

WKM 320T

Threaded floating ball valves

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WKM 320T Threaded Floating Ball Valves

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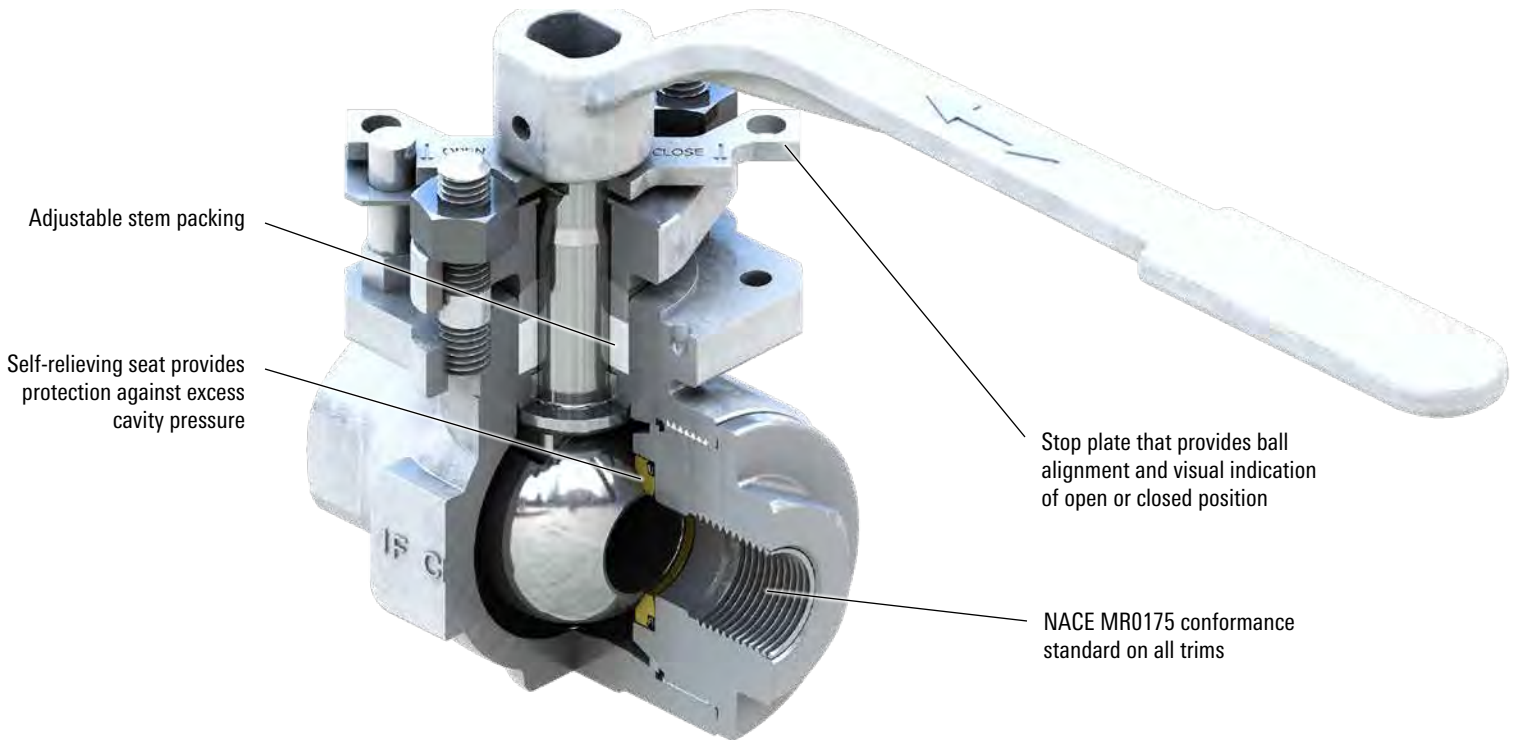
Features and Benefits

The handle can be correctly installed only in alignment with the ball port. The valve is open when the handle is aligned with piping and is closed when the handle is perpendicular to piping.

ASME Classes 600 and 1500

1/2-in full port through 3-in reduced port

NACE MR0175/ISO 15156



WKM 320T* threaded end floating ball valves satisfy a wide range of applications. Available in a variety of standard and optional materials, the valves are engineered for heavy-duty, maintenance-free performance and serve a variety of applications in virtually any industry.

Refining

The WKM 320T ball valve is ideal for the refining industry. The many seats, seals, and trims available offer the versatility to handle the wide variety of products used in the refining process.

Low-temperature service

Standard trims accommodate temperatures to -20 degF [-29 degC], and temperature trims are available to -50 degF [-46 degC].

