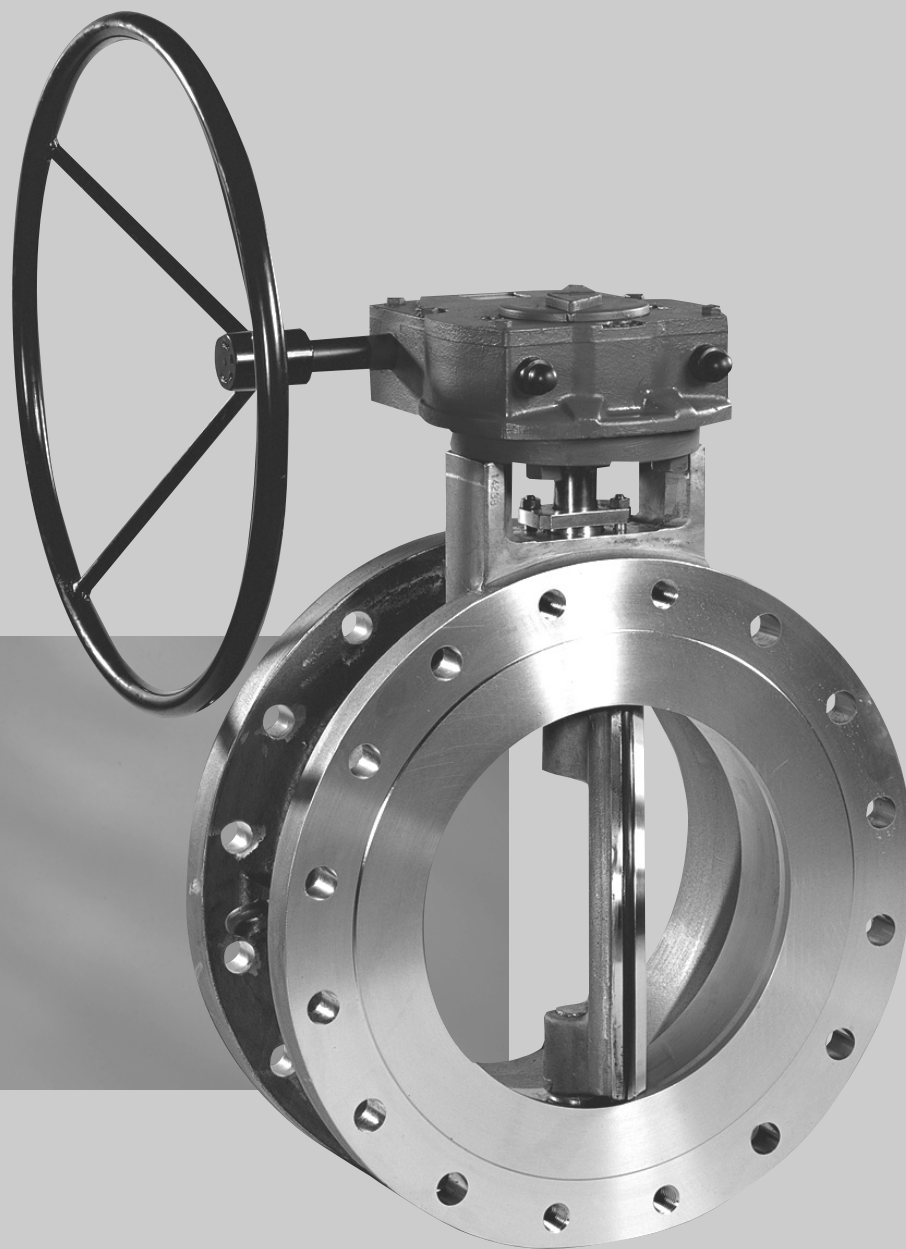


# OPERATING AND MAINTENANCE INSTRUCTION MANUAL

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**Tadpole 150 / 300**  
**BS/DIN PN10 / 16 / 25 / 40**



**TOMOETRITEC**  
THE ULTIMATE PROCESS VALVE

## INTRODUCTION

This instruction manual provides general information on the installation, inspection and maintenance of the Tritec double offset butterfly valve.

