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Important Note

Care should be taken when dismantling valves which have been overhauled using unknown materials.

Caution

When removing existing asbestos gland packing from the stuffing box prior to repacking, the packing should be dampened down with water to prevent the release of dust, both before and during removal. The material should be handled and deposited in accordance with the appropriate safety instructions.

Description

WV&C use an exfoliated graphite material produced as die pressed rings accurately sized to suit the valve stem and stuffing box. The concentric rings which centralise and align the stem so that it does not contact any metal parts of the gland and stuffing box base produce an excellent gland seal. Thus damage to the stem which would in turn promote gland leakage is prevented.

Carefully determined clearance exist between the stem and the gland, on high pressure valves a braided graphite filament packing is used, this is fitted both top and bottom of the gland and is carefully cut to length so that a close fitting butt-joint is produced.

On certain valves, e.g. uniflows an extra laminated block is fitted in the base of the stuffing box. It is vitally important to the integrity and operability of the valve that the correct components are used in valve glands. When overhaul of the valve are undertaken we recommend that the spares are provided via WVC are used.

Backseats

Some valves are fitted with backseats on the valve stem which in the open position can make a seal on the underside of the bonnet.

Where backseats are fitted it may be used for stem sealing; for example it will allow temporary sealing of the gland sealing of the gland to allow system operation until the gland can be repacked.

We do not recommend that backseats are used or relied upon for the purpose of re-packing the stuffing box whilst the valve is under pressure.

Back seats should not be considered as stops to prevent over travel when opening a valve. Hence when a valve is being opened it should be operated to the position shown as open or the backseat contact be kept to minimum force and then the hand wheel backed off 1/8th turn in the opposite direction after taking out the backlash.

Valve operated by electric actuators should always have their limit switches correctly set for open position; i.e. that the actuator stops in the open position as indicated on the travel index plate, valves should not be open to the backseat using the actuator. If there is a requirement to backseat the valve this should be done by engaging the hand wheel and carefully winding the valve to the backseat.

Caution

Care must be taken when approaching a valve with a leaking gland in order to backseat or un backseat it. This operation should only be carried out when it is safe to do so.

Because of the out of balance stem loads, very little effort is required to backseat the valve. If after backs seating a valve gland leaking persists, extreme force must not be applied to the back seat, as this will cause serious mechanical damage to other parts of the valve.

Valves with leaking glands should be attended to at the earliest opportunity.

Backseats should be lapped in the conventional manner with lapping plates. On no account should the stem be lapped on to the backseat in the bonnet. If serious damage has occurred on any of the seating surfaces these may be machined prior to lapping.

Note: The total amount of material that can be removed by lapping or machining must not exceed 1.57mm (0.062"). The original seat profile and width must be maintained after any machining.

Comprehensive advice on lapping can be found in the publication Maintenance of Valves and Seats. IOM-P1-Rev 1.

After any overhaul of the valve a check must be made to ensure that the full open position of the valves e.g. (when fitted on venture valves the eye piece is in line with the seats) corresponds with the position indicated by the index plate, that there is a gap before the backseat touches and there are no problems due to 'over travel' if the backseat faces have been overhauled. Actuator limit switches must also be checked to ensure the valve stops in the appropriate position without overrunning on to the backseat.

Preventative Maintenance

Regularly inspect valves for signs of gland leakage. The gland packing can be tightened to prevent leakage but if a leak has persisted for some time it will have blown out some of the packing material and thus simply tightening the gland will not prevent the leakage. In addition the lack of support given to the stem by the gland packing may allow for the stem to come into contact with the metal gland parts. If the valve is fitted with backseat refer to information on backseats.

Caution: Only undertake preventative maintenance when it is safe to do so. Do not over tighten gland nuts in an attempt to stop gland leaks. If the leakage cannot be controlled, then overhaul the gland at the earliest opportunity.

Overhaul

Overhaul the valve only when it is safe to do so.

Obtain the correct spare parts prior to dismantling the valve. Do not attempt to reuse gland packing material.

Instructions for dismantling the valve can be found in the appropriate Installation, Operation & Maintenance Manual.

Care must be taken not damage to the stem or stuffing box when removing old packing material. Clean and inspect all parts and replace any damaged components.

Re packing should be performed with the valve stem through the bonnet, with no other fittings preventing access to the stuffing box.

If the valve utilises any loose metal ring or bushes in the stuffing box, ensure those are in place.

Replace any preformed block where fitted.

Cut to length and fit a portion of braided packing. Square ends are best there is no need to scarf or mitre the joint. Cut to length just before insertion to avoid braid from fraying. Avoid using braid cut too short.

Fit each ring of packing separately, tamping down each ring into the stuffing box with a tubular ram preferably fitted with a bronze bush on the end and having a small clearance between the spindle and stuffing box.

Each successive ring should be tamped down, until the full compliment of rings are fitted. Consolidation of the rings is important as adequate load cannot be achieved solely by tightening the gland studs.

Fit a final piece of braided packing into the top of the stuffing box as described above.

Fit the gland follower and replace the nuts, tighten the nuts evenly keeping the stem and gland concentric to avoid any contact with any parts in the sealing area.

The valve may then be completely assembled, tested and the system re commissioned. The packing may require slight attention after the application of pressure and temperature, in order to maintain packing density the gland should be followed up as soon as possible after re commissioning to prevent leakage.

In order to obtain optimum service during service glands should be followed up as soon as possible when any leakage is detected.

Typical Packing Arrangement

