

# 73P/74P Series ANSI Class 150 & 300



## Flanged Full Bore Ball Valve

<b>Size Range:</b>	1/2" - 6" (DN15 - DN150)
<b>Flange Connection:</b>	<b>73P Series</b> - ANSI class 150 <b>74P Series</b> - ANSI class 300
<b>Application:</b>	Chemical, Petrochemical, Oil and Gas production, Refining, Energy, Pulp & Paper and others
<b>Service:</b>	Steam, Chemicals, LP-Gas, Thermal Fluid, Chlorine, Ammonia, Sour Gas
<b>Materials:</b>	Carbon Steel, Stainless Steel, Hasteloy-C, Alloy-20, Monel, Duplex
<b>Certifications:</b>	Firesafe to API 607 4 <sup>th</sup> Edt., BS 6755 Pt 2, API 6FA Lloyds Type Approved to BS 5351, ISO 9001, PED 97/23/EC
<b>Operation:</b>	Hand or Gear operated, Pneumatic or Electric Actuated

The **73P/74P** Series are **HABONIM**'s line of flanged full bore ball valves in ANSI Class 150# and Class 300#. Ideal for conditions which require maximum flow capacity with minimum pressure drop, reducing risk of clogging with solids or slurries, HABONIM's full bore valves offer tight shutoff, long service life and high durability with exceptional performance in many service applications under the most severe working conditions.

### Construction

Valve sizes 1/2" to 1" are one piece design. Valve sizes 1 1/2" to 6" are split body design. All valves have a top mounting flange conforming to ISO 5211 for direct mounting of actuators, fugitive emission bonnets or extended handles.

### Seats

Flexible seat design provides tight shutoff at high and low pressures, reduce wear and valve torque. A wide range of seat materials are available. Standard seat materials are Virgin PTFE, glass filled PTFE or carbon filled PTFE. For other seat materials, please refer to Bulletin T-624 or consult with Habonim.

### Stem

The valve stem assemblies have blowout proof stems with live loaded spring washers to compensate for pressure and temperature surges and wear.

### Ball

A highly polished solid ball with a pressure relief hole in the stem slot to equalise the pressure in the body cavity ensures tight shutoff and long service life.

### Body and Trim Materials

The standard valve body material are 316 Stainless Steel, Carbon Steel grades WCB and LCB, and Alloy-20. Other materials are available. Standard trim material is 316 Stainless Steel. Trim material such as Hastelloy-C, Alloy-20, Monel and other materials are available for specific applications.

### Antistatic

The valve stem has a built in antistatic device which ensures continuous contact of stem-to-ball and stem-to-body .

### Finish

Carbon Steel valves are phosphate and oil dipped. Stainless Steel valves are natural.

### Fire Safe Valves

Fire Safe valves are designed and tested to the requirements of API 607 4<sup>th</sup> Edition and to BS 6755 Part 2 specifications. Valves for fire safe application are identified by the prefix "**AF**". Fire Safe certificates for valves, if necessary should be requested.

### Secondary sealing

All fire safe valves are fitted with flexible graphite body seals and graphite stem seals.

The valves contain soft seat rings. In the event of fire, a secondary metallic machined ring comes in contact with the ball and prevents leakage through the valve port. The stem incorporates a machined ring shaped surface which will prevent leakage, once the thrust seal has been burned off.

### Special Service

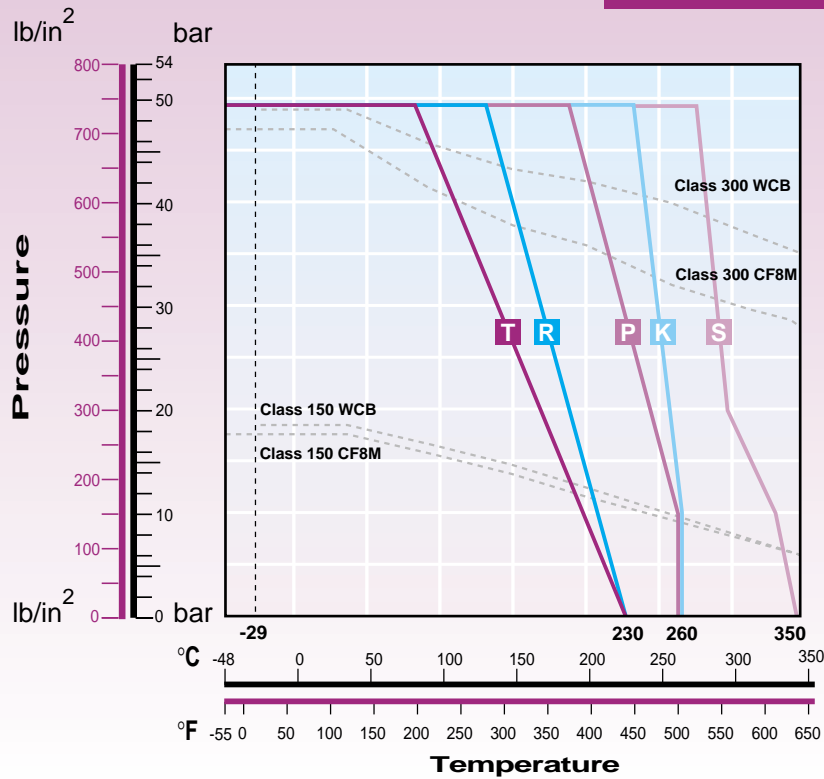
Valves prepared for special services such as Dry Chlorine, Oxygen, Hydrogen Peroxide, Ammonia, Vacuum, Steam, Thermal fluids and low temperature service are in accordance with the relevant standards.

