### SOLENOID VALVE SPECIFICATIONS / ORDERING GUIDE

<table>
<thead>
<tr>
<th>Model No.</th>
<th>2-WAY</th>
<th>3-WAY</th>
<th>4-WAY</th>
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</thead>
<tbody>
<tr>
<td>Screwed Connection</td>
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<tr>
<td>Flanged Connection</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Normally Closed</td>
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<tr>
<td>Normally Open</td>
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</tr>
<tr>
<td>Multi-Purpose</td>
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<tr>
<td>Water-tight Construction</td>
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<tr>
<td>Explosion-proof Construction</td>
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<tr>
<td>Operating method</td>
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<tr>
<td>Min. Operating Pressure MPa</td>
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<tr>
<td>Max. Operating Pressure MPa</td>
<td>1/(1-2)</td>
<td>1</td>
<td>0.7</td>
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<tr>
<td>Media</td>
<td>Water, Oil, Air, Gas, Chemicals</td>
<td>Air</td>
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<tr>
<td>Electric Current</td>
<td>AC,DC</td>
<td>AC,DC</td>
<td>AC,DC</td>
</tr>
<tr>
<td>Solenoid Energized Continuously</td>
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<td></td>
</tr>
<tr>
<td>Solenoid Energized One pulse</td>
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<td></td>
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</tr>
<tr>
<td>Body Materials</td>
<td>CAC,SCS</td>
<td>CAC,SCS</td>
<td>AL</td>
</tr>
<tr>
<td>Manual Operation</td>
<td>Option</td>
<td>Option</td>
<td></td>
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</table>

### LIQUID LEVEL GAUGE SPECIFICATIONS / ORDERING GUIDE

<table>
<thead>
<tr>
<th>Model No.</th>
<th>Tubular Gauge</th>
<th>Reflex Gauge</th>
<th>Transparent Gauge</th>
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<tbody>
<tr>
<td></td>
<td>Marine Gauge</td>
<td>See-tru Gauge</td>
<td>#133 Gauge</td>
</tr>
<tr>
<td>Pipe Size</td>
<td>G3/4</td>
<td>3/4</td>
<td>1/2~1</td>
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<td>No. of Section</td>
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<td>Gauge Valve Type</td>
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<td>Quick Mount</td>
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<td>Drain Connection</td>
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<td>Max. MPa Working Pressure</td>
<td>Atmosphere</td>
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<tr>
<td>Max. Temperature °C</td>
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<td>150</td>
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<tr>
<td>Min. Temperature °C</td>
<td>Atmosphere</td>
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<td>-100</td>
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<td>Valve body, Liquid Chamber Materials</td>
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<td>BR</td>
<td>SS</td>
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<tr>
<td>Center to Center Max.</td>
<td>1,000</td>
<td>1,500</td>
<td>1,500</td>
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</tbody>
</table>

### Remark
- Indicates Valves Constructions Available
**MOOU SERIES**
- Size: 1/8", 1/4", and 3/8"
- Working Pressure: 0~0.7MPa (orifice φ 1.6)
  - 0~0.4MPa (orifice φ 3.0)
- Cv Factor: 0.084 (φ 1.6), 0.22 (φ 3.0)
- Electricity: AC, DC Continuous
- Solenoid Enclosure: Two types are available:
  1. Watertight (for outdoors)
  2. Explosion-proof Model d2G4
- Body Material: Aluminum Alloy
- Function: Solenoid direct acting
  1. Normally closed
  2. Normally open
  3. Two outlets, one exhaust
  4. One outlet, two exhausts
- With manually operated button (Patented)
- Class of Coil Insulation: H
- Explosion-proof terminal box is revolved 340° for wiring and piping construction

**M15G SERIES**
- Size: 1/4" and 3/8"
- Working Pressure: 0.1~0.99MPa
- Cv Factor: 0.87 (orifice φ 6)
- Electricity: AC, DC Continuous
- Solenoid Enclosure: Two types are available:
  1. Watertight (for outdoors)
  2. Explosion-proof Model d2G4
- Body Material: Aluminum Alloy
- Function: Pilot operated 4-way
  - 2 position 5 ports
- Others are identical to MOOU Series

**M65G SERIES**
- Size: 3/8", 1/2", 3/4", and 1-1/4"
- Working Pressure: 0.1~0.9MPa
- Cv Factor: 2.0, 2.5 (3/8", 1/2" orifice φ 12.2)
  - 5.0 (3/4" orifice φ 19)
  - 12.0 (1", 1-1/4" orifice φ 31.8)
- Head: M15G Series Solenoid with Pilot valve

**M15GA (D) E22P SERIES**
- Size: 1/8", 1/4", and 3/8"
- Solenoid Enclosure:
  - Explosion-proof for hydrogenous atmosphere of Model d3aG4
- Others are identical to MOOU Series
3&4-WAY DOUBLE LATCH SOLENOID VALVES

MOODU SERIES
Using the double latch option, the valve is operated by means of a permanent magnet latch circuit that can be controlled by a momentary current pulse of fifty milliseconds. Continuous current may be used if desired, but continuous current flow is not necessary.

