ENGINEERING
TOMORROW

Data Sheet

# Oil seperator
# Type **OUB**

Oil seperator type OUB is for use
in all refrigeration plants


Oil separator type OUB is for use in all refrigeration plants where the compressor lubricating oil must be returned directly to the compressor oil sump under all operating conditions.

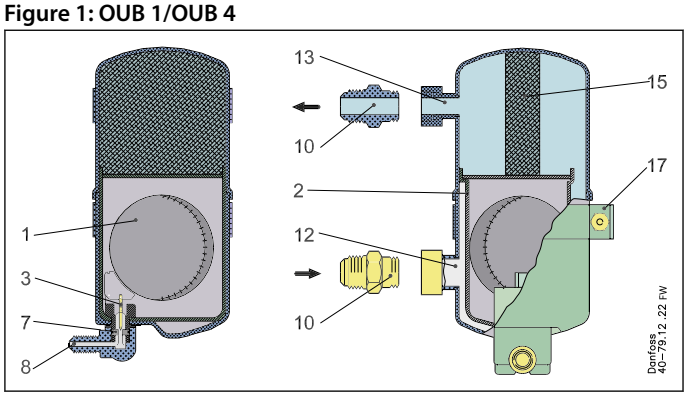
In this way lubricating oil from the compressor is prevented from circulating with the refrigerant in the refrigeration system itself.

**Features**

- Ensures oil return to compressor oil sump. Prevents compressor breakdown caused by lack of lubrication. Increases compressor operating life
- High efficiency Due to the interaction of reduced flow velocity, change of flow direction for oil concentration, collection of separated oil at high temperatures, and automatic oil return to the crankcase
- Protects against liquid hammer in the compressor
- Better utilisation of condenser and evaporator capacity (no oil-gas collection)
- Pulsation and noise damping on the high-pressure side of system
- OUB 1 may be used in the following EX range: Category 3 (Zone 2)

## Functions

**Figure 1: OUB 1/OUB 4**




| | |
|---|---|
| **1** | Float |
| **2** | Oil container |
| **3** | Float needle |
| **7** | Orifice |
| **8** | Return oil connection (¼ in. / 6 mm flare / solder) |
| **10** | Connection nipple |
| **12** | Inlet connection refrigerant vapour |
| **13** | Outlet connection refrigerant vapour |
| **15** | Oil concentrator |
| **17** | Fixing strap |

The very effective function of the OUB is due to the interaction of the following:

- velocity and change of flow direction of the incoming mixture of oil and refrigerant
- oil concentration, separation, and filtration
- storage of separated oil at high temperatures, thus preventing absorption of the refrigerant.
  Refrigerant vapour is led through the inlet connection (12). The oil contained in the vapour is separated as a result of the change in velocity and direction through the oil concentrator (15) which at the same time also acts as an oil filter.
  When the superheated refrigerant vapour flows around the oil container (2) some of the superheat is given off. In this way the oil container reaches a constant high temperature and the separated oil is stored in a warm state, i.e. with as low a refrigerant content as possible. Thus, the refrigerant is prevented from flowing to the crankcase where it could cause violent boiling.
  The float (1) opens the needle valve (3) depending on the amount of oil, whereupon the condensing pressure forces the oil back to the crankcase therefore ensuring automatic oil return.

# Product specification

## Technical data

**Table 1: For type OUB**

| Features | Specifications |
|---|---|
| Refrigerants | R22, R134a, R290 **), R404A, R407A, R407C, R407F, R407H, R438A, R448A, R449A, R449B, R450A, R452A, R454A *), R454C *), R455A *), R507A, R513A, R600 **), R600a **), R1234ze *), R1270 **)<br>(1)- OUB 1 only<br>(2)- OUB 1s only |
| Max. working pressure | PS/MWP = 28 bar |
| Max. test pressure | Pe = 40 bar |
| Temperature of medium | -40 – 120 °C |
| Net volume | OUB 1: 0.52 l |
| | OUB 4: 2.46 l |
| Oil reservoir | OUB 1: 0.1 l |
| | OUB 4: 0.5 l |
| Recommended tightening torque of unions | OUB 1: 40 Nm |
| | OUB 4: 90 Nm |

(1) OUB 1 is evaluated for R454A, R454C, R455A, R1234ze by ignition source assessment in accordance with standard EN ISO80079-36. Flare connections are only approved for A1 and A2L refrigerants.
(2) OUB 1s is evaluated for R290, R454A, R454C, R455A, R600, R600a, R1234ze, R1270 by ignition source assessment in accordance with standard EN ISO80079-36. Flare connections are only approved for A1 and A2L refrigerants

For complete list of approved refrigerants, visit www.products.danfoss.com and search for individual code numbers, where refrigerants are listed as part of technical data.

