

# TWO-WAY SOLENOID VALVE

General Purpose & Explosion-proof

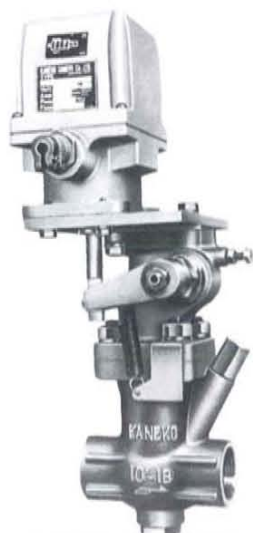
**M30 & M31 SERIES TWO WAY SOLENOID VALVE**



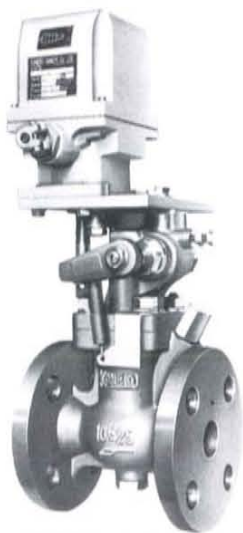
**Silent Technology KANNEKO**



# M30 SERIES 2 WAY SOLENOID VALVE



M30C-A44-□S



M30C-A44-□F



M30C-AE44-□S



M30C-AE44-□F

## M30 SERIES 2 WAY SOLENOID VALVE GENERAL DESCRIPTION

Solenoid valve of this model is used for On-Off control of liquid, vapor and vacuum. Provided of construction for various fluid pressure and electric source.

Pipe Size: From 15(1/2") to 50(2")  
(65(2 1/2")~100(4") #301

Others, for Emergency operation, Manual Reset Solenoid valve (M31 Series are provided.)

## FEATURE

1. Main valve is directly connected to pilot valve, so can use even if differential pressure is 0.
2. Size and seat size is same, loss of pressure is very little.
3. To be used for wide range of fluid.
4. Has construction of solenoid portion does not contact to fluid, so has no effect of fluid.
5. Parts are standardized, by the system of parts stocks, even if special fluid, comparatively can deliver in short.

## STANDARD SPECIFICATIONS

### 1. FUNCTION

- (1) Normally closed type:  
Valve closed when de-energized.  
Valve opens when energized.
- (2) Normally open type:  
Valve opens when de-energized.  
Valve closed when energized.

### 2. SIZE & Cv FLOW FACTOR

Table-1

SIZE	15(1/2")	20(3/4")	25(1")	32(1 1/4")	40(1 1/2")	50(2")
Cv Flow Factor	4.2	8.4	10.5	14.1	28.7	48.5

### 3. PIPE CONNECTION:

- (1) Screwed: PT, NPT Under 32(1 1/4")
- (2) Flanged: JIS, ANSI (Standard is JIS 10kg/cm<sup>2</sup> but stainless steel is manufactured up to JIS 30kg/cm<sup>2</sup>)

### 4. MATERIAL:

- (1) Main body  
CAC406 . . . . . 15(1/2")~50(2")  
SCS13A . . . . . 15(1/2")~50(2")  
SCS14 . . . . . 15(1/2")~50(2")  
FC200 . . . . . 40(1 1/2"), 50(2")
- (2) Seat portion  
Soft seat . . . . . NBR, Viton, Neo-plane  
Metal seat . . . . . C6191, SUS304, SUS316
- (3) Packing  
NBR, Viton, Neo-plane, EPR, Teflon
- (4) Inner metal portion  
Copper alloy, SUS304, SUS316

### 5. FLUID:

Gas, Liquid, Steam

### 6. FLUID VISCOSITY:

to be used under Max. 250 cst (Redwood No. 1 sec 1500)

### 7. PRESSURE & TEMPERATURE:

Refer to Table-4. and 5

### 8. AMBIENT TEMPERATURE:

- 20°C ~ + 40°C But to be used within the range of fluid does not frozen

### 9. VALVE SEAT LEAKAGE:

None (In case of soft seat)

### 10. SOLENOID:

- (1) CONSTRUCTION  
General purpose outdoor use  
Flame proof, outdoor use (JIS C0903 d2G4)
- (2) CONNECTION GLAND  
G $\frac{1}{2}$ " (Standard) G $\frac{3}{4}$ " (In case of indication)
- (3) STANDARD COIL AND CLASS OF INSULATION  
Continuous Duty Molded Class B or H  
Class B . . . . . Use under 80°C Fluid temperature  
Class H . . . . . Use over 80°C Fluid temperature
- (4) STANDARD VOLTAGE  
AC, 100, 110, 200, 220V 50/60Hz  
DC, 24, 48, 100, 110, 125V  
Other voltages available When required
- (5) NORMAL OPERATING VOLTAGE RANGE  
+ 10% , - 15%
- (6) RATING  
Continuous rating (Short time rating by request)
- (7) ELECTRICAL INFORMATION (Table-2, Table-3)

### 11. CAUTION CLAUSES FOR USAGE:

- (1) Mounting, solenoid portion should be upward to horizontal pipe lining.  
(Allowable incline angle should be within 30° either front & back, left & right.
- (2) Flow direction is limited.  
(Secondary pressure should not be higher than primary pressure)
- (3) In case of fluid is liquid, perform air drain from air drain valve.
- (4) Do not painting to movable parts

### 12. SPECIAL ORDER:

- (1) 1/8", 1/4" and 3/8" Bushing (Only CAC Screwed Body)
- (2) Terminal box (TF 60) according to JIS F8801 (For outdoor use only, Explosion proof type is enclosed)  
G $\frac{1}{2}$ " (15 a, b, c)  
G $\frac{3}{4}$ " (20 a, b, c)
- (3) Micro-switch, may be fitted to general purpose & explosion proof type.  
Indication valve open  
Indication valve close  
Indication valve open & close  
Please indicate
- (4) Manual operation lever (Lock device may be provided)
- (5) Dust proof cover (Available for only to normally closed type)

AC Table-2

V/Hz	Size 15(1/2")~ 32(1 1/4")		Size 40(1 1/2")~ 50(2")	
	Inrush	Holding	Inrush	Holding
100/50	9.0	0.55	37	1.65
100/60	9.5	0.65	41	2.0
110/60	8.5	0.50	40	1.8
200/50	5.5	0.30	20	0.8
200/60	6.0	0.33	22	0.92
220/60	5.0	0.27	21	0.9