- Size: 1/8", 1/4" and 3/8"
- Working Pressure: 0~0.99MPa
- Option: Manually operated button
- Others are identical to MOODU Series
- Solenoid Enclosure Two types are available:
  1. Watertight (for outdoors)
  2. Explosion-proof Model d2G4 Approved by JLM
- Others are identical to MOODU Series

M15DG SERIES
- Size: 1/4" and 3/8"
- Working Pressure: 0.1~0.99MPa
- Electricity: AC, DC 500 msec., pulse operated
- Option: Manually operated button (Patented)
- Explosion-proof terminal box is revolved 300° for available to wiring and piping construction
- Others are identical to M15G Series

M65DG SERIES
- Size: 3/8", 1/2", 3/4", 1" and 1-1/4"
- Working Pressure: 0.1~0.9MPa
- Electricity: AC, DC 500 msec., pulse operated
- Head: M15DG Series Solenoid with pilot valve
- Body Material: Aluminum die cast
- Others are identical to M15DG and M65G Series

Pneumatic Three Sets 1/4" to 1"
Silencer 1/8" to 1"
2-WAY SOLENOID VALVES FOR VARIOUS FLUID

M30 SERIES
- Size: 1/2" ~ 1" (Screwed)
  1/2" ~ 2" (Flanged)
- Working Pressure: Max. 3MPa (1/2" ~ 1")
  Max. 1MPa (1-1/2" ~ 2")
- Electricity: AC, DC
- Solenoid Enclosure Two types are available:
  (1) Watertight (for outdoors)
  (2) Explosion-proof Model d2G4
  Approved by JLM
- Pipe Connection: Screwed or flanged
- Body Materials: Bronze, stainless steel & cast iron
- Media: Air, gas, water, steam (200°C) and chemicals
- Function: Normally closed and open

Size and Cv Factor
<table>
<thead>
<tr>
<th>Size</th>
<th>1/2</th>
<th>3/4</th>
<th>1</th>
<th>1-1/4</th>
<th>1-1/2</th>
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<tr>
<td>Cv Factor</td>
<td>4.2</td>
<td>8.4</td>
<td>10.5</td>
<td>14.1</td>
<td>28.7</td>
<td>48.5</td>
</tr>
</tbody>
</table>

#301 SERIES
- Size: 2-1/2" ~ 3"
- Working Pressure: 0 ~ 1MPa
- Electricity: AC, DC
- Explosion-proof Model d2G4
  Approved by JLM
- Pipe Connection: Flanged
- Body Materials: Bronze, stainless steel and cast iron
- Media: Air, gas, water, oil and steam (200°C)
- Function: Normally closed and open
- The others refer to page 1

TYPE 5282 SERIES
- Working Pressure: 0.05 ~ 1MPa
- Electricity: AC, DC
- Explosion-proof (Type & Class)
  Exed I CT5 (PTB)
  Exed I CT5 (JAPAN)
- Pilot operated, Flapper type
  Actuator and Diaphragm sealing construction
- Body Materials: Brass, Stainless Steel
MANUAL RESET VALVES FOR EMERGENCY

M31R, T SERIES
- Size: 1/2” ~ 2”
- Working Pressure: 0~3MPa (1/2” ~1”)
  0~1MPa (1-1/2” ~2”)
- Electricity: AC, DC
- Solenoid Enclosure: Two types are available
  (1) Watertight (for outdoors)
  (2) Explosion-proof Model d2G4 Approved by JLM
- Pipe Connection: Screwed and flanged
- Body Materials: Bronze and stainless steel
- Functions: No voltage release or Electrically tripped

M301R, T SERIES
- Size: 2-1/2” ~4”
- Working Pressure: 0~1MPa
- Pipe Connection: Flanged
- Body Materials: Bronze, cast iron and stainless steel

C51T, C SERIES
EXPLOSION-PROOF FOR HYDROGEN
- Size: 1/8”, 1/4 & 3/8”
- Working Pressure: 0.1~0.99MPa
- Electricity: AC, DC
- Pilot operated 3-way and Electrically tripped