## Dimensions and weight

**Figure 2: OUB 1/OUB 4 - without connection unions**

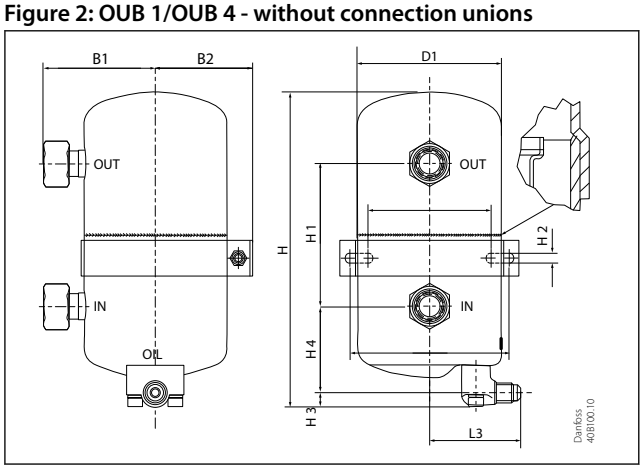



**Figure 3: OUB 1/OUB 4 (flare & solder connection)**

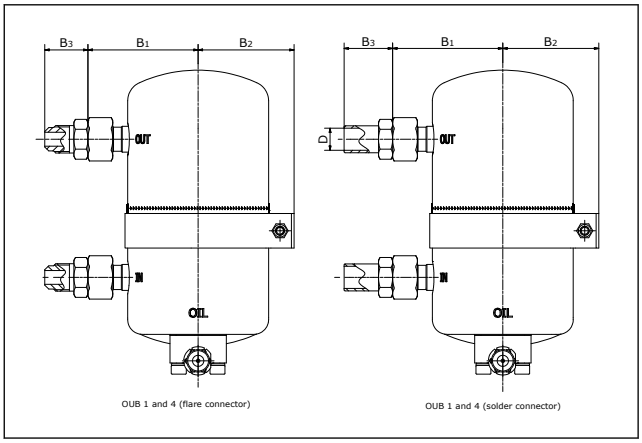
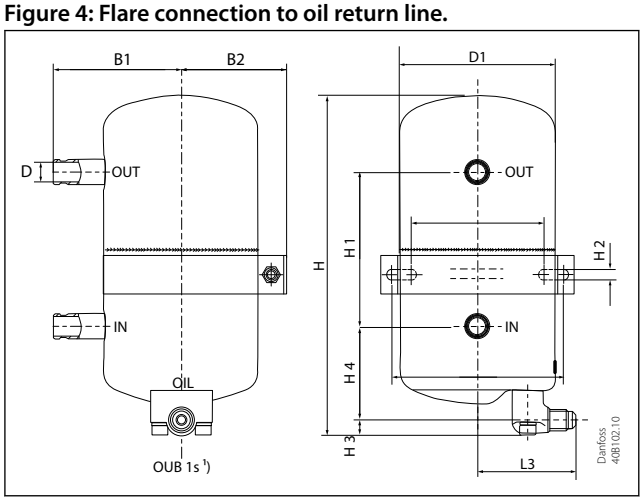
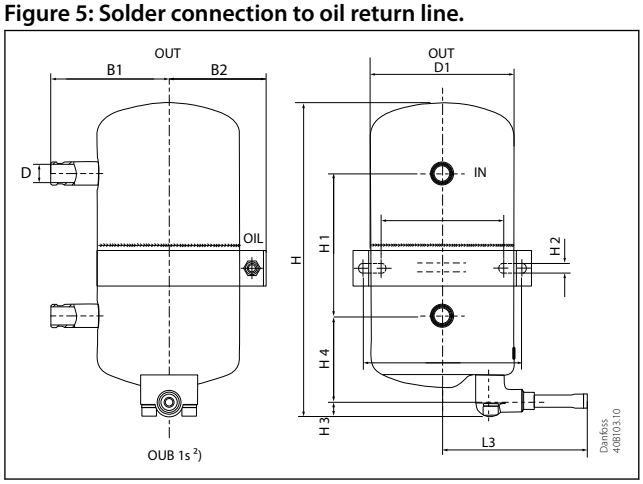


**Figure 4: Flare connection to oil return line.**




1) OUB 1s ¼ in. flare connection to oil return line.

