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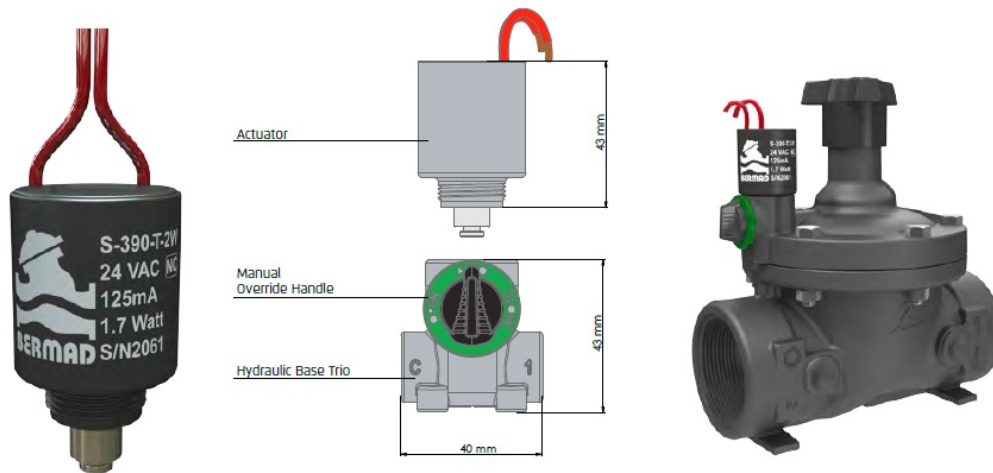
Irrigation

Bermad Solenoids and Control Units



2-Way Solenoid Actuator

Product code: S-390-2W / S-390T-2W



S-390-2W

The BERMAD S-390T-2W is a compact 2-Way Normally Closed Solenoid Actuator, specially designed for reliable long life service in irrigation systems controlled by Continuous Current Controllers. The BERMAD Solenoid Actuator is applicable directly to the Trio valve cover or with a Trio Base that enables combining the S-390T-2W in variety of 2-way control circuits. Model S-390T-2W is compliant with all Continuous Current Controllers on the market. It excels in its low power demand and low sensitivity to dirt and voltage variations.

Features and Benefits

- Advanced Construction Materials, Unique Plastic Casing
 - Proven pressure, voltage and weather resistance
 - Highly durable in corrosive environments
 - High mechanical strength
 - Protection Class- IP68; NEMA Type 6D
- Superb Internal Design and Finish
 - Reliable operation under dirt loaded water
 - Low sensitivity to voltage variations

- Low Power Consumption
 - Low coil heating and sediment damage
 - Saves wires and infrastructures costs
 - Suites all Continuous Current Controllers on the market
- Simple Installation, Operation and Maintenance
- Robust "Trio" 3-position manual override handle, Close, Open & Automatic modes
- Reliable and Durable Product that Bears the Stamp of BERMAD Quality

Applications

- Solenoid controlled on/off valves
- Solenoid controlled pressure and flow control valves
- Multiple valve systems
- Systems distanced from control center

Specifications

Ports:

Base Port - 1 (1/4" NPT) - Outlet

Base Port - C (1/4" NPT) - Inlet

Solenoid to Base Connection: 3/4"; 20 UNEF Male Threaded

Base orifice size: 2 mm

Base Flow Factor: Kv = 0.10 m³/h @ 1 bar ΔP; Cv=0.12 GPM @1 psi ΔP

Leads: 2 leads x 0.32 mm² x 80 cm

Operating Pressure Range: 0-10 bar

Max. Temperature: water 80 °c; 180 °F

Materials

Actuator Casing: Nylon

Seals: NBR

Wetted parts: Stainless steel and polyamide

Base: Nylon (Optional: Brass)

Electrical Data

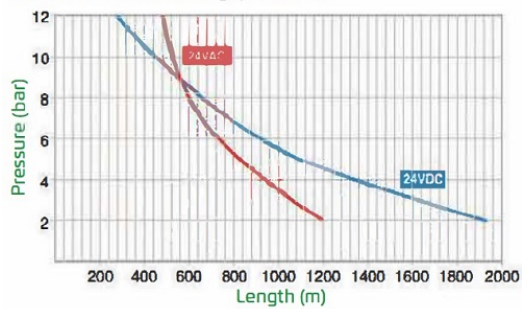
Actuator Type	Cable Color	Power (Watt)	Current (Amp)		Resistance ohm@20°C; 68°F
			Inrush	Hold	
S390T-2W-24VAC-R	Red/Red	1.7	0.25	0.125	375
S390T-2W-24VAC-D	Red/Orange	2.2	0.13	0.13	*
S390T-2W-24VDC	Black/Black	3.6	0.18	0.18	156
S390T-2W-12VDC	Blue/Blue	4.0	0.33	0.33	36

