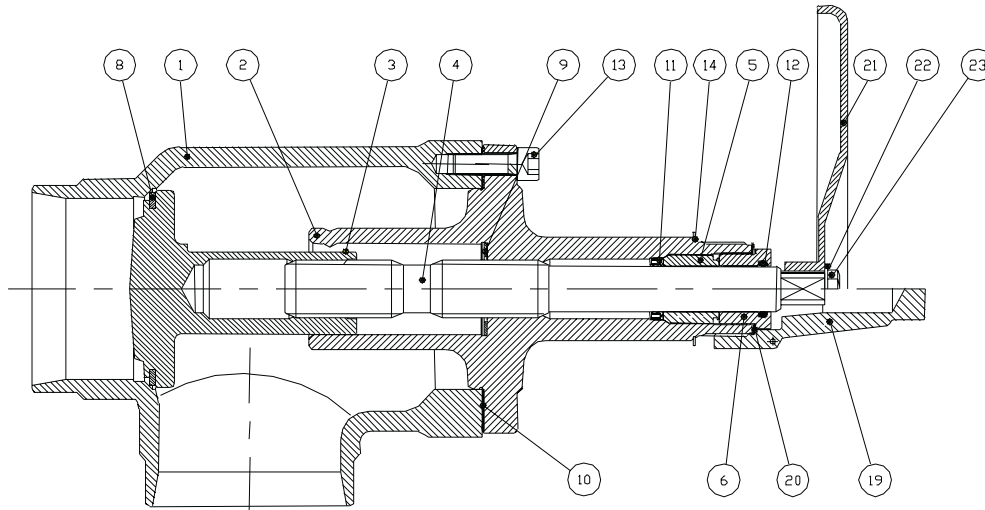
Item	Part name	Material	DIN	EN	ISO	ASTM compliance
1	Body	TSTE 285 *	17.103	10028-3		A350
2	Bonnet	TSTE 285 *	17.103	10028-3		A350
3	Cone	TSTE 285 *	17.103	10028-3		A350
4	Spindle	X5CrNi 1810 +	17.440	10088	683/13 Type11	AISI 304
5	Bushing	GG25	1.691		185 grade 250	A48 Class 40B
6	Packing screw	X5CrNi 1810 +	17.440	10088	683/13 Type11	AISI 304
8	Seat	PTFE with graphite				
9	Back seat	PTFE with graphite				
10	Gasket	Non-asbestos				
11	U-sleeve	PTFE				
12	O-ring	Neoprene				
13	Screw	A4-70 +	267-13		898	
14	Marking ring	Stainless steel				
19	Cap	Al Si 10 Mg	1.725			CSA 17510 S12N
20	Seal	PTFE				
21	Handwheel	Steel				
22	Nut	X5CrNi 1810 +	17.440	10088	683/13 Type11	AISI 304

* Forged Steel

+ Stainless Steel

Specification of Materials

2 1/2", 3", 4", 5", 6" and 8"



Survey of Materials

Item	Part name	Material	DIN	EN	ISO	ASTM compliance
1	Body	GS-C 25N/GS-21Mn5 #	17.245/SEW 685	10213-2/10213-3		A216-WCB/A352-LCB
2	Bonnet	TSTE 285 *	17.103	10028-3		A350
3	Cone	TSTE 285 *	17.103	10028-3		A350
4	Spindle	X5CrNi 1810 +	17.440	10088	683/13 Type11	AISI 304
5	Bushing	GG25	1.691		185 grade 250	A48 Class 40B
6	Packing screw	X5CrNi 1810 +	17.440	10088	683/13 Type11	AISI 304
8	Seat	PTFE with graphite				
9	Back seat	PTFE with graphite				
10	Gasket	Non-asbestos				
11	U-sleeve	PTFE				
12	O-ring	Neoprene				
13	Screw	A4-70 +	267-13		898	
14	Marking ring	Stainless steel				
19	Cap	Al Si 10 Mg	1.725			CSA 17510 S12N
20	Seal	PTFE				
21	Handwheel	Steel				
22	Washer	Steel				
23	Screw	A4-70 +	267-11		898	

Cast Steel

* Forged Steel

+ Stainless Steel

Dimensions, Angle Valves

Butt Weld, Socket Weld and Threaded End Executions

	Size	A	B	C	D	E	F	G	Weight
	(inch)	(inch)	(inch)	(inch)	(inch)	(inch)	(inch)	(inch)	(lb)
	1/2	1.6	3.6	8.5	8.9	2.5	2.1	3.2	3.1
	3/4	1.6	3.6	8.5	8.9	2.5	2.1	3.2	3.1
	1	2.2	4.4	9.9	10.8	2.6	2.8	4.8	6.2
	1 1/4	2.2	4.4	10.3	10.8	2.6	3.0	4.8	7.1
	1 1/2	2.8	5.4	11.6	12.1	3.0	3.4	4.8	8.8
	2	2.8	5.7	11.9	12.4	2.9	4.1	4.8	11.0
	2 1/2	3.8	8.1	14.8	16.0	3.4	5.0	8.9	28.6
	3	3.8	8.7	16.0	16.4	3.4	5.6	8.9	35.0
	4	4.8	10.7	19.1	19.3	3.6	6.4	11.9	55.0
	5	5.6	12.8	22.3	23.1	3.6	8.3	15.8	90.0
	6	7.1	15.4	25.4	26.0	4.0	9.1	15.8	132.0
	8	9.9	19.7	34.3	35.5	6.0	12.6	19.7	264.0

Dimension "C" is with valve in open position

Dimensions, Globe Valves

Butt Weld, Socket Weld and Threaded End Executions

	Size	A	B	C	D	E	F	G	H	Weight
	(inch)	(inch)	(inch)	(inch)	(inch)	(inch)	(inch)	(inch)	(inch)	(lb)
	1/2	4.8	7.4	5.9	6.5	2.5	2.1	3.2	8.1	3.8
	3/4	4.8	7.4	5.9	6.5	2.5	2.1	3.2	8.1	3.8
	1	5.4	8.7	7.1	7.8	2.6	2.8	4.8	9.5	7.5
	1 1/4	6.0	9.1	7.3	8.3	2.6	3.0	4.8	10.1	9.3
	1 1/2	6.3	9.4	7.9	8.7	3.0	3.4	4.8	10.3	11.0
	2	7.1	10.1	8.4	9.1	2.9	4.1	4.8	11.1	15.2
	2 1/2	9.1	12.6	10.5	13.0	3.2	5.0	8.9	15.2	28.2
	3	10.3	13.6	11.1	13.2	3.2	5.6	8.9	15.8	36.0
	4	12.2	16.0	13.2	16.8	3.6	6.4	11.9	19.5	58.0
	5	15.0	19.1	15.8	19.3	3.6	8.3	15.8	22.5	105.0
	6	16.6	20.7	17.0	20.9	4.0	9.1	15.8	24.5	137.0
	8	21.3	28.0	23.1	28.4	6.0	12.6	19.7	33.1	286.0

Dimension "D" is with valve in open position



YORK Refrigeration
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