Other design applications available include Control valves with V-Ported seats and Double-Block and Bleed valves. Diverter valves and Steam Jacketed valves are optional up to 2" only. Valves are approved to UL-125 for Liquid Petroleum Gas. Sour gas service valves are to NACE MR-01-75. Ask for the relevant bulletins for all these applications.

### Other available accessories

- **Stem extensions** for valves.
- **Fugitive Emission** kits for hazardous fluids.
- **Locking devices** for securing valve position.
- **Manual gear Operators** for operating large valves.
- **Declutchable gear operators** for actuated valves.
- **Spring return handle** Habonim Compact spring return actuator fitted with a handle extension.
- **Limit switches** for on-off indication.

Pressure / Temperature Graph



The pressure/ temperature rating is determined by the valve flanges and by the seat rating. Temperature ranges from -48°C to 350°C (-54°F to 660°F).

- T** Virgin PTFE
- R** Glass Filled PTFE
- P** Carbon Filled PTFE
- K** PEEK
- S** VESPEL

Other seats are available on request. Valves fitted with PEEK seats are assembled with PEEK thrust seal and SS 17-4PH stem.

Valve Options

HABONIM speciality with customer solutions for special applications has resulted in many designs. Some of the various valve designs and accessories that HABONIM have available with the 73P/74P series are shown below. For more information and other options, please consult with Habonim.

VALVE SIZE	Cv Values		Limiting Stem Input Torque			
	FLOW COEFFICIENTS		316 S/S		17- 4PH	
in	Cv	Kv	Nm	in-lb	Nm	in-lb
1/2"	30	26	13.2	117	91	805
3/4"	50	43	24.4	216	165	1,460
1"	100	86	24.4	216	165	1,460
1 1/2"	250	216	48.6	430	268	2,370
2"	480	414	NA	NA	268	2,370
3"	1,300	1,120	385	3,400	1,930	17,000
4"	2,400	2,070	NA	NA	1,930	17,000
6"	5,400	4,660	1,570	13,900	7,500	66,375

Cv - Flow in US GPM at 1 psi pressure drop.

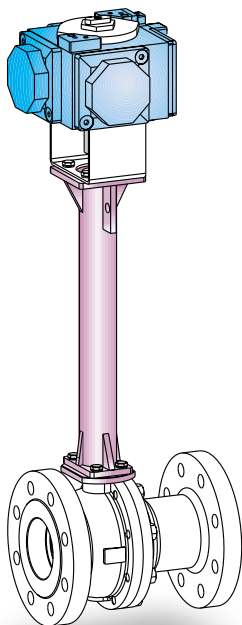
Kv - Flow in m<sup>3</sup>/hr at 1 bar pressure drop.

Valve flow rates are determined in full open position with water at 15 C° (60 F°).

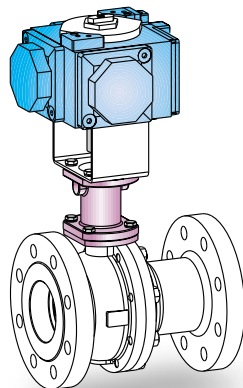
\* Limiting Stem torque figures are based on random laboratory tests.

These are not to be confused with valve torque.