Maintenance-free performance

Under most conditions, the WKM 320T ball valve will provide years of trouble-free service with no maintenance required. In some severe applications, such as handling extremely abrasive slurries at high temperature, it may be necessary to replace the seats occasionally. Seat and seal kits are available, and replacement can be done easily with ordinary tools.

Sour oil and gas service

WKM* valves have served for years in gathering lines, manifolds, and field processing units in sour oil and gas fields. All trim combinations conform with NACE MR0175/ISO 15156.

Features and Benefits

Self-relieving seats

A patent-pending seat design provides automatic cavity relief without requiring a vented ball or external relief valve. API Spec 6D monogram is available upon request.

Actuation friendly

A variety of actuator types, including pneumatic, hydraulic, diaphragm, vane, electromechanical, and electrohydraulic, can be easily installed.

Fire tested for safety

All WKM 320T ball valves are qualified under API Standard 607 7th Ed. The seat and locked-in stem design contributes to its fire-tested characteristics. Should the soft seats be destroyed by fire, the ball floats downstream, providing a tight metal-to-metal seal against the lip of the seat pocket. If the tailpiece seals are destroyed, the metal-to-metal tailpiece-to-body connection retards external leakage.

Adjustable, replaceable packing

The inline valve stem packing options consist of PTFE and graphite. The packing is field adjustable and virtually never requires lubrication.

Fugitive emissions

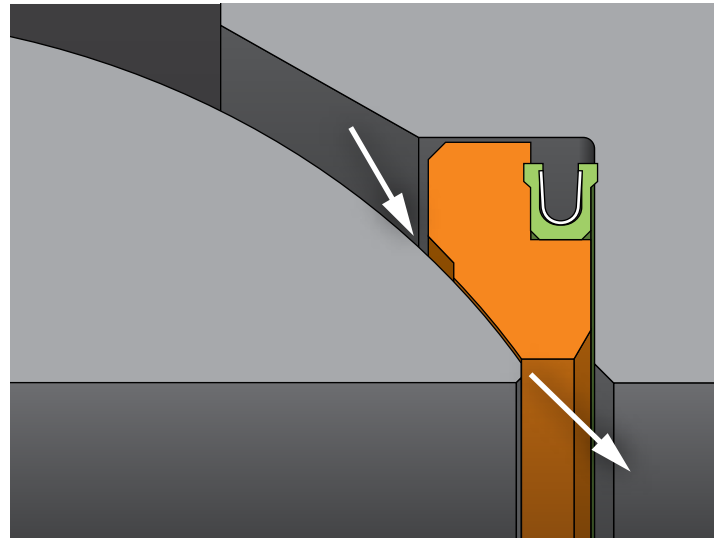
WKM 320T ball valves can be supplied and certified to meet the requirements of fugitive emissions (FE) as regulated by ISO and API.

Positively retained stem

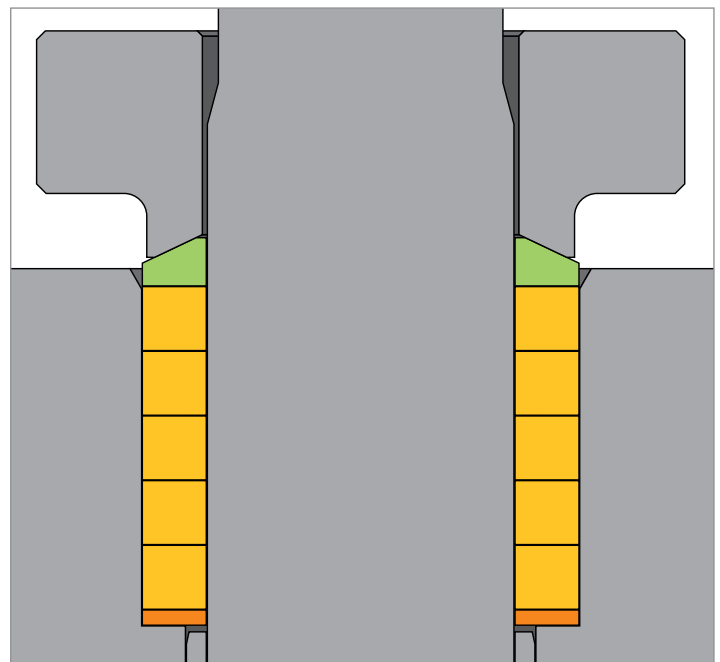
The stem is positively retained and cannot be removed with the valve in service.

