

**HAKOHAN**<sup>®</sup>  
VALVES

**KIM**<sup>®</sup>  
VALVES

# Diaphragm Valves

LONG LIFE VALVES



**W** - WEIR TYPE

**ST** - STRAIGHT THROUGH TYPE

# KIM DIAPHRAGM VALVES



**KIM Diaphragm Valves** are worldwide known (since 1956) for their benefits in corrosion and abrasion resistance, offering features of leak tightness and low cost maintenance in severe service applications.

**KIM Diaphragm Valves** are based on simple operating principles and extremely versatile in their applications because of the variety of body materials, linings, coatings and diaphragm grades which available.

## ADVANTAGES

- The operating parts of the valve are isolated from the fluid preventing any possibility of corrosive contamination.
- The over-closure protection system avoids diaphragm tampering due to the apply of excessive force.
- No packing/gaskets used inside the valve's body which eliminates leak path and deep corrosion.
- Inbuilt open/closed indicator system.
- Easy maintenance procedures allow cleaning and diaphragm changing without removing the valve from the line even if it is in open position.
- The vast variety of linings and coatings, together with many diaphragm combinations, makes the valve suitable to handle nearly any fluid under the most severe conditions.
- Suitable to operate in vacuum implementations.
- Suitable for most connection possibilities to the pipes (all flange drilling systems, screws and welding).
- Valve's shaft is made of stainless steel 304 as standard for best corrosion resistance.
- Designed for low operatng torques for saving energy.
- Suitable for all kinds of actuators.

## DIAPHRAGM SELECTION AND SERVICES

GRADE	MATERIAL NAME	TEMP		SIZE RANGE		TYPICAL SERVICES
		C°	F°	Inch	mm	
10	Natural Rubber	-40 to 100°	-40 to 212°	1/4" - 14"	8-350	General purpose, abrasives, water, diluted minerals acids
11	Natural Rubber Composite	-40 to 100°	-40 to 212°	1/2" - 8"	15-200	Abrasives, slurry and suspended solids
20	EPDM / Black	-40 to 140°	-40 to 284°	1/4" - 14"	8-350	General Purpose, highly-resistant to temperatures, most corrosive chemicals and abrasive liquids.
2F	EPDM / food grade	-30 to 120°	-22 to 248°	1/2" - 8"	15-200	Food and pharmaceuticals
30	Butyl Rubber	-20 to 120°	-4 to 248°	1/4" - 14"	8-350	Acids, alkalis, hot water, low pressure steam
40	Nitrile Rubber	-20 to 100°	-4 to 212°	1/4" - 14"	8-350	Oils, fats and fuels
50	Neoprene	-30 to 105°	-22 to 221°	1/4" - 14"	8-350	Air, weak chemicals, greases
60	Hypalon	-20 to 100°	-4 to 212°	1/2" - 14"	15-350	Concentrated acids and alkalis, chlorine services
70	Viton FPM	-20 to 150°	-4 to 302°	1/2" - 8"	15-200	Concentrated sulphuric and other acids, aromatic hydrocarbons, chlorine services
80	Silicone	-30 to 175°	-22 to 347°	1/2" - 8"	15-200	Moderate or oxidizing chemicals, ozone, concentrated sodium hydroxide. Recommended for food.
93/20	PTFE/EPDM backed	-30 to 175°	-22 to 347°	1/2" - 8"	15-200	Highest chemical and temperature resistance
93/30	PTFE/Butyl backed	-30 to 150°	-22 to 302°			
93/60	PTFE/Hypalon backed	-20 to 120°	-4 to 248°			
93/70	PTFE/Viton backed	-20 to 175°	-4 to 347°			

■ **NOTE:** These temperature data relate to water. For other materials, contact your local KIM distributor. Diaphragms at maximum temperatures cannot be used satisfactory at maximum pressures.



## BODY SELECTION

There are many critical services that demand a lined body for maximum chemical or abrasion resistance. KIM VALVES offers the following linings and coatings. Special linings and coatings can be furnished upon request.



