

# 77/78 **SERIES** DIN PN16 & PN40 FLANGED **FULL BORE** BALL VALVE



<b>Size Range</b>	DN15 - DN200
<b>Service</b>	Steam, Thermal Fluid, LP-Gas, Dry Chlorine, Oxygen, Ammonia, Vacuum, Sour Gas and others
<b>Materials</b>	Stainless Steel, Carbon Steel, Alloy-20 (others on request)
<b>Flange Connection</b>	<b>77 Series</b> - DIN PN16 F1,F4, F5 <b>78 Series</b> - DIN PN40 F1,F4, F5
<b>Application</b>	Chemical, Petrochemical, Oil and Gas production, Refining, Pulp & Paper, Food Industry and others
<b>Certifications</b>	API 607 4 <sup>th</sup> Edition & BS 6755 Part 2 Fire Testing
<b>Operation</b>	Wrench or Gear operated, Actuated

The **77/78** Series are **HABONIM** flanged full bore ball valves in pressure rating of PN16 and PN40. Ideal for conditions which require maximum flow capacity with minimum pressure drop, HABONIM 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

Valves DN15 to DN25 are one piece design. Valve DN40 to DN200 are two piece design. Valve mounting platforms for attaching actuators or gears are in accordance with ISO 5211 (standard).

### 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, 15% 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 which have 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 materials 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 electrical contact of stem-to-ball and stem-to-body .

### Finish

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

### 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**". Certificates for Fire Safe valves, if necessary, - should be requested. Will be provided upon request.

### Secondary sealing

All fire safe valves are fitted with flexible graphite body and 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

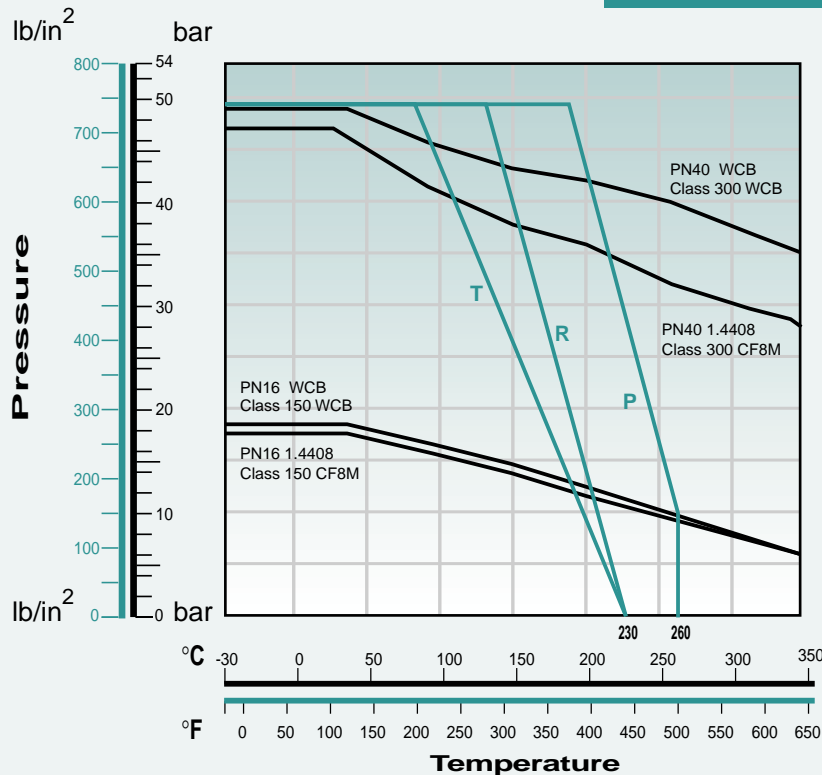
Valves prepared for special services such as Dry Chlorine, Oxygen, Hydrogen Peroxide, Ammonia, Vacuum, Steam, Thermal fluids and low temperature service are in accordance with the relevant standards.

Valves are approved to UL-125 for Liquid Petroleum Gas. Sour gas service valves are to NACE MR-0175-97. Ask for the relevant bulletins for all these applications.

