



# Brass Thermo Valves

## Models 7140-7177



### FEATURES

- Protects pump from premature failure of seals and cups by eliminating heat build-up in closed loop by-pass systems.
- Choice of three port sizes to allow convenient and easy installation into the by-pass loop.
- Automatically seats during unloader/regulator pressure spikes to prevent fluid bleed.
- Temperature protection without interruption in flow.
- Compatible with systems using either unloader or regulator valves.
- Mount multiple Thermo Valves in-line to handle increased system flow.
- Optional By-Pass hose with Thermo Valve for quick, compact installation.

### SPECIFICATIONS

	U.S. Measure	Metric Measure
<b>145°F MODELS 7140, 7141, 7142</b>		
Max. Inlet System Flow .....	.25 GPM	(95 L/M)
Max. Inlet Pressure .....	125 PSI	(8.8 BAR)
<b>Inlet Port (7140)</b> .....	<b>1/4" NPTM</b>	<b>(1/4" NPTM)</b>
<b>Inlet Port (7141)</b> .....	<b>3/8" NPTM</b>	<b>(3/8" NPTM)</b>
<b>Inlet Port (7142)</b> .....	<b>1/2" NPTM</b>	<b>(1/2" NPTM)</b>
Bleed Port .....	1/8" NPT	(1/8" NPT)
Weight .....	.5.6 oz.	(.16 kg)
Dimensions .....	3.0" x 7/8"	(76 x 22mm)

<b>165°F MODELS 7143, 7144, 7145</b>		
Max. Inlet System Flow .....	.25 GPM	(95 L/M)
Max. Inlet Pressure .....	125 PSI	(8.8 BAR)
<b>Inlet Port (7143)</b> .....	<b>1/4" NPTM</b>	<b>(1/4" NPTM)</b>
<b>Inlet Port (7144)</b> .....	<b>3/8" NPTM</b>	<b>(3/8" NPTM)</b>
<b>Inlet Port (7145)</b> .....	<b>1/2" NPTM</b>	<b>(1/2" NPTM)</b>
Bleed Port .....	1/8" NPT	(1/8" NPT)
Weight .....	.5.6 oz.	(.16 kg)
Dimensions .....	3.0" x 7/8"	(76 x 22mm)

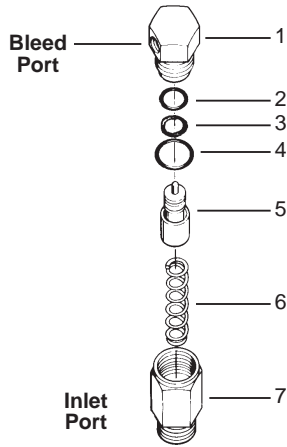
<b>180°F MODELS 7170, 7171, 7172</b>		
Max. Inlet System Flow .....	.25 GPM	(95 L/M)
Max. Inlet Pressure .....	125 PSI	(8.8 BAR)
<b>Inlet Port (7170)</b> .....	<b>1/4" NPTM</b>	<b>(1/4" NPTM)</b>
<b>Inlet Port (7171)</b> .....	<b>3/8" NPTM</b>	<b>(3/8" NPTM)</b>
<b>Inlet Port (7172)</b> .....	<b>1/2" NPTM</b>	<b>(1/2" NPTM)</b>
Bleed Port .....	1/8" NPT	(1/8" NPT)
Weight .....	.5.6 oz.	(.16 kg)
Dimensions .....	3.0" x 7/8"	(76 x 22mm)

<b>190°F MODELS 7175, 7176, 7177</b>		
Max. Inlet System Flow .....	.25 GPM	(95 L/M)
Max. Inlet Pressure .....	125 PSI	(8.8 BAR)
<b>Inlet Port (7175)</b> .....	<b>1/4" NPTM</b>	<b>(1/4" NPTM)</b>
<b>Inlet Port (7176)</b> .....	<b>3/8" NPTM</b>	<b>(3/8" NPTM)</b>
<b>Inlet Port (7177)</b> .....	<b>1/2" NPTM</b>	<b>(1/2" NPTM)</b>
Bleed Port .....	1/8" NPT	(1/8" NPT)
Weight .....	.5.6 oz.	(.16 kg)
Dimensions .....	3.0" x 7/8"	(76 x 22mm)

The Thermo Valve must be installed with a pressurized pump inlet.