**Figure 5: Solder connection to oil return line.**




2) OUB 1s 6 mm ODF solder connection to oil return line.

**Table 2: Flare connection**

| Type | Flare connection | | H | $H_1$ | $H_2$ | $H_3$ | $H_4$ | $L_1$ | $L_2$ | $L_3$ | $B_1$ | $B_2$ | $B_3$ | $øD_1$ | Net weight |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | [in] | [mm] | | | | | | | | | | | | | |
| | ⅜ | 10 | 177 | 80 | 5.5 | 9 | 49 | 69 | 89 | 50 | 60 | 55 | 30 | 81 | 1.2 |
| OUB 1 | ½ | 12 | 177 | 80 | 5.5 | 9 | 49 | 69 | 89 | 50 | 60 | 55 | 31 | 81 | 1.3 |
| | ⅝ | 16 | 177 | 80 | 5.5 | 9 | 49 | 69 | 89 | 50 | 60 | 55 | 38 | 81 | 1.4 |
| | ⅝ | 16 | 263 | 126 | 8.5 | 9 | 67 | 111 | 143 | 72 | 94 | 85 | 44 | 131 | 4.6 |
| OUB 4 | ¾ | 16 | 263 | 126 | 8.5 | 9 | 67 | 111 | 143 | 72 | 94 | 85 | 49 | 131 | 4.7 |
| | 1 | 25 | 263 | 126 | 8.5 | 9 | 67 | 111 | 143 | 72 | 94 | 85 | 51 | 131 | 4.8 |

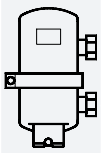
**Table 3: Solder connection**

| Type | Solder connection | | H | $H_1$ | $H_2$ | $H_3$ | $H_4$ | $L_1$ | $L_2$ | $L_3$ | $B_1$ | $B_2$ | $B_3$ | $øD_1$ | øD | Net weight |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | [in] | [mm] | | | | | | | | | | | | | | |
| | ⅜ | 10 | 177 | 80 | 5.5 | 9 | 49 | 69 | 89 | 50 | 60 | 55 | 29 | 81 | 9.6 | 1.2 |
| OUB 1 | ½ | 12 | 177 | 80 | 5.5 | 9 | 49 | 69 | 89 | 50 | 60 | 55 | 31 | 81 | 12.8 | 1.2 |
| | ⅝ | 16 | 177 | 80 | 5.5 | 9 | 49 | 69 | 89 | 50 | 60 | 55 | 42 | 81 | 16.0 | 1.3 |
| OUB 1s | - | 10 | 177 | 80 | 5.5 | 9 | 49 | 69 | 89 | 81 | 65 | 55 | - | 81 | 10.0 | 1.2 |
| | - | 10 | 177 | 80 | 5.5 | 9 | 49 | 69 | 89 | 50 | 65 | 55 | - | 81 | 10.0 | 1.2 |

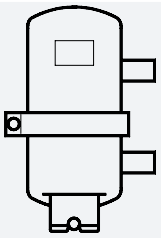
| Type | Solder connection | | H | $H_1$ | $H_2$ | $H_3$ | $H_4$ | $L_1$ | $L_2$ | $L_3$ | $B_1$ | $B_2$ | $B_3$ | $øD_1$ | øD | Net weight |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | [in] | [mm] | | | | | | | | | | | | | | |
| OUB 4 | 5/8 | 16 | 263 | 126 | 8.5 | 9 | 67 | 111 | 143 | 72 | 94 | 85 | 40 | 131 | 16.0 | 4.3 |
| | 3/4 | 18 | 263 | 126 | 8.5 | 9 | 67 | 111 | 143 | 72 | 94 | 85 | 45 | 131 | 19.1 | 4.3 |
| | 7/8 | 22 | 263 | 126 | 8.5 | 9 | 67 | 111 | 143 | 72 | 94 | 85 | 45 | 131 | 22.3 | 4.3 |
| | 1 | 25 | 263 | 126 | 8.5 | 9 | 67 | 111 | 143 | 72 | 94 | 85 | 45 | 131 | 25.5 | 4.3 |
| | 1 1/8 | 28 | 263 | 126 | 8.5 | 9 | 67 | 111 | 143 | 72 | 94 | 85 | 47 | 131 | 28.7 | 4.3 |