Tight-sealing floating ball design

The ground, polished ball is free to float and mates perfectly with the conical seats for a positive, leak-proof seal. Self-cleaning and self-adjusting, the ball also is pressure activated—the higher the line pressure, the tighter the seal.



Seat that relieves excess cavity pressure to the upstream side of the valve.



Fugitive-emissions packing arrangement.

Specifications

ASME Classes 600 and 1500

Operating temperatures

- From -50 to 500 degF [-46 to 260 degC]

Standard material

- Body
 - Carbon steel and stainless steel
- Ball and stem
 - Carbon steel and stainless steel

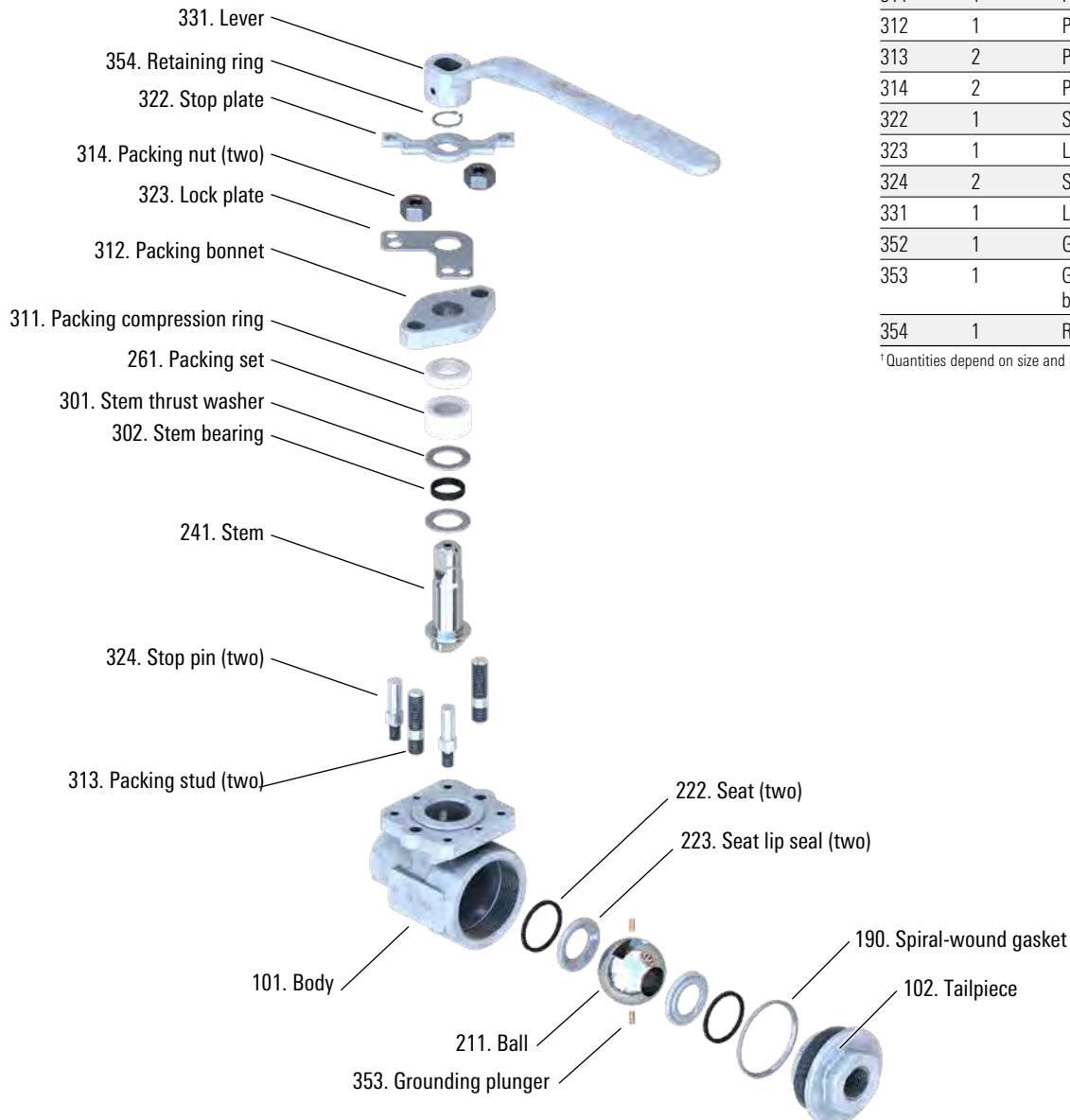
Industry compliance

- American Society of Mechanical Engineers (ASME) Standards B16.5 and B16.34
- Manufacturers Standardization Society Specifications MSS SP-25, 55, and 72
- API Spec 607 7th Ed. fire-test specification
- Canadian Registration Number (CRN)
- API Spec 608
- NACE MR0175
- ANSI Standard B16.34
- API Spec 6D upon request
- ISO or API fugitive emissions upon request
- European Pressure Equipment Directive (PED/CE) available upon request