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*This manual covers pressure ranges  
150 - 300lb pressure classes.*

## 1. STORAGE

The Tadpole butterfly valve is despatched with the disc cracked off the seat and the flange faces and valve internals protected with covers. Machined ferrous surfaces are protected with an approved rust preventative. If the valve is for clean gas duty and is being supplied "degreased", a label is attached stating this and the valve sealed in a polythene covering. It is suggested that the valve is kept packed until it is to be installed in the pipeline.

## 2. INSTALLATION

### Machinery Directive - Declaration of Incorporation

Tomoe Tritec valves must not be put into service until the machinery into which they are to be incorporated has been declared in conformity with the provisions of the Machinery Directive. Tomoe Tritec valves must not be used as Safety Components (Emergency Shutdown Valves) within the meaning of the Machinery Directive without prior notification to Tomoe Tritec.

The valve is designed to seal against bidirectional flow and can therefore be installed with flow in either direction. However enhanced sealing life will be obtained with upstream flow against the shaft side of the disc. This preferred flow direction is shown on the nameplate attached to the valve body adjacent to the operating gear and also on the GA drawing. The valve may be installed in the pipeline with the valve shaft in a horizontal, vertical or intermediate position.

Prior to installation the pipeline must be cleaned from dirt and welding residues to avoid damage to the valve during operation.

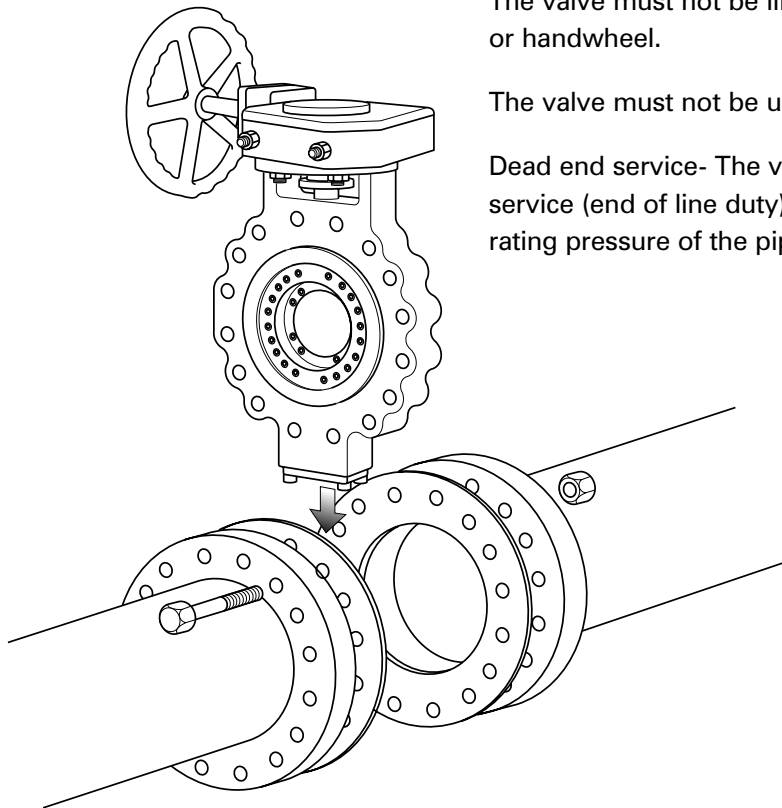
Ensure that the valve is closed prior to installation to avoid the risk of damage to the sealing surfaces.

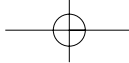
The valve must only be lifted by the eyebolt or lifting eyes provided with the valve.

The valve must not be lifted by the gearbox, actuator or handwheel.

The valve must not be used for pipework alignment.

Dead end service- The valve is suitable for dead end service (end of line duty) in either direction to the full rating pressure of the piping system.