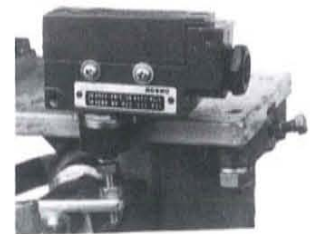
DC Table-3

V	Size 15(1/2")~ 32(1 1/4") Holding	Size 40(1 1/2")~ 50(2") Holding
24	1.6	2.0
48	0.8	1.0
100	0.32	0.6
110	0.34	0.4
125	0.31	0.45

### OPTION



Dust Proof Cover



Micro Switch

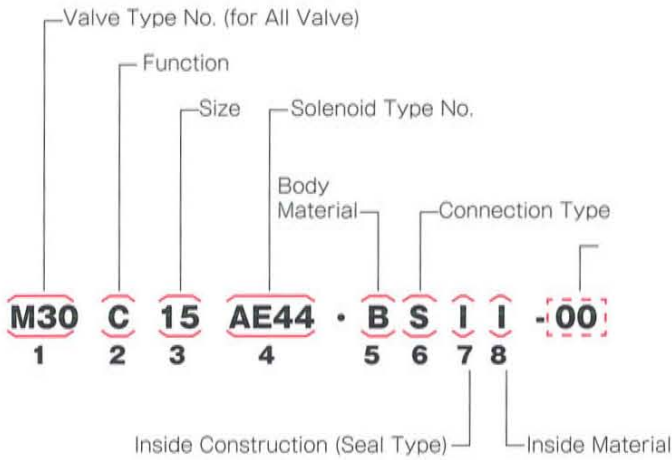


General Purpose Terminal Box



Manual Operating Lever

## MODEL NO. DIScription



40 and 50 A66: For AC general purpose use  
D66: For DC general purpose use  
AE66: For AC explosion-proof and water tight  
DE66: For DC explosion-proof and water tight

(Note)M31series: All size to use A44, D44, AE44 and DE44

### 5. BODY MATERIALS

B: CAC406  
S: SCS13A, SCS14(Stainless steel)  
F: FC200(Cast iron. size40 and 50 only)

### 6. PIPE CONNECTION

S: Screwed(15 to 32 only)  
F: Flanged

### 7. INNER CONSTRUCTION

1: Soft seal(Packing, O-ring seal)  
2: Metal seal(Packing, O-ring seal)  
5: Metal seal(Packing, Teflon U-packing seal)

### 8. INNER MATERIAL(Trimmed materials)

1: C3604,06191(Copper alloy)  
2: SUS304 (In case of body material is SCS 13, whole of fluid contact portion)In case of body material is FC200 only Trim portion, Other portion is used of copper alloy. But body material CAC406 and SCS14 combination is none.  
3: SUS316 (Use only in case of main body material is SCS14)  
4: SUS304 (In case of main body material is FC200, and in case of inner material is used whole of SUS304)

In case of special specification, other than above-mentioned standard, we manufacture by request, please inquiry to Engineering Dept.

### 1. VALVE TYPE No.

In this catalogue following expression  
M30: 2-way solenoid valve  
M31: Manual reset 2-way solenoid valve

### 2. FUNCTION

C: Normally Closed(Energized open)  
D: Normally Open(Energized closed)

### 3. SIZE

15(1/2"),20(3/4"),25 (1"),32(1 1/4"),40(1 1/2"),50(2")

### 4. SOLENOID MODEL No.(Different according to size)

15 to 32 A44: For AC general purpose use  
D44: For DC general purpose use  
AE44: For AC explosion-proof and water tight  
DE44: For DC explosion-proof and water tight

## MODEL NO. AT WORKING PRESSURE & TEMPERATURE

Table-4

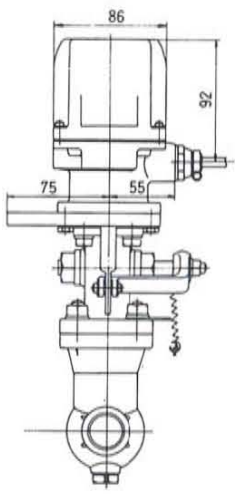
Model No.	Size	Working Press Mpa	Temp.	Remark
BS11□	15A~32A	0~2.0(1.0)	5~ 80	into ( ) 32(1 1/4")
BS21□			5~120	
BS51□			5~180	
BS11□		0~1.6(1.0)	5~ 80	
BF21□			5~120	
BF51□			5~180	
SS12□	15A~25A	0~3.0	5~ 80	
SS22□			5~120	
SS52□			5~200	
SF12□		0~3.0	5~ 80	
SF22□			5~120	
SF52□			5~200	

Table-5

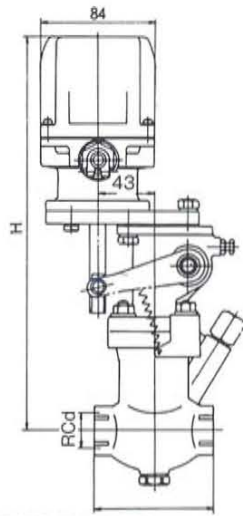
Model No.	Size	Working Press Mpa	Temp.	Remark
BF11□	40 (1 1/2") 50 (2")	0~1.0	5~ 80	
BF21□			5~120	
BF51□			5~180	
SF12□			5~ 80	
SF22□			5~120	
SF52□			5~200	
FF1□			5~ 80	
FF2□			5~120	
FF5□			5~180	

Note: In case of fluid is steam, maximum working pressure should be under 1Mpa  
Above mentioned pressure changes according to Flange standard.