Bill of Materials

Part No.	Quantity	Description
101	1	Body
102	1	Tailpiece
151	- [†]	Body stud
152	- [†]	Body nut
190	1	Socket-weld (SW) gasket, body to tail
211	1	Ball
222	2	Seat
223	2	Seat lip seal
241	1	Stem
261	1	Packing set (PTFE or graphite)
301	2	Stem thrust washer
302	1	Stem bearing
311	1	Packing compression ring
312	1	Packing bonnet
313	2	Packing stud
314	2	Packing nut
322	1	Stop plate
323	1	Lock plate
324	2	Stop pin
331	1	Lever
352	1	Ground spring, stem to ball [†]
353	1	Grounding plunger, ball to body
354	1	Retaining ring

[†]Quantities depend on size and pressure class..



Materials List

Body Group Trim Number

Part	Carbon Steel (NACE) 24	Carbon Steel for Low Temperature (NACE) 37	Stainless Steel (NACE) 23	Carbon Steel with Coating (NACE) 26
Body	A216 Grade wrought carbon (WCC)	A352 Grade low-temperature wrought carbon (LCC)	A351 Grade CF8M	A216 Grade WCC, ZPEX® coating
Tailpiece	A216 Grade WCC	A352 Grade LCC	A351 Grade CF8M	A216 Grade WCC, ZPEX coating
Bonnet cap	Low alloy carbon steel (CS) zinc plated	Low alloy CS zinc plated	Low alloy CS zinc plated	Low alloy CS zinc plated
Packing studs	A320 Grade L7M zinc plated	A320 Grade L7M zinc plated	A320 Grade L7M zinc plated	A320 Grade L7M zinc plated
Packing nuts	A194 Grade L7M zinc plated	A194 Grade L7M zinc plated	A194 Grade L7M zinc plated	A194 Grade L7M zinc plated

NACE indicates compliance with NACE MR0175/ISO 15156.

† ZPEX coating on studs and nuts available on request.

Internal Group Trim Number

Ball	A105 CS ENP	—†	A351 CF8M or 316 SS	A105 CS ENP
Stem	A105 CS ENP	—†	316 stainless steel (SS)	A105 CS ENP
Ground spring	INCONEL® material	—†	INCONEL	INCONEL
Compression ring	316 SS	—†	316 SS	316 SS
Thrust washer	CS and TFE	—†	SS and TFE	CS and TFE

† Low-temperature model requires 23 stainless internal group.

Seal Group Trim Code

Part	LTF	TTF	CGF	PGF
Temperature limits	–20 to 220 degF [–29 to 104 degC]	–50 to 400 degF [–46 to 204 degC]	–50 to 500 degF [–46 to 260 degC]	–50 to 450 degF [–46 to 232 degC]
Seat	Delrin® material	Filled PTFE	High-performance PTFE	PEEK
Packing	PTFE	PTFE	Graphite	Graphite
Body seal	Spiral-wound gasket Grafoil® and SS	Spiral-wound gasket Grafoil and SS	Spiral-wound gasket Grafoil and SS	Spiral-wound gasket Grafoil and SS

Actuator Trim Codes

Actuator Codes (Wrenches)