* Coil resistance in this coil can not be measured



Maximum cable length according to coil type

Cable cross section: 0.5 mm²,
orifice size: 1.8 mm, air gap: 0.7 mm



For cables longer than shown in diagram

In order to calculate the cross section of a length other than shown in the diagram, use the following equation:

$$S = \frac{L(\text{sol})}{L(\text{diagram})} \times 0.5$$

S = Minimum conductor cross-section in mm²

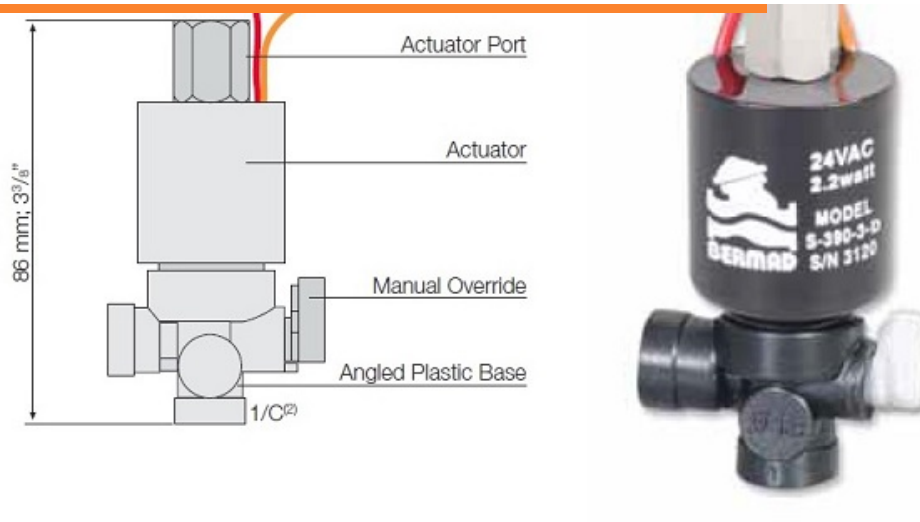
L (sol) = Actual Length of cable to solenoid

L (diagram) = Length of cable shown in this diagram

3-Way Solenoid

Product Code: S-390-3W-B





S-390-3W-B

The BERMAD S-390-3W is a compact 3-Way Solenoid, specially designed for reliable long life service in irrigation systems controlled by Continuous Current Controllers. The BERMAD solenoid can control valves independently or in combination with other control circuit accessories. Model S-390-3W is compliant with all Continuous Current Controllers on the market. It excels in its low power and low sensitivity to dirt and voltage variations. The hydraulic base features a manual override and consists of a bracket for attaching to the valve or to a solenoid manifold.

Features and Benefits

- Advanced Construction Materials, Unique Plastic Casing
 - Proven pressure, voltage and weather resistance
 - Highly durable in corrosive environments
 - High mechanical strength
 - Protection Class- IP68; NEMA Type 6D

- Superb Internal Design and Finish
 - Reliable operation under dirt loaded water
 - Low sensitivity to voltage variations

- Low Power Consumption
 - Low coil heating and sediment damage
 - Saves wires and infrastructures costs

- Suites all Continuous Current Controllers on the market

- Angled Plastic Base with Installation Bracket
 - High flow capacity quickens valve response
 - Manual override open
 - Simple installation to valve or manifold
- Simple Installation, Operation and Maintenance
- Reliable and Durable Product that Bears the Stamp of BERMAD Quality

Applications

- Solenoid controlled on/off valves
- Solenoid controlled pressure and flow control valves
- Multiple valve systems
- Systems distanced from control center

Specifications

Ports:

Actuator Port (1/8" NPT) - Pressure (N.O.); Vent (N.C.)

Base Port - 1 (1/8" NPT(1)) - Vent (N.O.); Pressure (N.C.)