### Other available accessories

- **Extended handles** for valves.
- **Fugitive emission** kits for hazardous fluids.
- **Locking devices** for securing valve position.
- **Manual gear Operators** for large valves.
- **Decutchable gear operators** for actuated valves.
- **Spring return handle** (Dead man lever) using the Habonim Compact spring return actuator fitted with a handle extension.
- **Limit switches** for on-off indication.

## Pressure / Temperature Graph



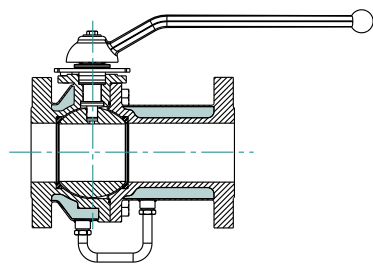
The pressure/ temperature rating is determined by the valve flanges and by the seat rating. Temperature ranges from -48°C to 300°C (-54°F to 572°F).

- T** Virgin PTFE
- R** Glass Filled PTFE
- P** Carbon Filled PTFE

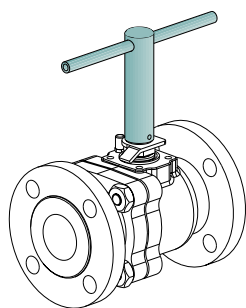
Other seats are available on request.

## Valve Options

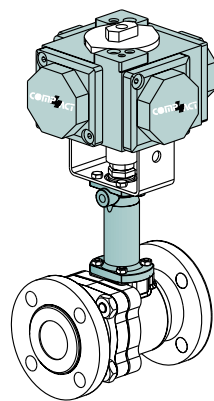
Some of the various valve options and accessories that Habonim has available are shown below. For more information and other options, consult with Habonim.



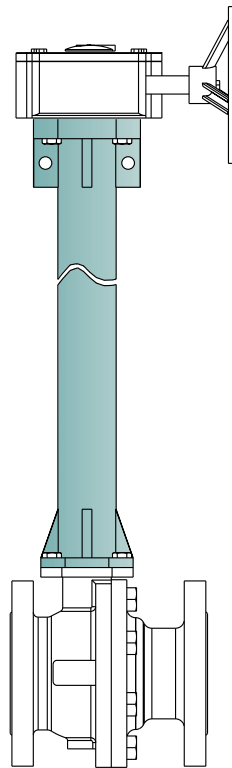
Steam Jackets



Extended Handle



Fugitive Emission with 'Compact' actuator



Extended Gear Operator

## Valve Cv Values

VALVE SIZE	FLOW COEFFICIENTS	
	Cv	Kv
mm		
15	30	26
20	50	43
25	100	86
40	250	216
50	480	414
80	1300	1120
100	2400	2070
150	5400	4660
200	10000	8620

Cv- flow in US GPM, pressure in psi

Kv- flow in m<sup>3</sup>/hr, pressure in bar

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

## Valve Torque figures

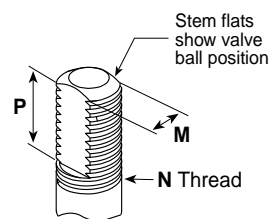
SIZE	Nm	in.lb	SIZE	Nm	in.lb
15	10	89	80	90	797
20	15	133	100	160	1416
25	20	177	150	450	3983
40	30	266	200	1100	9735
50	40	354			

Valve torque figures were determined from controlled laboratory tests and should be used as guidance only. Please consult with factory for specific applications.