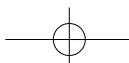
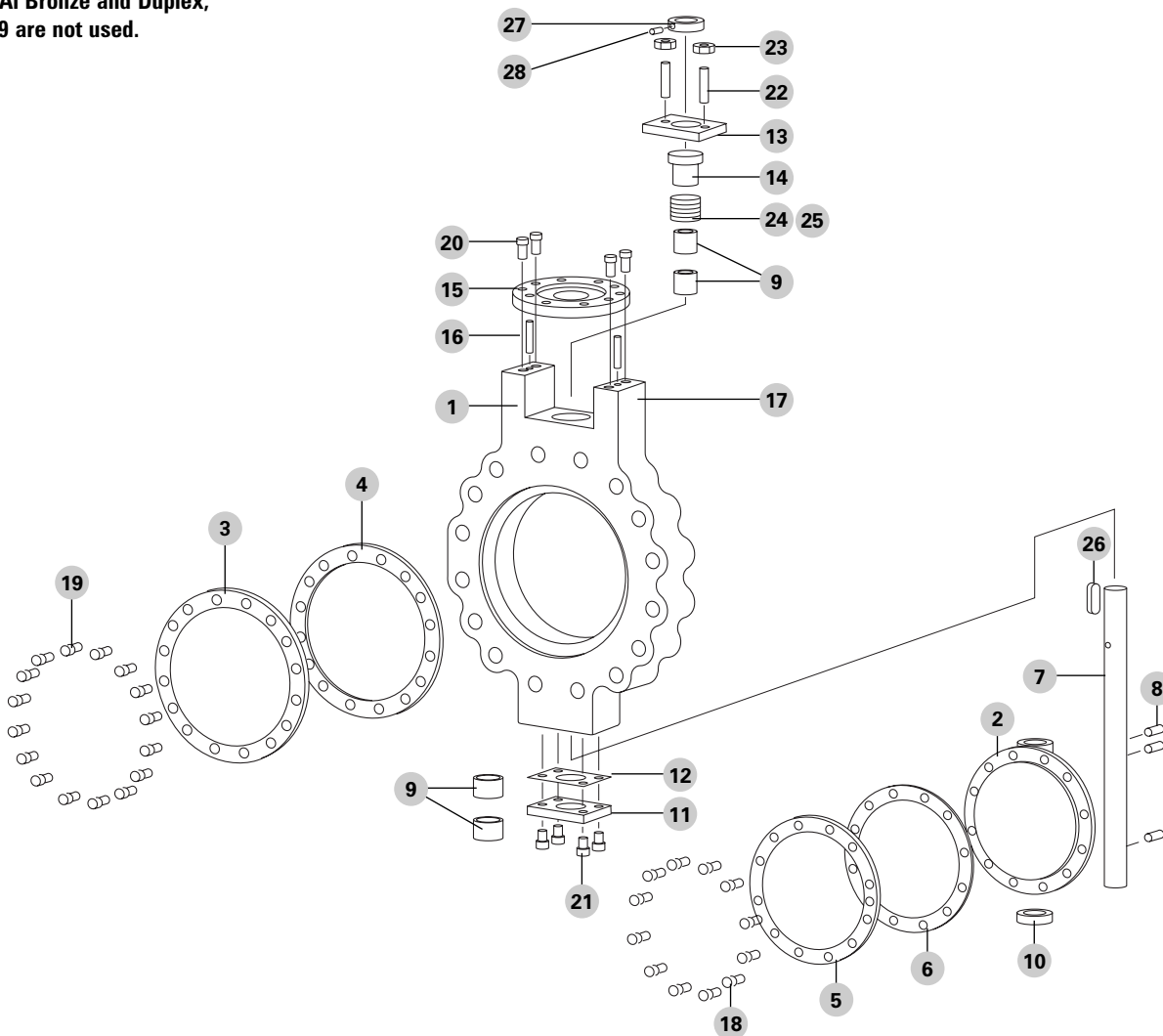


