

# HABONIM

## 87P & 88P Series

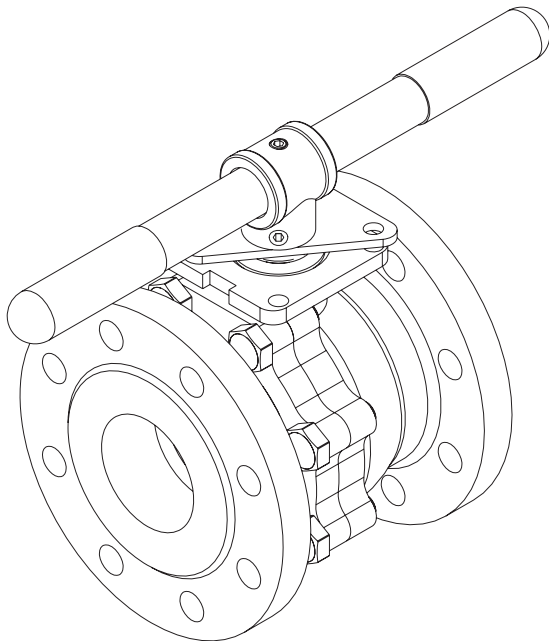
## Installation, Operating & Maintenance

### Full Port Flanged Ball Valves

#### Series Included:

87P, AF87P,  
88P, AF88P,

#### Sizes Included: DN15 – DN200



#### 1. GENERAL

This Installation, Operating & Maintenance manual covers the instructions required for safe use of Habonim flanged ball valves type 87P/88P series. The manual relates to DIN full bore flanged ball valves. Before using a valve, read the entire IOM carefully and make sure you understand everything.

#### **WARNINGS & SAFETY INSTRUCTIONS**

Habonim cannot anticipate all of the situations a user may encounter while installing and using Habonim valves. The user **MUST** know and follow all applicable industry specifications on the safe installation and use of these valves. Misapplication of the product may result in injuries or property damage. Refer to Habonim product catalogues, product brochures and installation, operating and maintenance manuals for additional product safety information or contact Habonim.

1. Keep hands and objects away from the valve ports at all times. Actuated valves could be accidentally operated, resulting in serious injury or valve damage.
2. Before removing a valve from the line always make sure the line has been depressurized and drained. Cycle the valve a few times to relieve any pressure that could be trapped in the body cavity.
3. Utmost caution must be taken when handling a valve that has toxic, corrosive, flammable or a contaminant nature media flowing through its pipeline. The following safety precautions are recommended when dismantling valves with hazardous media:
  - a. Wear eye shield, protective headgear, clothing, gloves and footwear.
  - b. Have available running water.
  - c. Have a suitable fire extinguisher when media is flammable.
4. Do not try to operate a valve that exhibits any sign of leakage. Isolate the valve and either repair or replace it.
5. Do not use or substitute non Habonim components or parts in Habonim valves and assemblies.



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D E D I C A T E D T O I N N O V A T I O N

## 2. LIMITATIONS

The correct selection of materials of construction, seats and seals, internal valve components and pressure/temperature ratings determines the safe use of the valves and the particular performance requirements for the application. This information can be found on the nameplate welded to the valve body.

The combined corrosion and erosion allowance for the valve body wall thickness is 1 mm. When this allowance has gone, the valve should no longer be used. Inspect the valve wall thickness every time the valve is maintained. Refer to Habonim Corrosion Data Chart T-614 to determine the corrosion rate for your application.

As the extent of applications these valves can be used in is large, it does not make it possible to cover all installation and maintenance instructions to service the valves. It is the owners responsibility to use the valves as recommended and in accordance with the pressure and temperature limits as stated in this manual. Where in doubt, please consult with Habonim. Any unstable fluid or gas should be identified by its manufacturer and must not be used with Habonim valves.

### CAUTION:

The valves should be used in a well designed, adequately protected system to ensure that external and internal pressure and temperature limits are not exceeded. The valve body rating can be higher than the seat rating. •Valve surface temperature may become extremely hot or cold due to ambient or operating conditions. Prevent any type of direct contact with the valve that may harm the workers. Wear protective gloves.

