KTL-AR

INSTALLATION, OPERATION AND MAINTENANCE

CONTENTS AND DOCUMENT CONTROL

KTL-AR MANUAL

Installation, operation and maintenance · English

Proposed reference VAYCOM-KTL-AR-EN

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KTL-AR

INSTALLATION, OPERATION AND MAINTENANCE

INTRODUCTION AND SAFETY

DESCRIPTION AND SCOPE

The KTL-AR is a bidirectional wafer-type knife gate valve with a stainless steel through-going gate and a two-piece metal body. It is designed for fluids containing suspended solids. This manual covers installation, operation and maintenance. Also consult the instructions for the actuator and its accessories.



IDENTIFICATION AND SERVICE

Check that the nominal size, connection and materials suit the pipeline. Check the fluid, pressure and temperature against the limits in the documentation supplied with the unit.

DOCUMENTATION SUPPLIED

Consult the VAYCOM declarations and certificates for the supplied unit to determine the requirements that apply to its configuration.

BEFORE STARTING WORK

01 PERSONNEL AND PROTECTION

Installation, adjustment and maintenance must be carried out by qualified personnel. Wear personal protective equipment appropriate to the fluid and task.

02 PROCESS ISOLATION

Isolate the valve on both sides, depressurise and drain the line section. Clean the section if required by the fluid.

03 ENERGY AND MOVEMENT

Isolate and lock out energy sources. Release stored energy and verify that the gate cannot move unexpectedly.

04 SAFE OPERATION

Keep hands and tools clear of the bore and the gate travel path. Refit the guards before restoring service and keep them in place during operation.

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RECEIPT, HANDLING AND LIFTING

RECEIPT

Check the identification and accessories against the delivery note. Inspect the packaging and valve. Record and report damage or missing items before installation.

PREPARING THE LIFT

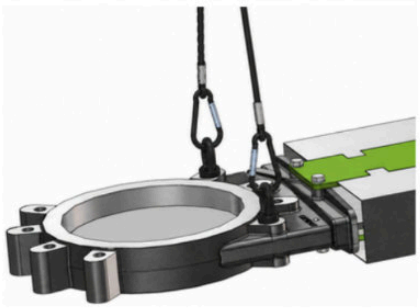
Confirm the total mass and centre of gravity of the assembly. Select lifting equipment suitable for the load and rigging arrangement. Mark off the lifting area.

WARNING · SUSPENDED LOAD

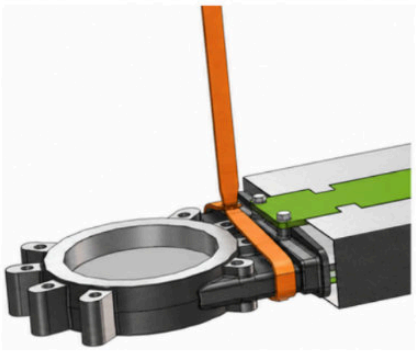
Use the approved attachment points for the KTL-AR. Keep clear of the load path and the area below the load. Do not lift the valve by the actuator, guards or bore.

ATTACHING TO THE VALVE BODY

The illustrations show examples from the VAYCOM KS / KS LUG manual. For the KTL-AR, confirm the method and attachment points in the lifting drawing for the assembly.



Eyebolts fitted to the body



Sling around the body

LIFTING AND SETTING DOWN

Lift the assembly a few centimetres and check its balance. If it tilts, set it down before adjusting the rigging. Place the assembly on a stable base and secure it before removing the lifting equipment.

If the drawing allows eyebolts, check thread compatibility and seating in accordance with the eyebolt manufacturer’s instructions.

For lifting by the cylinder lugs and changing the assembly orientation, see sheet 03.

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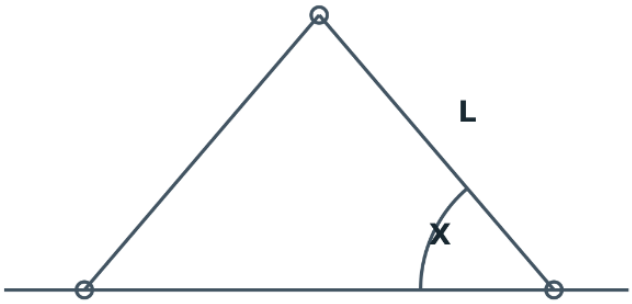
LIFTING WITH TWO LIFTING LUGS

WARNING · CYLINDER LIFTING LUGS

Use the lugs to suspend or tilt the assembly only if the VAYCOM lifting drawing authorises that operation.

