DI

CONTENTS

DIVERTER DAMPER

Installation, operation and maintenance

01 **Scope and safety**
Purpose of the manual, operating conditions and lockout.

02 **Transport and storage**
Receipt, handling, packaging and preservation.

03 **Installation and assembly**
Alignment, flanged or welded connections, position and supports.

04 **Commissioning and operation**
Functional checks and manual, pneumatic and electric actuation.

05 **Preventive maintenance**
Periodic checks, cleaning, lubrication and records.

06 **Packing replacement**
Removal, installation, adjustment and spare part selection.

07 **Sealing and actuators**
Inspection of blades, sealing surfaces, mechanical linkage and actuators.

08 **Spare parts and end of life**
Spare part identification, removal and waste management.

| SUPPLEMENTARY DOCUMENTATION

Also refer to the approved drawing, technical data sheet and manuals for the actuator and accessories supplied with the equipment.

DI

SCOPE AND SAFETY

INSTALLATION, OPERATION AND MAINTENANCE

| PURPOSE AND SCOPE

This manual provides general instructions for installation, operation and maintenance of the VAYCOM DI series diverter damper, designed to divert air and gases in industrial ducts using two mechanically linked blades.

It is supplemented by the approved drawing, technical data sheet and documentation for the actuator and accessories supplied. Before carrying out any work, check the equipment identification and the specific order requirements.

| OPERATING CONDITIONS

Maximum PS: 0.5 bar relative to atmospheric pressure. Observe the gas, temperature and mounting position specified for the equipment supplied. Compatibility and sealing depend on its configuration. Consult VAYCOM before changing service conditions.

The DI does not provide leak-tight isolation. Do not use it as the sole means of isolation for access to ducts. Isolate all paths that could introduce hazardous gases, pressure or residual energy.

| BEFORE INSTALLATION OR MAINTENANCE

01 Personnel and protection

Work must be carried out by qualified personnel familiar with the installation and this manual, using appropriate personal protective equipment.

02 Process isolation

Isolate the inlet and both outlets, depressurise and safely remove gases and residues. Wait until the equipment reaches a safe temperature.

03 Energy isolation and lockout

Disconnect, isolate and lock out electrical, pneumatic and hydraulic supplies. Release residual pressure and prevent accidental operation.

04 Moving parts

Do not place hands or tools in flow passages or connecting rods. Immobilise both blades and ensure the shafts are free of load before removing the actuator or mechanical linkage.

| DOCUMENTATION AND SPECIAL VERSIONS

Also follow the actuator manufacturer's instructions. Do not modify the equipment without VAYCOM's approval. In potentially explosive atmospheres, use only the version identified for that service and follow its specific documentation.

DI

TRANSPORT AND STORAGE

| RECEIPT OF EQUIPMENT

Check that the equipment received matches the order and inspect the packaging, body, both blades, shafts, connecting rods and actuator. Check for impact damage, deformation, corrosion or damaged accessories.

Record any issues and report them to VAYCOM before installation. Retain the equipment identification and documentation for subsequent operations.

| TRANSPORT AND HANDLING

01 Lifting equipment

Check the weight and use suitable lifting equipment and slings. Use the designated lifting points on the equipment or the procedure specified in its documentation.

02 Component protection

Do not lift by the actuator, shafts, connecting rods, blades or flow openings. Use the designated lifting points and soft slings; protect sealing surfaces and coating.

03 Support and stability

Keep the equipment stable during loading, unloading and transport. Support the body without deforming it or transmitting loads to the blades, linkage or actuator. Secure moving parts against movement.

04 Packaging and securing

Secure the equipment and separate units sharing the same packaging. Protect against water, moisture and saline environments, particularly during sea transport.

| STORAGE

Store the damper in a dry, covered and ventilated location, on a flat surface with stable supports. For extended periods, a storage temperature not exceeding 30 °C is recommended.

Protect the interior and moving parts against dust and dirt. Avoid exposure to rain, direct sunlight and saline environments. If temporarily stored outdoors, cover the equipment without restricting ventilation or encouraging condensation.

