

# Howden Engineered Solution for Hydraulic Hoses



Howden Engineering issues new specifications on design of hydraulic hoses.

**Howden engineering specifications have been revised to correct the length and design of the hydraulic hoses. Howden also experienced that if there was not enough care taken during assembly the hose(s) and twisting of the hoses was induced, the hose(s) would start to leak because of accelerated fatigue.**

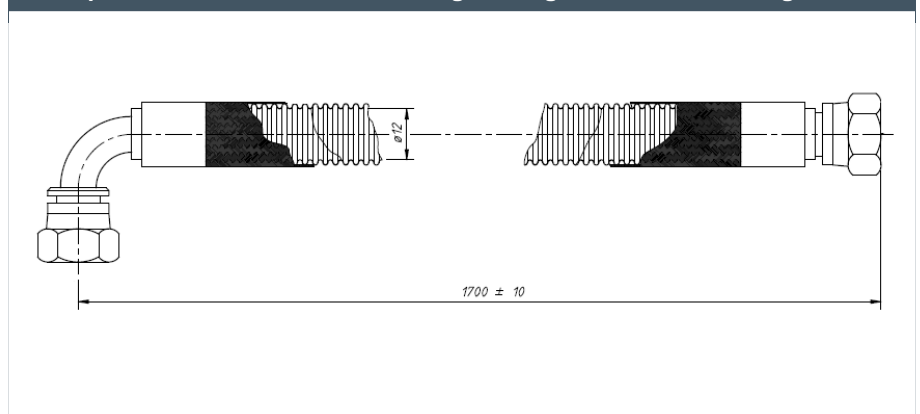
Howden has recorded certain issues in relation to the lengths of the hydraulic hoses mounted on the rotating oil seal. These issues have affected both short and long hoses, as the engineering guidelines from our hose supplier for determining the optimum hose length have been unclear. Furthermore, there have been examples of hoses twisting when mounted. In certain instances, this has caused unnecessary fatigue and wear of the hoses, leading to failure.

## The solution

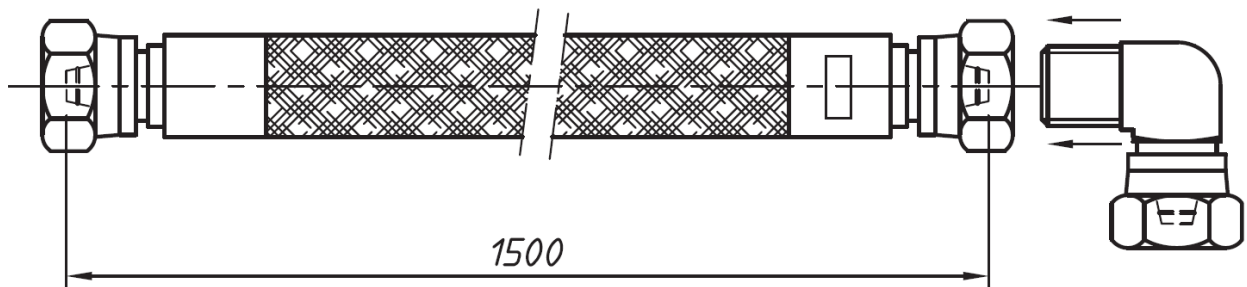
In order to solve these issues, Howden Engineering has instituted the following actions:

1. Together with our hose suppliers Howden Engineering has revised the hose calculation methods, resulting in the hoses being produced according to new optimum length calculations. Tests at Howden have shown that these new lengths accommodate the physical movements that occur during blade pitch regulation.