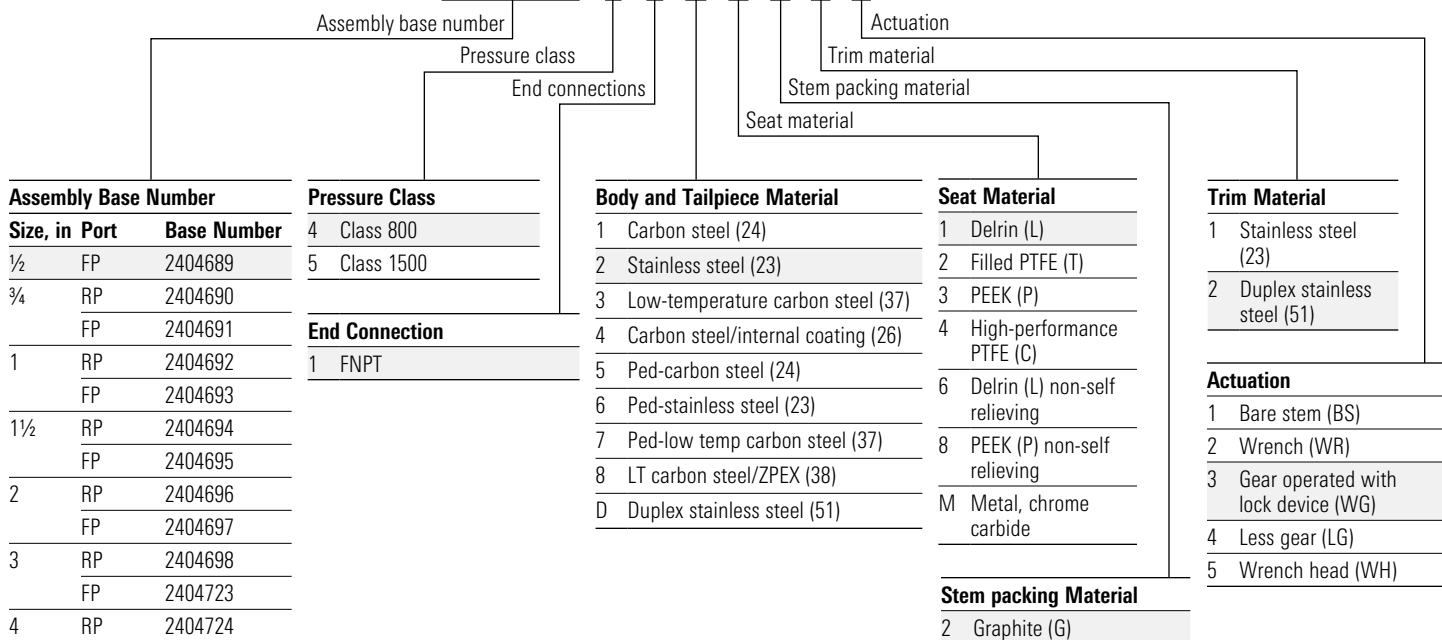
Part (Body)	Wrench—For All Body Material Codes
Wrench head	Steel
Wrench handle	Carbon steel
Wrench handle pin	Carbon steel
Capscrew	Alloy steel
Stop plate	Carbon steel

How to Order

Threaded (two-piece cast)

Example

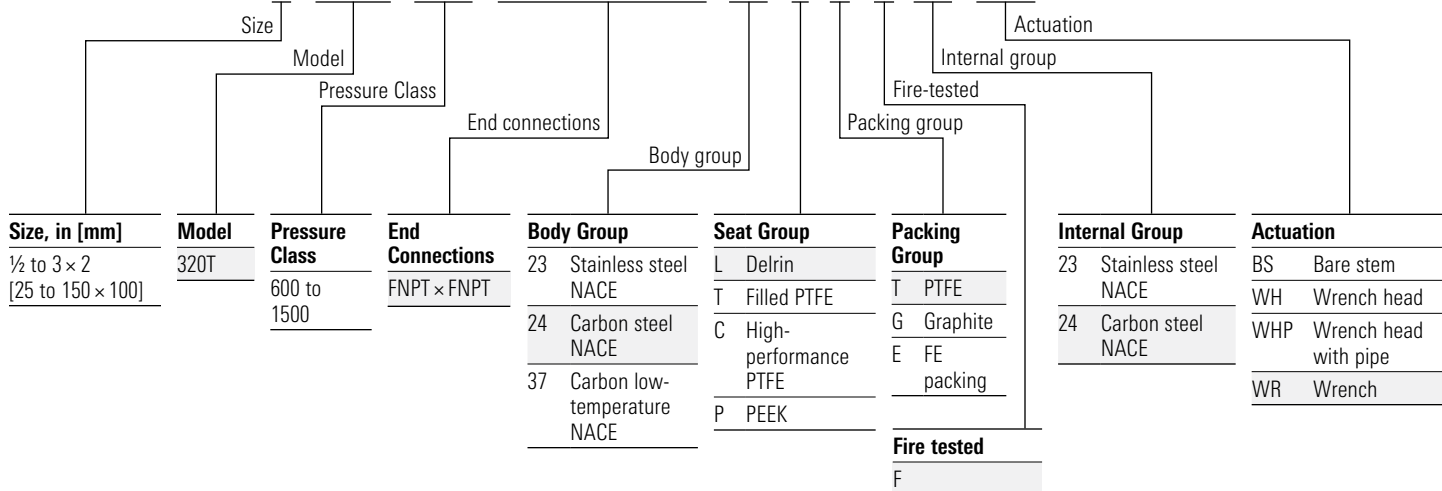
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Trim Codes