## Ordering

### Table 4: OUB 1 / OUB 4

| Figure | Type | Connection | | | Rated plant capacity [kW] | | | | | Code no. for OUB + unions (straightway) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | [in] | [mm] | Version | R22 | R134a | R404A | R507 | R407C | |
|  | OUB 1 | 3/8 | 10 | Flare | 3.1 | 2.5 | 3.5 | 3.5 | 4.4 | 040B0010 + 2 × 040B0132 |
| | | 3/8 | - | Solder | 3.1 | 2.5 | 3.5 | 3.5 | 4.4 | 040B0010 + 2 × 040B0140 |
| | | 1/2 | 12 | Flare | 3.1 | 2.5 | 3.5 | 3.5 | 4.4 | 040B0010 + 2 × 040B0134 |
| | | 1/2 | - | Solder | 3.1 | 2.5 | 3.5 | 3.5 | 4.4 | 040B0010 + 2 × 040B0142 |
| | | 5/8 | 16 | Flare | 3.1 | 2.5 | 3.5 | 3.5 | 4.4 | 040B0010 + 2 × 040B0136 |
| | | 5/8 | 16 | Solder | 3.1 | 2.5 | 3.5 | 3.5 | 4.4 | 040B0010 + 2 × 040B0144 |
| | | Without connection unions | | | | | | | | 040B0010 |
| | OUB 4 | 5/8 | 16 | Flare | 11.6 | 9.6 | 12.8 | 12.8 | 16.0 | 040B0040 + 2 × 040B0256 |
| | | 5/8 | 16 | Solder | 11.6 | 9.6 | 12.8 | 12.8 | 16.0 | 040B0040 + 2 × 040B0266 |
| | | 3/4 | - | Solder | 11.6 | 9.6 | 12.8 | 12.8 | 16.0 | 040B0040 + 2 × 040B0268 |
| | | 7/8 | - | Solder | 11.6 | 9.6 | 12.8 | 12.8 | 16.0 | 040B0040 + 2 × 040B0270 |
| | | 1 1/8 | - | Solder | 11.6 | 9.6 | 12.8 | 12.8 | 16.0 | 040B0040 + 2 × 040B0274 |
| | | Without connection unions | | | | | | | | 040B0040 |

### Table 5: OUB 1s

| Figure | Type | Connection | | Rated plant capacity [kW] | Code no. for OUB + unions (straightway) |
|---|---|---|---|---|---|
| | | [mm] | Version | R22 | |
|  | OUB1s [1] | 10 | Solder | 3.1 | 040B0023 |
| | OUB1s [2] | 10 | Solder | 3.1 | 040B0029 |

[1] 1/4 in. flare connection to oil return line
[2] 6mm ODF solder connection to oil return line

## Certificates, declarations and approvals

The list contains all certificates, declarations, and approvals for this product type. Individual code number may have some or all of these approvals, and certain local approvals may not appear on the list.

Some approvals may change over time. You can check the most current status at danfoss.com or contact your local Danfoss representative if you have any questions.

**Table 6: Certificates, declarations and approvals**

| Document name | Document type | Document topic | Approval authority |
|---|---|---|---|
| RU Д-DK.БЛ08.B.00828_19 | EAC Declaration | Machinery & Equipment | EAC |
| 040B0625.AA | Manufacturers Declaration | PED | - |
| UL SA3736 | Mechanical - Safety Certificate | - | UL |
| 034R9541.AA | Manufacturers Declaration | China RoHS | - |
| 034L9630.AA | Manufacturers Declaration | ATEX | - |

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