### 3. EXPANDED VIEW OF VALVE

1. Body	15. Mounting Plate
2. Disc	16. Dowel Pin
• 3. Body Seat	17. Nameplate
• 4. Body Seat Gasket	18. Disc Seal Screw
5. Disc Seal Retainer	19. Body Seat Screw
• 6. Disc Seal	20. Mounting Plate Screw
7. Shaft	21. End Cover Screw
8. Shaft Pin	22. Gland Stud
9. Bearing	23. Gland Nut
10. Thrust Ring	24. Gland Packing (3-Off)
11. End Cover	25. Gland Packing (2-Off)
12. End Cover Gasket	26. Key
13. Gland Plate	27. Anti-Blowout Collar
14. Gland Plate Spigot	28. Set Screws Anti-Blowout

• Recommended Spare Parts

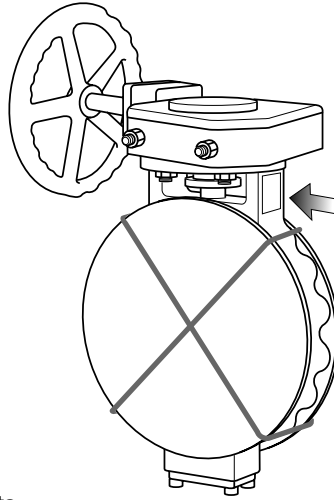
For Valves with Alloy bodies such as Stainless Steel, Al Bronze and Duplex, items 3, 4 and 19 are not used.



## 4. INSTRUCTIONS

### Packing

- 1 All valves will be despatched with wooden covers attached to the flange faces to protect the gasket sealing surfaces and internal trim.
- 2 The valve disc is cracked off the seat in the almost closed position.
- 3 The Tritec name plate shown in the picture contains information such as size, pressure class, materials and the unique serial number which must be quoted when ordering spare parts.



### Transportation

- 1 Use crates or packing cases for ocean transportation.
- 2 For overland Transportation a covered vehicle is recommended with protective sheets covering the valves.

### Storage

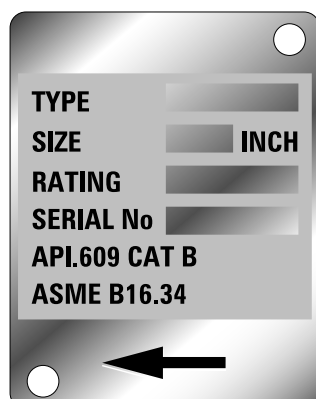
- 1 Store the valves indoors in a cool temperature between -10°C to +60°C. Do not remove the wooden covers until ready to install valves.
- 2 When storing valves unpacked, take care in protecting valves and actuators from excessive loads. Do not stack unpacked valves.

### Unpacking:

- 1 Unpack valves just before installation.

## 5. SPARE PARTS ORDERING

When ordering spare parts or discussing matters concerning this valve with the factory, it is essential to quote the unique serial number of the valve which is to be found on the stainless steel nameplate attached to the valve body adjacent to the operating gear.



## 6. MAINTENANCE

Tomoe Tritec double offset butterfly valves are designed for minimum maintenance, however, it is recommended that the valve is cycled several times from fully open to fully closed every 3 months. In addition it is recommended that the valve is removed from the pipeline every 2 years and is subjected to a thorough visual inspection particularly in the sealing areas for signs of damage and wear. To carry out maintenance as detailed below, no special tools are required, but it should be noted that a torque wrench covering the torque range required will be needed (refer to torque table opposite for details). Before carrying out any of the maintenance detailed below, please ensure that a copy of this operating and maintenance instruction manual or relevant GA drawing is available to facilitate identification and location of the component parts.

### Disc Seal Replacement

Prior to removal of the valve from the line ensure that the pipe line has been de-pressurised and drained.

With the valve removed from the pipeline and taken to a safe and clean working environment, removal of the disc seal can proceed.