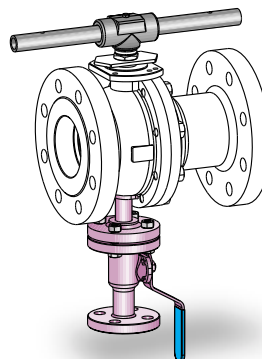
Actuator Extension



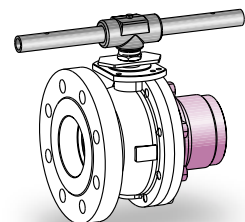
Fugitive Emission with actuator



Double Block & Bleed



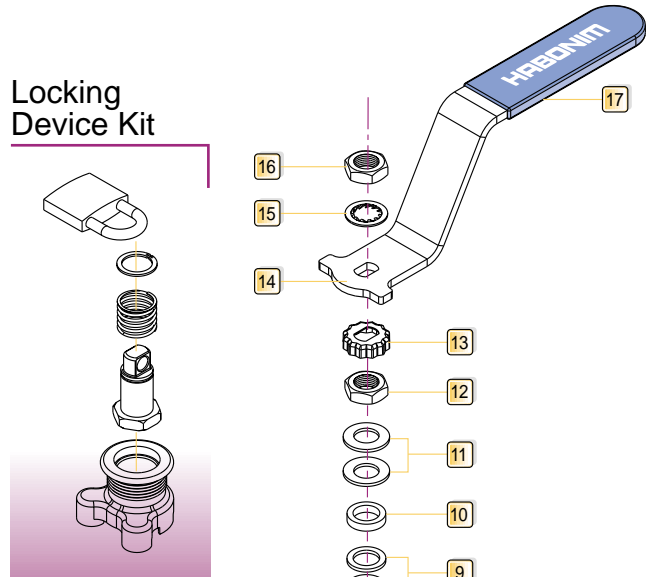
Buttweld end



**VALVE SPECIFICATION - 1/2" - 1" (15 - 25mm)**

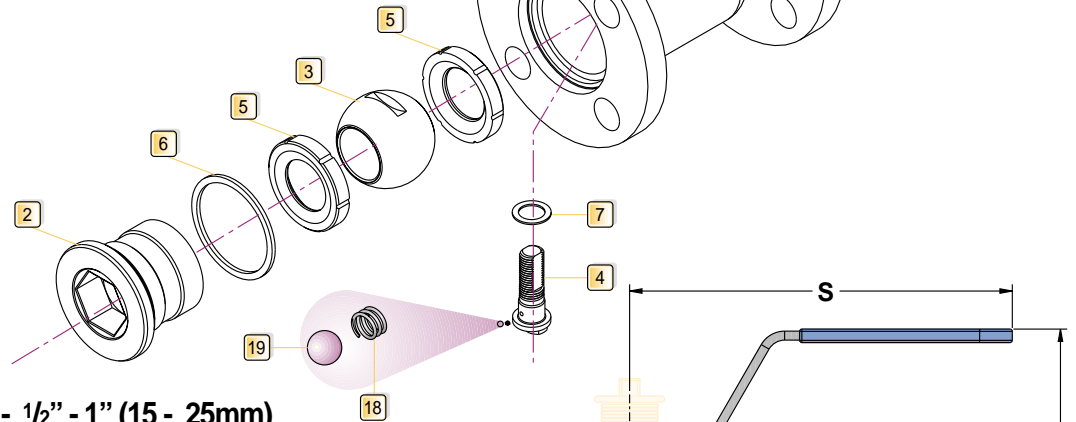
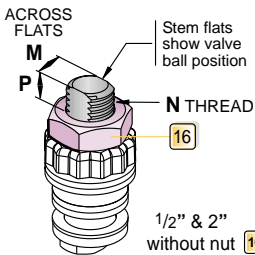
ITEM NO.	DESCRIPTION	MATERIAL SPECIFICATION
1	BODY	STAINLESS ST. ASTM A351 CF8M CARBON ST. ASTM A 216 WCB
2	INSERT	STAINLESS ST. ASTM A351 CF8M CARBON ST. ASTM A 216 WCB
3	BALL	STAINLESS ST. AISI 316
4	STEM	STAINLESS ST. AISI 316
*5	SEAT RING	VIRGIN PTFE
*6	BODY SEAL	VIRGIN PTFE
*7	STEM THRUST SEAL	PTFE - 25% CARBON FILLED
8	STOP PIN	STAINLESS ST. AISI 316
*9	STEM SEAL	PTFE - 25% CARBON FILLED
10	GLAND	STAINLESS ST. 316
11	DISC SPRING	STAINLESS ST. 17-7PH
12	GLAND NUT	STAINLESS ST. AISI 316
13	TAB WASHER	STAINLESS ST. AISI 316
14	WRENCH	STAINLESS ST. AISI 304 CARBON ST. ZINC PLATED
15	SERRATED WASHER	STAINLESS ST. AISI 316
16	WRENCH NUT	STAINLESS ST. AISI 316
17	SLEEVE	VINYL PLASTISOL
18	PLUNGER SPRING	STAINLESS ST. AISI 302
19	ANTI STATIC PLUNGER	STAINLESS ST. AISI 316

