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Tech Talk 0066
New MES5MS Mine – Spec Engine Strangler

Main Differences Between The New MES5MS & Standard Engine Stranglers (MES3 & MES5)

1) **Materials of construction:** The standard MES3 & MES5 engine stranglers have an aluminium body, disc, handle and air cylinder. Underground mining applications require *NO EXPOSED ALUMINIUM.* The MES5MS uses leaded bronze (gunmetal) for the body, disc and handle. The Single acting air cylinder uses brass for the barrel and gland, with a stainless steel rod. All other parts (excluding o-rings) are stainless steel, with the exception of the shoulder bolt that the roller runs on, which is high tensile steel. The reason aluminium cannot be used in underground mining applications is that is has the tendency to spark if struck, and the presence of flammable gasses underground is a reality.
2) **Operation:** The standard MES3 and MES5 engine stranglers require setting (to the open position) by hand. The air cylinder locks this open position, which in normal operating conditions has no air pressure applied to it. In an emergency situation, air pressure is applied to the cylinder (eg via a rollover sensor), releasing the handle and shutting the valve. The design requirement for the MES5MS is that it must be "fail-safe" – in that the valve does not rely on air pressure to shut. This is achieved by using a single acting air cylinder, fitted so that when there is no air pressure applied, the force of the return spring holds the valve shut. In a normal running situation, the truck or plant air pressure opens the valve, enabling the engine to run. In an emergency situation, the air supply is removed, (via air control valve), and the return spring forces the valve to shut.
3) **Mounting:** The standard MES3 & MES5 have a lip on the outside diameter, designed to be fitted using air intake hose & hose clamps. The MES5MS is designed to be fitted using flange adaptors, bolted through the 8 x 7.00mm slots, and sealing on the external o-rings (See Fig 1 page 2). Liquip does not manufacture these flange adaptors at the present time.

Internal Design

- The internal design is identical to the new MES3 and MES5 designs, using a spherical sealing surface and tighter tolerances. (See tech talk 0065).

Prototype Testing

- One of the initial prototype MES5MSs was tested to 100,000 actuations. The only obvious wear was a 1.5mm groove worn into the operating handle by the return spring. All other wear was negligible. It is not expected that any engine strangler will be subject to this amount of cycles. However, the cycle test was carried out on a workbench, and not on an operating engine subject to higher temperatures, vibration and air intake vacuum.