	MATERIAL CODE	MATERIAL NAME	END CONNECTION	SIZE RANGE		TEMP °C	TYPICAL SERVICES
				Inch	mm		
UNLINED BODY (Epoxy coated)	CI	Cast Iron	Threaded	1/2" - 3"	15 - 80mm	-20 to 80°	Good acid, natural salts & alkali resistance suitable for food and water
			Flanged	1/2" - 14"	15 - 350mm	-20 to 80°	
	SG	Ductile Iron	Threaded	1/2" - 3"	15 - 80mm	-20 to 80°	
			Flanged	1/2" - 14"	15 - 350mm	-20 to 80°	
	CS	Cast Steel	Threaded	1/2" - 3"	15 - 80mm	-20 to 80°	
			Flanged	1/2" - 14"	15 - 350mm	-20 to 80°	
	SS	Cast St Steel	Threaded	1/2" - 3"	15 - 80mm	-20 to 80°	
			Socket Weld	1/2" - 3"	15 - 80mm	-20 to 80°	
Butt Weld			1/2" - 3"	15 - 80mm	-20 to 80°		
Flanged			1/2" - 14"	15 - 350mm	-20 to 80°		
	Bronze	Threaded	1/2" - 2"	15 - 50mm	-20 to 80°		
		Flanged	1/2" - 6"	15 - 150mm	-20 to 80°		
RUBBER LINED BODY	SR	Soft Natural Rubber	Flanged	3/4" - 14"	20 - 350mm	-40 to 100°	General purpose, abrasives, water, diluted mineral acids
	HR	Hard Natural Rubber	Flanged	3/4" - 14"	20 - 350mm	-40 to 100°	General purpose, good acid & alkali resistance
	BR	Butyl Rubber	Flanged	3/4" - 14"	20 - 350mm	-20 to 120°	Good acid & alkali resistance including sulphuric acid
	NR	Neoprene Rubber	Flanged	3/4" - 14"	20 - 350mm	-30 to 105°	Weak chemicals & greases
	HY	Chlorosulfonated polyethylene - CSM hypalon rubber	Flanged	3/4" - 14"	20 - 350mm	-30 to 95°	Concentrated acids & alkali
	EPDM	EPDM - Black	Flanged	3/4" - 14"	20 - 350mm	-40 to 140°	General Purpose, highly-resistant to temperatures, most corrosive chemicals and abrasive liquids
PLASTIC LINED BODY (W Type only)	ETFE	Ethylene tetrafluorethylene-tefzel	Flanged	1" - 6"	25 - 150mm	-20 to 150°	High chemical resistance, abrasion resistant, suitable for food
	PFA	Perfluoroalkoxy	Flanged	1" - 6"	25 - 150mm	-20 to 175°	High chemical resistance, High abrasion resistant, high temperature stability, suitable for food
	PVDF	Polyvinylidene flouride	Flanged	1" - 6"	25 - 150mm	-20 to 130°	Resistant to most inorganic acids & bases of moderate concentration, sodium hypo-chlorite service
	PP	Polypropylene	Flanged	1" - 6"	25 - 150mm	-30 to 85°	Water treatment, effluent lines especially hot effluent lines from dye stuffs, chemical processing plating fluid & steel works pickling lines
COATED BODY	GL	Glass	Flanged	1/2" - 8"	15 - 200mm	-10 to 175°	High chemical resistance, abrasion resistant, high temperature stability, suitable for food
	ECTFE	Ethylene chlorotrifluoroethylene HALAR	Flanged	1/2" - 8"	15 - 200mm	-20 to 130°	High chemical resistance to mineral & oxidizing acids, alkali, salts & nearly all solvents
	Nylon I I	Rilsan	Flanged	1/2" - 8"	15 - 200mm	-20 to 80°	Potable water and water treatment chemicals

### Standard Specifications

**Design standards:** EN13397-2002 (BS5156:1985), MSS SP88 ■ **Face to Face standards:** EN558-I Series I (DIN3202-FI), EN558-I Series 7 (BS-5156), MSS SP88