**Locking Device Kit**

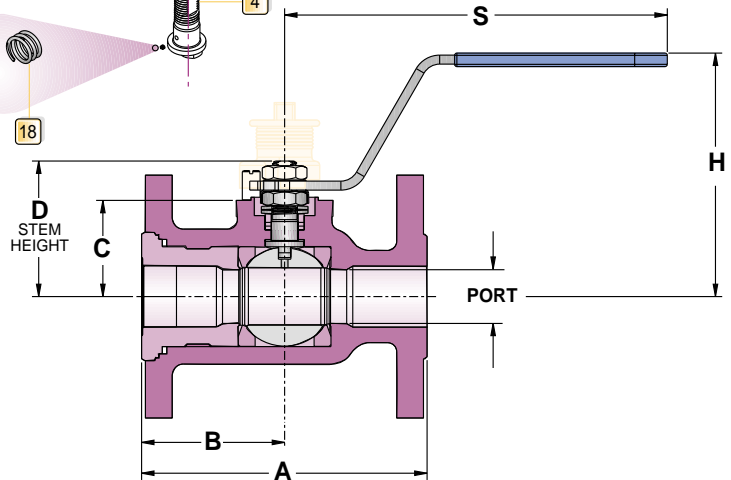
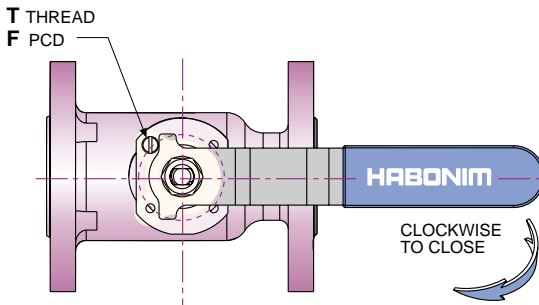


The materials above are for standard applications. Other materials are available.  
\* Standard items supplied in repair kits.

**STEM DIMENSIONS 1/2" - 1"**



**VALVE DIMENSIONS - 1/2" - 1" (15 - 25mm)**



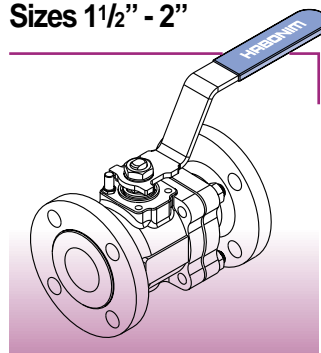
VALVE SIZE	PORT DIA	VALVE DIMENSION											APP. WEIGHT kg. / lb			
		A		B	C	D	F	H	M	N	P	S	T	150	300	
1/2"	mm	14.3	108	140	48.0	31.4	40.5	36 (F03)	94.0	5.54	3/8"	11.1	151	M5	1.8	2.3
	in	0.56	4.25	5.5	1.90	1.24	1.59	1.42	3.7	0.218	UNF	0.44	5.95		4.0	5.1
3/4"	mm	20.6	117	152	58.0	38.2	55.6	42 (F04)	103.5	7.54	7/16"	15.4	170	M5	2.2	3.3
	in	0.81	4.62	6.0	2.28	1.50	2.19	1.65	4.07	0.296	UNF	0.61	6.69		4.8	7.3
1"	mm	25.4	127	165	63.5	42.7	60.3	42 (F04)	108	7.54	7/16"	15.4	170	M5	3.2	4.6
	in	1.0	5.00	6.5	2.50	1.68	2.37	1.65	4.25	0.296	UNF	0.61	6.69		7.0	10.1

**VALVE SPECIFICATION 1 1/2" - 6" (40 - 150mm)**

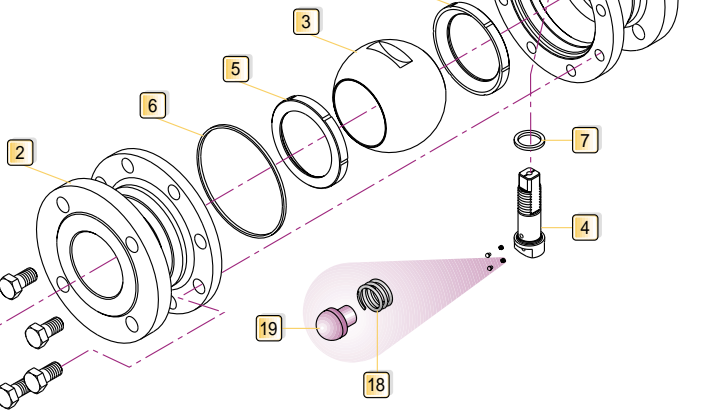
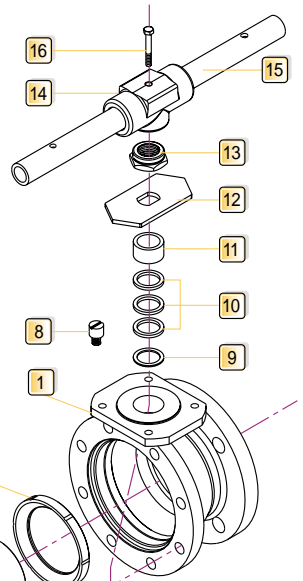
ITEM NO.	DESCRIPTION	MATERIAL SPECIFICATION
1	BODY	STAINLESS ST. ASTM A351 CF8M CARBON ST. ASTM A 216 WCB
2	END CAP	STAINLESS ST. ASTM A351 CF8M CARBON ST. ASTM A 216 WCB
3	BALL	STAINLESS ST. AISI 316
4	STEM	STAINLESS ST. AISI 316 or 17-4PH
*5	SEAT RING	VIRGIN PTFE
*6	BODY SEAL	VIRGIN PTFE
*7	STEM THRUST SEAL	PTFE - 25% CARBON FILLED
8	STOP PIN	STAINLESS ST. AISI 316
*9	STEM LOCATION RING	STAINLESS ST. AISI 316
10	GLAND PACKING	PTFE - 25% CARBON FILLED
11	GLAND	STAINLESS ST. AISI 316
12	INDICATOR STOP PLATE	CARBON ST. ZINC PLATED
13	GLAND NUT	CARBON ST. ZINC PLATED
14	WRENCH	MALLEABLE IRON
15	WRENCH HANDLE	TUBE SCH. 40 ZINC PLATED
16	WRENCH BOLT	STAINLESS ST. AISI 304
17	BODY CONNECTOR SCREW	STAINLESS ST. AISI 304 CARBON ST. ZINC PLATED
18	PLUNGER SPRING	STAINLESS ST. AISI 302
19	ANTI STATIC PLUNGER	STAINLESS ST. AISI 316

