

# Risbridger

Quality Engineering Solutions

## 7 Series Engine Oil Dispensing Pump Instructions



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## **INTRODUCTION**

- 1 This chapter provides an illustration of the 7 Series Pump, a brief description, as well as operating and maintenance procedures for the pump. The pump is configured for use with Engine Oils, Mineral Hydraulic Fluid, FC75, 'Sternol', 'Flutec PP3' and 'Coolanol 25R' (Viton seals are fitted throughout).

Health & Safety considerations: There are no harmful substances, chemicals or materials used in the manufacture of these Risbridger dispensing pumps. However, some of the oils and fluids they are used to dispense are harmful to health. Operators should avail themselves of current safety data sheets for these fluids.

## **BRIEF DESCRIPTION**

### ***General***

- 2 The pump consists of:
  - 2.1 A hand-operated, single-action piston pump assembly.
  - 2.2 A central, three-way, valve body with attached suction pipe/striker knob assembly.
  - 2.3 A pump cylinder.
  - 2.4 A filter housing.
  - 2.5 A 1600 series filter element.
  - 2.6 Filter to hose tailpiece.
  - 2.7 A clear PVC conductive hose assembly (open braided). Standard lengths available – 36 in, 54 in, 72in.
  - 2.8 A hose coupling, c/w dust cap\* (various options)  
\* A stowage nose is available as an alternative (See Appendix)
  - 2.9 A toggle and strap assembly which enables attachment of a 1 US Quart or 1 Litre can.
  - 2.10 A sight-glass/air bleed valve (optional).

### ***Identification Labels***

- 3 In addition to the manufacturer's label, which identifies the pump serial and type numbers, a further label is attached (or supplied for attachment) to specify the fluid with which the pump is to be used throughout its working life.

## **Pump Cylinder Assembly**

- 4 The pump cylinder assembly screws on to the top of the three-way valve body with an 'O' ring seal between the joint surfaces. At the top end (handle end) of the cylinder, a sintered bronze bush is retained by a circlip. The stainless steel piston rod, running through the bush, has a nylon piston head with a groove cut in it to accommodate a quad ring seal. The piston rod is inserted through the base of the pump cylinder, through the bronze bush and is secured to the stirrup handle by a setscrew and plain washers.

## **Fluid Dispensing Volumes**

- 5 The pump can dispense up to 2 cu. in (33 ml) of fluid per stroke at a maximum pressure of 8.3 bar (120 psig).

To dispense 1 US Quart or 1 Litre, the following number of strokes are required:

5.1 28 strokes = 1 US Quart.

5.2 30 strokes = 1 Litre.

*NOTE The above table is for information purposes only. Risbridger replenishment pumps are not subject to calibration.*

## **Oil Can Attachment**

- 6 The sliding suction tube has a hardened tip designed to puncture the lid of an oil can which can be fitted unopened to the re-oiling pump and is held securely in place by the toggle and strap assembly. A stability base is supplied with the pump which reduces the risk of can damage during fitment and improves sealing.