Periodically inspect its condition and the corrosion protection of machined surfaces. Maintain lubrication of components that require it, in accordance with their instructions. Inspect the equipment again before installation.



FORKLIFT TRUCK

According to weight and packaging.



PALLET TRUCK

Only with suitable pallet support.

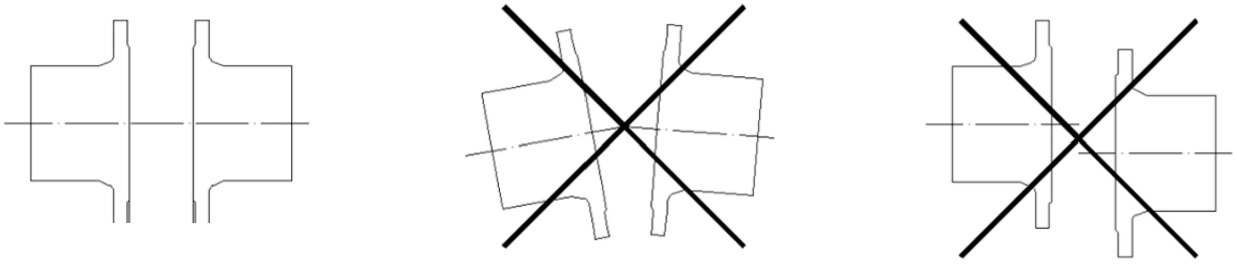
DI

INSTALLATION AND ASSEMBLY

| PRELIMINARY CHECKS

Apply the safety measures on sheet 01. Check the equipment and service conditions against the approved drawing. Clean the body, blades, sealing surfaces and all three connections; remove dirt and weld debris that could obstruct movement.

| FLANGE ALIGNMENT



CORRECT | NOT PARALLEL | MISALIGNED

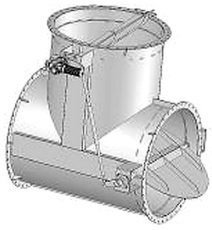
| INSTALLATION BETWEEN FLANGES

Maintain alignment and spacing without forcing the body. Fit gaskets and fasteners compatible with the gas, pressure and temperature, according to the approved drawing. Tighten progressively in a cross pattern to the specified torque. Do not use bolts to correct misalignment.

| WELDED CONNECTION, WHERE SPECIFIED

Only for the welded version defined in the approved drawing: use qualified personnel, level and support the equipment. Weld in stages initially to control stresses, then complete the continuous joint and check free travel of both blades.

| ORIENTATION AND SUPPORTS



T CONFIGURATION · THREE CONNECTIONS

Install with the shafts horizontal, according to the approved drawing. Identify the inlet and both outlets; the arrangement must match the intended circuit. Other positions on request.

All three ducts must have independent supports. Avoid loads and stresses on the body and allow space for connecting rods, the actuator and maintenance.

| VERIFICATION AND CONNECTIONS

Check that gaskets, bolts and debris do not obstruct either blade. Connect the actuator with energy sources locked out. Retain linkage, stop and limit switch settings; do not leave accessible openings unguarded.

DI

COMMISSIONING AND OPERATION

| FUNCTIONAL CHECK

01 Installation inspection

Check the body and actuator fasteners, mechanical linkage, joint tightness and all three connections. Remove tools and check that guards are fitted.

02 Operation without process pressure

With the movement area clear, perform several cycles. Check coordinated movement of both blades and the linkage, and verify that the indicated position corresponds to each outlet.