The valves should be used in a well designed, adequately supported piping system such that it will not be subjected to undue forces and moments during service. Avoid shock loads (water hammer).

The valves are not designed to operate during or after earthquakes or under fatigue conditions. It is the responsibility of the owner to determine if fatigue conditions exist.

Do not allow dust layers to build up on the equipment.

The process fluid temperature shall not exceed the ignition temperature of the dust.

## 3. STORAGE

Prior to storage, inspect the valve for shipping damage. Keep all protective packaging and flange covers attached to the valves during storage. It is recommended to keep the valves in a clean and dry environment until ready for use.

Carbon Steel valves painted black to retard rusting during storage. It is not a substitute for paint or other means of protective coating to be applied to the valve once installed.

Stainless steel valves have their natural finish and do not need any additional protection once installed.

## 4. OPERATING INSTRUCTIONS

Habonim valves provide tight shut off when used under normal conditions and in accordance with Habonim's published pressure/temperature chart. Consult with Habonim for the proper seat material selection. Valve operation works by operating the valve handle 90° turn anti-clockwise to open, and 90° turn clockwise to close. On manually operated valves the

valve is open when the handle or stem flats are parallel with the pipeline and closed when the handle or stem flats are perpendicular to the pipeline. Valves DN125 and above have a square headed shaft with a groove on the top that shows the ball position.

All standard valves are bidirectional and as such, can be installed for flow in either direction. Valves which are unidirectional will have a flow direction arrow welded to the body and separate assembly instructions. If a shut-off valve is installed for end of line service, it must be ensured that it is closed with a blind end connection and the valve is secured against being opened unintentionally.

**WARNING:** Never look into the valve bore while the valve is in a flow line.

Pressure and fluids could escape from the valve causing bodily injury. A silicone-based lubricant is applied to assist valve break in. The lubricant, if unacceptable, may be removed by a solvent wash.

To prevent leakage malfunctions resulting from internal wear or seal degradation, the user must establish a preventive maintenance and inspection program. This program must include:

- a. Inspection of parts to detect loss of wall thickness which may result in decreased pressure capacity.
  - b. Routine replacement of seals and inspection for proper operation.
- Valve operating torques as published in the Habonim literature are the normal expected maximum break-away torques. These torques have been confirmed by laboratory testing of each valve under controlled conditions. Highly viscous or abrasive media, frequency of operation and temperature fluctuations could cause an increase in valve torque.

## 5. INSTALLATION

The installation procedure for ball valves is critical to ensuring both long life and satisfactory performance. Valves stored on site awaiting installation should be kept in their original packing, in dry conditions, where damage will not occur. Before carrying out the installation, it is important to follow the basic procedures described below:

### 5.1 General

- 5.1.1 Carefully unpack the valve and check valve nameplate for identification of materials (see Figure 1).
  - 5.1.2 Remove any special materials, which were used for packing.
  - 5.1.3 Check the valve for any marks indicating flow direction. Appropriate care must be taken, to install the valve for proper flow orientation.
  - 5.1.4 Inspect the valve interior through the end ports to determine it is clean and free from foreign matter.
  - 5.1.5 Cycle the valve and inspect any functionally significant features.
  - 5.1.6 Read all the literature and note any special warning tags or plates attached to the valve.
  - 5.1.7 Before installation of manually operated valves, check to insure the ball is in the fully open position in order to prevent possible damage to the ball and seats. Fail-to-close actuated valves should be operated to the open position for inspection. The valve performance depends on its original conditions.
  - 5.1.8 Use the correct bolt material and size that suits the valve flanges.
  - 5.1.9 Use the appropriate gasket material and structure for the application.
- ### 5.2 Flanged Valves