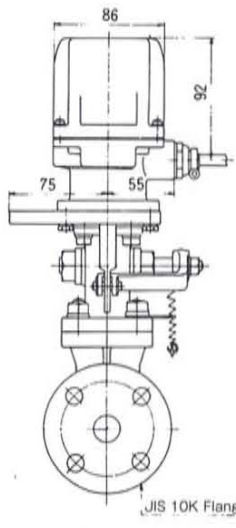
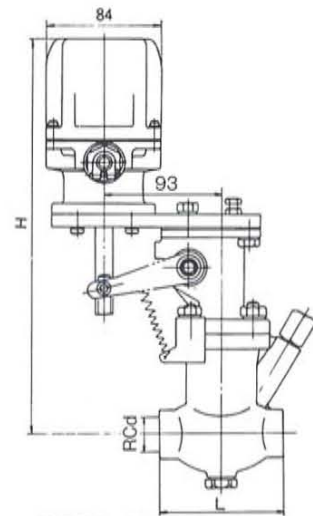
15(1/2") to 32(1/4") . NORMALLY CLOSED & OPEN . AC



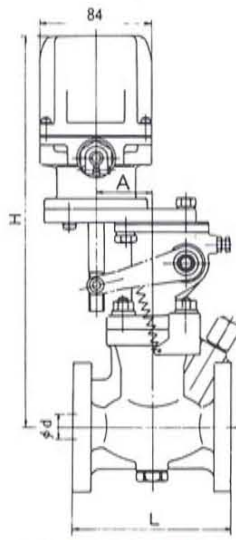
**M30C-A44-S**  
Normally Closed for  
General Purpose · AC



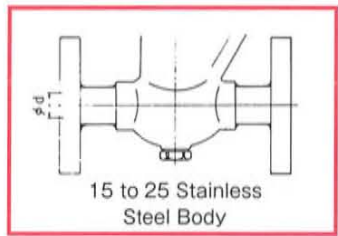
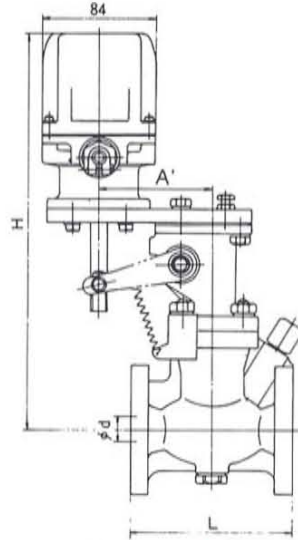
**M30D-A44-S**  
Normally Open for  
General Purpose · AC



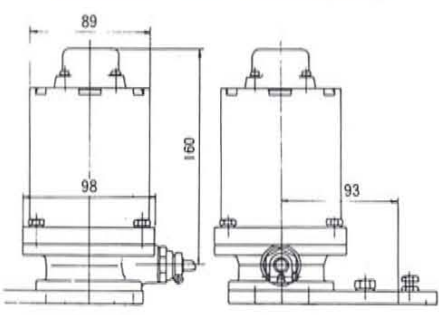
**M30C-A44-F**  
Normally Closed for  
General Purpose · AC



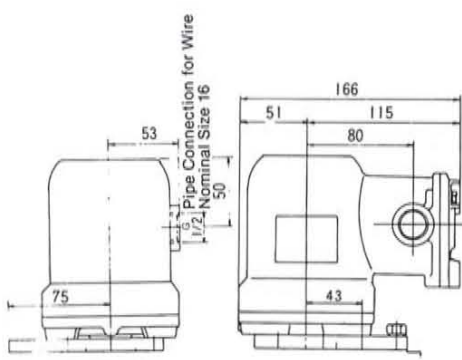
**M30D-A44-F**  
Normally Open for  
General Purpose · AC



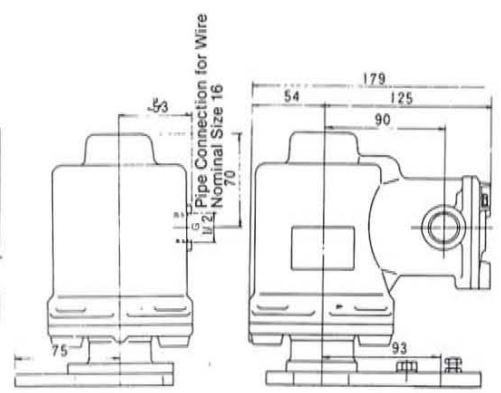
15(1/2") to 32(1/4") . GENERAL PURPOSE . EXPLOSION-PROOF



**M30-D44**  
General Purpose · DC



**M30-AE44**  
Explosion-proof · AC



**M30-DE44**  
Explosion-proof · DC

### Gun Metal Body . AC . General Purpose

Model No.	Conn.	Size d	H	L
M30□ -15-A44-BS□□	S	15	288	80
M30□ -20-A44-BS□□		20	298	90
M30□ -25-A44-BS□□		25	298	100
M30□ -32-A44-BS□□		32	303	130
M30□ -15-A44-BF□□	F	15	288	105
M30□ -20-A44-BF□□		20	298	120
M30□ -25-A44-BF□□		25	298	130
M30□ -32-A44-BF□□		32	303	155

### Stainless Steel Body . AC . General Purpose

Model No.	Conn.	Size d	H	L
M30□ -15-A44-SS□□	S	15	298	100
M30□ -20-A44-SS□□		20	298	100
M30□ -25-A44-SS□□		25	298	100
M30□ -32-A44-SS□□				
M30□ -15-A44-SF□□	F	15	198	170
M30□ -20-A44-SF□□		20	298	170
M30□ -25-A44-SF□□		25	298	170
M30□ -32-A44-SF□□				

### Gun Metal Body . DC . General Purpose

Model No.	Conn.	Size d	H	L
M30□ -15-D44-BS□□	S	15	338	80
M30□ -20-D44-BS□□		20	348	90
M30□ -25-D44-BS□□		25	348	100
M30□ -32-D44-BS□□		32	353	130
M30□ -15-D44-BF□□	F	15	338	105
M30□ -20-D44-BF□□		20	348	120
M30□ -25-D44-BF□□		25	348	130
M30□ -32-D44-BF□□		32	353	155

### Stainless Steel Body . DC . General Purpose

Model No.	Conn.	Size d	H	L
M30□ -15-D44-SS□□	S	15	348	100
M30□ -20-D44-SS□□		20	348	100
M30□ -25-D44-SS□□		25	348	100
M30□ -32-D44-SS□□				
M30□ -15-D44-SF□□	F	15	348	170
M30□ -20-D44-SF□□		20	348	170
M30□ -25-D44-SF□□		25	348	170
M30□ -32-D44-SF□□				

### Gun Metal Body . AC . Explosion-proof

Model No.	Conn.	Size d	H	L
M30□ -15-AE44-BS□□	S	15	288	80
M30□ -20-AE44-BS□□		20	298	90
M30□ -25-AE44-BS□□		25	298	100
M30□ -32-AE44-BS□□		32	303	130
M30□ -15-AE44-BF□□	F	15	288	105
M30□ -20-AE44-BF□□		20	298	120
M30□ -25-AE44-BF□□		25	298	130
M30□ -32-AE44-BF□□		32	303	155