*“Customer confidence is our greatest asset”*

## EXPLODED VIEW



## PARTS LIST

ITEM	PART NO.	DESCRIPTION	MODEL USED	QTY
1	34166 BB	Cap	All	1
2	34174 B	O-Ring, Cap - Internal	All	1
3	34163	Back-up Washer	All	1
4	34173 B	O-Ring, Cap - External	All	1
5	34164	Power Pill-145°F	7140, 7141, 7142	1
	34264	Power Pill-165°F	7143, 7144, 7145	1
	34364	Power Pill-180°F	7170, 7171, 7172	1
	34564	Power Pill-190°	7175, 7176, 7177	1
6	34165	Spring	All	1
7	34167	Body 1/2" NPT	7142, 7145, 7172, 7177	1
	34168	Body 3/8" NPT	7141, 7144, 7171, 7176	1
	34169	Body 1/4" NPT	7140, 7143, 7170, 7175	1
—	7090.40	By-Pass Hose w/7140 Thermo Valve (145°)	2SF	1
—	7091.41	By-Pass Hose w/7141 Thermo Valve (145°)	4SF	1
—	7092.40	By-Pass Hose w/7140 Thermo Valve (145°)	2SFX	1
	7093.42	By-Pass Hose w/7142 Thermo Valve (145°)	5-7 FR	1

Material Codes (Not Part of Part No.) B=Buna-N BB=Brass

## TROUBLESHOOTING

Problem	Probable Cause	Solution
Leaking at low temperature or non by-pass operation through bleed port	<ul style="list-style-type: none"> <li>Foreign material trapped</li> <li>Damaged o-ring</li> <li>Damaged Power Pill</li> </ul>	<ul style="list-style-type: none"> <li>Check internal and external o-rings on cap.</li> <li>Check internal and external o-rings on cap for cuts and fit and replace if worn or damaged.</li> <li>Check for deep cuts or imperfections on inner lip of cap where o-ring seats.</li> <li>Check for deep cuts or imperfections on top lip of power pill which seats up to inner cap o-ring and replace if damaged.</li> <li>Check for malfunctioning power pill stem. Failure of stem to expand and retract will prevent opening and closing of valve. Replace if worn.</li> <li>Check external o-ring on cap and replace if worn or cut.</li> </ul>
Leaks between body and cap	<ul style="list-style-type: none"> <li>Damaged o-ring</li> </ul>	<ul style="list-style-type: none"> <li>Check external o-ring on cap and replace if worn or cut.</li> </ul>

**SELECTION:** The Thermo Valve is a simple device designed to be **installed in the by-pass line** of the regulating device when the by-pass fluid is being recirculated to the inlet of the pump. This Thermo Valve is effective with either a pressure regulator or an unloader.

**INSTALLATION:** Exercise caution when installing the Thermo Valve not to exceed the maximum inlet pressure of the valve or the pump.

When installed in a **Piston Pump** application with the **by-pass routed directly to the inlet line**, the maximum inlet pressure to the pump is **40 PSI** and a **pressure reducing valve** must be installed between the Thermo Valve and pump inlet.

When installed in a **Plunger Pump** application with the **by-pass routed directly to the inlet line or inlet port**, the maximum inlet pressure to the pump is **60-70 PSI** and a **pressure reducing valve** must be installed between the Thermo Valve and the pump inlet.

Some regulating devices may have excessive pressure spikes when in by-pass. The maximum inlet pressure to the Thermo Valve is 125 PSI.

Caution should be exercised not to exceed 125 PSI in the by-pass loop as this may cause harm to both the valve and the pump.

For convenience in installation, By-pass Hose and Thermo Valve assemblies are available for 1/4", 3/8" and 1/2" unloader connections.

**OPERATION:** As the system fluid is recirculated during the by-pass cycle, the temperature will increase. Frequent or prolonged by-pass can result in extremely high temperature build-up. These high temperatures cause premature failure of cups and seals. Installing the Thermo Valve protects the pump against these excessive temperatures. The power pill in the Thermo Valve detects the temperature rise in the fluid and compresses the spring, opening the bleed port and dumping a portion of the over-heated fluid.

Because of the unique design of the Thermo Valve it will not bleed fluid during a pressure spike from the regulator or unloader as it completely seats and shuts off the flow.

**The Thermo Valve must be installed with a pressurized pump inlet.**

If the system is suction feed a check valve is necessary. Consult factory for assistance, to avoid cavitation in system.

## WARRANTY

### 90 Day Warranty

Refer to complete Cat Pump Warranty for further information.

Products described hereon are covered by one or more of the following U.S. patents 3558244, 3652188, 3809508, 3920356, 3930756 and 5035580

June 1997 4715

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