- 5.2.1 Before installing the valves, make sure the flanges on the mating pipe are free from excessive grit, dirt or burrs.
- 5.2.2 The mating flanges must be aligned and parallel with the correct distance to allow the valve face-to-face dimension and gaskets to fit between.
- 5.2.3 Insert the valve between the mating flanges. If tilting or levering of the flanges is required, avoid harming the sealing surfaces of the flanges.
- 5.2.4 Align the valve and mating flanges and insert at least 2 bolts at the lowest side of the flange to support the gaskets.
- 5.2.5 Insert the gaskets between the flanges. Insert the remaining bolts.
- 5.2.6 Before tightening the bolts, make sure the gaskets are aligned with the raised face of the mating flanges.
- 5.2.7 Tighten the flange bolts according to the gasket manufacturer's recommended instructions or to the torque figures shown in (table 3) using the tightening patterns in (figure 2).
- 5.2.8 It is recommended to use ring spanners to tighten and support the bolts and nuts.
- 5.2.9 Before flushing the line, be sure the valves are in the fully open position. Fail-to-close actuated valves should be operated to the open position for flushing.
- 5.2.10 Before pressure testing the valves, bring the valves to the half-open position to ensure pressure reaches the stem seals and to avoid unnecessary loading of the seats. Fail-to-close actuated valves should be brought to the half-open position.

**6. MAINTENANCE**

HABONIM valves have a long and trouble free life, and maintenance is seldom required. When maintenance is necessary, valves can be refurbished on site.

To extend valve performance and reduce possible plant problems, the following procedures should be followed:

- 6.1 If leakage at the stem area is noted, it is recommended to tighten the gland nut about 1/6-turn as a routine maintenance procedure. This will compensate for any wear or settling of the gland packing.
- 6.2 Caution: Excessive tightening of the stem nut can result in accelerated seal wear and high valve operating torque.
- 6.3 If the valve is removed from the line and disassembled, replacement of all seats and seals is recommended using the appropriate Habonim Repair kit. Examine all metallic sealing surfaces such as ball and stem or the body and insert mating surfaces that contact the seats for wear, corrosion or damage.
- 6.4 Only Habonim's authorized spare parts should be used. Repair kits from Habonim flanged reduce bore valves consist of the following:
  - 2 x soft seat rings
  - 1 x body seal
  - 1 x stem thrust ring
  - 2 or 3 x gland packing (depends on valve size or seal material)
  - 1 x O-Ring seal
- 6.5 In addition to repair kits, other spare parts available from Habonim are: valve balls, stems, glands, bolts, screws and nuts. Should additional parts be required, it is recommended that the complete

valve be replaced.

- 6.6 When ordering repair kits, please provide the valve size and full figure number code and series.

**7. DISASSEMBLY**

- 7.1 Cycle the valve with the line pressure fully relieved before attempting to remove the valve from the pipeline, to insure pressure has also been discharged from the valve cavity.
- 7.2 Loosen all flange bolts. Before removing the valve, allow the fluid to drain from the valve ports.
- 7.3 Remove all but one flange bolt on either side of valve, so the valve body can swing away from its installed position and be brought out of the pipe line. Make sure there is no load on the flange before removing the remaining bolts and valve. If needed, use a lever to release the bolts.
- 7.4 Clamp the valve in a vice or connect the valve back flange to a fixture to support it before removing end cap.
- 7.5 Bring the valve to the closed position.
- 7.6 Loosen the valve body bolts and remove the end cap. Lay the end cap on the flange side and remove the seat from its place.
- 7.7 Remove the ball and body seal from the body. Take care not to damage the sealing surfaces of the body or end cap. Set the ball aside in clean secure area for reuse.
- 7.8 Pull out the second seat from the body cavity, taking care not to damage the sealing surfaces of the valve.
- 7.9 Remove the wrench bolt, wrench pipe, wrench head, gland nut, indicator stop plate and gland. Place all components removed, in clean secure area.
- 7.10 Push the stem down into the body and remove it. Discard the stem thrust ring and gland packing, care taken not to scratch or nick the packing bore area of the body. Clean the stem and packing bore area. There is no need to remove the stem location ring.