M55R, T SERIES 3-WAY AIR ONLY
- Size: 3/8” ~1-1/4”
- Working Pressure: 0.12~0.99MPa
- Electricity: AC, DC
- Pilot operated 3-way normally closed and open
- Body Materials: Bronze
- Head: M81R or M81T Series Solenoid with Pilot valve

M81RG, TG SERIES 4-WAY AIR ONLY
- Size: 1/4” and 3/8”
- Working Pressure: 0~0.99MPa
- Direct operated 2 position
- Explosion-proof Model d2G4
- Electricity: AC, DC
- Materials: Aluminum alloy body

C81RG, TG SERIES 4-WAY AIR ONLY
- 4-way pneumatic direction control
- Pneumatic lock, pressure-reset manual system
- Size: 1/4” and 3/8”
- Working Pressure: 0~0.99MPa
- Signal Pressure: 0.1~0.99MPa
- Materials: Aluminum alloy body and pilot valve housing,

BELLOFRAM 4-WAY VALVE AIR ONLY
- Size: 1/4” and 3/8”
- Working Pressure: 0~0.99MPa
- Signal Pressure: 0.1~0.99MPa
- (Note) Belloframe: Belloframe corporation’s rubber rolling diaphragms.
- Materials: Aluminum alloy body
ALL WEATHER DESIGNED BREATHER VALVES AND FLAME ARRESTERS

The breather valve and flame arrester assembly are mounted on the oil storage tank.

- **Size:** \( \phi \) 80 (3") \( \sim \) \( \phi \) 250 (10")
- **Set Pressure:**
  - Pressure side: \(+0.25\sim+0.5\) KPa
  - Vacuum side: \(\sim0.25\sim-0.5\) KPa
- **Body Materials:** Cast iron with stainless steel and plastic trim
- **These Breather valves and flame arresters are cold district atmosphere, temperature at minus 10°C to minus 30°C operating tested.**

STANDARD MODEL

- **Size:** \( \phi \) 40 (1-1/2") \( \sim \) \( \phi \) 250 (10")
- **Set Pressure:**
  - Pressure side: \(+0.25\sim+0.5\) KPa
  - Vacuum side: \(\sim0.25\sim-0.5\) KPa
- **Pipe Connection:** Flanged JIS 10K, ANSI 150 lbs.
- **Media:** Atmosphere air and oil vapor
- **Body Materials:** Cast iron, aluminium and stainless steel with bronze and stainless steel trim.

PRESSURE RELIEF VALVES

- **Size:** \( \phi \) 40 (1-1/2") \( \sim \) \( \phi \) 250 (10")
- **Set Pressure:** \(+0.25\sim+0.5\) KPa
- **But may be set at any pressure desired**
- **Pipe Connection:** Flanged JIS 10K, ANSI 150 lbs.
- **Media:** Atmosphere air and oil vapor
- **Body Materials:** Cast iron, aluminium and stainless steel with bronze and stainless steel trim.

VACUUM RELIEF VALVES

- **Size:** \( \phi \) 40 (1-1/2") \( \sim \) \( \phi \) 250 (10")
- **Set Pressure:** Same as standard model’s negative pressure, but may be set at any pressure desired
- **(Note)** These valve pallets are dead weight located on seat rings. The pressure pallet is lifted from its seat ring, when the tank pressure reaches the valve pressure setting, allowing the excess pressure to be vented to the atmosphere. As the tank pressure drops below the valve pressure setting, the pressure pallet returns to the closed position. For a negative pressure (vacuum), the vacuum pallet is lifted from its seat ring when the tank vacuum reaches the valve vacuum setting, allowing air to flow into the tank to relieve the excess vacuum condition. The vacuum pallet returns to its normal position as the tank vacuum drops below the valve vacuum setting.