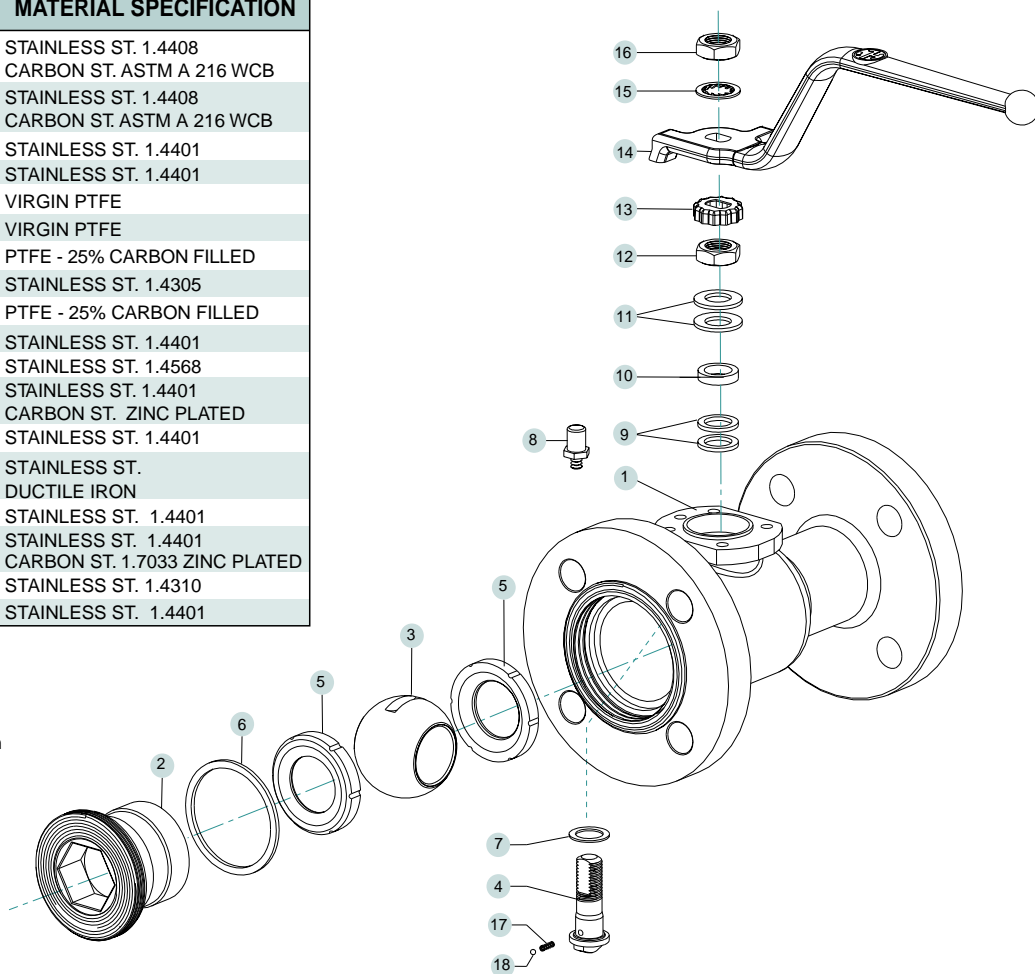
## VALVE SPECIFICATION DN15 - DN25

ITEM NO.	DESCRIPTION	MATERIAL SPECIFICATION
1	BODY	STAINLESS ST. 1.4408 CARBON ST. ASTM A 216 WCB
2	INSERT	STAINLESS ST. 1.4408 CARBON ST. ASTM A 216 WCB
3	BALL	STAINLESS ST. 1.4401
4	STEM	STAINLESS ST. 1.4401
*5	SEAT RING	VIRGIN PTFE
*6	BODY SEAL	VIRGIN PTFE
*7	STEM THRUST SEAL	PTFE - 25% CARBON FILLED
8	STOP PIN	STAINLESS ST. 1.4305
*9	GLAND PACKING	PTFE - 25% CARBON FILLED
10	GLAND	STAINLESS ST. 1.4401
11	DISC SPRING	STAINLESS ST. 1.4568
12	GLAND NUT	STAINLESS ST. 1.4401 CARBON ST. ZINC PLATED
13	TAB WASHER	STAINLESS ST. 1.4401
14	WRENCH	STAINLESS ST. DUCTILE IRON
15	SERRATED WASHER	STAINLESS ST. 1.4401
16	WRENCH NUT	STAINLESS ST. 1.4401 CARBON ST. 1.7033 ZINC PLATED
17	PLUNGER SPRING	STAINLESS ST. 1.4310
18	ANTI STATIC PLUNGER	STAINLESS ST. 1.4401