**8. ASSEMBLY**

- 8.1 Insert one new seat ring into the end cap with its round profile facing up and put it aside.
- 8.2 Lubricate the new stem thrust ring with appropriate lubricant (Molycote 33 - thin smear).
- 8.3 Place the stem thrust ring on the stem and insert the stem horizontally into the center body with the threaded side first and carefully guide it up through the stem bore.
- 8.4 Holding the stem up insert the new packing over the stem and into the stem bore. Place the gland and indicator stop plate onto the stem.
- 8.5 Thread the gland nut onto the stem. Tighten the gland nut to the torque figures (table 1).
- 8.6 Place the wrench head on the stem square so the pipe will be parallel to the groove marked on its head. Insert the pipe in the wrench head and screw the wrench bolt. Turn the wrench to the closed position.
- 8.7 Secure the body with its open side facing up and insert the second seat ring into its housing with its round profile facing up.
- 8.8 Insert the ball in the body cavity until the stem tang is engaged to

the ball slot and the ball is nested in the

- 8.9 Place the new body seal into the valve body.
- 8.10 Holding the end cap and the seat together from the inside of the passage, carefully place them on the valve body making sure not to damage the ball or body seal.
- 8.11 Laying the end cap and its seat on the ball, align it to the body bolt holes, making sure that the body flange and end cap flange are correctly oriented.
- 8.12 Insert the body bolts and tighten them evenly to the torque figures in (table 2) using a proper tool. With stainless steel bolts use anti-galling lubricant.
- 8.13 Refer to the Installation Instructions in section 5 of this manual to complete the valve assembly to the line.
- 8.14 Leave the valve in the open position for flushing the line.

FIGURE 1

Valve Marking and Labeling

All valves marking is on 2 nameplates which are spot welded to the valve body or flange. All Valves carry the CE & ATEX (Ex) mark.

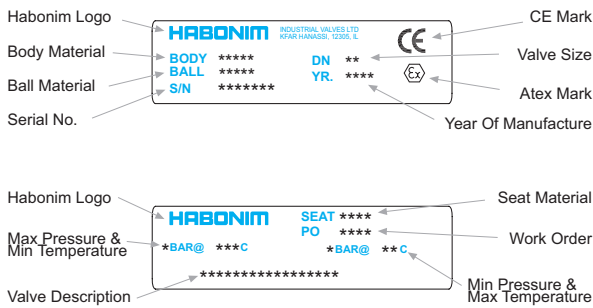


TABLE 1

Stem Nut Tightening Torque

Valve Size	Nut Thread	PTFE Seals		* Graphite Seals		
		Nm	in.lb	Nm	in.lb	
15	1/2"	3/8-26UNF	8	71	8-10	71-89
20	3/4"	3/8-26UNF	8	71	8-10	71-89
25	1"	9/16-18UNF	11	97	11-13	97-115
32	1 1/4"	9/16-18UNF	11	97	11-13	97-115
40	1 1/2"	5/8-18UNF	16	142	17-20	150-180
50	2"	5/8-18UNF	16	142	17-20	150-180
65	2 1/2"	7/8-14UNF	24	215	24-28	215-248
80	3"	7/8-14UNF	24	215	24-28	215-248
100	4"	1 1/8-12UNF	24	215	24-28	215-248
125	5"	1-3/8-12UNF	40	354	40-48	354-425
150	6"	1-3/8-12UNF	40	354	40-48	354-425
200	8"	1-3/4-12UNF	71	630	71-76	630-673

\* Graphite stem seals must be torqued to the higher torque figure in the table, then cycled 6-10 times and re-torqued to the lower torque figure.

IMPORTANT:

An excessively tightened gland nut can cause excessive packing wear and increase stem torque.

TABLE 2  
Body Bolt Tightening Torque

The following table provides body bolt torque values to connect the end cap.

Valve Size		Body Bolt Size	Tightening Torque (Nm)
PN16	PN40		
15	15	M8	20
20	20	M8	20
25	25	M10	40
32	32	M10	40
40	40	M12	55
50	50	M12	55
65	65	M12	55
80	-	M12	55
100 & 125	80	M12	55
150	100 & 125	M16	150
200	150	M20	220
-	200	M22	270

TABLE 3  
Flange Bolt Tightening Torque

The following table provides flange bolt torque values and are to used as guidelines only and are not rigid limits.

The torque values will be determined by the gasket type and the material of the gasket, bolt, flange and lubricant used. It is the responsibility of the user to determine all these parameters and use the correct values.