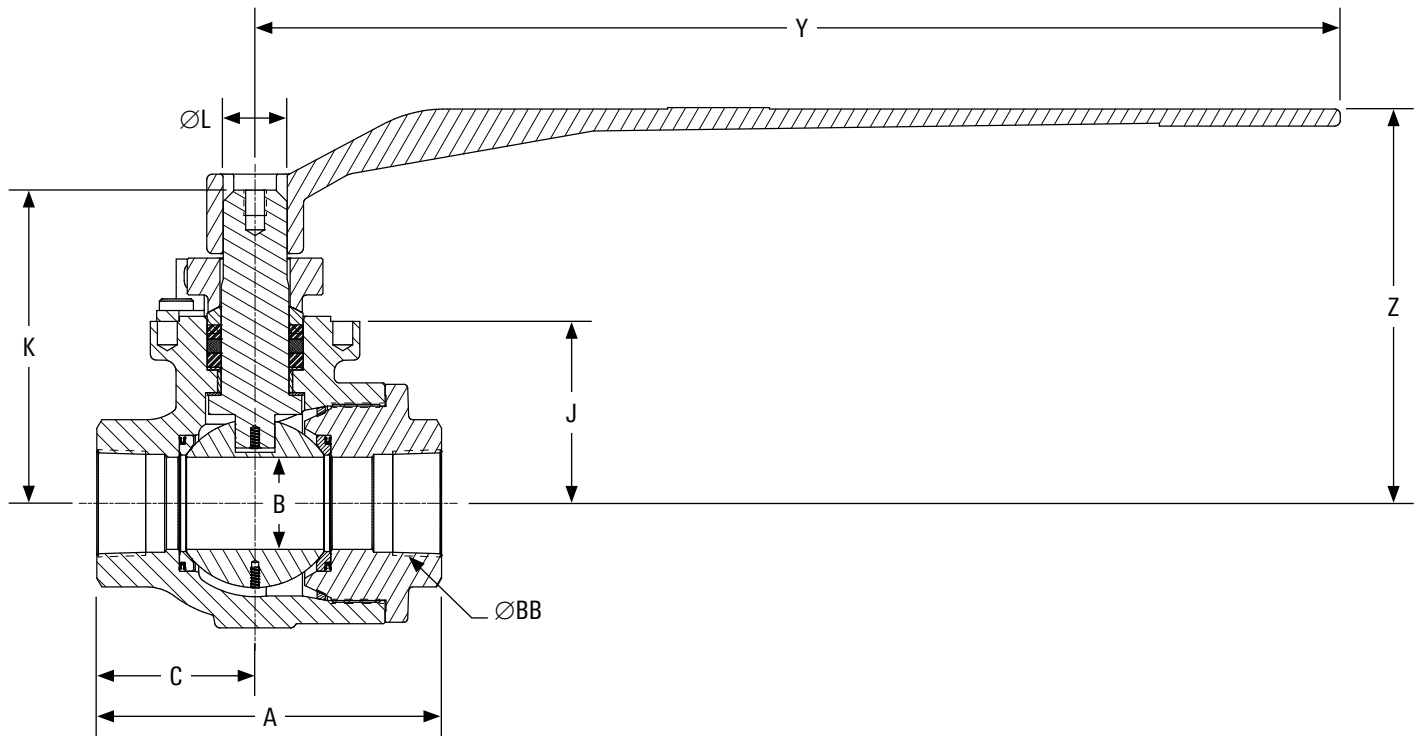
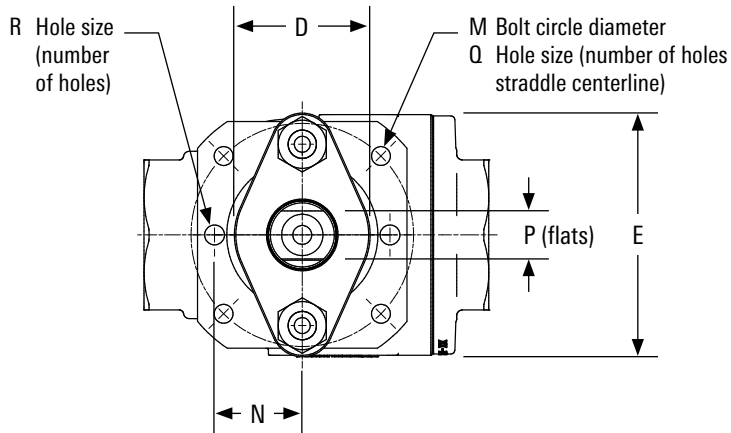
Example