The materials above are for standard applications. Other materials are available.  
\* Standard items supplied in repair kits.

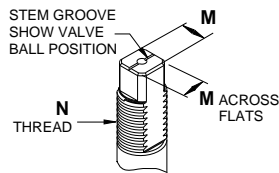
**Sizes 1 1/2" - 2"**



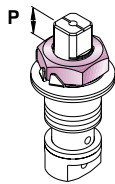
VALVE SIZES 1 1/2" - 2" ARE 2-PIECE AND HAVE A SQUARE SHAPE BODY. THE STEM ASSEMBLY PARTS ARE BUILT IN THE STYLE OF SIZES 1/2" - 1".



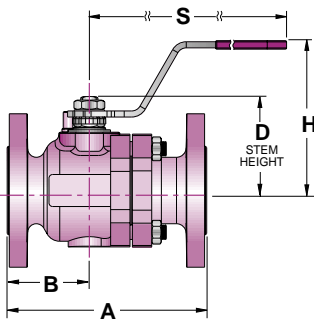
**STEM DIMENSIONS 3" - 6"**



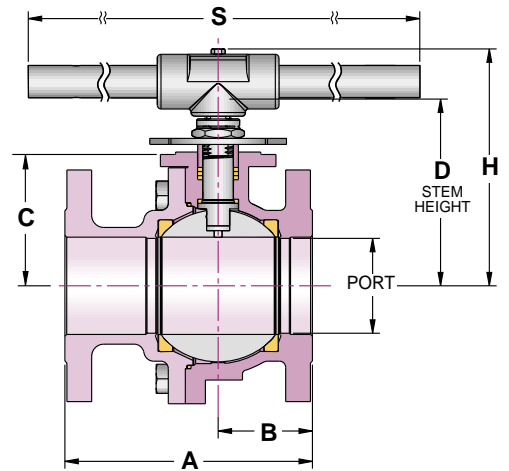
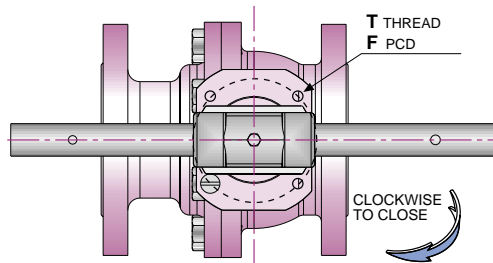
**PREPARATION FOR ACTUATION**