Base Port - C(2) (1/8" NPT(1)) -Valve Control Chamber (Common)

(1) Brass Base Ports Size is 1/4" NPT

(2) Brass Base Common Port is marked "2"

Solenoid to Base Connection: 3/4"; 20 UNEF Male Threaded

Leads: 2 leads x 0.32 mm² x 80 cm

Operating Pressure Range: 0-10 bar

Materials

Actuator Casing: Nylon

Seals: NBR

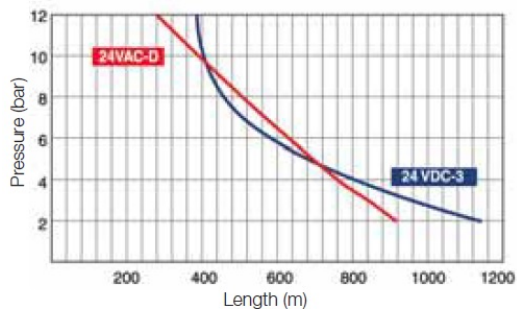
Wetted parts: Stainless steel 400 and polyamide

Base: Nylon (Optional: Brass)

Cable Length Data

Maximum cable length according to coil type

Cable cross section: 0.5 mm², orifice size: 1.8 mm, air gap: 0.8 mm



For cables longer than shown in diagram

In order to calculate the cross section of a length other than shown in the diagram, use the following equation:

$$S = \frac{L (sol)}{L (diagram)} \times 0.5$$

S = Minimum conductor cross-section in mm²

L (sol) = ActualLength of cable to solenoid

L (diagram) = Length of cable shown in this diagram

Electrical Data

Electrical Data:

Actuator Type	Cable Color	Power (Watt)	Current (Amp)		Coil Resistance ohm@20°C; 68°F
			Inrush	Hold	
S-390-3W-24VAC-D NO	Red/Orange	2.2	0.13	0.13	37.5
S-390-3W-24VAC-D NC	Orange/Blue	3.5	0.20	0.20	*
S-390-3W-24VAC-R NO	Red/Red	2.9	0.46	0.24	21
S-390-3W-24VDC NO & NC	Black/Black	4.2	0.17	0.17	135
S-390-3W-12VDC NO & NC	Blue/Blue	4.0	0.33	0.33	36

* The resistance in these coils cannot be measured

3-Way Flow & Pressure Data

Actuator Type	Pressure Rating (bar; Psi)		Inlet Port Kv*		Exhaust Kv*	
	1.6	1.8	1.6	1.8	1.6	1.8
S-390 24VAC-D-NO	10;150		0.05			0.12
S-390 24VAC-D-NC	15;220	10;150	0.07	0.12	0.05	
S-390 24VAC-R-NO	10;150		0.05			0.12
S-390 24VDC-NO	8;115		0.05			0.12
S-390 24VDC-NC	10;150	5;70	0.07	0.12	0.05	
S-390 12VDC-NO	8;115		0.05			0.12
S-390 12VDC-NC	10;150	5;70	0.07	0.12	0.05	

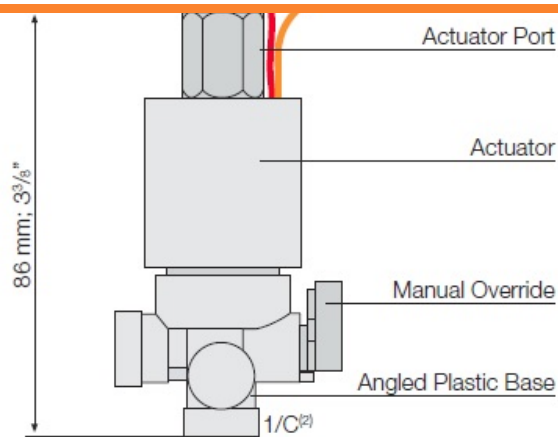
* Kv = m³/h @ 1 bar ΔP ** CV = GPM @ 1 bar ΔP

S-390-3W-B - Electrical & Pressure Data

3-Way Solenoid - With Trio Base

Product Code: S390T-3W





S390T-3W

The BERMAD S-390-3W is a compact 3-Way Solenoid, specially designed for reliable long life service in irrigation systems controlled by Continuous Current Controllers. The BERMAD solenoid can control valves independently or in combination with other control circuit accessories. Model S-390-3W is compliant with all Continuous Current Controllers on the market. It excels in its low power and low sensitivity to dirt and voltage variations. The hydraulic base features a manual override and consists of a bracket for attaching to the valve or to a solenoid manifold.