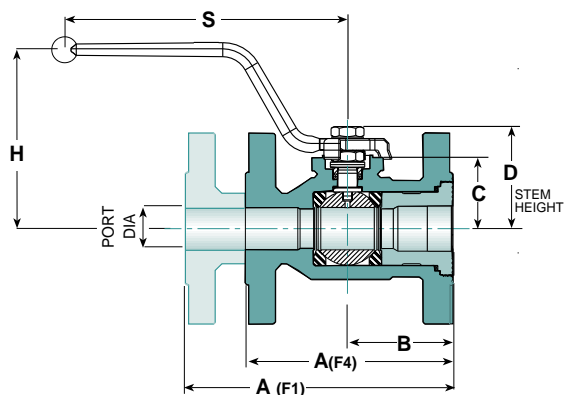
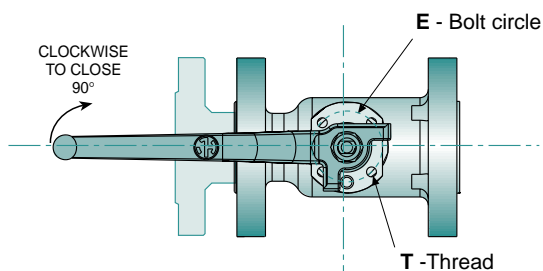
\* Standard items for repair kits



Stem Dimensions



## VALVE DIMENSIONS DN15 - DN25



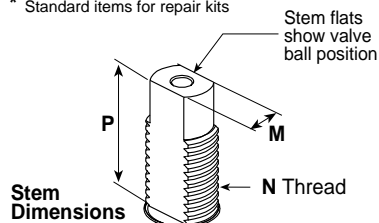
Valve Size		Valve Dimensions													App. Weight kg. / lb	
		Port Dia	A		B	C	D	E	H	M	N	P	S	T	F1	F4
			F1	F4												
15 mm		14.3	130	115	48.0	31.5	40.5	36 (F03)	98.6	5.54	3/8"	11.1	160	M5	2.2	2.1
1/2" in		0.56	5.12	4.53	1.89	1.24	1.59	1.42	3.88	0.218	UNF	0.44	6.30		4.8	4.6
20 mm		20.6	150	120	58.0	38.3	56.5	42 (F04)	105	7.54	7/16"	15.4	170	M5	3.2	3.0
3/4" in		0.81	5.91	4.72	2.28	1.51	2.22	1.65	4.13	0.296	UNF	0.61	6.69		7.0	6.6
25 mm		25.4	160	125	63.5	41.8	61.0	42 (F04)	108	7.54	7/16"	15.4	170	M5	4.2	4.0
1" in		1.0	6.30	4.92	2.50	1.65	2.40	1.65	4.25	0.296	UNF	0.61	6.69		9.2	8.8

Valves DN15 to DN25 are PN40 only.

