Thermal Bypass Assembly

This thermal bypass valve is ideally suited for hydrostatic drive circuits which require fast warm-up, controlled fluid temperature, and low return line back pressure. When installed in the return line of a hydraulic circuit that employs an oil cooler, this device will modulate fluid temperature by either shifting return line flow through the cooler, or bypassing directly to the reservoir. In addition, a built-in pressure relief function automatically relieves excess pressure to the reservoir should the cooler become restricted and resultant pressure drop become too high for the cooler circuit.

Standard Shift Temperatures
100°F (38°C) 120°F (49°C) 140°F (60°C) 160°F (71°C)

Full Shift (Cooler Port Open) Temperatures
Shift temperature plus 25°F (14°C)

Relief Valve Setting 65 PSI (4.5 BAR) Consult factory for other pressure settings.

Maximum Operating Pressure 250 PSI (17 BAR)

Proof Pressure 300 PSI (21 BAR)

Minimum Burst Pressure
Up to the full shift temperature: 325 PSI (22 BAR).
Above the full shift temperature: 600 PSI (41 BAR).

Minimum Operating Temperature -30°F (-34°C)

Maximum Operating Temperature Shift temperature plus 75°F (24°C)

Maximum Flow Rating 60 GPM (227 l/m)

Leakage @ 250 PSI (17 BAR) and 60 GPM (227 l/m) Inlet Flow
Cooler Port:
- 0.5 GPM (2 l/m) maximum up to 5°F (3°C) before shift temp.
- 1.0 GPM (4 l/m) maximum from 5°F (3°C) before shift to shift.
Tank Port: 0.10 GPM (0.4 l/m) maximum

Operating Fluid Mineral base hydraulic fluids

Construction Aluminum die-cast housing

Operating Characteristics
- Mode 1: At temperatures below the shift temperature oil flows from inlet to tank port.
- Mode 2: At temperatures between the start of shift and full shift the flow from the inlet port is divided between the cooler and tank ports.
- Mode 3: At temperatures above the full shift temperature inlet flow is through the cooler port.
- Mode 4: At temperatures above the full shift temperature the excess pressure is relieved through the tank port.

For 120°F Shift Temperature

NOTE: If the temperature drops below 145°F the valve will shift back to modes 2 or 1.

Graphic Symbol

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thermaltransfer.com

tp-sales@aphheattransfer.com +1.262.554.8330
Thermal Bypass Assembly

Pressure Drop (Mobile DTE 26 OIL)

Inlet Port Thru Tank Port
@ 100°F (38°C) (300 SUS)

Inlet Port Over Integral Relief Valve
@ 170°F (77°C) (78 SUS)

Inlet Port Thru Cooler Port
@ 145°F (63°C) (110 SUS)

NOTE: Pressure drop shown is added to relief valve crack pressure for total pressure drop.

<table>
<thead>
<tr>
<th>Part Number</th>
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<tbody>
<tr>
<td>65654</td>
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How to Order
Consult factory for pricing and lead time

Part Number
Pressure Setting
65 = Standard, 65 PSI
Optional pressure settings available in 5 PSI increments, up to 85 PSI.

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