RIGGING GEOMETRY

X is the angle of each sling leg from the horizontal. L is the length of each leg between its connection points.





Optional lifting lugs · KS / KS LUG example

DATA TO VERIFY FOR THE KTL-AR

Configuration	DN, cylinder, lifting lugs and accessories
Assembly mass	Valve, cylinder and fitted accessories (kg)
Approved geometry	Angle X and minimum length L for each arrangement
Permissible load	Maximum approved mass for each configuration and angle

HORIZONTAL TRANSFER AND REORIENTATION

Identify the load-bearing points and the points used only to stabilise the assembly. To move from vertical to horizontal, follow the approved attachment and support sequence for the supplied configuration.

See sheet 04 to verify the permissible load and minimum sling leg length.

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MASSES AND LIFTING CAPACITIES

APPROXIMATE MASS WITH PNEUMATIC ACTUATION

Source — VAYCOM KTL-AR catalogue, sheet 06. Confirm the actual mass of the assembly, including accessories, before lifting.

DN	Mass (kg)
50	14
65	16
80	19
100	25
125	36
150	43
200	86
250	116
300	188

DN	Mass (kg)
350	233
400	324
450	455
500	800
600	960
700	2000
800	2600
900	3200

CAPACITY WITH TWO LIFTING LUGS

Before lifting, verify the permissible load, angle X and minimum length L in the approved drawing for the supplied configuration. See sheet 03 for definitions of X and L.

DN / cylinder	Angle X (°)	Maximum mass (kg)	Minimum L (mm)
To be confirmed	Pending validation	Pending validation	Pending validation

WARNING · LIFTING CAPACITY

When lifting by the lugs, use the capacity and geometry approved in the VAYCOM drawing for the supplied unit. The approximate mass in the catalogue does not specify the lifting capacity of the lugs.

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INSTALLATION BETWEEN FLANGES

WARNING · RESIDUAL PRESSURE AND MOVEMENT

Isolate the line on both sides, depressurise and drain it. Lock out the actuator before starting work. See sheet 01.

01 · PREPARATION AND ORIENTATION

Inspect and clean the bore, seats and flange faces. Allow clearance for the full stroke. The standard KTL-AR is bidirectional. If a directional accessory is fitted, follow the direction shown on the drawing.

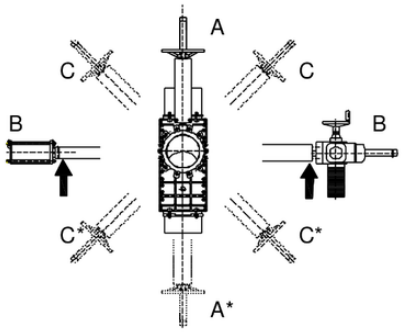


Fig. 1 · Mounting orientations and supports

A indicates an upright actuator, B a horizontal actuator and C an inclined actuator. Consult VAYCOM for positions marked with an asterisk. Confirm actuator support for horizontal or inclined installations and installations subject to vibration. Confirm assembly support for vertical piping.

02 · ALIGNMENT AND FASTENING

Check flange spacing, parallelism and alignment. Centre the valve without using the bolts to force the piping into position. Fit the specified gaskets and check the blind thread depth T on the drawing.

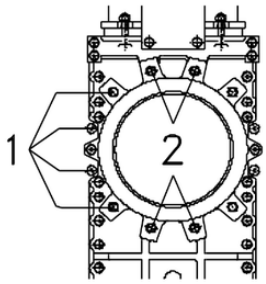


Fig. 2 · Fastening between flanges

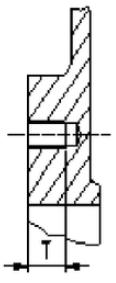


Fig. 3 · Blind thread depth T

In Fig. 2, callout 1 identifies the side bolts and callout 2 identifies the top and bottom bolts. The reference drawing shows that order. For the KTL-AR, use the tightening sequence and torques in the VAYCOM drawing for the unit.

Illustrations are for reference. Confirm details in the VAYCOM documentation supplied with the unit.