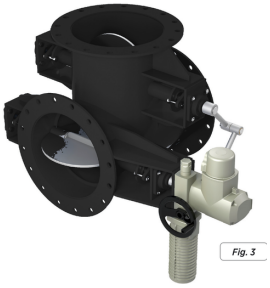
03 Commissioning

Introduce process conditions in a controlled manner and check for leakage at joints and shaft passages. If abnormalities occur, stop and isolate the equipment before intervening.

| ACTUATOR IDENTIFICATION



QUARTER-TURN PNEUMATIC



ELECTRIC

Typical arrangements. Refer to the manual for the actuator supplied.

| MANUAL AND PNEUMATIC OPERATION

Follow the indicated operating direction. Do not force stops or use extensions. On the DI, the linkage moves both blades; do not alter connecting rod length or position. Pneumatic actuation may be quarter-turn or linear.

Use the air pressure and quality specified by the manufacturer; lubricate only if required. For single-acting actuators, check the fail-safe position on loss of air. Do not open spring housings.

| ELECTRIC OPERATION AND SETTINGS

Check the power supply, earthing, wiring diagram, direction of rotation and signalling according to the actuator manual. Disconnect and lock out before carrying out any work. Retain the stop, travel and torque limit settings.

Do not increase the operating force to overcome an obstruction. Non-leak-tight shut-off does not replace process isolation. Record commissioning checks and any issues encountered.

DI

PREVENTIVE MAINTENANCE

BEFORE CARRYING OUT WORK

Apply the lockout and safety measures on sheet 01. Isolate the inlet and both outlets, release pressure and remove gases, and wait until a safe temperature is reached. Immobilise both blades and the linkage, and release stored energy according to the actuator instructions.

PERIODIC CHECKS

01 Body, joints and fasteners

Check for corrosion and deformation, and inspect fasteners and supports. Check for leaks at duct connections and shaft penetrations.

02 Blades and sealing areas

Inspect both blades and their sealing surfaces. Remove deposits that restrict travel or impair sealing without damaging contact surfaces.

03 Shafts, connecting rods and actuator

Check for play, noise, loose fasteners and increased operating force. Inspect joints, blade synchronisation, connections and position indication for each outlet.

04 Packing

Monitor external leakage and the condition of the packing gland. If the specified adjustment does not restore sealing, replace the packing with a type suitable for the service.

CLEANING AND LUBRICATION

Clean the equipment periodically to prevent dust and residue build-up. Use methods and products compatible with the materials and coatings; protect the actuator and accessories during cleaning.

Grease bearing housings only if they are relubricatable, using the product, quantity and interval specified for the installed component. For gearboxes and actuators, follow the manufacturer's instructions.

FREQUENCY AND RECORDS

Inspect packing every 6 months as a reference interval, shortening this according to operating cycles, temperature, dust, corrosion or leakage. Inspection does not imply automatic replacement. Record inspections, adjustments and spare parts fitted.

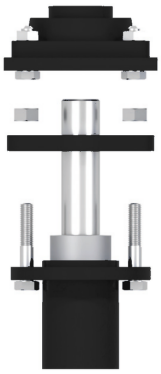
POST-MAINTENANCE CHECK

Remove tools, refit guards and carry out test cycles under safe conditions. Check operation and leakage before returning to service. For ATEX versions, also carry out the checks specified in their dedicated documentation.

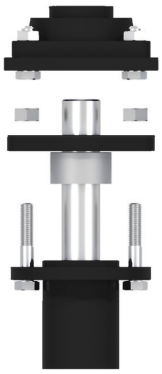
DI

PACKING REPLACEMENT

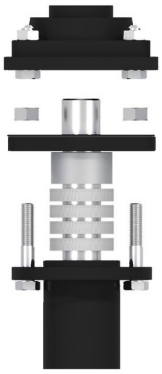
With the process isolated, free of pressure and residual gases and at a safe temperature, lock out the actuator and immobilise both blades and the linkage. This procedure applies to the gland flange and sleeve assembly shown.



1 · Release the gland flange



2 · Remove the gland sleeve



3 · Extract the packing rings

Repeat the procedure at each packing gland fitted to the shafts of both blades. Confirm the number and arrangement against the equipment drawing.

DISASSEMBLY AND CLEANING

Loosen and remove the gland flange nuts. Move the flange and withdraw the gland follower along the shaft to access the rings. Remove all used packing with a suitable tool, without scratching the shaft or damaging the housing. Clean and inspect both surfaces.