Features and Benefits

- Advanced Construction Materials, Unique Plastic Casing
 - Proven pressure, voltage and weather resistance
 - Highly durable in corrosive environments
 - High mechanical strength
 - Protection Class- IP68; NEMA Type 6D

- Superb Internal Design and Finish
 - Reliable operation under dirt loaded water
 - Low sensitivity to voltage variations

- Low Power Consumption
 - Low coil heating and sediment damage
 - Saves wires and infrastructures costs
 - Suits all Continuous Current Controllers on the market

- Angled Plastic Base with Installation Bracket
 - High flow capacity quickens valve response
 - Manual override open
 - Simple installation to valve or manifold
- Simple Installation, Operation and Maintenance
- Reliable and Durable Product that Bears the Stamp of BERMAD Quality

Applications

- Solenoid controlled on/off valves
- Solenoid controlled pressure and flow control valves
- Multiple valve systems
- Systems distanced from control center

Specifications

Ports:

Actuator Port (1/8" NPT) - Pressure (N.O.); Vent (N.C.)

Base Port - 1 (1/8" NPT(1)) - Vent (N.O.); Pressure (N.C.)

Base Port - C(2) (1/8" NPT(1)) -Valve Control Chamber (Common)

(1) Brass Base Ports Size is 1/4" NPT

(2) Brass Base Common Port is marked "2"

Solenoid to Base Connection: 3/4"; 20 UNEF Male Threaded

Leads: 2 leads x 0.32 mm² x 80 cm

Operating Pressure Range: 0-10 bar

Materials

Actuator Casing: Nylon

Seals: NBR

Wetted parts: Stainless steel 400 and polyamide

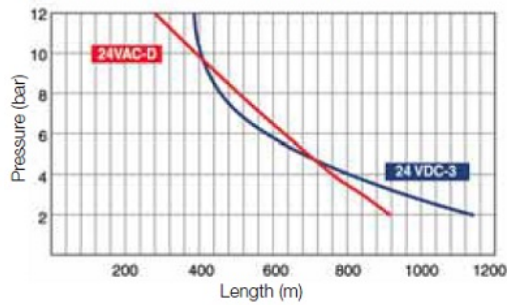
Base: Nylon (Optional: Brass)

Cable Length Data

Cable Length Data:

Maximum cable length according to coil type

Cable cross section: 0.5 mm², orifice size: 1.8 mm, air gap: 0.8 mm



For cables longer than shown in diagram

In order to calculate the cross section of a length other than shown in the diagram, use the following equation:

$$S = \frac{L(\text{sol})}{L(\text{diagram})} \times 0.5$$

S = Minimum conductor cross-section in mm²

L (sol) = Actual Length of cable to solenoid

L (diagram) = Length of cable shown in this diagram

Electrical Data

Electrical Data:

Actuator Type	Cable Color	Power (Watt)	Current (Amp)		Coil Resistance ohm@20°C; 68°F
			Inrush	Hold	
S-390-3W-24VAC-D NO	Red/Orange	2.2	0.13	0.13	37.5
S-390-3W-24VAC-D NC	Orange/Blue	3.5	0.20	0.20	-
S-390-3W-24VAC-R NO	Red/Red	2.9	0.46	0.24	21
S-390-3W-24VDC NO & NC	Black/Black	4.2	0.17	0.17	135
S-390-3W-12VDC NO & NC	Blue/Blue	4.0	0.33	0.33	36