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TESTING AND COMMISSIONING

WARNING · PINCH HAZARD

Fit the guards before operating the valve. Keep hands and tools clear of the gate travel path.

03 · GUARDS AND NO-LOAD TEST

Fit the guards, including the lower guard if supplied. Check the flange fastenings and actuator connections. With the process isolated, verify full travel and confirm that the position signals match actual gate movement.

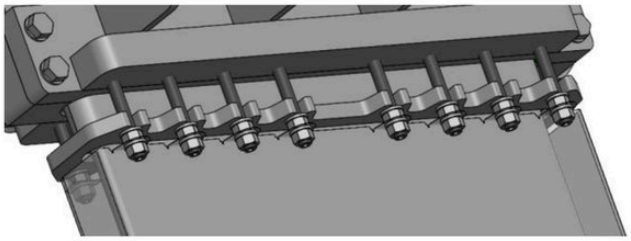


Fig. 4 · Lower guard

04 · COMMISSIONING

Restore service in a controlled manner. Check valve operation and check for leaks at the flanges and packing gland. If you find a leak or irregular movement, isolate the equipment before working on it.



Fig. 5 · Packing gland adjustment

05 · CHECKS AFTER ADJUSTMENT

If the packing gland needs adjustment, follow sheet 08 and use the torque specified for the unit. If the body joint leaks, see sheet 09 and the assembly drawing. Refit the guards and repeat the travel and leakage checks.

Illustrations are for reference. Confirm details in the VAYCOM documentation supplied with the unit.

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ACTUATION

WARNING · PINCH HAZARD

Check that the guards are fitted and keep the gate travel path clear.

BEFORE OPERATING

Check that the actuator and its connections are secure. Before making adjustments or carrying out work, follow the isolation measures on sheet 01.

RISING-STEM HANDWHEEL AND GEARBOX

Turn the handwheel in the direction marked on the operator or specified in its documentation. Operate without extension bars and avoid forcing the operator at the end of travel. For rising-stem configurations, the KTL-AR catalogue recommends a gearbox from DN350 upwards.

LEVER · IF SUPPLIED

Release the position lock, if fitted, before moving the lever. Move the lever in the indicated direction and re-engage the lock according to the operator instructions.

PNEUMATIC CYLINDER

The standard configuration is double-acting. If a single-acting cylinder is supplied, confirm its fail-safe position and follow its connection diagram. Check pressure, air quality and lubrication requirements in the cylinder documentation. For horizontal mounting, confirm the support in the assembly drawing.

ELECTRIC ACTUATOR · IF SUPPLIED

Follow the actuator manual for connections and settings. Verify the direction of rotation, the limit switches and, where applicable, the torque limiter settings.

OPERATION TEST

With the process isolated, perform the test on sheet 06. Verify full travel, direction of movement and agreement between the signals and the actual gate position. If you find any interference, isolate the equipment before working on it.

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MAINTENANCE · PACKING

WARNING · RESIDUAL PRESSURE AND PINCH HAZARD

Isolate the line on both sides, depressurise and drain it. Lock out energy sources, release stored energy and secure the gate against movement before disassembly.

01 · PREPARATION AND ACCESS

Identify the packing (item 5) and packing glands (item 6) on sheet 12. Before disconnecting the operator, confirm the disassembly position and secure the gate as shown in the unit drawing.