INSTALLATION AND ADJUSTMENT

Install new rings, ensuring that the ends of each ring meet correctly. Centre the gland sleeve and position the flange perpendicular to the shaft. Tighten nuts gradually in a cross pattern, avoiding sleeve contact with the shaft or excessive tightening that impedes operation. Keep shafts free of external loads.

FINAL CHECK

Refit guards, check all packing glands and perform several cycles without process pressure. Restore service in a controlled manner and check for external leakage. If readjustment is necessary, stop and isolate the equipment before intervening, then repeat the check.

SPARE PART SELECTION

Confirm the material, cross-section, length and number of rings against the equipment drawing or spare part specification. Do not automatically use dimensions from other series.

DI

SEALING AND ACTUATORS

| SEALING INSPECTION

Before accessing the interior, apply the safety measures on sheet 01. Isolate the process, release pressure and residual gases, wait until a safe temperature is reached, and immobilise both blades and the linkage against accidental movement.

DI CONFIGURATIONS

Free-blade closure or metal-to-metal sealing with a square bar, depending on the equipment supplied. These configurations do not have a soft sealing gasket requiring periodic removal and replacement.

| BLADES, SEALING AND LINKAGE

Remove deposits from both blades and their sealing areas using methods compatible with their materials. Check for wear, corrosion, deformation and damage to edges and contact surfaces. Inspect shafts, fasteners and linkage joints.

Check that opening one path closes the other and that the linkage operates without abnormal play. Do not alter connecting rod length, stops or settings to correct inadequate sealing. Consult VAYCOM before machining or welding sealing surfaces.

| ACTUATOR MAINTENANCE

Manual / gearbox	Check fasteners, play and the position indicator. Lubricate only the designated points and follow the gearbox manual.
Pneumatic	Check connections, leakage, rod or shaft and operation. To replace seals or dismantle the actuator, follow the manufacturer's procedure.
Electric	Isolate and lock out the power supply before carrying out work. Check connections and signalling according to the actuator manual, retaining its travel and torque settings.

| SPRINGS AND STORED ENERGY

For spring-return actuators, disconnecting the air supply does not remove stored energy. Do not open spring housings. To remove the actuator, immobilise both blades, relieve loads on the linkage and follow the manufacturer's specific procedure or consult VAYCOM.

DI

SPARE PARTS AND END OF LIFE

SPARE PART IDENTIFICATION AND ORDERING

Spare parts must match the materials and configuration of the equipment supplied. Request original or expressly approved spare parts from VAYCOM, identifying the component and providing the equipment details.

INFORMATION REQUIRED

DI model and diameters of all three connections · Serial or order number · Drawing reference and component position, if available · Material and service conditions. For the actuator, include manufacturer, model and nameplate data.

REMOVAL OF EQUIPMENT

Before dismantling, apply the safety measures on sheet 01: isolate and depressurise the process, remove gases and residues, wait until a safe temperature is reached, and lock out energy sources. Immobilise both blades, the linkage and any mechanism containing stored energy.

Support the assembly using equipment suitable for its weight before releasing fasteners at all three connections. For a welded joint, plan separation according to the material, access and duct condition. Do not cut or apply heat until the section is clean and confirmed safe.

WASTE SEPARATION AND MANAGEMENT

Metals	Separate the body, blades, shafts, connecting rods and other metal parts by material for recovery by an authorised waste contractor.
Seals and packing	Separate from metals. Manage according to their composition and the process contaminants with which they have been in contact.
Oils and greases	Collect under controlled conditions and deliver to the appropriate waste contractor. Prevent discharge onto the ground, into drains or into the environment.
Actuators and accessories	Separate electrical and electronic components. Follow the manufacturers' instructions for dismantling and waste management.

PACKAGING AND PROCESS RESIDUES

Separate and recycle packaging. Decontaminate the equipment where necessary and manage waste according to its nature and the applicable requirements.