### Stainless Steel Body . AC . Explosion-proof

Model No.	Conn.	Size d	H	L
M30□ -15-AE44-SS□□	S	15	298	100
M30□ -20-AE44-SS□□		20	298	100
M30□ -25-AE44-SS□□		25	298	100
M30□ -32-AE44-SS□□				
M30□ -15-AE44-SF□□	F	15	298	170
M30□ -20-AE44-SF□□		20	298	170
M30□ -25-AE44-SF□□		25	298	170
M30□ -32-AE44-SF□□				

### Gun Metal Body . DC . Explosion-proof

Model No.	Conn.	Size d	H	L
M30□ -15-DE44-BS□□	S	15	340	80
M30□ -20-DE44-BS□□		20	350	90
M30□ -25-DE44-BS□□		25	350	100
M30□ -32-DE44-BS□□		32	355	130
M30□ -15-DE44-BE□□	F	15	340	105
M30□ -20-DE44-BE□□		20	350	120
M30□ -25-DE44-BE□□		25	350	130
M30□ -32-DE44-BE□□		32	355	155

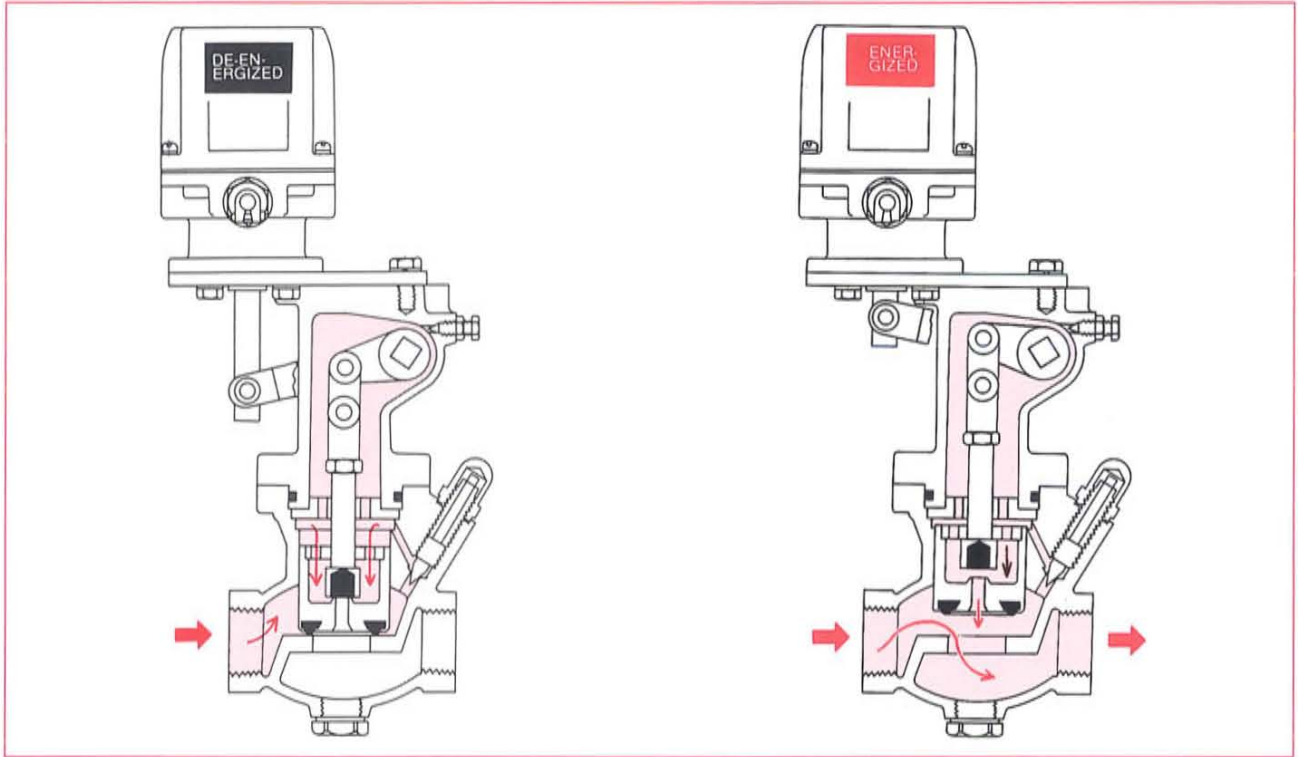
### Stainless Steel Body . DC . Explosion-proof

Model No.	Conn.	Size d	H	L
M30□ -15-DE44-SS□□	S	15	350	100
M30□ -20-DE44-SS□□		20	350	100
M30□ -25-DE44-SS□□		25	350	100
M30□ -32-DE44-SS□□				
M30□ -15-DE44-SF□□	F	15	350	170
M30□ -20-DE44-SF□□		20	350	170
M30□ -25-DE44-SF□□		25	350	170
M30□ -32-DE44-SF□□				

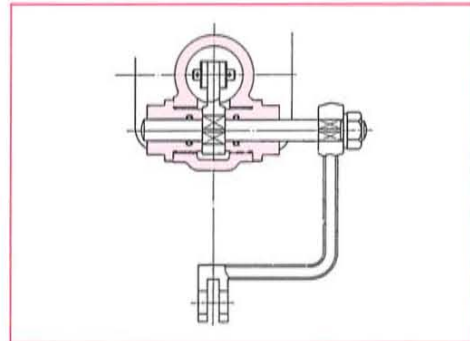
Note: S: Screwed, F: Flanged  
 Into □ word refer to page 6. It word denoted as function, trim material and outside construction (seal type).