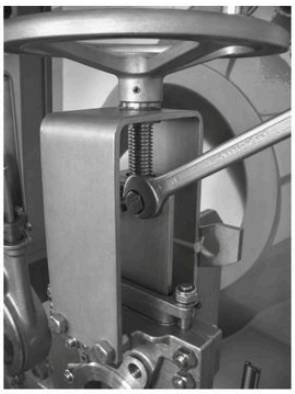


Fig. 1 · Non-rising stem

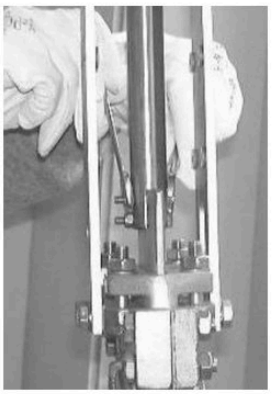


Fig. 2 · Rising stem

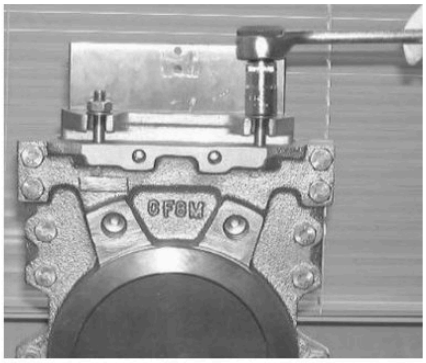


Fig. 3 · Packing gland

02 · DISASSEMBLY

Remove the necessary guards. In the configurations shown, disconnect the gate from the drive nut (Fig. 1) or from the stem or rod (Fig. 2). If the yoke must be removed, support the assembly before releasing its fasteners. Loosen and remove the packing glands (Fig. 3).

03 · REPLACEMENT AND ADJUSTMENT

Remove the old packing, clean the recesses and inspect the gate. If the replacement packing comes in split rings, stagger the joints. Refit the packing glands and tighten them evenly to the VAYCOM specification.

04 · REASSEMBLY AND CHECKS

Refit and secure the yoke, coupling and any guards removed. Check gate travel with the process isolated. Restore service in a controlled manner and check for leaks as described on sheet 06. Isolate the equipment before making any further adjustments.

Illustrations are for reference. Confirm details in the VAYCOM documentation supplied with the unit.

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MAINTENANCE · SEATS AND SEALS

WARNING · RESIDUAL PRESSURE AND PINCH HAZARD

Isolate the line on both sides, depressurise and drain it. Lock out energy sources, release stored energy and secure the gate against movement before disassembly.

01 · LEAK LOCATION AND VALVE REMOVAL

Locate the leak before disassembly. Remove the valve in accordance with sheets 02 to 04. In the DN200 exploded view on sheet 12, the seat is item 4, the scraper ring is item 7 and the body joint gasket is item 15.

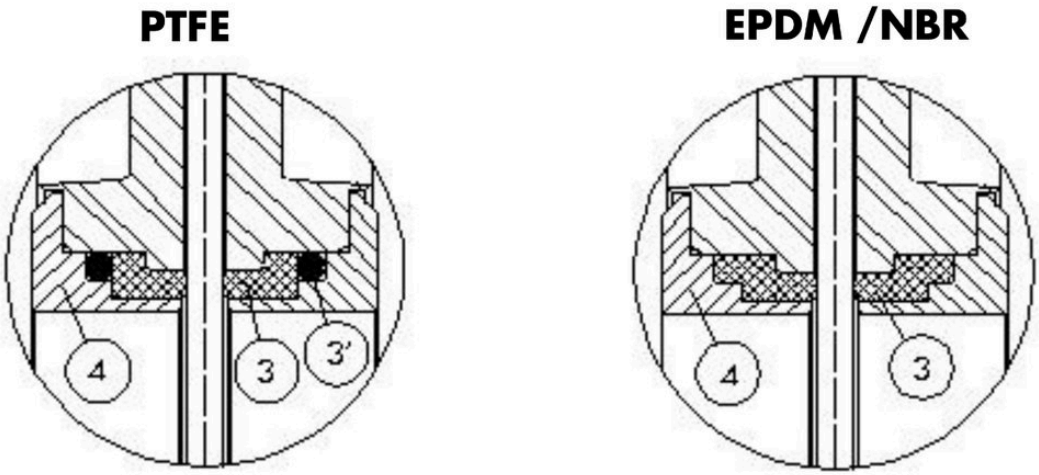


Fig. 4 · Illustrative cross-sections of PTFE and EPDM/NBR seals

Callouts 3, 3′ and 4 apply to this illustration. To identify spare parts, use the item numbers in the VAYCOM exploded view for the unit.

02 · SEAL REPLACEMENT

Confirm the material and retention arrangement. Remove the retainer as shown in the drawing, remove the old seal and clean the recess. Inspect the sealing surfaces. Install the replacement in the specified orientation. If the PTFE seal includes an O-ring, confirm its position and installation sequence in the drawing.

03 · REASSEMBLY AND CHECKS

Refit the retainer and apply the torques specified for the unit. If work was carried out on the joint between the body halves, follow the relevant assembly drawing. Lubricate as specified in the operator documentation. Refit the guards and check travel and leakage as described on sheet 06.