**Sizes 1 1/2" - 2"**



**Sizes 3" - 6"**



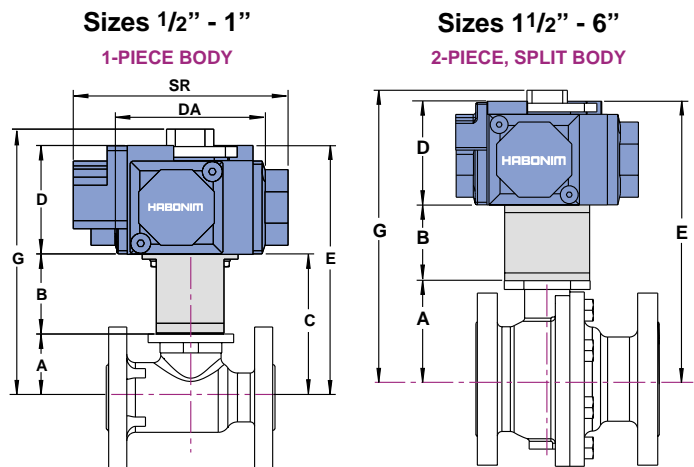
VALVE SIZE	PORT DIA	VALVE DIMENSIONS												APP. WEIGHT kg. / lb		
		A		B		C	D	F	H	M	N	P	S	T	150	300
40 mm	38.1	165	190	68.0	80.4	48.3	77.8	50 (F05)	124	8.7	9/16"	19.6	220.5	M6	6.6	9.8
1 1/2" in	1.50	6.5	7.5	2.68	3.17	1.90	3.06	1.968	4.88	0.343	UNF	0.77	6.68		14.5	21.5
50 mm	50	178	216	65.0	65.0	70.0	88	70 (F07)	134.2	8.7	9/16"	19.6	220.5	M8	13.0	15.0
2" in	2.00	7.0	8.50	2.56	2.56	2.75	3.46	2.755	5.28	0.343	UNF	0.77	6.68		28.6	33.0
80 mm	80	203	283	79.0	85.0	108	154.6	102 (F10)	194.8	18.9	1	16.7	400	M10	26.0	29.0
3" in	3.25	8.0	11.14	3.11	3.35	4.25	6.08	4.015	7.67	0.244	UNF	0.66	15.75		57.0	64.0
100 mm	100	229	305	82.0	94.0	124	170.6	102 (F10)	211	18.9	1	16.7	610	M12	34.0	39.0
4" in	3.94	9.0	12.01	3.23	3.70	4.88	6.71	4.015	8.31	0.244	UNF	0.66	24.00		75.0	86.0
150 mm	150	394	403	168	168	179	248.5	125 (F12)	308	28.4	1 1/2"	26.2	916	M12	71.0	78.0
6" in	5.91	15.51	15.87	6.61	6.61	7.05	9.78	4.921	12.12	1.11	UNF	1.03	36.00		156	172

**73P/74P Series Automated Valve Dimensions**

**Actuation**

Where automation is required, the 73P/74P series ball valves are available with Habonim's unique 4-Piston pneumatic Compact actuator. The Compact actuator is available in 8 sizes, spring return or double acting. All the valves mounting flanges are according to ISO 5211 and are suitable for accommodating any quarter turn actuator (pneumatic or electric) for valve automatization. Valves can be operated for on-off or throttling application.

The actuators have a NAMUR air connection interface for attaching solenoids (except H15). Limit switches and positioners can be mounted on the actuator top face according to NAMUR or ISO bolt pattern. For information, please refer to Bulletin B-310.



VALVE SIZE	ACTUATOR SIZE	73P/74P SERIES					COMPACT ACTUATOR		
		A	B	C	E	G	D	D/A	S/R
1/2"	H15		48	79.4	139.4	147.2	60.0	80.4	105.7
	F03	31.4	48	79.4	139.4	157.1	66.6	93.3	121.5
	H25		48	79.4	139.4	175.7	84.4	120.8	153.8
3/4"	H15		48	86.1	146.0	153.9	60.0	80.4	105.7
	F04	38.2	48	86.1	163.8	163.8	66.6	93.3	121.5
	H25		60	98.1	146.1	194.4	84.4	120.8	153.8
1"	H15		48	90.7	182.5	158.5	60.0	80.4	105.7
	F04	38.2	48	90.7	194.1	168.4	66.6	93.3	121.5
	H25		60	102.7	150.7	199.0	84.4	120.8	153.8
1 1/2"	H20		60	108.2	187.1	185.9	66.6	93.3	121.5
	F05	48.3	60	108.2	198.7	204.5	84.4	120.8	153.8
	H30		60	108.2	174.8	214.4	96.0	141.6	175.8
2"	H25		60	150.0	204.2	246.3	84.4	120.8	153.8
	F07	70.0	60	150.0	230.3	256.2	96.0	141.6	175.8
	H35		60	150.0	234.4	285.0	122.1	172.4	214.8
3"	H45		60	150.0	246.0	307.5	144.8	201.2	261.7
	H30		80	188.0	272.1	294.2	96.0	141.6	175.8
	F10	108.0	80	188.0	294.8	323.0	122.1	172.4	214.8
4"	H45		80	188.0	284.0	345.5	144.8	201.2	261.7
	F10		120	188.0	310.1	395.4	195.5	201.2	261.7
	H60		120	188.0	310.1	395.4	195.5	201.2	261.7
6"	H35		80	204.0	332.8	339.0	122.1	172.4	214.8
	F10	124.0	80	204.0	383.5	361.5	144.8	201.2	261.7
	H45		120	204.0	326.1	411.4	195.5	264.3	343.5
6"	H60		120	204.0	348.8	466.5	243.0	321.5	422.0
	F12	179.0	120	299.0	399.5	434.0	122.1	172.4	214.8
	H75		120	299.0	447.0	456.5	144.8	201.2	261.7
			120	299.0	421.1	506.4	195.5	264.3	343.5
			120	299.0	443.8	561.5	243.0	321.5	422.0

**Actuator Sizing**

Valve Sizing Tables of the Compact actuators on Habonim Valves are available on request. The sizing tables are based on valve size, differential pressure, valve seat types, working temperature, flowing media and frequency of operation. The valve torque figures are calculated from tests using water at room temperature at different pressure drops for each seat material and actuator air pressure. Please consult with HABONIM for more details.