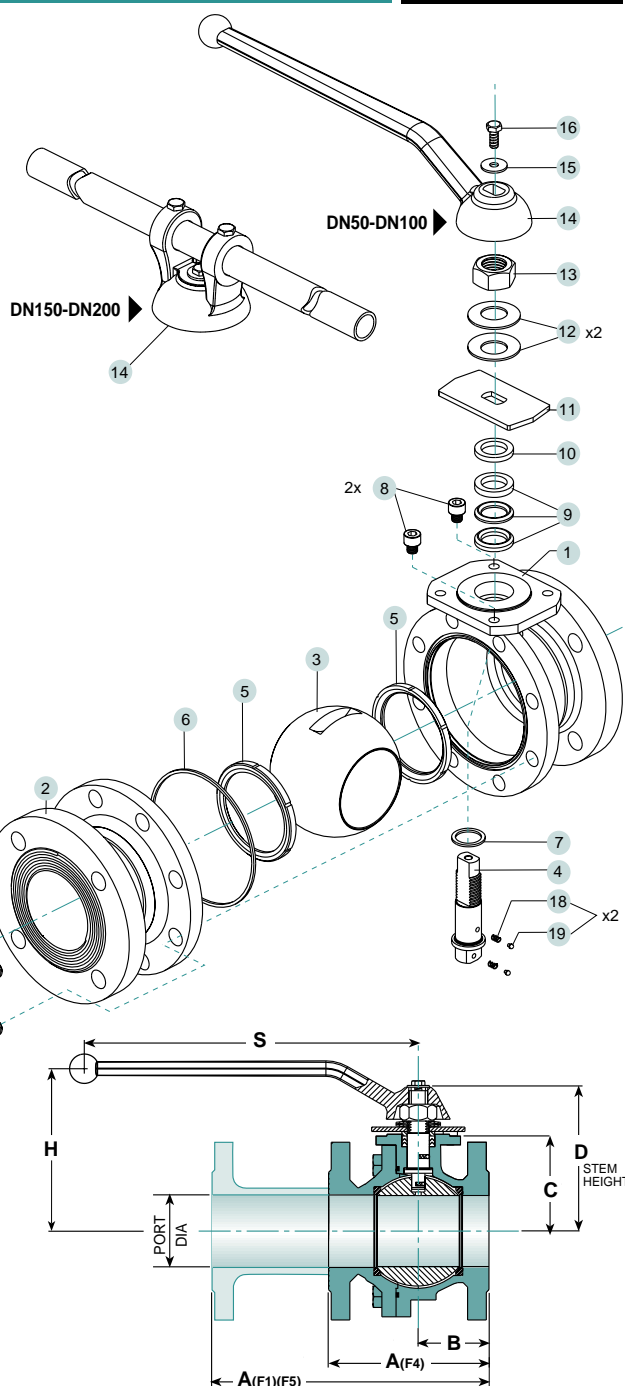
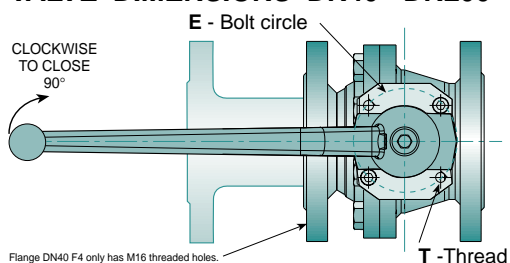
## VALVE SPECIFICATION DN40 - DN200

ITEM NO.	DESCRIPTION	MATERIAL SPECIFICATION
1	BODY	STAINLESS ST. 1.4408 CARBON ST. ASTM A 216 WCB
2	END CAP	STAINLESS ST. 1.4408 CARBON ST. ASTM A 216 WCB
3	BALL	STAINLESS ST. 1.4401/1.4408
4	STEM	STAINLESS ST. 1.4401/1.4542
*5	SEAT RING	VIRGIN PTFE
*6	BODY SEAL	VIRGIN PTFE
*7	STEM THRUST SEAL	PTFE - 25% CARBON FILLED
8	STOP PIN	STAINLESS ST. 1.4305
*9	GLAND PACKING	PTFE - 25% CARBON FILLED
10	GLAND	STAINLESS ST. 1.4401
11	STOP PLATE	CARBON ST. ZINC PLATED
12	DISC SPRING	STAINLESS ST. 1.4568
13	GLAND NUT	STAINLESS ST. 1.4401
14	WRENCH	DUCTILE IRON
15	WRENCH WASHER	STAINLESS ST. 1.4571
16	WRENCH SCREW	STAINLESS ST. AISI 304
17	BODY CONNECTOR SCREW	STAINLESS ST. ISO 4017-A2 CARBON ST. ZINC PLATED ISO 4017-8.8
18	PLUNGER SPRING	STAINLESS ST. 1.4310
19	ANTI STATIC PLUNGER	STAINLESS ST. 1.4401