Illustrations are for reference. Confirm details in the VAYCOM documentation supplied with the unit.

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STORAGE

STORAGE LOCATION

Store the valve indoors in a clean, dry area. Protect it from weather, condensation, dust, impacts and vibration. Observe the temperature limits specified for the valve, its seals and the supplied actuator.

SUPPORTING AND PROTECTING THE ASSEMBLY

Keep the assembly on its packaging or on a stable base and secure it against tipping and movement. Arrange the support so that no load is placed on the gate or actuator. Keep covers and transport protection in place until installation.

GATE POSITION

Keep the gate in the storage position specified for the supplied configuration. Protect the exposed part of the gate from impacts, dirt and corrosion.

ACTUATORS AND ACCESSORIES

Protect pneumatic and electrical connections with their plugs or covers. Follow the component manufacturer’s storage requirements for cylinders, motors, solenoid valves and other accessories.

INSPECTION BEFORE INSTALLATION

After prolonged storage, inspect the valve and check that accessible surfaces and connections are clean and undamaged. To move the valve, follow sheets 02 and 03. For installation and operating checks, follow sheets 05 and 06.

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ENVIRONMENTAL CONSIDERATIONS

PACKAGING

Separate cardboard, wood, plastics and metal packaging components. Send each material through the appropriate collection channel. Handle contaminated packaging according to the contaminant.

DECOMMISSIONING

Before removing the valve, follow the isolation instructions on sheet 01. Collect residual process fluid and cleaning liquids in suitable containers to prevent spills. If the equipment has been in contact with a hazardous fluid, follow the site decontamination procedure.

SEPARATING COMPONENTS

Separate metals from seals, packing and other non-metallic components according to their material and condition. Handle used lubricants and any fitted electrical or electronic accessories separately. See the exploded view on sheet 12 to identify components.

COLLECTION AND RECOVERY

Send recoverable materials through available recycling channels. Handle contaminated waste and components requiring special treatment in accordance with the requirements applicable at the site.

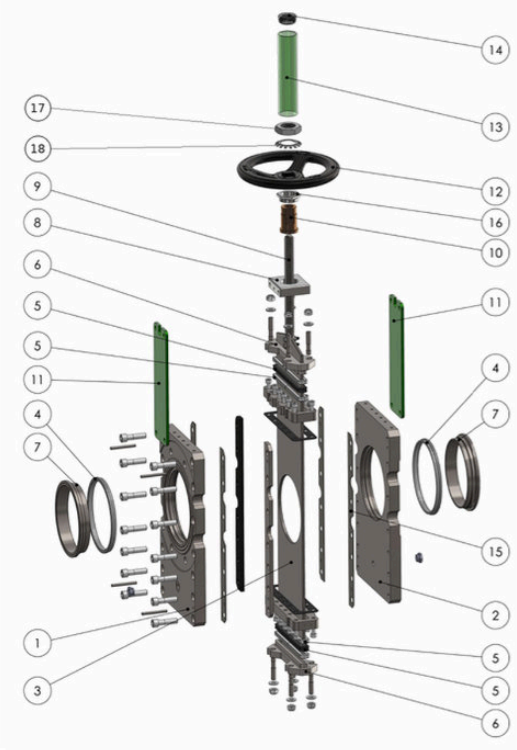
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EXPLODED VIEW AND PARTS LIST

REFERENCE CONFIGURATION · DN200 WITH MANUAL HANDWHEEL

Identify each component by its item number in the exploded view.



Item	Component	Material
1	Body half	S275JR
2	Body half	S275JR
3	Gate	AISI 304L
4	Seat	EPDM
5	Packing	SINT + PTFE
6	Packing gland	GJL250 / ALU / CF8M
7	Scraper ring	AISI 304L
8	Yoke	Steel
9	Stem	AISI 304
10	Stem nut	Bronze
11	Support plates	S275JR
12	Handwheel	GJS500-7
13	Stem cover	ST-52
14	Top plug	Plastic
15	Body joint gasket	EPDM
16	Yoke retaining nut	Steel
17	Stem cover nut	Steel
18	Castellated washer	Steel

SPARE PART IDENTIFICATION

Confirm the DN, item number and material against the drawing for the supplied unit.