**Testing standards:** EN12266-2 2002 (BS6755 Part I)

**Material Specifications - Metal Bodies:** Cast Iron (ASTMA126 CI B), Ductile Iron (ASTMA395 60-40-18), Carbon Steel (ASTMA216 Gr WCB), Stainless Steel (ASTMA351 Gr CF8), Stainless Steel (ASTMA351 Gr CF8M), Stainless Steel (ASTMA351 Gr CF3M), Alloy 20 (ASTMA351 Gr CN7M), Hastelloy C ASTM A-494 Gr CW-6M, Bronze ASTM A83600 LG2/4

**Flange Valve Drilling Standards:** ANSI B16.5 Class 125 & 150, EN1092 PN 10/16 (BS4504), AS2129-2000 Table D/E (BS10 1962), JIS B2220

**Screwed Valve Thread Standards:** ANSI B2.1 NPT, AS1722.1 Part I BSPP

# W



## Weir type valve

- Suitable for control & throttling services.
- Capable of handling higher temperature/corrosive services due to the use of PTFE diaphragm.
- Ability for self-draining to avoid product build up or contamination.
- Suitable for vacuum services.

## WORKING PRESSURES

Maximum permissible working pressures within a temperature range of  $-10^{\circ}$  to  $50^{\circ}\text{C}$  ( $14^{\circ}$  to  $122^{\circ}\text{F}$ ) are as follows:

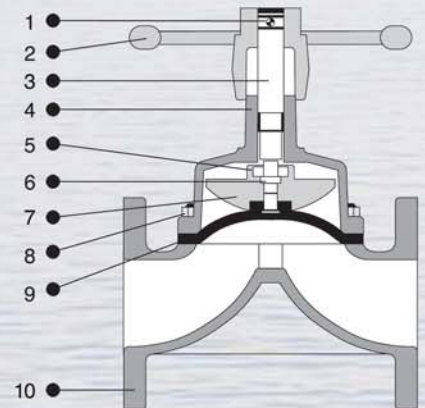
VALVE SIZE		PRESSURES WITH RUBBER DIAPHRAGM		PRESSURES WITH PTFE DIAPHRAGM	
DN (mm)	INCH	BAR	PSI	BAR	PSI
15 - 50	¼ - 2	16	232	10	145
65 - 125	2½ - 5	10	145	10	145
150	6	10	145	7	102
200-250	8-10	7	102	6	87
300-350	12-14	6	87	-	-

Higher temperatures will lower the physical properties of the various diaphragm materials and require decreased working pressures.

## MATERIAL SPECIFICATION

PART NO.	COMPONENT	MATERIAL
1*	Handwheel pin	Spring steel
2	Handwheel	Cast iron / stainless steel
3*	Stem	Stainless steel - AISI 304
4	Bonnet	Cast iron / stainless steel
5	Compressor pin	Spring steel
6	Thrust disc	Polyacetal
7	Compressor	Cast iron / stainless steel
8*	Studs/bolts & nuts	Carbon steel, Grade 8.8
9	Diaphragm	As specified (see table)
10*	Body	Cast iron / ductile iron / stainless steel

\* Other materials available upon request



Nylon 11 (Rilsan)



Glass lined



Halar (ECTFE) coated



PFA lined



Rubber lined (EPDM)



ETFE lined  
PVDF/PP lined

# ST

## Straight Through type valve

- Recommended for dense fluids or slurries services where solids are greater than 10-15% in the fluid.
- Suitable when mineral pressure drop is required.
- Used when “rodding” or “pigging” of the line is necessary.



### WORKING PRESSURES

Maximum permissible working pressures within a temperature range of -10<sup>o</sup> to 50<sup>o</sup>C (14<sup>o</sup> to 122<sup>o</sup>F) are as follows:

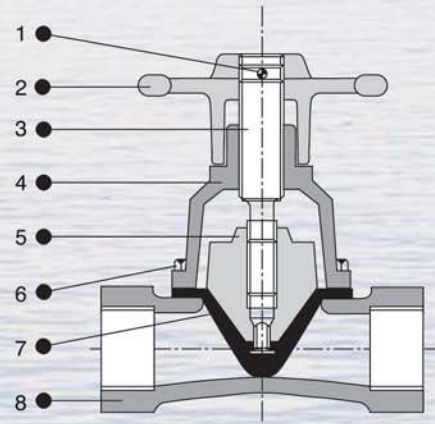
VALVE SIZE		PRESSURES	
DN (mm)	INCH	BAR	PSI
25-100	1-4	10	145
125-150	5-6	6	87
200-300	8-12	3.5	50

Higher temperatures will lower the physical properties of the various diaphragm materials and require a decrease in working pressures.