**Flanged Valve Sizing Table**

The following sizing table is for Class 150 and 300 valves with PTFE seats at ambient temperatures and 10 bar pressure drop and is for reference only.

VALVE SIZE	Double Acting (DA)			Spring Return (SR)		
	60 psi	80 psi	100 psi	60 psi	80 psi	100 psi
1/2"	H15	H15	H15	H20-2A2B	H15-1B2	H15-2
3/4"	H20	H15	H15	H25-2A2B	H20-2C	H20-3
1"	H20	H15	H15	H25-2A2B	H20-2C	H20-3
1 1/2"	H25	H20	H20	H30-2A2B	H25-2C	H25-3
2"	H25	H25	H20	H35-2A2B	H30-2C	H25-3
3"	H35	H30	H30	H45-2A2B	H35-2C	H35-3
4"	H45	H35	H30	H60-2A2B	H45-2C	H45-3
6"	H60	H45	H35	H75-2A2B	H60-2C	H60-3

**Mounting Actuators or Gear Operators**

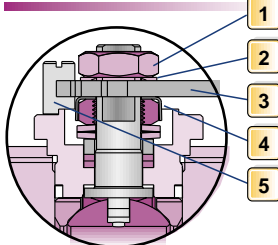
When preparing a valve for actuation, make sure to follow the instructions below.

**Stem arrangement for actuated valves.**

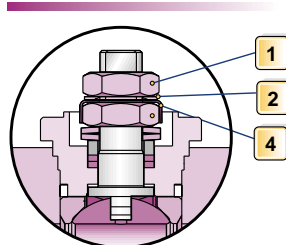
Valve sizes 1/2" to 2".

Release the wrench nut **1** and serrated washer **2** remove the wrench **3** and refasten the wrench nut on the tab washer. **4** Remove the stop pin. **5** Valve size 1/2" and 2" do require the wrench nut.

Manual Valve stem assembly



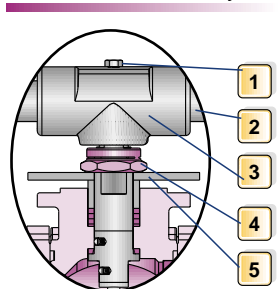
Actuated Valve stem assembly



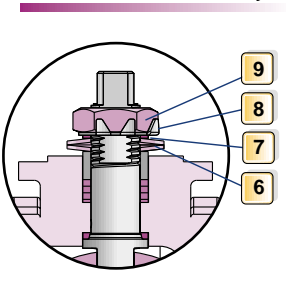
Valve sizes 3" to 6".

Release the wrench bolt **1** and remove the wrench handle **2** wrench head **3** gland nut **4** and stop plate **5** Assemble the two disc springs **6** stem location ring **7** tab washer **8** and refasten the non-slotted gland nut **9**

Manual Valve stem assembly



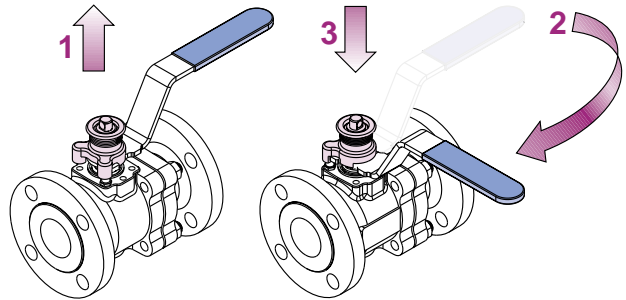
Actuated Valve stem assembly



**Locking Device**

LLP (Locked in Last Position)

The Habonim spring loaded locking device (LD) is ideal for applications where it is critical to keep the valve position without the risk of accidental operation. The locking device fits easily to the valve stem by simply removing the stem nut and threading the lock stem above the handle. The LD can lock the valve in closed or open position. The LD can be fitted to the valve in-line. Available in sizes 1/2" to 2".

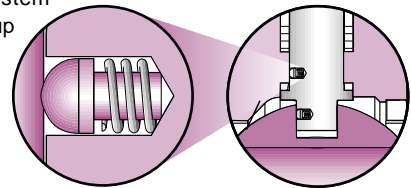


Valve in OPEN position

Valve in CLOSED position

**Antistatic Device**

Antistatic device to discharge static electricity buildup on the ball, conforming to BS 5351 for continual electrical contact between ball/stem and stem/body. The contact is made by a spring loaded stainless steel element inserted in the stem or a conductive PTFE stem seal. Valve sizes up to 2" require a stem/body contact, while larger size valves also need ball/stem contact.