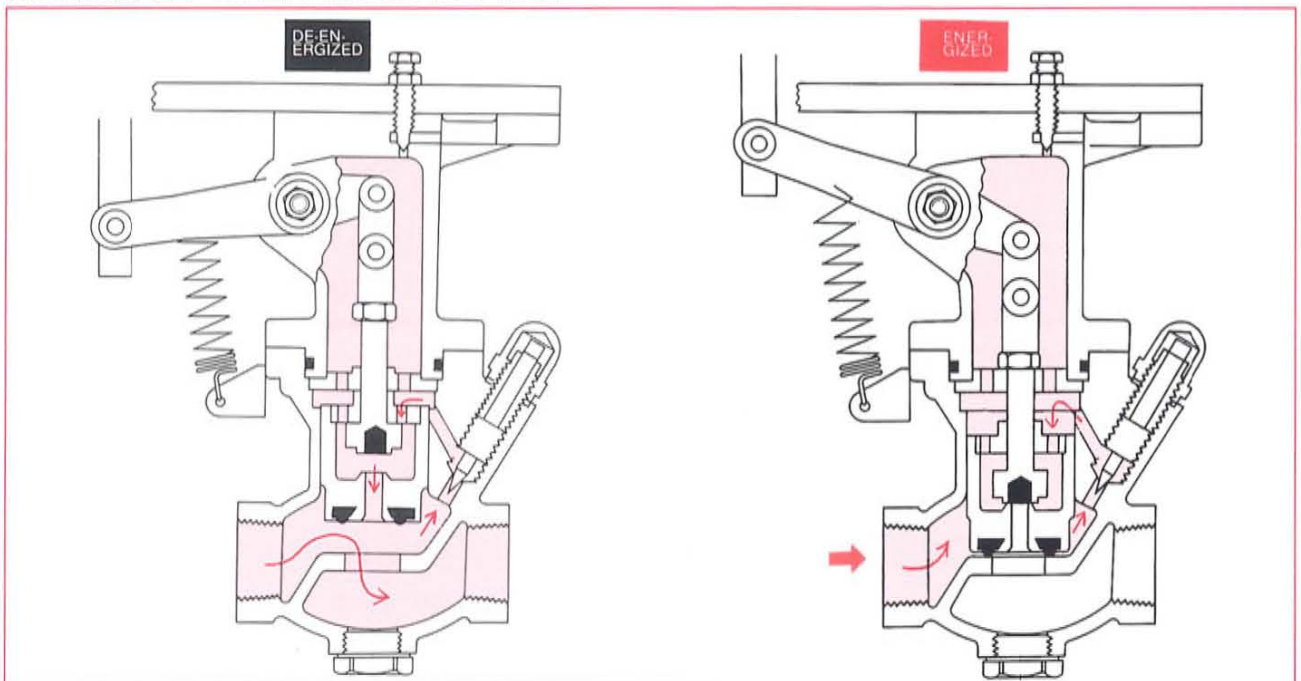
## NORMALLY CLOSED-M30C SERIES



SEAL OF SPINDLE

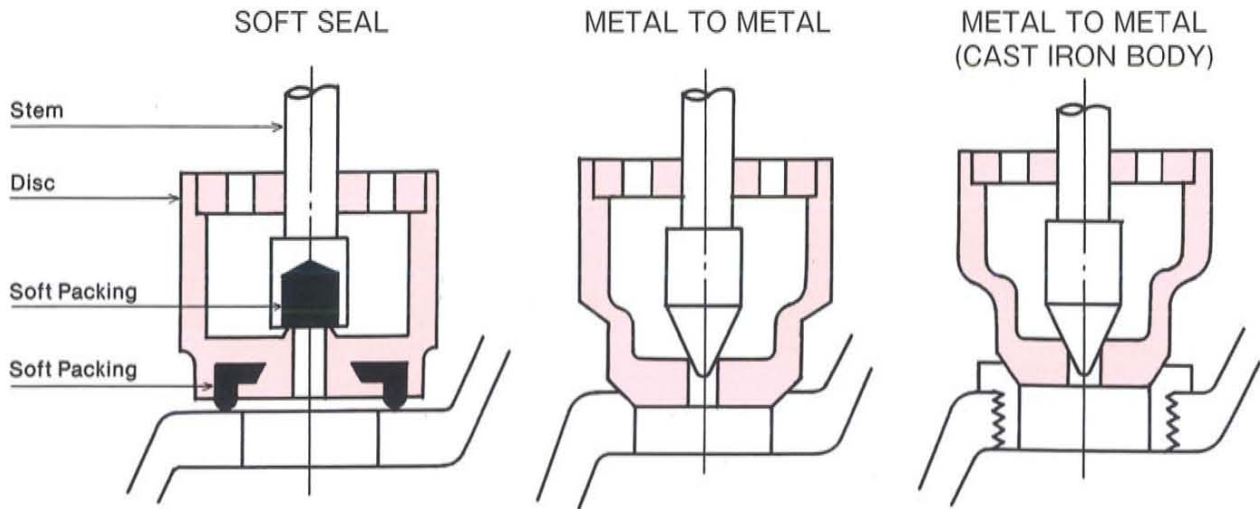


## NORMALLY OPEN-M30D SERIES





### DISC SEAL TYPE



MARK OF END	BS-11 BF-11	BS-21 BF-21	BS-51 BF-51	SS-12 SF-12	SS-22 SF-22	SS-52 SF-52
BODY (15~32)	CAC406	CAC406	CAC406	SCS13A	SCS13A	SCS13A
STEM	C6191	C6191	C6191	SUS304	SUS304	SUS304
SEAL TYPE	SOFT	METAL	METAL	SOFT	METAL	METAL
PACKING	"O" ring	"O" ring	Teflon	"O" ring	"O" ring	Teflon
WORKING PRESS MPa	½"~1"	0~2.0	0~2.0	0~2.0	0~3.0	0~3.0
	15~25	0~1.6	0~1.6	0~1.6	0~3.0	0~3.0
	1-¼", 32	0~1.0	0~1.0	0~1.0		

MARK OF END	BF-11	BF-21	BF-51	SF-12	SF-22	SF-52	FF-11	FF-22	FF-52
BODY (40, 50)	CAC406	CAC406	CAC406	SCS13A	SCS13A	SCS13A	FC200	FC200	FC200
STEM	C6191	C6191	C6191	SUS304	SUS304	SUS304	C6191	SUS304	SUS304
SEAL TYPE	SOFT	METAL	METAL	SOFT	METAL	METAL	SOFT	METAL	METAL
PACKING	"O" ring	"O" ring	Teflon	"O" ring	"O" ring	Teflon	"O" ring	"O" ring	Teflon
WORKING PRESS MPa	0~1.0			0~1.0			0~1.0		