### MATERIAL SPECIFICATION

PART NO.	COMPONENT	MATERIAL
1*	Handwheel pin	Spring steel
2	Handwheel	Cast iron / Stainless steel
3*	Stem	Stainless steel AISI 304
4	Bonnet	Cast iron / Stainless steel
5	Compressor	Cast iron / Stainless steel
6*	Studs/bolts & nuts	Carbon steel, Grade 8.8
7	Diaphragm	As specified (see table)
8*	Body	Cast iron / ductile iron / Stainless steel

\* Other materials available upon request



Nylon II (Rilsan)



Rubber lined



Halar (ECTFE) coated



Glass lined



Unlined

# STRUCTURE & DIMENSIONS

## DIAPHRAGM VALVE COMPONENTS

### HANDWHEEL

All KIM handwheels are designed for functional use and comfortable handling

### STEM

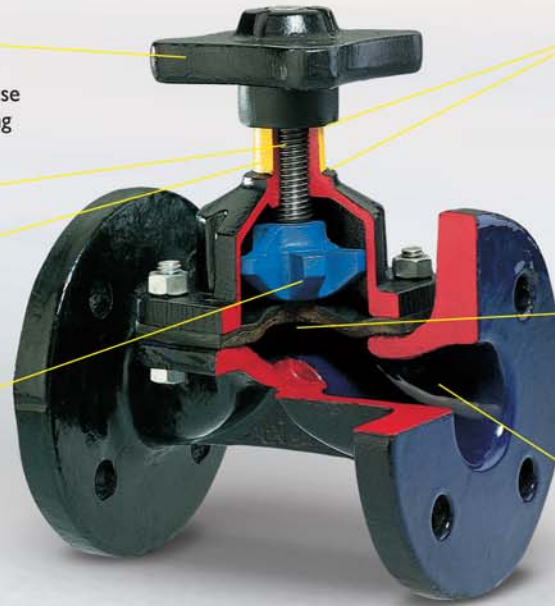
Precision machined from stainless steel provides long term corrosion resistance

### INDICATOR

Bonnet is painted bright yellow under handle skirt to provide clear indication of valve position from any angle

### COMPRESSOR

Conforms to contours of diaphragm for support during opening and closure



### OVER-CLOSURE PROTECTION

Patented bonnet design provides over-closure protection for diaphragm in closed position. These two metal surfaces will seat and prevent over-compression of diaphragm.

### DIAPHRAGM

Flexible member provides positive closure and isolates bonnet components from fluid stream

### BODY

The interior's smooth contours provide unrestricted flow and minimum pressure loss

## STRAIGHT THROUGH TYPE - FACE TO FACE DIMENSIONS

VALVE SIZE		FLANGED			THREADED
DN-INCHES	DN mm	EN558-1 Series 7 BS-5156 UNLINED	EN558-1 Series 1 DN 3202 F-1 LINED/UNLINED	MSS-SP88 UNLINED	
1	25	127	160	140	108
1.5	40	159	200	165	n/a
2	50	190	230	190	168
2.5	65	216	290	216	n/a
3	80	254	310	254	n/a
4	100	305	350	317	n/a
6	150	406	480	406	n/a
8	200	521	600	521	n/a
10	250	635	730	635	n/a
12	300	749	850	749	n/a