With the valve in the closed position, remove the disc seal screws (22) and then remove the retaining ring (6) from the valve. The disc seal (7) is now accessible and can be removed.

Thoroughly clean all the removed parts and the valve disc before reassembly. With the valve in the closed position the new disc seal (7) and retaining ring (6) can now be placed in position and the bolts holes aligned, the retaining ring screws (22) can be fitted and hand tightened. The disc seal retaining screws (22) can now be tightened down so that the disc seal (7) is tight against the valve body seat, the valve can now be tested to see that no seat leakage occurs. If a small leakage is evident the the disc seal retaining screws (22) either side of the leak can be tightened a little more until the leakage stops.

## 6. MAINTENANCE (continued)

### Adjustment / Replacement of Gland Packing

The Tomoe Tritec butterfly valve is supplied with a graphite adjustable gland packing which has been packed and adjusted for immediate use. However, during service, leakage may occur and it may be necessary to tighten the gland nuts (23). This can be done with the operator on the valve. Do not overtighten the nuts however as this may cause damage to the valve and may lead to increased operating torque. If leakage persists then the gland packing (33 & 34) must be replaced and the following procedure followed:-

- 1** Remove the valve operator.
- 2** Remove the mounting plate (15), anti blowout collar (27) and key (28).
- 3** Remove the gland plate (13) and gland plate spigot (14) by undoing the 2 gland nuts (23) and sliding both parts off the shaft (7).
- 4** Remove the gland packing rings (24 & 25).  
Do not re-use.
- 5** Replace with a new gland packing set (24 & 25) taking care when sliding over the shaft (7) not to damage the rings on the keyway.
- 6** Replace the 2 piece gland (13 & 14) and tighten the gland nuts (23) Do not overtighten as this will lead to increased valve operating torques.
- 7** Replace the anti blow-out collar (27), key (26) and mounting plate (15), ensuring the dowel pins are (16) refitted.
- 8** Replace the valve operator ensuring the dowel pins (16) are refitted (if supplied).

### Torque Table for Screw Tightening

Screw Size	St.Stl A4 Grade 80 Nm	St.Stl 17/4PH Nm
M4	3.2	3.9
M5	6.5	7.9
M6	11.1	13.4
M8	26.9	32.5
M10	53.2	64.3
M12	92.9	112.2
M16	230.6	278.6
M20	449.8	543.5
M24	777.7	939.8
M30	1545.0	1866.9
M36	2700.0	3262.5

*Note:*

*Torques given are the maximum allowable for the screw size. It is acceptable to use these maximum torques at all times, however if the GA is available, use the torques given on the drawing.*

*General Note:*

*All other components are available as spares. Please contact Tomoe Tritec for details quoting the valve serial number. Such spares will be despatched with specific instructions on fitting.*

## 7. OPERATOR / GEARBOX FITTING INSTRUCTIONS

When supplied with bare shaft valves, special care and attention needs to be given to the location and tightening of any top works operator. Failure to follow these instructions may lead to shaft, seat, seal and bearing damage and in the worst case cause shaft seizure.

- 1 All work to be carried out in a clean, dust free environment.
- 2 Location holes for dowels are supplied on the Tomoe mounting plate; corresponding holes must be available on the operator mounting plate.
- 3 Dowels must be fitted to these holes to ensure the operator is centralised and does not distort the vertical shaft plate.
- 4 The mounting kit location faces **MUST** be machined and parallel within a tolerance of not greater than 0.25mm (see diagram 2).
- 5 The valve **MUST** be in the fully closed position before fitting any operator.
- 6 When fitting the operator, the valve must be positioned with the shaft in the vertical position. If this is impractical, support must be given to the operator so that no bending force is applied to the shaft.
- 7 The operator **MUST NOT** be hammered or forced onto the shaft, as this will cause damage to the seat, seal and bearings within the closure mechanism of the valve, and will lead to failure. Remove the risk of force by relieving the location hole in the operator and / or the key in the valve.
- Any drive coupling should have an air release hole to allow air to escape as it is fitted over the valve shaft.
- 8 Once in place, the operator needs to be bolted into position with the relevant studs, screws and nuts. A steady and consistent pressure being applied.
- 9 If the shaft is located in the line in any position other than vertical, support should be given to the operator.
- 10 Cycling the valve open to closed and back to open again a few times will be beneficial to the valve seat, checking during this procedure is recommended to ensure the operation is smooth and no scuffing occurs between the disc seal and body seat.
- 11 When the valve is moved after fitting the operator. whether for testing, packing or delivery to site, the valve, where possible, should be in the fully closed position.
- 12 **Failure to follow these instructions may invalidate any warranty given by Tomoe Tritec.**