Valve Size (DN)	PN 16		PN 40	
	Nm	in.lb	Nm	in.lb
15	55	485	55	485
20	55	485	55	485
25	55	485	55	485
32	150	1,330	150	1,330
40	150	1,330	150	1,330
50	150	1,330	150	1,330
65	150	1,330	150	1,330
80	150	1,330	150	1,330
100	150	1,330	220	1,950
125	150	1,330	320	2,835
150	220	1,950	320	2,835
200	220	1,950	360	3,185

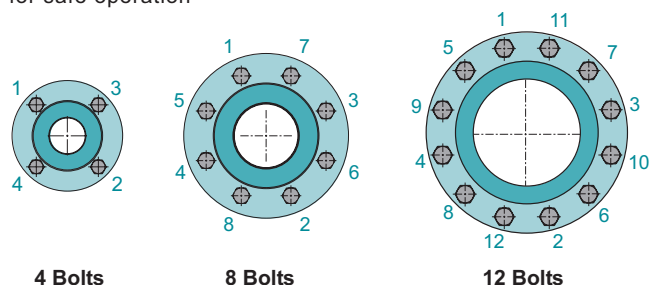
IMPORTANT:

From the bolts point of view, the torque selected should be high enough to ensure adequate strain (stretch) in the bolt, but not so high as to cause the material to be taken beyond yield into the plastic response region.

If the initial bolt stress is too low the total amount of strain (stretch in the bolt) is low and under these circumstances any subsequent reduction in thickness of the gasket due to creep will quickly result in loss of bolt strain and subsequent leakage.

FIGURE 2  
Flange Bolt Tightening Pattern

When installing the valves in-line, follow the bolt tightening patterns shown below, using the recommended torque figures for safe operation



**Valve Specification DN15-DN200**

Item	Description	Material Specifications	Qty.
1	Body	Carbon St. EN-10213-2 1.0619 Stainless St. EN-10213-4 1.4408	1
2	Body Connector	Carbon St. EN-10213-2 1.0619 Stainless St. EN-10213-4 1.4408	1
3	Ball	Stainless St. EN-10213-4 1.4408 Stainless St. EN-10213-4 1.4308**	1
4	Stem	Stainless St. ASTM A276 316 Stainless St. ASTM A276 304**	1
5*	Seat Ring	PTFE, RPTFE, NRG, TFM	2
6*	Body Seal	PTFE, Graphite	1
7*	Stem Thrust Seal	PTFE	1
8*	O-Ring	Viton (FKM)	1-2***
9*	Gland Packing	PTFE Graphite	2-5 1
10*	Bushing	Stainless St. ASTM A276 304	1
11	Follower	Stainless St. 304	1
12	Disc Spring	Stainless St. 301	2
13	Stem Nut	Stainless St. ASTM A194-8	1
13A	Handle Nut	Stainless St. ASTM A194-8	1
14	Locking Clip	Stainless St. ASTM A276 304	1
15	Handle + Lock	Stainless St. ASTM A351 CF8	1
16	Handle Sleeve	Vinyl Plastisol	1
17	Stop Pin	Stainless St. ASTM A193-B8	1

Item	Description	Material Specifications	Qty.
18	Body Connector Studs	Carbon St. ASTM A193-B7	87P 4-10
		Stainless St. ASTM A193-B8	88P 4-12
19	Body Connector Nuts	Carbon St. ASTM A194-2H	87P 4-10
		Stainless St. ASTM A194-8	88P 4-12
20	Handle Sleeve (DN100 & up)	Vinyl Plastisol	2
21	Pipe Handle (DN100 & up)	Carbon St. Zinc Plated	1
22	Tee Wrench (DN100 & up)	Stainless St. ASTM A351 CF8	1
23	Set Screw (DN100 & up)	Stainless St. ASTM A193-B8	2
24	Stop Plate (DN100 & up)	Stainless St. ASTM A276 304	1
25	Antistatic Spring	Stainless St. 304**	2
		Stainless St. 316	
26	Antistatic Ball	Stainless St. 304**	2
		Stainless St. 316	

\* Standard item for repair kit  
 \*\* For Carbon St. valve DN65 & larger  
 \*\*\* 2 O-Rings for DN125 & larger