## WEIR TYPE - FACE TO FACE DIMENSIONS

VALVE SIZE		FLANGED			THREADED
DN-INCHES	DN mm	EN558-1 Series 7 BS-5156 UNLINED	EN558-1 Series 1 DN 3202 F-1 LINED/UNLINED	MSS-SP88 UNLINED	
0.5	15	108	130	102	66
0.75	20	117	150	140	80
1	25	127	160	140	108
1.25	32	146	180	152	122
1.5	40	159	200	165	142
2	50	190	230	190	167
2.5	65	216	290	216	225
3	80	254	310	254	276
4	100	305	350	317	n/a
5	125	356	400	356	n/a
6	150	406	480	406	n/a
8	200	521	600	521	n/a
10	250	635	730	635	n/a
12	300	749	850	749	n/a
14	350	749	980	749	n/a



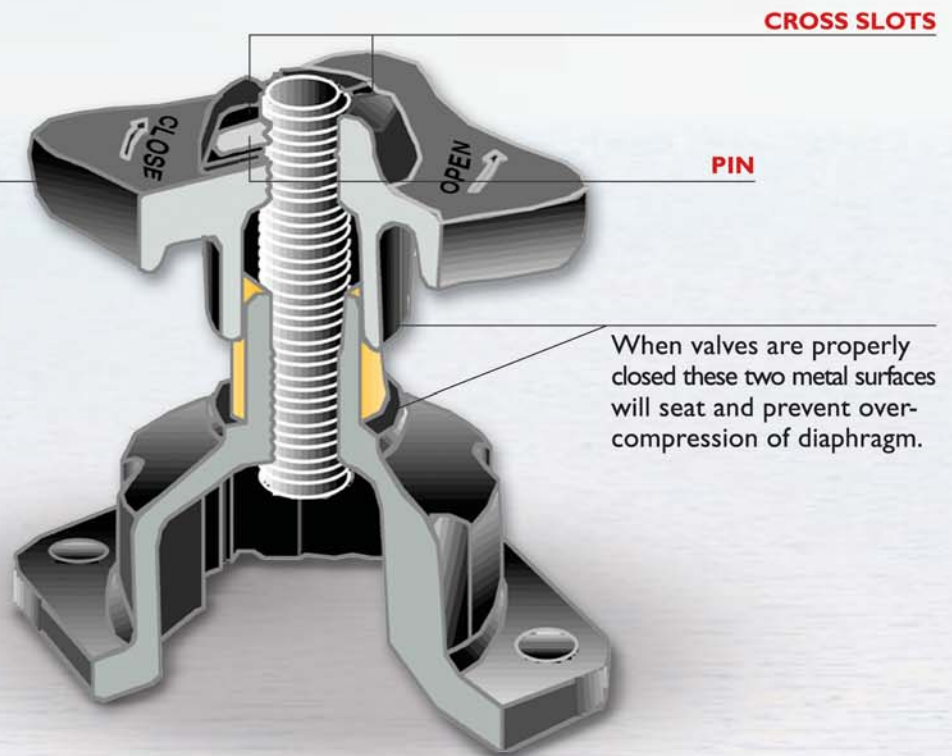
## OVER-CLOSURE PROTECTED BONNET

**KIM Over-Closure-Protection** is a standard feature on the **Type 'N'** bonnets on both **KIM Weir** and **Straight Through Valves**. The key features of the **Type 'N'** bonnet include adjustable over-closure protection to compensate for variations in diaphragm and lining thickness, and is tamper-proof to prevent adjustment by unauthorized personnel. A brightly colored sleeve on the **Type 'N'** bonnet indicates the exact valve position. By adjusting **KIM Over-Closure-Protection** feature automatically, the valve position indicator also adjusts.



### HANDWHEEL

The handwheel is threaded onto the valve's spindle and is fixed in the proper position by inserting the pin into one of the four cross slots.