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MES5MS (MINE-SPEC) MECHANICAL ENGINE STRANGLER

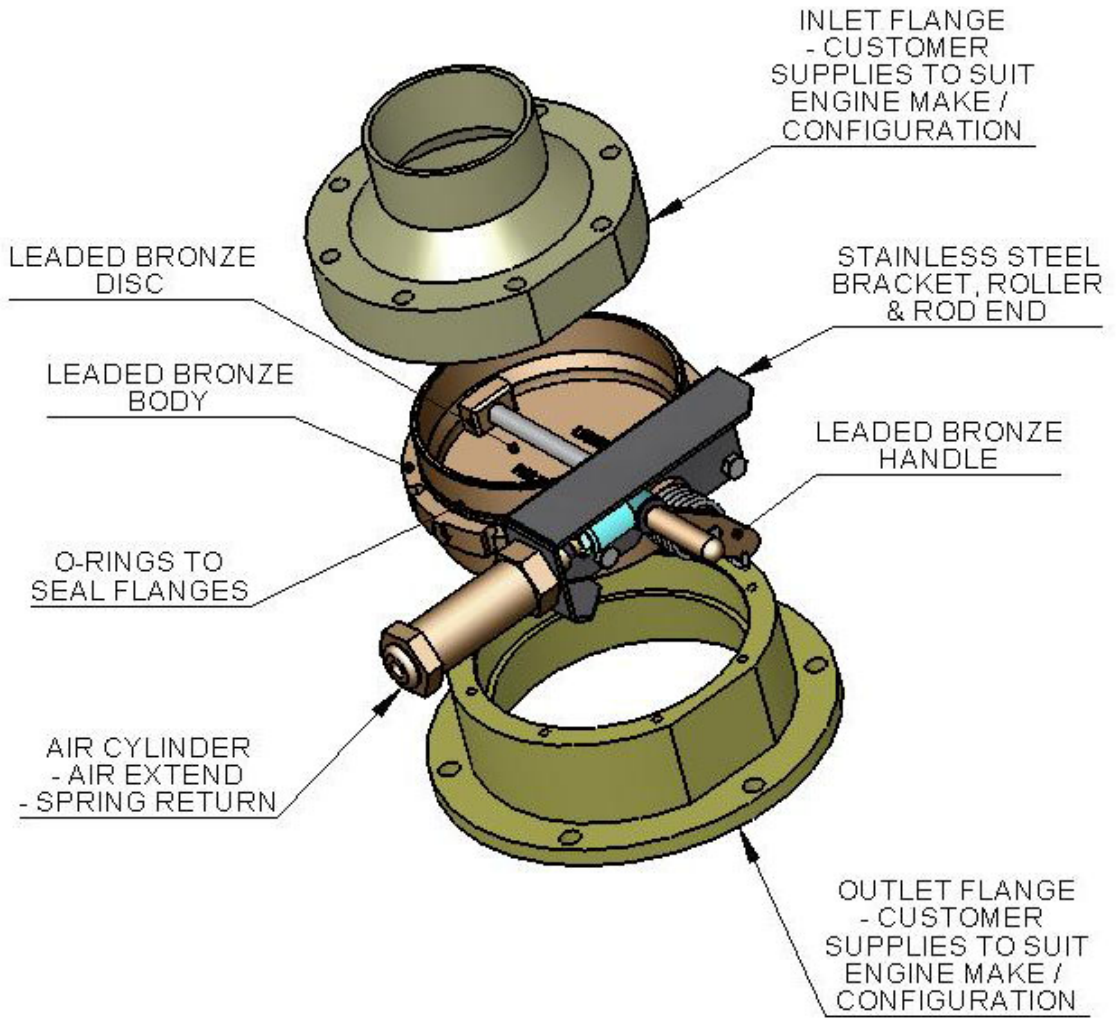

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FIG.1 - MES5MS CAD IMAGE

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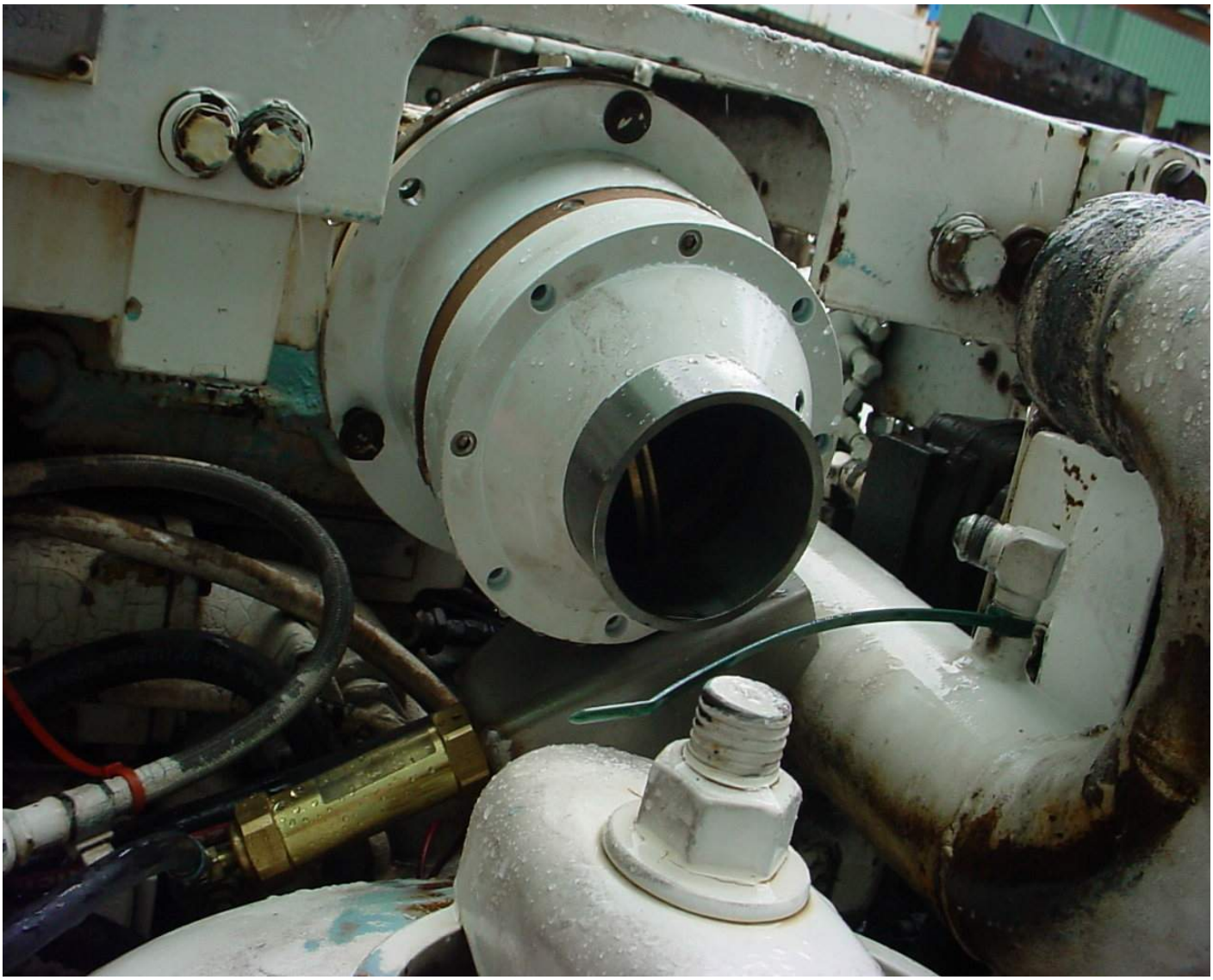

FIG. 2 – MES5MS FITTED TO CUSTOMER'S ENGINE