* The resistance in these coils cannot be measured

3-Way Flow & Pressure Data

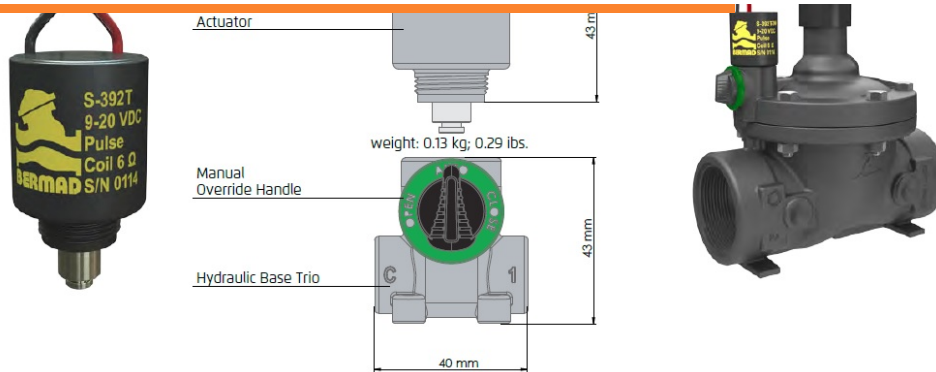
Actuator Type	Pressure Rating (bar, Pa)		Inlet Port Kv*		Exhaust Kv*	
	1.6	1.8	1.6	1.8	1.6	1.8
S-390 24VAC-D-NO	10;150		0.05			0.12
S-390 24VAC-D-NC	15;220	10;150	0.07	0.12	0.05	
S-390 24VAC-R-NO	10;150		0.05			0.12
S-390 24VDC-NO	8;115		0.05			0.12
S-390 24VDC-NC	10;150	5;70	0.07	0.12	0.05	
S-390 12VDC-NO	8;115		0.05			0.12
S-390 12VDC-NC	10;150	5;70	0.07	0.12	0.05	

* Kv = m³/h @ 1 bar ΔP ** CV = GPM @ 1 bar ΔP

Magnetic Latch Solenoid Actuator - 2-Way, 9-20VDC Latch, 2-Leads

Product Code: S392T-2W





The BERMAD Model S-392T-2W is a compact 2-Way Latching Solenoid Actuator, specially designed for reliable long life service in irrigation systems controlled by Battery Operated Controllers. The BERMAD latching Solenoid Actuator is applicable directly to the valve cover or with a 2 Way Trio base that enables combining it in variety of 2-way control circuits. Model S-392T-2W consumes power only when switching positions, using a very short electric impulse. This prolongs life of batteries and enables solar recharging.

Features and Benefits

- Advanced Construction Materials, Unique Plastic Casing
 - Proven pressure, voltage and weather resistance
 - Highly durable in corrosive environments
 - Protection Class- IP68; NEMA Type 6D
- Superb Internal Design and Finish
 - Reliable operation under dirt loaded water
- Short Electrical pulse Latch Activation
 - Extremely low power consumption
 - Low voltage battery operation
 - Saves wires and infrastructures
 - No coil heating
 - Suits most Battery Operated Controllers on the market
 - Applicable in solar activated systems
- Simple Installation, Operation and Maintenance
- Reliable and Durable Product that Bears the Stamp of BERMAD

Pulse width: 20-100 mSec.

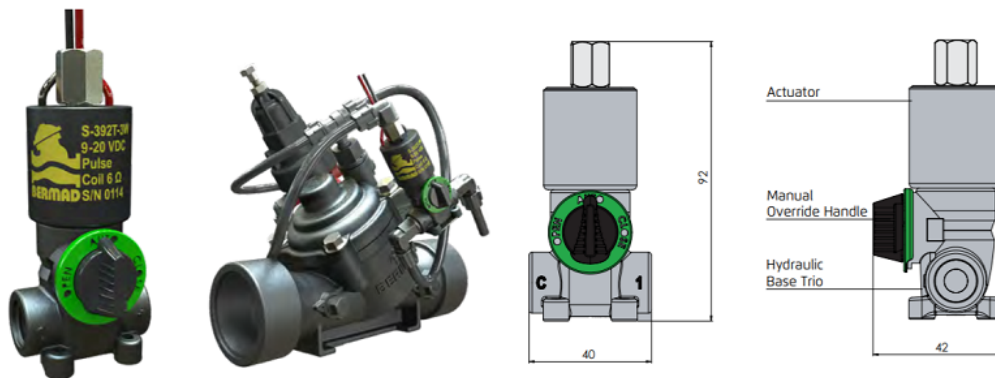
Operation Modes (electrical connections):

- +Red & -Black: Latch Position
- +Black & -Red: Released Position

Note: To ensure compatibility of solenoid with your system, please contact Us

Magnetic Latch Solenoid with Hydraulic Base 3-Way, 9-20VDC Latch, 2- Leads

Product Code: S-392T3W-B



The BERMAD Model S-392T-3W is a compact 3-Way Latching Solenoid pilot valve comprised of two main components: a solenoid and a 3-way hydraulic pilot valve. The BERMAD latching solenoid can control valves independently or in combination with other control circuit accessories. Model S-392T-3W consumes power only when switching positions, using a very short electric pulse. This prolongs life of batteries and enables solar recharging. The hydraulic base features a three position TRIO manual override and includes a bracket for attaching to the valve or to a solenoid manifold.