1 320T 800 FNPT x FNPT 24 L T F 24 WR



Dimensional Data— $\frac{1}{2}$ -in Full Port Through 3 in \times 2 in Reduced Port

$\frac{1}{2}$ -in full port through 3-in reduced port
ASME Classes 800 and 1500



Dimensions

WKM 320T Valve Dimensions

Size, in [mm]	A F × F	B	BB	C	D	E	J	JJ	K	L	M	MM	N	NN	P	Q	QQ	R	RR	C2	Y	Z
½ [13]	4 [102]	0.51 [13]	½-14 NPT	1.75 [44.5]	1.25 [31.8]	2.66 [67.6]	1.45 [36.9]	—	2.80 [71]	0.55 [13.9]	2.13 [54]	—	0.81 [20.6]	—	0.43 [10.9]	0.25-20 (4) 0.44 dp	—	0.187-(2) 0.31 dp	—	2.25 [57.2]	8 [203]	3.79 [96.3]
¾ × ½ [19 × 13]	4 [102]	0.51 [13]	¾-14 NPT	1.75 [44.5]	1.25 [31.8]	2.66 [67.6]	1.45 [36.9]	—	2.80 [71]	0.55 [13.9]	2.13 [54]	—	0.81 [20.6]	—	0.43 [10.9]	0.25-20 (4) 0.44 dp	—	0.187-(2) 0.31 dp	—	2.25 [57.2]	8 [203]	3.79 [96.3]
¾ [19]	4.1 [104]	0.76 [19.3]	¾-14 NPT	1.75 [44.5]	1.76 [44.7]	3.37 [85.6]	2.01 [51.1]	4.70 [120]	3.62 [91.8]	0.71 [17.9]	2.76 [70]	2.76 [70]	1.21 [30.7]	1.21 [30.7]	0.53 [13.9]	0.25-20 (4) 0.38 dp	0.28 (4) thru	0.187-(2) 0.31 dp	0.187-(2) 0.38 dp	2.35 [59.7]	10 [254]	4.81 [122]
1 × ¾ [25 × 19]	4.5 [114]	0.76 [19.3]	1-11.5 NPT	2.15 [54.6]	1.76 [44.7]	3.37 [85.6]	2.00 [51.1]	4.70 [120]	3.62 [91.8]	0.71 [17.9]	2.76 [70]	2.76 [70]	1.21 [30.7]	1.21 [30.7]	0.53 [13.9]	0.25-20 (4) 0.38 dp	0.28 (4) thru	0.187-(2) 0.31 dp	0.187-(2) 0.38 dp	2.35 [59.7]	10 [254]	4.81 [122]
1 [25]	5.13 [130]	1.01 [25.7]	1-11.5 NPT	2.5 [63.5]	2.24 [56.9]	3.88 [98.6]	2.40 [68.2]	5.70 [145]	4.46 [113]	0.86 [21.9]	3.38 [85.7]	2.76 [70]	1.38 [34.9]	1.38 [34.9]	0.67 [16.9]	0.38-16 (4) 0.50 dp	0.28 (4) thru	0.250-(2) 0.31 dp	0.250-(2) 0.38 dp	2.63 [66.8]	12 [305]	5.88 [149]
1½ × 1 [38 × 25]	5.75 [146]	1.01 [25.7]	1½-11.5 NPT	2.88 [73]	2.24 [56.9]	3.88 [98.6]	2.40 [68.2]	5.70 [145]	4.46 [113]	0.86 [21.9]	3.38 [85.7]	2.76 [70]	1.38 [34.9]	1.38 [34.9]	0.67 [16.9]	0.38-16 (4) 0.50 dp	0.28 (4) thru	0.250-(2) 0.31 dp	0.250-(2) 0.38 dp	2.87 [72.9]	12 [305]	5.88 [149]
1½ [38]	6 [152]	1.51 [38.4]	1½-11.5 NPT	2.83 [71.9]	2.5 [63.5]	4.38 [111]	2.92 [74.1]	6.42 [163]	5.16 [131]	1.10 [27.9]	4.02 [102]	4.02 [102]	1.63 [41.3]	1.63 [41.3]	0.86 [21.9]	0.38-16 (4) 0.63 dp	0.44 (4) thru	0.312-(2) 0.38 dp	0.312-(2) 0.53 dp	3.17 [80.5]	16 [406]	6.47 [164]
2 × 1½ [50 × 38]	6.25 [159]	1.51 [38.4]	2-11.5 NPT	2.96 [75.1]	2.5 [63.5]	4.38 [111]	2.92 [74.1]	6.42 [163]	5.16 [131]	1.10 [27.9]	4.02 [102]	4.02 [102]	1.63 [41.3]	1.63 [41.3]	0.86 [21.9]	0.38-16 (4) 0.63 dp	0.44 (4) thru	0.312-(2) 0.38 dp	0.312-(2) 0.53 dp	3.29 [83.6]	16 [406]	6.47 [164]
2 [50]	7.63 [194]	2.03 [51.6]	2-11.5 NPT	3.5 [83.9]	3 [76.2]	5.38 [137]	4.01 [102]	8.64 [219]	6.91 [175]	1.41 [35.89]	4.92 [125]	4.92 [125]	1.94 [49.3]	1.94 [49.3]	1.06 [26.9]	0.50-13 (4) 0.75 dp	0.56 (4) thru	0.438-(2) 0.63 dp	0.438-(2) 0.63 dp	4.13 [105]	24 [610]	8.10 [206]
3 × 2 [80 × 50]	9.75 [248]	2.03 [51.6]	3-8 NPT	4.5 [114]	3 [76.2]	5.38 [137]	4.01 [102]	8.64 [219]	6.91 [175]	1.41 [35.9]	4.92 [125]	4.92 [125]	1.94 [49.3]	1.94 [49.3]	1.06 [26.9]	0.50-13 (4) 0.75 dp	0.56 (4) thru	0.438-(2) 0.63 dp	0.438-(2) 0.63 dp	5.25 [133]	24 [610]	8.10 [206]
3 [80]	9.00 [229]	3.03 [77]	3-8 NPT	4.5 [114]	3 [76.2]	5.38 [137]	5.14 [104]	9.76 [248]	8.57 [218]	1.41 [35.9]	4.92 [125]	4.92 [125]	1.94 [49.3]	1.94 [49.3]	1.06 [26.9]	0.50-13 (4) 0.75 dp	0.56 (4) thru	0.438-(2) 0.63 dp	0.438-(2) 0.63 dp	4.5 [114]	24 [610]	9.94 [252]
4 × 3 [100 × 80]	10.50 [267]	3.03 [77]	4-8 NPT	5.25 [133]	3 [76.2]	5.38 [137]	5.14 [131]	9.76 [248]	8.57 [218]	1.41 [35.9]	4.92 [125]	4.92 [125]	1.94 [49.3]	1.94 [49.3]	1.06 [26.9]	0.50-13 (4) 0.75 dp	0.56 (4) thru	0.438-(2) 0.63 dp	0.438-(2) 0.63 dp	5.25 [133]	24 [610]	9.94 [252]