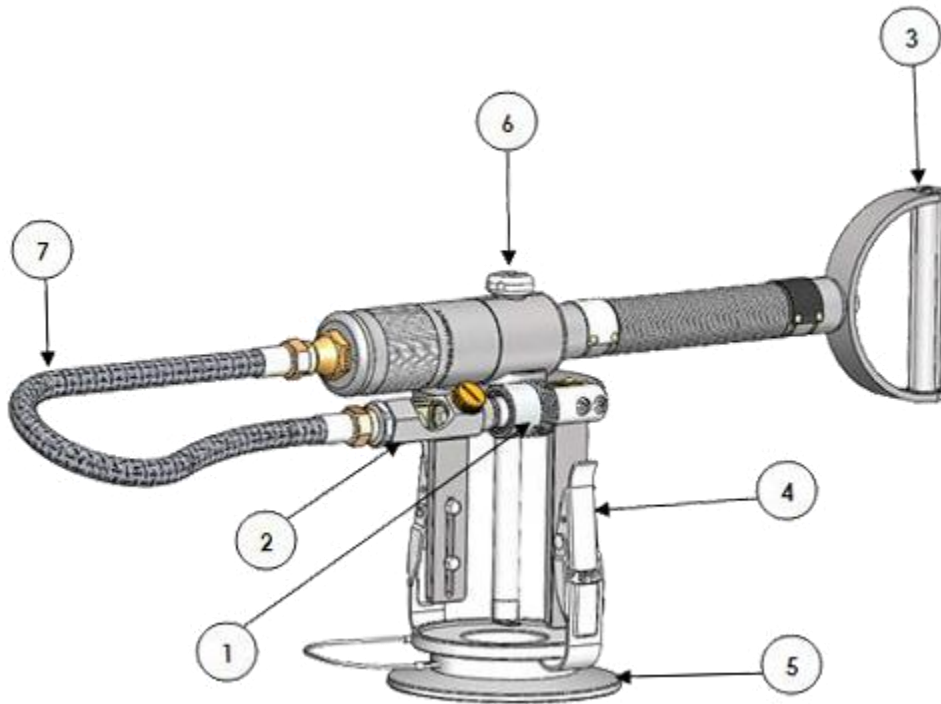


Fig 1 Engine Oil Dispensing Pump

TABLE 1 KEY TO FIGURE 1

Item No.	Description	Stock Code
N/I	Filter Element	1600FILTER
7	36" Clear PVC Hose (Conductive)	PC852
4	Toggles & Straps Only	786/9
6	Suction Pipe & Knob (Quart)	UZ/E/06
N/I	Suction Pipe & Knob (Litre)	UZ/E/06/L
3	Piston Rod, Handle & Cylinder Assembly	UZ7/1
N/I	Body, Flange, Suction Pipe & Toggles	786/8
N/I	Filter Housing & Tailpiece 3/8" BSP (shut-off)	786/7
N/I	Seal kit c/w Valve (non shut-off & shut-off t/p ) [Not Shown - see appendix]	UZ7/5
2	Sight Glass/Bleed Valve Assembly [Not Shown - see appendix]	1997
<b>Note: Alternative Hose Lengths Available</b>		
7	Clear Hose Assembly - Length 72"	PC851
7	Clear Hose Assembly - Length 54"	PC853
<b>Note: Alternative Larger Capacity Piston And Cylinder Assembly</b>		
N/I	Oversize Cylinder/Piston Assembly (10 Strokes = 1 U.S. Quart)	2000

N/I = Not illustrated

Item No.	Coupling Stock Code	Aircraft Types
1 (as shown)	1870 Coupling (Equivalent to OMP 2506-3)	Most Turbine Engines & CSD's/APU's/IDG's, eg. Boeing, Airbus, Embraer, Bombardier etc.
N/I	1871 Dust Plug (Equivalent to OMP 2506-5)	
1	1900 Coupling c/w Dust Plug (Equivalent to Roylyn 7744)	BAe 146/RJ Series

## **Filter Housing And Tailpiece**

- 7 The outlet side of the valve body assembly is fitted with a spring-loaded poppet valve and is threaded to provide a screwed connection for the filter housing. The filter element is a 1600 series filter.

### **1600 Series Filter**

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#### **FILTRATION STANDARDS**

The high quality 1600 filter element has a rating of  $\beta_{4.6} = 200$ , in accordance with ISO 16889:2008 (replacing ISO4572:1981). This allows dispensing of fluid to a cleanliness level of 17/15/12, in accordance with ISO 4406:1999, or NAS 1638 Class 6.

The changes introduced in the new standard ISO16889:2008 include replacement of the test dust used in calibrating the automatic particle counter. A summary of the changes is available on our website.

#### **FILTER LIFE**

Filter elements should be changed every 6-9 months or sooner if more than normal resistance is experienced during pumping.

**Under no circumstances should attempts be made to clean or back flush elements. Never use a pump without a filter.**

#### **“NO-FILTER/NO-FLOW” SHUT-OFF TAILPIECES**

Latest pumps are now fitted with a shut-off type tailpiece which provides a “No-filter/No-flow” feature. Older pumps can be converted to this system by replacing the filter housing/tailpiece assembly using the following spares kits which also include a modified anti-block washer to ensure correct operation after conversion:

#### **Stock Code 786/7 Filter Housing and Shut-off tailpiece $\frac{3}{8}$ ” BSP.**

For re-oiling pumps for engine oils, mineral hydraulic fluids, FC75, ‘Sternol’, ‘Flutec PP3’ and ‘Coolanol 25R’.

#### **SPARE ELEMENT STOCK CODES**

##### **Stock Code 1600FILTER**

Use for engine oils, mineral hydraulic fluids, FC75, ‘Sternol’, ‘Flutec PP3’ and ‘Coolanol 25R’. Replaces old Stock Codes 1600, 1600/V and Stock Code UZ1600.

The shelf life of the filter is five years.

## OPERATING PROCEDURE

### **Before Use Checks**

- 9 Before using the pump, check as follows:
  - 9.1 Ensure that the fluid identification label corresponds to the fluid being used.
  - 9.2 Ensure that the can to be used is filled with the correct fluid for the system being serviced.
  - 9.3 Ensure that the fluid container is of the correct size for the pump. The suction tube striker knob is clearly marked "Quart" or "Litre".

Note: A Litre suction tube is too long for a Quart can and there is a risk of puncturing the bottom of the can if used incorrectly.

- 10 Proceed as follows:
  - 10.1 Withdraw the suction pipe and clamp the oil can securely to the re-oiling pump.
  - 10.2 With the palm of your hand, drive the suction pipe firmly through the top of the can (see 9.3).
  - 10.3 Connect the pump to the appropriate aircraft / machinery system.
  - 10.4 Withdraw the stirrup handle to its fullest extent and commence pumping, using steady full strokes.
  - 10.5 Pump until the system is replenished.
  - 10.6 After use, a partly full can should be left attached to the pump.