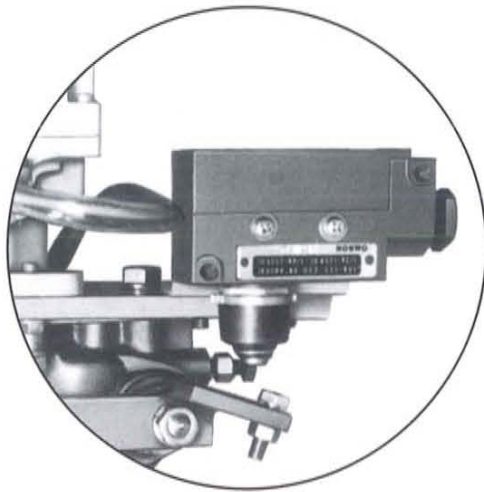
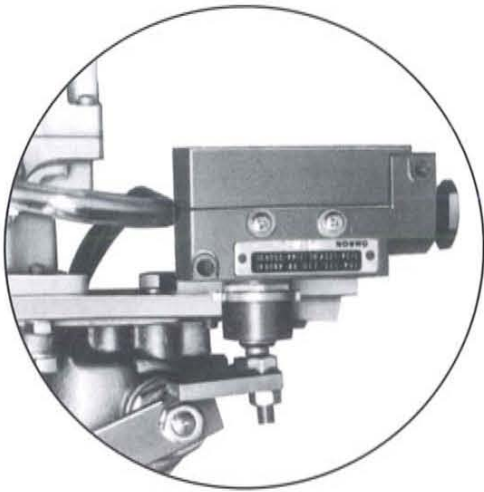
Notes: (1) This table shows standard combinations used in usual cases. For other cases, refer to page 6.

(2) In the case of the soft seal type, NBR, Viton and Neoprene are available. Select one of these materials according to the fluid used.

# MICROSWITCH MECHANISM

SITCH ON

SWITCH OFF



·MICROSWITCH :  
EXPLOSION-PROOF···WITH TWO  
·EXPLOSION-PROOF·M30C SERIES

·MICROSWITCH :  
GENERAL PURPOSE···WITH ONE  
EXPLOSION-PROOF·M31RD SERIES

·MICROSWITCH :  
GENERAL PURPOSE···WITH TWO  
·WITH GENERAL PURPOSE  
TERMINAL BOX  
·LEVER LOCK MECHANISM :  
GENERAL PURPOSE·M30C SERIES

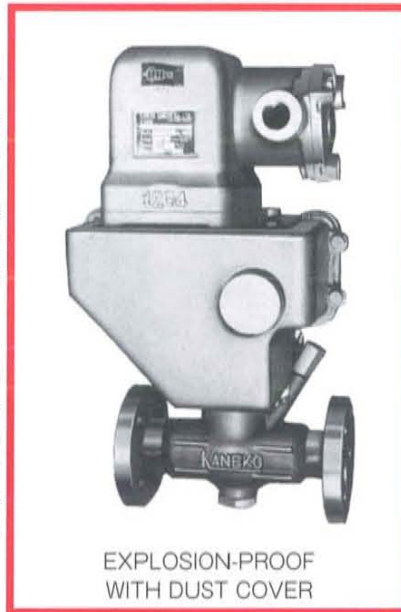
## ON MICROSWITCHES

Microswitches that give an opening/closing signal are used for on-off control of signals or control of the make-up of instrument circuits and for control operation and stop of the apparatus itself. Types of microswitches vary with the purpose of use and place of installation (outdoor, indoor, place where explosion-proof construction is specified, etc.). There are different specifications on control method, power supply and voltage, as well as various microswitch maker's standards, so a great variety of microswitches are available, of which the ones which best meet the required specifications are selected by us.

## DUST COVER

It is recommended to use a dust cover especially where there is much dust or sandy dust. With ordinary solenoid valves, fine dust accumulates in the casing, resulting in various troubles such as improper operation. Dust covers were fabricated to prevent such troubles.

The dust cover covers the solenoid, spindle gland and lever mechanism completely. The cover parted into two is sealed at its joint with packing by tightening bolts. It is requested to perform periodic maintenance of the dust cover set to clean the inside and check for proper operation.

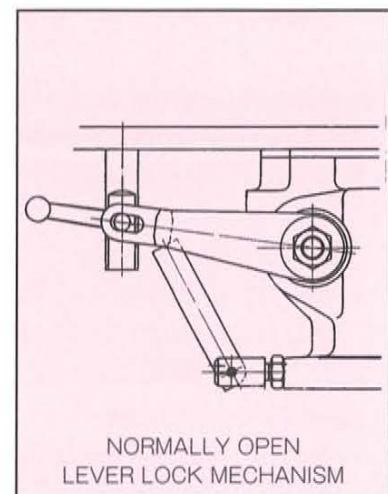
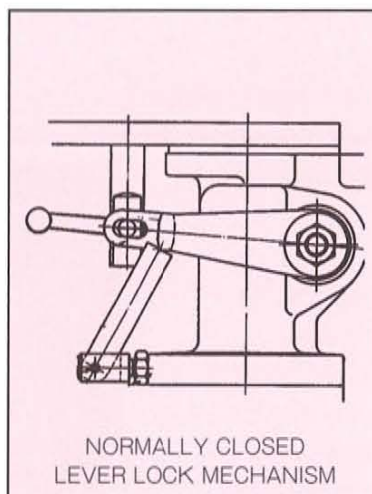
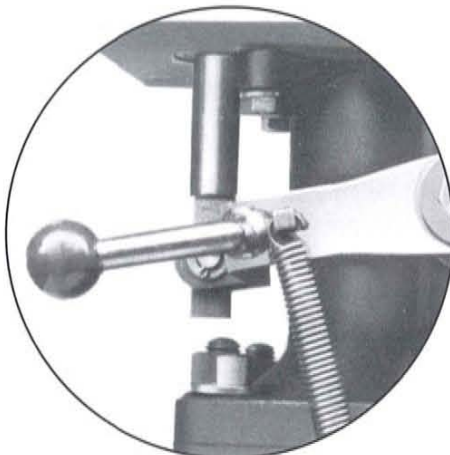
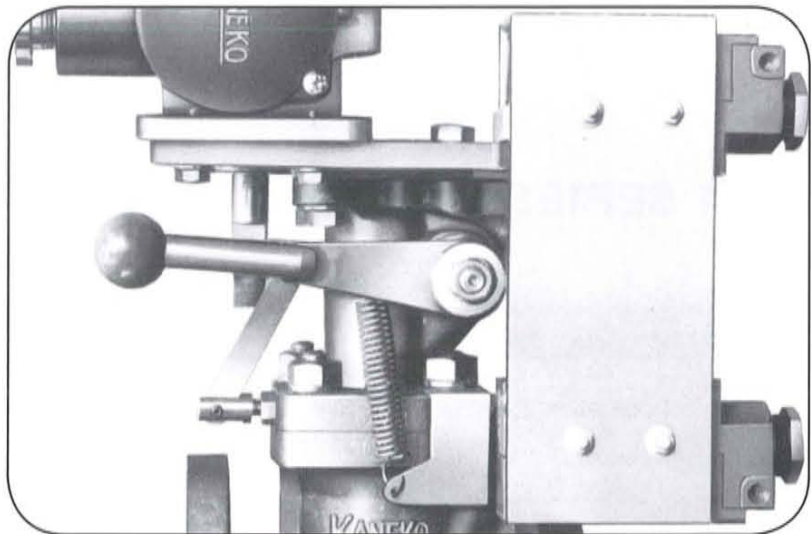


## LEVER LOCK MECHANISM

The Lever lock mechanism is provided to allow the condition of valve when energized to be maintained for a long time on power failure. It is installed as a special attachment upon request.

