### 1UL60 - Relief/Unloading Valve

**Description**

These unloader valves are used to unload a pump, or pumps, to tank when pressure in a separate part of the circuit reaches a preset level. The valves will close, causing the circuit to reload, when the pressure drops to approximately 85% of the unload pressure. The most common application is to maintain a pressure in an accumulator which may be used in an emergency to operate an essential hydraulic function. (Eg, a brake circuit). The 1PUL** valve has a drain port to ensure correct valve function while allowing the bypassed oil to be used for a secondary circuit requirement.

**Operation**

Inlet pressure is seen on the nose of the valve and system pressure (downstream of the system check valve) operates on the system pilot port. When pressure rises to the valve setting, the relief section opens and the system pressure acts on the pilot piston to hold the valve in the open position.

The ratio between the pilot piston diameter and the seat diameter to the relief valve pilot section ensures that the valve will be maintained in the fully open position until the system pressure drops to approximately 85% of the unload pressure.

**Features**

Valves are available as cartridges for installation into special line bodies or into custom designed Hydraulic Integrated Circuits. (NOTE: Provision must be made for a system check valve and a pilot line to signal the system pressure). Valve assemblies can be supplied complete in a line body for use in accumulator circuits. Bodied valves include a check valve and the required connection from the system to the valve pilot port.

**Performance Data**

<table>
<thead>
<tr>
<th>Ratings and Specifications</th>
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<tbody>
<tr>
<td>Figures based on: Oil Temp = 40° C. Viscosity = 32 cSt (150 SUS)</td>
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<tr>
<td><strong>Rated flow</strong></td>
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<td><strong>Max setting</strong></td>
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<tr>
<td><strong>Differential Unload/Reload</strong></td>
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<tr>
<td><strong>Cartridge material</strong></td>
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<td><strong>Body material</strong></td>
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<tr>
<td><strong>Mounting position</strong></td>
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<td><strong>Cavity number</strong></td>
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<td><strong>Torque cartridge into cavity</strong></td>
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<tr>
<td><strong>Weight</strong></td>
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<td><strong>Seal kit number</strong></td>
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<tr>
<td><strong>Recommended filtration level</strong></td>
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<td><strong>Operating temp</strong></td>
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<tr>
<td><strong>Leakage</strong></td>
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<tr>
<td><strong>Nominal viscosity range</strong></td>
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</table>

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**Pressure Drop Curves**

[Graph showing typical valve performance and system working pressure]
1UL60 - Relief/Unloading Valve
Spool, pilot operated
60 L/min (16 USgpm) • 350 bar (5000 psi)

Model Code

1UL** - P 4W - 35 S - 377

1 Function
1UL60 - Cartridge only
1UL65 - Cartridge and body

2 Adjustment Means
P - Leakproof screw adjustment
G - Tamperproof cap
(See page E-7 for dimensions)

3 Port Sizes
Code Port Size Housing Number - Sub Assembly

<table>
<thead>
<tr>
<th>Code</th>
<th>Port Size</th>
<th>Housing Number - Sub Assembly</th>
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<tbody>
<tr>
<td>4W</td>
<td>1/2&quot; BSP</td>
<td>BXP24103-4W-S-377</td>
</tr>
<tr>
<td>8T</td>
<td>1/2&quot; SAE</td>
<td>BXP24103-8T-S</td>
</tr>
</tbody>
</table>

4 Pressure Range @ 4.8 L/min
Note: Code based on pressure in bar.
10 - 40-100 bar. Std setting 75 bar
20 - 70-210 bar. Std setting 100 bar
35 - 150-350 bar. Std setting 200 bar

5 Seals
S - Nitrile (for use with most industrial hydraulic oils)
SV - Viton (For high temperature and most special fluid applications)

6 Body Material
377 - Steel
Omit for aluminium (up to 210 bar)

Dimensions
mm (inch)

Cartridge Only 1UL60

Hex socket adjust 4.0 A/F

17.0 A/F

33.3 A/F

1-1/8-12 UNF-2A

Pilot (3)

55.0 (2.17) max

59.5 (2.34)

Inlet (1)

Tank (2)

2 holes Ø9.0 (0.35) thro’

8.0 (0.31)

19.0 (0.75)

35.0 (1.38)

76.0 (2.99)

Note: For applications above 210 bar (3000 psi) please consult over technical department or use the steel body option.

Cartridge Only 1/2" Ports
Basic Code 1UL65
With System Check

8.0 (0.31)

60.0 (2.36)

1UL60-P-**-S

169 (6.65) approx

3CA80-1.5S

EATON Screw-In Cartridge Valves E-VLSC-MC001-E December 2009 E-331.A

Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.