\* Standard items for repair kits



## VALVE DIMENSIONS DN40 - DN200



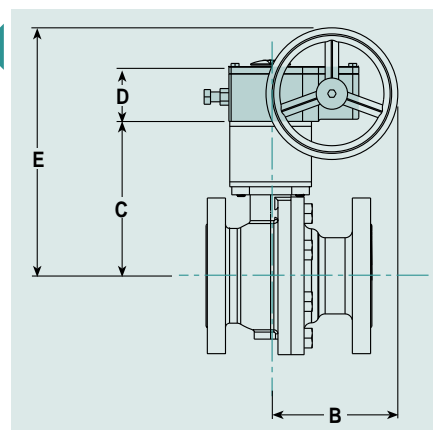
VALVE SIZE	PORT DIA	VALVE DIMENSIONS											APP. WEIGHT (kg / lb)			
		A F1, F5	A F4	C	D	E	H	M	N	P	S	T	F1, F5 PN16	F1, F5 PN40	F4 PN16	F4 PN40
40 mm	38.1	200	140	48.3	77.8	50 (F05)	122	8.7	9/16"	19.6	193	M6		10.9		10.3
1 1/2" in	1.50	7.87	5.51	1.90	3.06	1.968	4.81	0.343	UNF	0.77	7.60			24.0		22.7
50 mm	50	230	150	78.0	119	70 (F07)	240	8.7	M16	11.0	280	M8		15.0		13.0
2" in	2.00	9.06	5.91	3.07	4.69	2.755	9.45	0.343		0.43	11.03			33.0		28.6
80 mm	80	310	180	108	162	102 (F10)	300	18.9	M24	16.0	375	M10	26.0	29.0	24.0	25.0
3" in	3.15	12.20	7.09	4.25	6.40	4.015	11.81	0.744		0.63	14.77		57.0	64.0	52.8	55.0
100 mm	100	350	190	132	186	102 (F10)	325	18.9	M24	16.0	375	M10	34.0	39.0	30.0	34.0
4" in	3.94	13.78	7.48	5.20	7.32	4.015	12.80	0.744		0.63	14.77		75.0	86.0	66.0	74.8
150* mm	150	350	Optional	178	236	125 (F12)	362	28.4	M35	17.5	760	M12	63.0	75.0		
6" in	5.91	13.78	Optional	7.01	9.29	4.921	14.25	1.11		0.689	29.9		139	165		
200* mm	200	400	Optional	226	286	140 (F14)	362	28.4	M35	26.2	760	M16	97.0	108		
8" in	7.87	15.75	Optional	8.91	11.26	5.512	14.25	1.11		0.689	29.9		213	238		

\* Face to Face dimensions according to F5.

**MANUAL AND PNEUMATIC OPERATED VALVES**

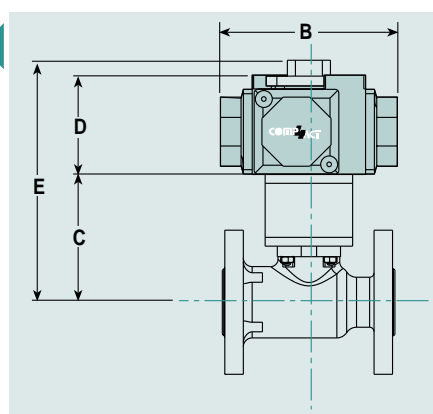
VALVE SIZE	GEAR SIZE	B	C	D	E
80	HK48	178	189	67.0	328
	HK70	205	189	78.5	339
100	HK48	178	213	67.0	352
	HK70	205	213	78.5	363
150	HK48	178	279	67.0	418
	HK70	205	279	78.5	429
200	HK70	205	348	78.5	498

**DN80 - DN200**  
Valves with  
Manual Gear  
Operator



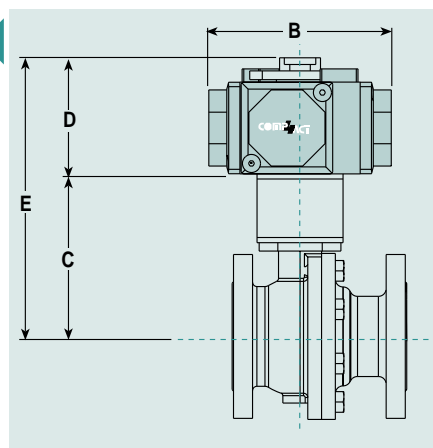
VALVE SIZE	ACT. SIZE	B		C	D	E
		*DA	*SR			
15	H15	80.5	106	79.5	60.0	146
	H20	93.0	122	79.5	67.0	156
	H25	121	154	79.5	84.0	173
20	H20	93.0	122	87.0	60.0	164
	H25	121	154	98.5	84.0	192
	H30	142	176	98.5	96.0	203
25	H20	93.0	122	90.0	67.0	167
	H25	121	154	102	84.0	196
	H30	142	176	102	96.0	207
	H35	172	215	102	122	236