## HAND LEVER

For easy opening and closing for special applications, only a knob is attached to the lever, in some cases.



## MANUAL RESET VALVES FOR EMERGENCY



Explosion-proof  
**M31R, M31T Series**



General Purpose



**301R, 301T Series**  
General Purpose  
2½", 3", 4" and 6"



**Fuel Cut-off Valve**  
For Marine

## M31 SERIES MANUAL RESET WAY SOLENOID VALVE

### GENERAL DESCRIPTION

Two types of operation are available:

- No voltage release
  - Latched Closed Valve: M31RC
  - Latched Open Valve: M31RD

- Electrically tripped
  - Latched Closed Valve: M31TC
  - Latched Open Valve: M31TD

Two manual reset operation:

The open and closed position the conventional lever type valve are visually indicated by the position of the lever.

- Lever up valve is closed:
  - M31RC : Solenoid Energized Latched Closed
  - M31TC : Solenoid De-Energized Latched Closed

- Lever up valve is open:
  - M31RD : Solenoid Energized Latched Open
  - M31TD : Solenoid De-Energized Latched Open

### APPLICATIONS

These valves can be used for oil and gas burners for power plant boiler, Marine and Gland Diesel cycle engine, process equipment, batching, and wherever valves are required to be opened manually and held in opened position until returned to their original positions electrically. A valve design particularly important in chemical refinery, metal working and air pollution processes.

ALL KANEKO Solenoid Valves are tested to operate at 15 % under the nominal voltage and are capable of operating for short periods at 10% over the nominal voltage. There are AC and DC of General Purpose and Explosion-proof type.

### SPECIFICATIONS

#### LEVER OPERATION – FUNCTION

No Voltage Release - Latched closed:

##### M31RC Series

With the solenoid energized, the valve is latched closed by raising the lever, valve trips open when solenoid is de-energized and remains open until manual reclosed.

No Voltage Release - Latched open:

##### M31RD Series

With the solenoid energized, the valve is latched open by raising the lever, valve trips closed when solenoid is de-energized and remains closed until manual reopened.

Electrically Tripped - Latched closed:

##### M31TC Series

Valve is latched closed by manually raising the lever. The latch will hold the valve closed until tripped open by momentary or continuous energization of solenoid.

Electrically Tripped - Latched open:

##### M31TD Series

Valve is latched open by manually raising the lever. The latch will hold the valve open until tripped closed by momentary or continuous energization of solenoid.

#### SIZE & Cv FLOW FACTOR

Table-6

SIZE	15(½")	20(¾")	25(1")	32(1¼")	40(1½")	50(2")
Cv Flow Factor	4.2	8.4	10.5	14.1	28.7	48.5

#### WORKING PRESSURE(Refer to Table 4 and 5)

BC Body  $\phi$  15~ $\phi$  25 (½"~1"): 0~1.6MPa

SS Body  $\phi$  15~ $\phi$  25 (½"~1"): 0~3.0MPa

BC, FC, SS Body  $\phi$  40,  $\phi$  50 (1½"~1"): 0~1.0MPa

#### PIPE CONNECTION

15 to 50 – Flanged JIS 10k,~30k

ANSI 150, 300

JPI 150, 300

½" to 1¼" – Screwed

RC – JIS

NPT – ANSI

#### BODY MATERIALS

(1) CAC406 – Cast Bronze (Gun Metal)

(2) FC200 – Cast iron

(3) SCS13 – Stainless Steel

#### TRIM

(1) Soft Seat for Air, Gases, Water, Light Oil

(2) Metal Seat for Steam, Air, Gases, Water, Oil

#### SOLENOID ENCLOSURES

Two types available.

(1) General Purpose

(2) Explosion-proof JIS Type

d2G4. For AC or DC

Approved by JLM

#### ELECTRICITY:

AC – 100, 200, 110, 220V 50Hz or 60Hz.

DC – 24, 48, 100, 110 and 125V

#### COIL:

Continuous Duty Molded.

Insulation Class B and H

#### Note:

Body's Face to Face or End to End and Height of Dimension are same to M30 Series 2 Way Solenoid Valves Refer to Page 3, 4 and 5.

### MODEL NO. (RC, RD, TC and TD)

Valve Type No.  
(With All Valve)

Function

Size

Solenoid Type No.

Inside Material

**M31**

**RC**

**25**

**AE44**

**B**

**S**

**1**

**1**

**[ ]**

Body Material  
Connection Type

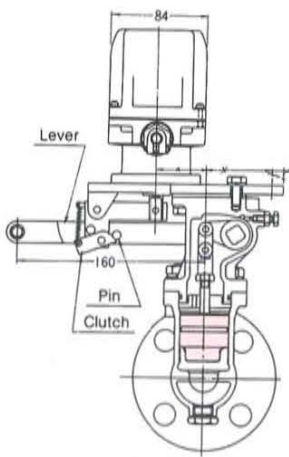
Inside Construction (Seal Type)