(Note: Most coupling and end connectors can be supplied with protective dust plugs or caps. For most popular couplings a stowage nose is fitted as an integral part of the pump, providing protection from particle ingress and damage to the coupling.)

## MAINTENANCE

### General

- 11 No special tools are required. The pump should be kept clean and should operate smoothly at all times. Any excessive resistance felt during the pumping stroke indicates a blocked filter. Insufficient suction and pressure of the pump and/or fluid leakage via the piston rod indicates that the piston seal is worn or damaged, and the pump must be returned for service.

### Changing The Filter

- 12 The 1600 series filter must be changed every 6-9 months or sooner if excessive resistance is felt during the pumping stroke.
- 13 Proceed as follows:
  - 13.1 Unscrew the filter housing, withdraw and discard the filter element.
  - 13.2 Clean the filter housing and hose connection in an ultrasonic tank if one is available. Otherwise, clean the housing and connection with fresh oil or fluid of the correct specification. Always protect the end screw threads from damage.
  - 13.3 Ensure that the pump is fitted with the correct tailpiece  
**N.B.** - All current pumps standardise on a ½" dia. tailpiece spigot (1600 series filter elements). Pumps having older 3/8 dia. tailpiece spigots either require alternative element types or are obsolete. (N.B. A pump repair/conversion service exists – contact Sales for details).
  - 13.4 Fit the new filter element over the nose in the filter housing and screw the housing on to the pump body. No loose seals or springs are required.
  - 13.5 Ensure that there is at least one pint (0.56 litre) of oil in the can and flush the filter by normal operation of the pump.
  - 13.6 Ensure that there is no leakage at the filter housing joint and that the pump operates normally. Treat the flushing fluid as waste.

### Changing The Seals And O-Rings

- 14 The piston seal is the only moving seal in the pump. Wear is indicated by leakage through to the rear of the piston and, consequently, up the piston rod to the top of the cylinder. Other leakage may occur at the screwed connections of the valve body due either to deterioration of the joint sealing rings or loose connections.
- 15 In the event of a worn piston seal or deterioration of the joint sealing rings, all seals must be replaced. During this procedure the pump should be thoroughly examined.
- 16 The seals are available in kit form (see fig 1).



## **WARNINGS**

### **(1) PRESSURISED FLUID**

This equipment produces fluid at a pressure hazardous to personnel. Ensure pressure is depleted after use or before maintenance.

### **(2) HAZARDOUS FLUID**

Prior to any operation or use of a Risbridger pump, identify the type of fluid to be used and apply the appropriate safety precautions for that fluid. Read the appropriate safety data sheet and wear the correct protective clothing.

## **CAUTIONS**

### **(1) IDENTIFICATION LABELS**

Only the fluid detailed on the identification labels attached to a pump is to be used with that pump.

### **(2) FILTERS**

Never use a pump without a filter fitted.

### **(3) FILTER ELEMENTS.**

Do not attempt to clean or back-flush used filter elements.

### **(4) INCORRECT ACTION**

The pump should operate smoothly at all times. Any excessive resistance felt during pumping indicates a blocked filter. Insufficient suction and pressure of the pump and/or fluid leakage at the screwed joints indicates that the piston seal is worn or damaged, and the pump must be returned for service.

<b>Risbridger Stock Code</b>	<b>Description</b>
PC852	36in Clear Conductive PVC Hose
1870COUPLING	Coupling (OMP2506-3 Equivalent) - Viton™
1871	Dust Plug (OMP2506-5 Equivalent) - Viton™
1997	Sight Glass/Bleed Valve Assembly
1600FILTER	Filter Element (Engine and Mineral Hydraulic)
UZ7/1	Piston Rod, Handle & Cylinder Assembly
786/7.25	Filter Housing & Tailpiece 1/4in BSP (Shut-Off)
786/7	Filter Housing & Tailpiece 3/8in BSP (Shut-Off)
786/8	Body, Flange, Suction Pipe & Toggles
786/9	Toggles & Straps Only
UZ7/5	Seal Kit c/w Valve (Non Shut-Off & Shut-Off T/P)
STABILITY-BASE	STABILITY BASE KIT FOR 7 & 8 SERIES PUMPS
UZ/E/06	Suction Pipe & Knob (Quart)
UZ/E/06/L	Suction Pipe & Knob (Litre)
<b>Note: ALTERNATIVE HOSE LENGTHS AVAILABLE</b>	
PC851	72in Clear Conductive PVC Hose
PC853	54in Clear Conductive PVC Hose
<b>Note: ALTERNATIVE LARGER CAPACITY PISTON AND CYLINDER ASSEMBLY</b>	
2000	Oversize Cylinder/Piston Assembly (10 Strokes = 1 U.S. Quart)

**Note: Older clear polyurethane hoses have now been superseded by conductive hose assemblies with "PC" prefix.**