**DN15 - DN25**  
Valves with the  
Compact  
Pneumatic  
Actuator



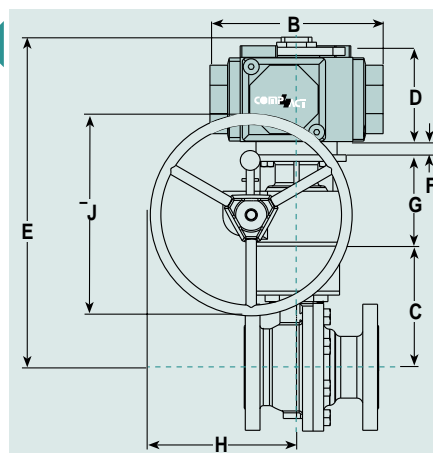
VALVE SIZE	ACT. SIZE	B		C	D	E
		*DA	*SR			
40	H20	93.0	122	108	67.0	185
	H25	121	154	108	84.0	202
	H30	142	176	108	96.0	213
	H35	172	215	108	122	242
50	H25	121	154	142	84.0	235
	H30	142	176	142	96.0	247
	H35	172	215	142	122	275
80	H30	142	176	189	96.0	295
	H35	172	215	189	122	323
	H45	201	262	189	145	346
	H60	264	343	209	195	415
	H75	321	422	209	243	469
100	H35	172	215	213	122	347
	H45	201	262	213	145	369
	H60	264	343	233	195	440
	H75	321	422	233	243	493
150	H45	201	262	279	145	436
	H60	264	343	279	195	486
	H75	321	422	279	243	539
200	H60	264	343	348	195	555
	H75	321	422	348	243	608

**DN40 - DN200**  
(1½" - 8") Valves  
with the Compact  
Pneumatic  
Actuator



VALVE SIZE	ACT. SIZE	B		C	D	E	F	G	H	ØJ
		*DA	*SR							
80	H30	142	176	189	96.0	441	13.0	133	222	305
	H35	172	215	189	122	472	16.0	133	222	305
	H45	201	262	189	145	499	20.0	133	222	305
	H60	264	343	209	195	588	25.0	148	308	457
	H75	321	422	209	243	642	25.0	148	308	457
100	H35	172	215	213	122	496	16.0	133	222	305
	H45	201	262	213	145	555	20.0	133	222	305
	H60	264	343	233	195	613	25.0	148	308	457
	H75	320	422	233	243	666	25.0	148	308	457
150	H45	201	262	279	145	589	20.0	133	222	305
	H60	264	343	279	195	659	25.0	148	308	457
	H75	321	422	279	243	712	25.0	148	308	457
200	H60	264	343	348	195	728	25.0	148	308	457
	H75	321	422	348	243	781	25.0	148	308	457

**DN80 - DN 200**  
Valves with  
Dec clutchable Gear  
Operators and the  
Compact  
Pneumatic  
Actuator



\* DA is Double Acting actuator      \* SR is Spring Return actuator

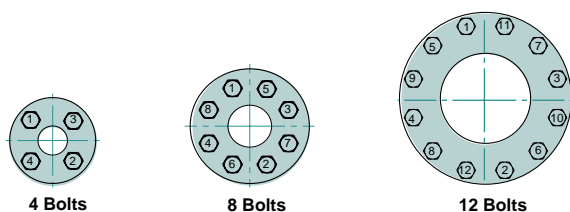
\* All dimensions on this page are in mm.

## Assembly and Packaging

Valves are assembled in a clean environment assembly room and 100% pressure leak tested. Each valve is individually tagged for traceability and can be provided with certification.

## Valve Installation

Habonim flanged valves are delivered in the open position and with flange protection covers. Actuated valves are in the Fail-Safe position. Remove covers only prior to installation. Flanged valves are installed directly into the pipe line. Follow the standard bolt tightening patterns, using the recommended torque figures for safe operation. Keep the valve in the open position at all times. It is recommended to flush the pipe line before operating the valve, to prevent seat damage.



