

Technical Information

MIS-MATCH OF CYLINDER VALVES

T016

Guidance on cylinder/valve mismatches by **THREAD SIZE/ PRESSURE**

In 2015 there were fatalities and serious injuries to dive centre staff while filling cylinders. These fatalities and injuries were put down to a mismatch between the threads of the cylinder and those of the valve fitted. This is still happening with an incident reported in 2022.

Scenario 1 - Valve compatibility

Cylinders must be fitted with a valve that has the same thread as the cylinder neck threads. An M25 cylinder must be fitted with an M25 valve, and a G³/₄ cylinder must be fitted with a G³/₄ valve etc.

Scenario 2 - Cylinder rating

In a similar fashion a cylinder rated at 232 bar must be fitted with a valve that is also rated at 232 bar. This ensures complete compatibility. Likewise, a 300 bar rated cylinder must be fitted with a 300 bar rated valve.

HSE consider pressure mismatch to signify poor engineering practice and therefore exceptions require careful thought e.g. Using 232 bar rated valves on 200 or 207 bar aluminium stage and inflation cylinders (where supply of a suitably rated valve is problematic). For appropriate combinations that involve mismatch IDEST produce a red quadrant label to caution the filler.



SOME COMBINATIONS ARE SIMPLY UNSUITABLE (E.G. 300 BAR VALVE ON A 232 BAR CYLINDER) AND SHOULD NOT BE PLACED INTO SERVICE.

Scenario 3 – EN 144-1 and DIN 477-6 mismatch

Some cylinders used for diving in the UK have another potential incompatibility. This involves cylinder valves imported from Germany that have a 25 x 2 mm stem thread. However, these valves have been manufactured to German standard DIN 477-6, not to EN 144-1/ISO 15245-1 which apply in the UK.

This German manufactured DIN 477-6 valve has a flange that is 'stepped'. This 'stepped' valve may only be used with a cylinder marked DIN 477-6 and a 70° 'taper' groove.

Valves manufactured to EN 144-1/ISO 15245-1 have a 'flat' flange and may be used for both 'square' shoulder (EN144-1/ISO 15245-1) and 45° 'tapered' (BS 1806) 'O' ring grooves.

By incorrectly fitting a DIN 477-6 valve to an EN 144-1 cylinder, a slight gap is created at the junction of cylinder and valve flange. This can cause leakage and risk during filling and use. It can also cause water ingress and possible corrosion at the top of the grooves.



If a test centre comes across such a combination during test, the top of the cylinder neck should be checked carefully. If no damage is found, then the cylinder can be hydraulically tested and a more appropriate valve fitted.