**A** Remove handwheel pin.



**B** Turn handwheel counter-clockwise one turn.



**C** Insert a piece of steel wire.

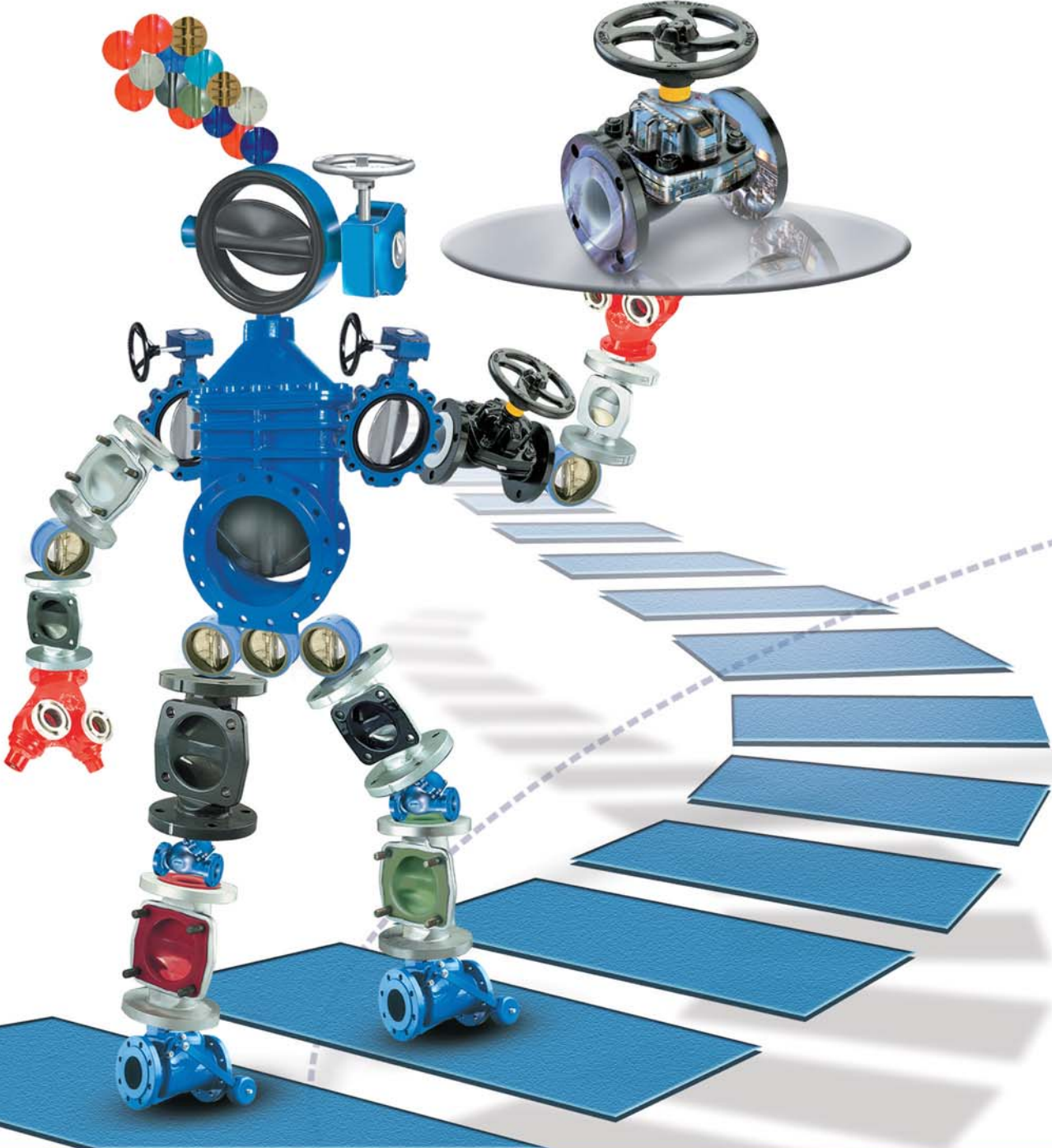


**D** Close valve tightly and remove steel wire.



**E** Turn handwheel clockwise until sleeve seats on bonnet rim and re-insert handwheel pin.

# LONG LIFE VALVES



8 Hashlagan St., Kiriath Gat 82021 Israel  
Tel. 972-8-6818899 ■ Fax. 972-8-6818801  
E-mail: hakohev@smile.net.il  
www.hakohev.com ■ www.kimvalves.com