## Actuation

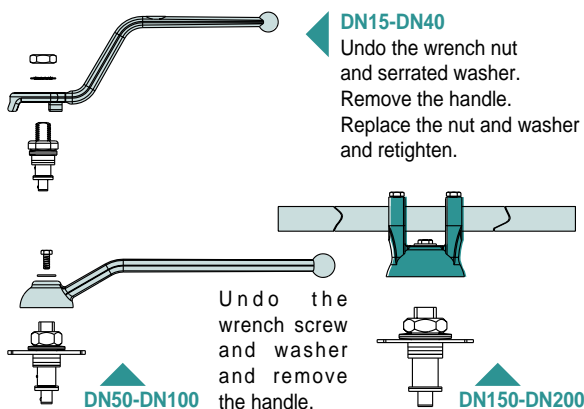
All the valves mounting flanges are in accordance with ISO 5211 standard and are suitable for accommodating quarter turn actuators (pneumatic or electric) for valve automation.

Valves can be operated for On-Off or throttling application with the Habonim Compact pneumatic actuator. Limit Switches for automation are available, also for hazardous classified areas.

Flanged **V-Port valve Control Packages** utilizing positioners mounted on the Compact actuator provide precise control for many process applications. Size range include DN15 to DN40.

## Mounting Actuators and Gear Operators

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



## Valve Sizing Table with 'Compact' Actuator PN16 and PN40 with PTFE Seats

VALVE SIZE	Double Acting (DA)		Spring Return (SR)	
	4.1 bar	5.5 bar	4.1 bar	5.5 bar
15	H15	H15	H20-2A2B	H15-1B2
20	H20	H15	H25-2A2B	H20-2C
25	H20	H20	H25-2A2B	H20-2C
40	H25	H20	H30-2A2B	H25-2C
50	H25	H25	H35-2A2B	H30-2C
80	H35	H30	H45-2A2B	H35-2C
100	H45	H35	H60-2A2B	H45-2C
150	H60	H60	H75-2A2B	H60-2C
200	H75	H75	CONSULT	CONSULT

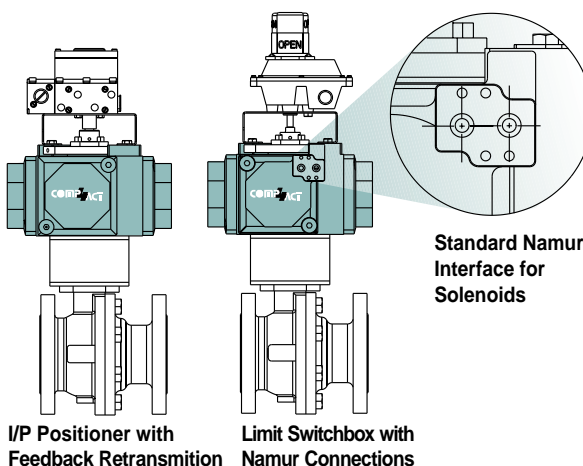
Valve Sizing Table is based on normal working conditions.

Valve torque values are calculated from tests using water at room temperature and using Virgin PTFE seats.

For other seat material and air pressure, please consult factory.

Refer to our Compact Pneumatic Actuator catalogue for more details.

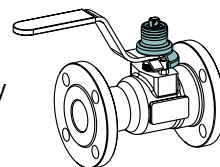
## Additional Accessories with Actuated Valves



## Locking Device

### LLP (Locked in Last Position)

Spring loaded locking devices can be fitted easily to the valve, with locking facility in closed or open position. The Locking Device can be fitted when valve is in-line. Available in sizes DN15 to DN40.



## Amongst the applicable standards

<b>Flanges:</b>	DIN 2501
<b>Face to Face:</b>	DIN 3202 F1, F4, F5
<b>Design:</b>	DIN 3357
<b>Antistatic:</b>	BS 5351
<b>Pressure Tests:</b>	DIN 3230, BS 6755 Part 1, API 598
<b>Fire Tests:</b>	API 607 4 <sup>th</sup> Edition BS 6755 Part 2
<b>Certificates:</b>	ISO -10474 (DIN EN 10204)



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