Features and Benefits

- Advanced Construction Materials, Unique Plastic Casing
 - Proven pressure, voltage and weather resistance
 - Highly durable in corrosive environments

- Protection Class- IP68; NEMA Type 6D

- Superb Internal Design and Finish
 - Reliable operation under dirt loaded water
- Short Electrical Pulse Latch Activation
 - Extremely low power consumption
 - Low voltage battery operation
 - Saves wires and infrastructures
 - No coil heating
 - Suites most Battery Operated Controllers on the market
 - Applicable in solar activated systems
- Hydraulic Base with Installation Bracket
 - High flow capacity quickens valve response
 - No dirt sedimentation inside solenoid actuator
 - 3 position TRIO manual override (OPEN, AUTO and Close)
 - Simple installation to valve or manifold
- Reliable and Durable Product that Carries the Stamp of BERMAD Quality

Typical Applications

- Systems distanced from control center
- Unavailable power supply locations
- Solenoid controlled on/off valves
- Solenoid controlled pressure and flow control valves
- Multiple valve systems
- Solenoid manifolds in irrigation heads
- Distribution Centers
- Energy Saving Irrigation Systems

Specifications

Base Ports: ¼" NPT

1 - Vent

C - Valve Control Chamber

Actuator Port (Pressure) - 1/8" NPT

Valve Anchoring:

By Screws (Self Tapping #8) at the Solenoid base

Leads: 2 leads x 0.32 mm² x 80 cm

Operation Modes (electrical connections)

+Red & - Black: Solenoid vents

+Black & - Red: Solenoid pressurizes

Operating Pressure Range: 0-10 bar

Base Orifice Diameter: 2.0 mm

Actuator Orifice Diameter: 1.6 mm

Base Flow Factor: Kv = 0.08 m³/h @ 1 bar DP; Cv = 0.09 GPM @1 psi DP

Materials

Actuator Casing: Nylon

Seals: NBR

Wetted parts: Stainless Steel

Base: Nylon

Electrical Data

Voltage Range: 9-20 VDC

Coil Resistance: 6Ω

Coil Inductance: 15/18 mH (off/on)

Pulse Width: 20-100 mSec

Ambient Temp. Max 60°C

Fluid Temp. Max 70°C

Dry Magnetic Latch Solenoid - with
Isolating Membrane & Hydraulic Base 3-

B2W24D	Bermad 2-way S390-2 24 volt DC Normally Closed
B3W12D	Bermad 3-way S390-3 12 volt DC Normally Open or Closed
B3W24A	Bermad 3-way S390-3 24 volt AC Normally Open or Closed
B3W24D	Bermad 3-way S390-3 24 volt DC Normally Open or Closed
BSOLB	Bermad Solenoid Base Universal with Manual Override
B2WL	2 Wire 2-way 6-20 VDC Latching Solenoid
B3W982L	2 Wire 3-way 12-50 VDC Latching Solenoid
B3W985L	3 Wire 3-way 12-50 VDC Latching Solenoid



BERMAD SOLENOIDS - S390T/S392T - TRIO TYPE

ITEM #	DESCRIPTION
B2W12D-T	Bermad 2 way S390-T 12 volt DC Normally Closed with TRIO Plunger
B2W24A-T	Bermad 2 way S390-T 24 volt AC Normally Closed with TRIO Plunger
B2W24D-T	Bermad 2 way S390-T 24 volt DC Normally Closed with TRIO Plunger
B2WL-T	Bermad 2 way 2 way S392-T 9-20 volt Latching with TRIO Plunger
B3WL.B	Bermad 3 way 2 wire 9-20 volt Latching TRIO solenoid and base



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Bermad Model 105 - Basic Hydraulic Valve

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Bermad Model 120 - 2 way Pressure Reducing Valve

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