RD SERIES

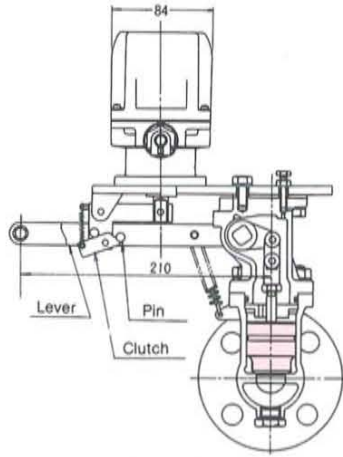
RC SERIES

TD SERIES

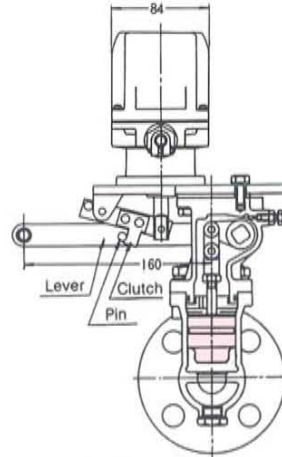
TC SERIES



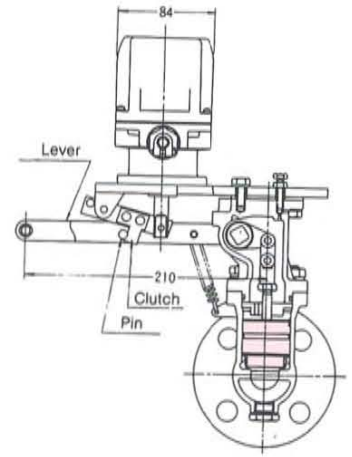
Energized  
Latched Open



Energized  
Latched Closed



De-Energized  
Latched Open

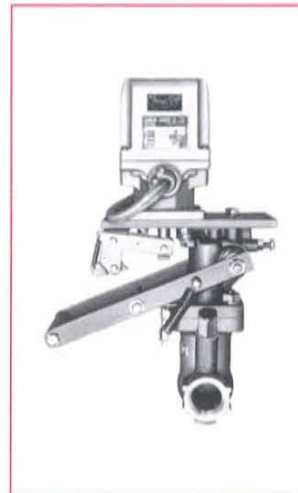


DE-Energized  
Latched Closed

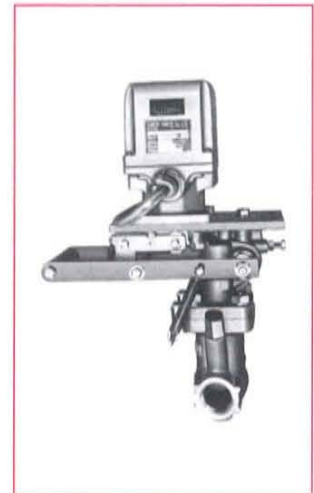
RD SERIES · Energized Latched Open



De-Energized Closed  
with Micro Switch



De-Energized Closed



## 301MR EMERGENCY SHUT-OFF MANUAL RESET SOLENOID VALVE



- Function: Energized Latched Open
- Pipe Size: 40 (1½")~80 (3")
- Working Pressure: 0~4.0MPa
- Media: Fuel Oil
- Media Temperature: 80~120°C
- Coil Insulation Class: H
- Electricity: 100, 110, 115V 60Hz AC

- Body: Carbon Steel
- Trim: Stainless Steel
- Seat: Stallyted
- Accessories:
  - \*Microswitches
  - \*Terminal Box
  - \*Companion Flange

## MANUAL RESET VALVES FOR EMERGENCY



GENERAL PURPOSE

MODEL : M31R □ SERIES  
T □ SERIES

NOMINAL SIZE : 15~50

WORKING PRESSURE : 0~3.0MPa (15 to 25)  
0~1.0MPa (40, 50)



EXPLOSION-PROOF



GENERAL PURPOSE

MODEL : #301 MR SERIES

NOMINAL SIZE : 65, 80, 100

WORKING PRESSURE : 0~1.0MPa (65, 80)  
0~0.2MPa (100)



EXPLOSION-PROOF

M31RD SERIES

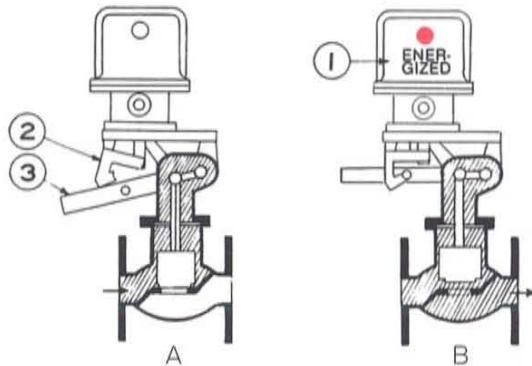


Fig.-1 ENERGIZED LATCHED OPEN VALVE

M31RD SERIES

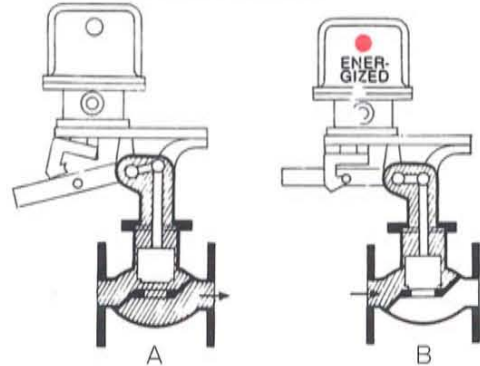


Fig.-2 ENERGIZED LATCHED CLOSED VALVE

M31TD SERIES

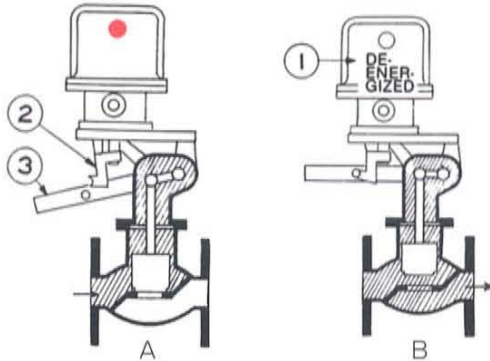


Fig.-3 DE-ENERGIZED LATCHED OPEN VALVE

M31TC SERIES

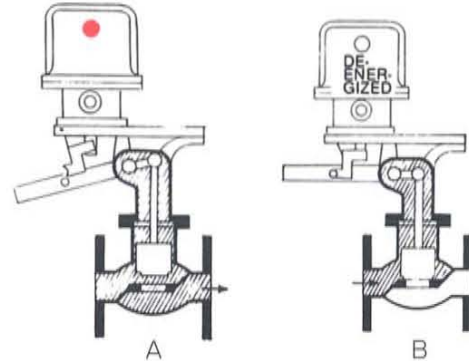


Fig.-4 DE-ENERGIZED LATCHED CLOSED VALVE

**OPERATING METHOD**

With the solenoid in state ①, pull up hand lever ③ and fix to clutch arm ②. "B" shows the latched condition. In case of emergency, hand lever ③ is detached from clutch arm ②. "A" shows the unlatched condition.