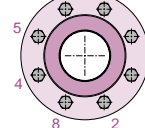


**Valve Installation**

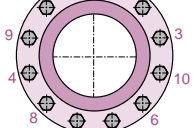
Habonim flanged valves are delivered in the open position and with flange protection covers. Flanged valves are installed directly into the pipe line. When installing the valves in-line, follow the bolt tightening patterns shown below, using the recommended torque figures for safe operation. For more information, please refer to the Installation, Operation and Maintenance manual of the Habonim Flanged valves.



4 Bolts



8 Bolts



12 Bolts

Valve Size (in)	Valve Size (DN)	ANSI 150		ANSI 300	
		Nm	in.lb	Nm	in.lb
1/2"	15	80	710	80	710
3/4"	20	80	710	140	1,240
1"	25	80	710	140	1,240
1 1/2"	40	80	710	240	2,120
2"	50	140	1,240	140	1,240
3"	80	170	1,500	250	2,210
4"	100	170	1,500	250	2,210
6"	150	170	1,500	250	2,210

# Identification Code

## The HABONIM 73P & 74P Ball Valve Identification Code

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	
1	0		A	F	7	3	P	-	4	4	6	6	T	G	/	1	5	0	-											
<b>SIZE</b>		<b>SERVICE</b>			<b>SERIES</b>			<b>BODY END</b>			<b>BALL STEM</b>		<b>SEAT SEAL</b>		<b>FLANGE</b>			<b>SPECIAL APPLICATION</b>												
					73P or 74P																									

SIZE			SERVICE	BODY / END	SEAT	SEAL	SPECIAL APPLICATION
Code	Inch	mm					
05	1/2"	15	A Antistatic	1 Bronze	A TFM	G Expanded Graphite	90° Diverter ball valve 90° turn (1" & under)
07	3/4"	20	C Cryogenic	4 Carbon Steel	C PCTFE	I Impregnated Graphite	180° Diverter ball valve 180° turn (1" & under)
10	1"	25	D Diverter Bottom entry	6 S. St. 316 (L)	F PFA	M S. St O-Ring	A0866 Stem seal Ammonia service
15	1 1/2"	40	F Firesafe	7 Monel	H VX1	R Reinforced PTFE 15% Glass filled	P043 Stem seal for gas service
20	2"	50	K Dry Chlorine	8 S. St. 304	J Reinforced PTFE 25% Glass filled	T PTFE	F043 Stem seal Neoprene
30	3"	80	N Control	9 C. Steel LCB	K PEEK®	U UHMWPE	P250 Ball with Pressure relief hole
40	4"	100	O Oxygen	A Alloy-20	L Virgin PEEK®	V Viton®	J2N05 Jacketed valve, No. Outlets, Type, Size
60	6"	150	Q Cavity filler	C Hasteloy-C	M Metal	<b>FLANGE</b>	
			S Diverter Side entry	D Duplex	P NRG	150 ANSI 150 RF	V60 Control valve seat
			V Vacuum	M S. St. 17-4PH	R Reinforced PTFE 15% Glass filled	300 ANSI 300 RF	DBB Double Block & Bleed
			W Steam & Thermal fluid	Z Inconel 718	S VESPEL®	FF Flat Face	NACE Nace service
			X Metal seats		T PTFE	BW Buttweld neck	LD Swivel Locking device
					U UHMWPE		K LLP Locking device
					Y Delrin®		

In some applications the available options above are limited to specific sizes. Please consult with Habonim for details.

### How to order

When placing an order for HABONIM valves, please provide as many details possible on the application such as: Media, Temperature, Pressure, Pipe line size and type of connection.

**Example: 20 AF73P - 4466TG / 150**

Size 2" (20), Antistatic (A), Firesafe (F), Full Bore ANSI 150 (73P), C. St Body & End Cap (44), S. St 316 Ball & Stem (66), PTFE Seats (T), Graphite Body Seal (G), ANSI 150 RF Flange (150).

### Standards of Compliance

Flanges:	ANSI B16.5 Raised Face BS 1560 class 150, 300
Face-to Face:	ANSI B16.10 Short Pattern
Antistatic:	BS 5351
Design:	Lloyds Type App. BS 5351 ANSI B16.34, BS 5159
Pressure Testing:	API 598. BS 6755 Pt. 1 ISO 5208
Fire Testing:	API 607 4th Edt. API 6F BS 6755 Pt. 2.
NACE (option must be specified)	MR-01-75-200
Quality Assurance	ISO 9001,
Certification:	PED 97/23/EC ISO -10474 DIN EN 10204 3.1.B

### Quality Assurance

As an ISO 9001 certified company, Habonim operates according to internal manufacturing specifications that are written for each application and for specific customers. From the design stages to final inspection of assembled valves, Habonim controls its procedures for the integrity of the parts, their manufacturing process, storing and preservation and final assembly, to keep the highest standards of perfection of the product.

All valves are 100% leak tested before packaging. Each valve is tagged for traceability and material certification is provided on request.



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