Diagram 1

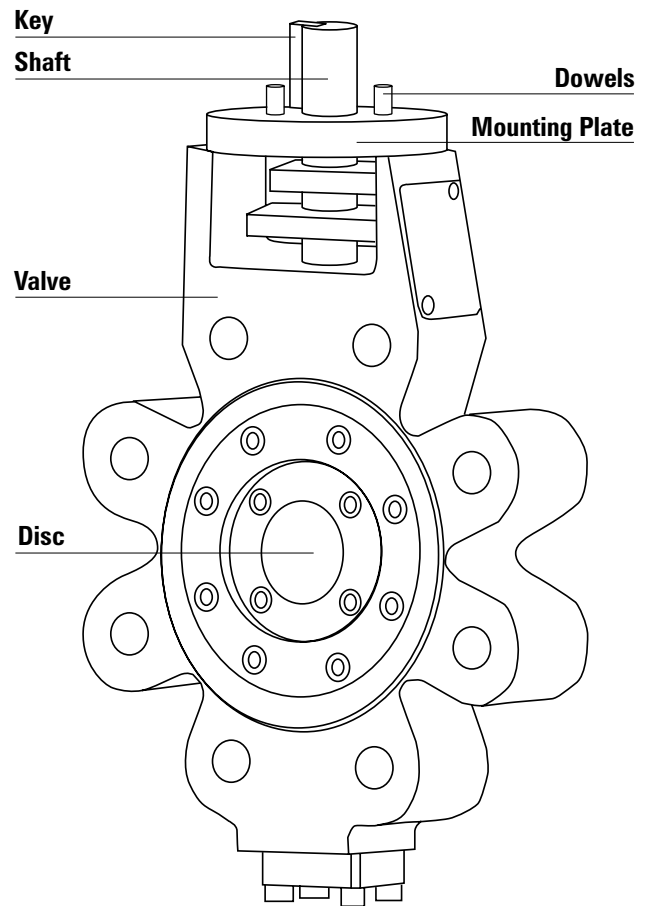
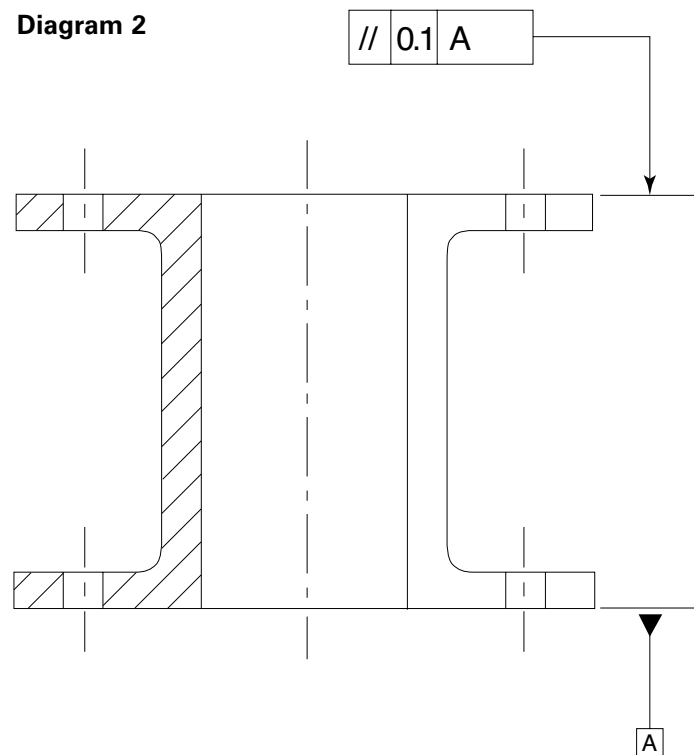
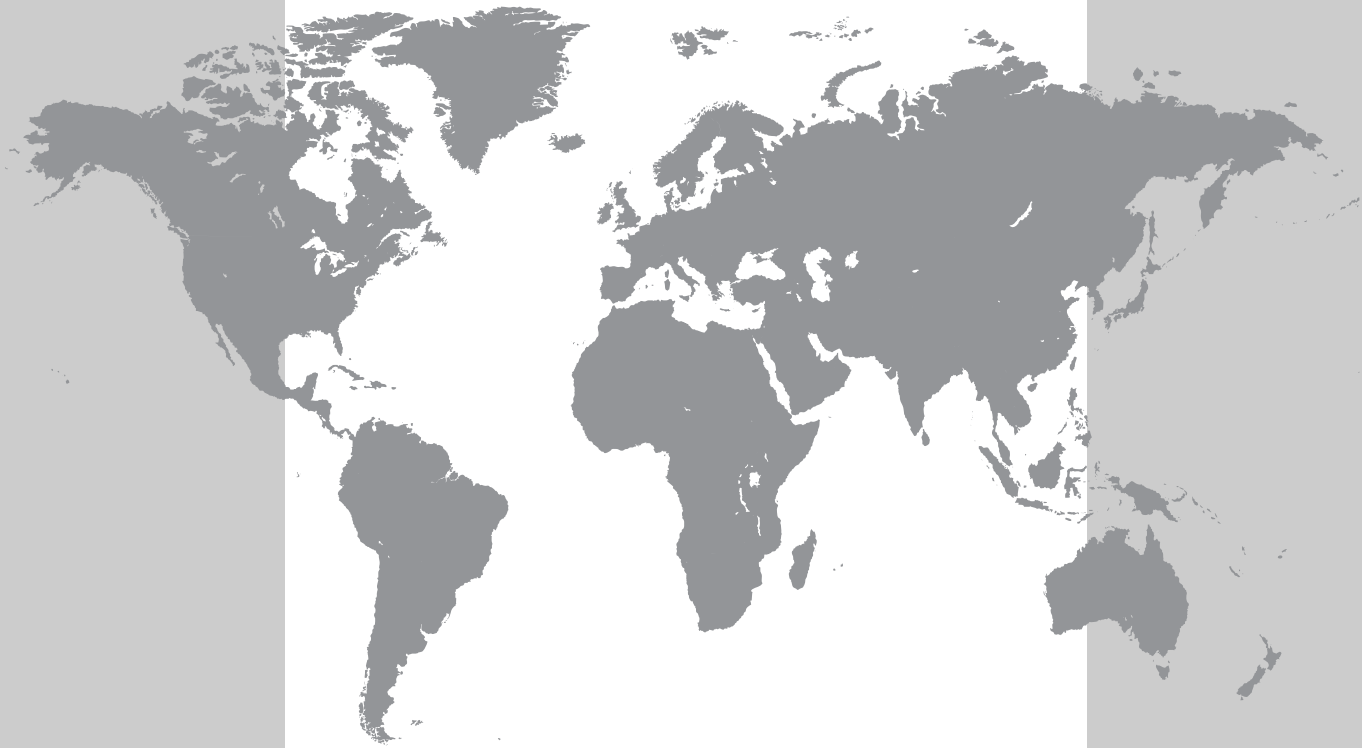
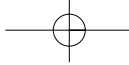


Diagram 2





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