Torque Estimation and MAST

PEEK Seat with Graphite Stem Packing

Valve Port Size, in [mm]	Pressure Class	Gauge Pressure	Run Torque at Max. P, lbf.in		Break Torque at Max. P, lbf.in		MAST [†] , lbf.in
			RTFE/Delrin	PEEK	RTFE/Delrin	PEEK	
½ [12.7]	800	80–200	51	52	82	91	227.6
¾ [19.05]	800	80–200	98	102	170	190	400.8
1 [25]	600	80–200	204	210	342	381	881.0
1½ [38.1]	600	80–200	441	457	853	969	1,548.5
2 [50]	600	80–200	747	781	1,622	1,867	3,290.4
3 [80]	600	80–200	1,601	1,694	4,189	4,912	6,943.6

[†] Maximum allowable stem torque (MAST).

Weights

Valve Size, in [mm]	Weight, lbm [kg]	
	1500 Wrench	1500 Bare Stem
½ [13]	4.7 [2.1]	4.1 [1.9]
¾ × ½ [19 × 13]	4.6 [2.1]	4.0 [1.8]
¾ [19]	7.7 [3.5]	6.6 [3]
1 × ¾ [25 × 19]	8.1 [3.7]	7.0 [3.2]
1 [25]	13.4 [6.1]	11.5 [5.2]
1½ × 1 [38 × 25]	15.0 [6.8]	13.12 [5.9]
1½ [38]	23.9 [10.8]	21.2 [9.6]
2 × 1½ [50 × 38]	23.2 [10.5]	20.5 [9.3]
2 [50]	44.7 [20.3]	38.8 [17.6]
3 × 2 [80 × 50]	60.2 [27.3]	54.2 [24.6]
3 [80]	62.6 [28.4]	56.7 [25.7]
4 × 3 [100 × 80]	80.1 [36.3]	74.7 [33.9]

Notes

WKM 320T Threaded Floating Ball Valves



slb.com/valves

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