Example of an old hose: Incorrect length, integral 90° elbow, O-ring in NBR



## Example of a new hose: Improved length, separate swivel nut 90° elbow, O-ring in FPM

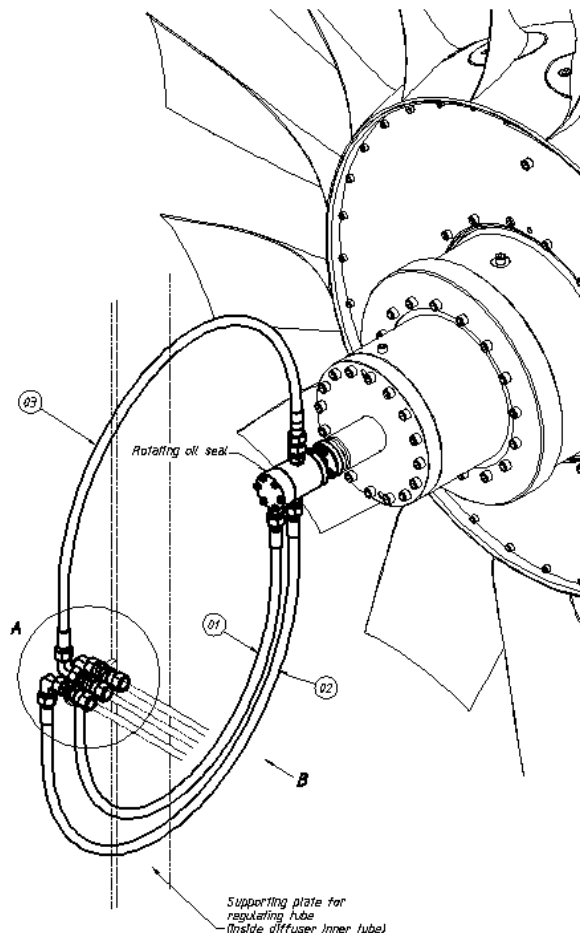


2. Hoses will be delivered with straight hose fittings at both ends. This ensures that the hoses cannot twist when mounted, eliminating the risk of the hoses distorting, as recorded in some cases when fitted with a integral 90° hose fitting. From now on, all hose deliveries will therefore include 90° swivel nut elbows. New hoses will replace previously delivered hoses.
3. Improving of the sealing element. Howden has exchanged the old NBR O-ring with FPM. This is to improve the high temperature margin.
4. New installation instruction has been distributed to our Technical Advisors and included in this Technical Bulletin.

### New hydraulic hoses



### Overview of assembled hydraulic hoses



## Mounting procedure / check list

### Mounting procedure/ check list:

Step 1) Mount bulkhead connectors (pos. 05, 06 and 07), and tighten them to supporting plate.

Step 2) Mount hoses loose on bulkhead connectors, and rotating oil seal. See [P1] references on drawing (only shown for one hose).

**NOTE : DO NOT TIGHTEN NUTS**

Step 3) Adjust hose to be free of tension, and make it hang in a natural and straight curve - avoid flexing in hose

Step 4) Check that hose is properly elevated from "floor" - on small fans it may be necessary to turn swivel nut elbow some degrees. See [P2] references on drawing (only shown for one hose).

Step 5) Tighten swivel nut elbow to bulkhead. See [P3] references on drawing (only shown for one hose).

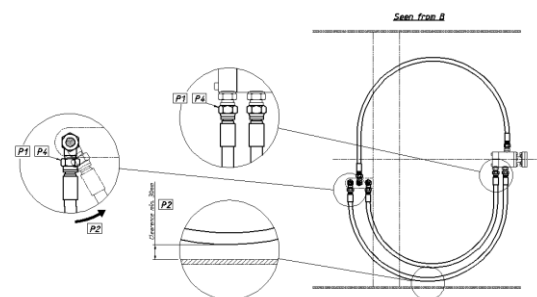
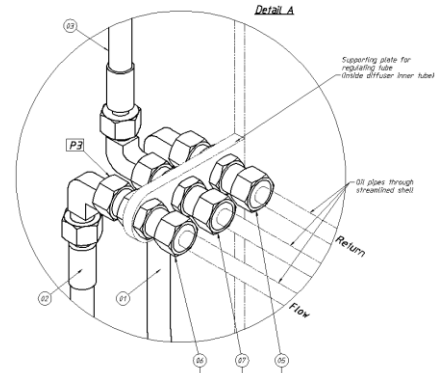
**NOTE : PREVENT BULKHEAD FROM TURNING BY FIXING IT WITH A WRENCH OR SIMILAR**

Step 6) Tighten hose nuts on swivel nut elbow, and on rotating oil seal. See [P4] references on drawing (only shown for one hose).

**NOTE : PREVENT SWIRVEL NUT FITTING, AND FITTING ON ROTATING OIL SEAL FROM TURNING BY FIXING IT WITH A WRENCH OR SIMILAR**

Step 7) Ensure that all connections are tight.

**NOTE : CHECK THAT ALL NUTS ARE TIGHT.**



For more information please contact your local Howden office.

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