GAS SEAL UNIT (For Tank Gas Blanketing)

- **Size:** 3/8" x 3/4" (Screwed) and \( \phi \) 25 x \( \phi \) 50 (Flanged)
- **Primary Pressure (Supply):** \(0.1\sim0.7\) MPa G.Max.
- **Secondary Pressure:** \(0.1\sim7\) KPa (3/8" x 3/4")
- \(0.05\sim7\) KPa (\( \phi \) 25 x \( \phi \) 50)
- **Body Material:** Stainless steel
DIRECT READING LIQUID LEVEL GAUGES

REFLEX GAUGE, TRANSPARENT REFLEX, TRANSPARENT GAUGES

- Tank Connection: Screwed, socket weld and 1/2", 3/4" and 1" flanged
- Shell Test Pressure: 6MPa
- No. of Sections: one to eight sections (R-N20 Series)
- Size No.:

<table>
<thead>
<tr>
<th>Size No.</th>
<th>Visible Length</th>
<th>Boss Center</th>
</tr>
</thead>
<tbody>
<tr>
<td>R</td>
<td>T</td>
<td></td>
</tr>
<tr>
<td>1 x 1 R</td>
<td>1 x 1 T</td>
<td>171</td>
</tr>
<tr>
<td>1 x 2 R</td>
<td>1 x 2 T</td>
<td>181</td>
</tr>
<tr>
<td>1 x 3 R</td>
<td>1 x 3 T</td>
<td>201</td>
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<td>1 x 4 R</td>
<td>1 x 4 T</td>
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<td>1 x 5 T</td>
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<tr>
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<tr>
<td>10 x 6 R</td>
<td>10 x 6 T</td>
<td>2835</td>
</tr>
</tbody>
</table>

No. of Sections

- One Section
- Two Sections
- Three Sections
- Four Sections
- Five Sections
- Six Sections
- Seven Sections
- Eight Sections

(Note) R = Reflex, T = Transparent

No. 133 TUBULAR GAUGE

- Tank Connection: 3/4" Screwed and flanged
- Visible Length: Boss Center minus 145mm

MARINE GAUGE

- Tank Connection: 3/4" Screwed
- Visible Length: Boss Center minus 120mm

SEETRU GAUGE BRASS BODY

- Tank Connection: 3/4" Screwed
- Visible Length: Boss Center minus 120mm

SEETRU GAUGE STAINLESS STEEEL BODY

- Tank Connection: 3/4" Screwed and flanged
- Visible Length: Boss Center minus 120mm

SEEFLEX MARINE GAUGE FLAT GLASS TYPE

- Compliant to SOLAS
- Type of Approval
  LR, ABS, DNV, NK, JG
DIRECT READING LIQUID LEVEL GAUGES

DIAL LIQUID LEVEL GAUGES
- Working Pressure: 0.02, 0.5 and 3MPa
- Liquid Temperature: 120°C Max.
- Alarm and Control Contact Point: Available assembly max. 4 contact points but without Model: KL-400 Series

FLOAT SWITCH LIQUID LEVEL CONTROLLER
- Test Pressure: 1.5MPa
- Contact point system: Lead switch
- Contact point capacity: 50VA(AC 100V 0.5A) Resistance loading.
- Control range system: Micro-switch lever method.
- Control range: 50 to 1000, 100 to 1500 and 100 to 2000mm

MAGNET FLOAT TYPE LEVEL GAUGE
- Working Pressure: Max 25.0MPa
- Working Temp: 430°C
- Specific Gravity: 2~0.3
- Material
  - SUS304
  - SUS316
  - PP, PVC

SLIM TYPE MAGNET FLOAT LEVEL GAUGE
- Working Pressure: 3MPa
- Working Temp: 150°C
- Specific Gravity: 2~0.7
- Connection: 20A JIS 10K, 20K 3/4" ANSI 150, 300
- Body Material:SUS304
- Float Material:SUS316L
NEW PRODUCTS

TYPE "me" EXPLOSION PROOF
SOLENOID VALVE
M15G-MK15G SERIES
- Size: 1/4" and 3/8"
- Compliant to CE marking and ATEX Directive
- Type of Approval
  CENELEC, JIS, NEPSI, KOSHA
- Explosion proof Class
  EU: I2G EExme I T6
  JAPAN: Exse I T6
  CHINA: Exme I T4
  KOREA: Exme I T6

INTRINSICALLY SAFETY EXPLOSION PROOF
MC15 MK15G SERIES
- Size: 1/4" and 3/8"
- Compliant to CE marking and ATEX Directive
- Type of Approval
  CENELEC, JIS
- Explosion proof Class
  EU: I1G EExia I BT4
  JAPAN: Exia I BT4

MAGNET FLOAT TYPE LEVEL GAUGE
WITH TRANSMITTER 4~20mA
- Enclosure
  (1) Watertight (for outdoors) IP64
  (2) Explosion-proof, Exd I B+H2T6
    IP66

IN-LINE TYPE FLAME ARRESTER
CRIMPED METAL TYPE
- Type of Approval
  BAM 02ATEX 0001X
- Compliant to CE marking and EN12874
- Gas Group I A
- In-Line type. Deflagration
- Short time burning