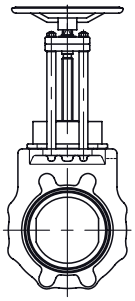
Operating Instructions

ERHARD ERU Knife Gate Valve K1

DN 50 - 300

Handwheel, chain wheel, types of operation by square end



These operating instructions must always be used in combination with operating instructions BA01E001!

1 Description of Product and Range of Application

Type/Design	Product number	
ERU Knife Gate Valve K1	4655....	PN 10
ERU Knife Gate Valve K1 with regulating orifice	4656....	PN 10

with non-rising stem,
designed for manual operation by handwheel, chain wheel or operating key,
for extension of the operating device, e.g. by means of extension stem.

Product No.	Nominal Diameter DN	Nominal Pressure PN	Hydr. test pressure in bars for Body	Seat	Max. admissible working pressure in bars at a working temperature of max. 70° C
4655, 4656	50 - 300	10	15	10	10
4657, 4623	50 - 300	10	15	10	10

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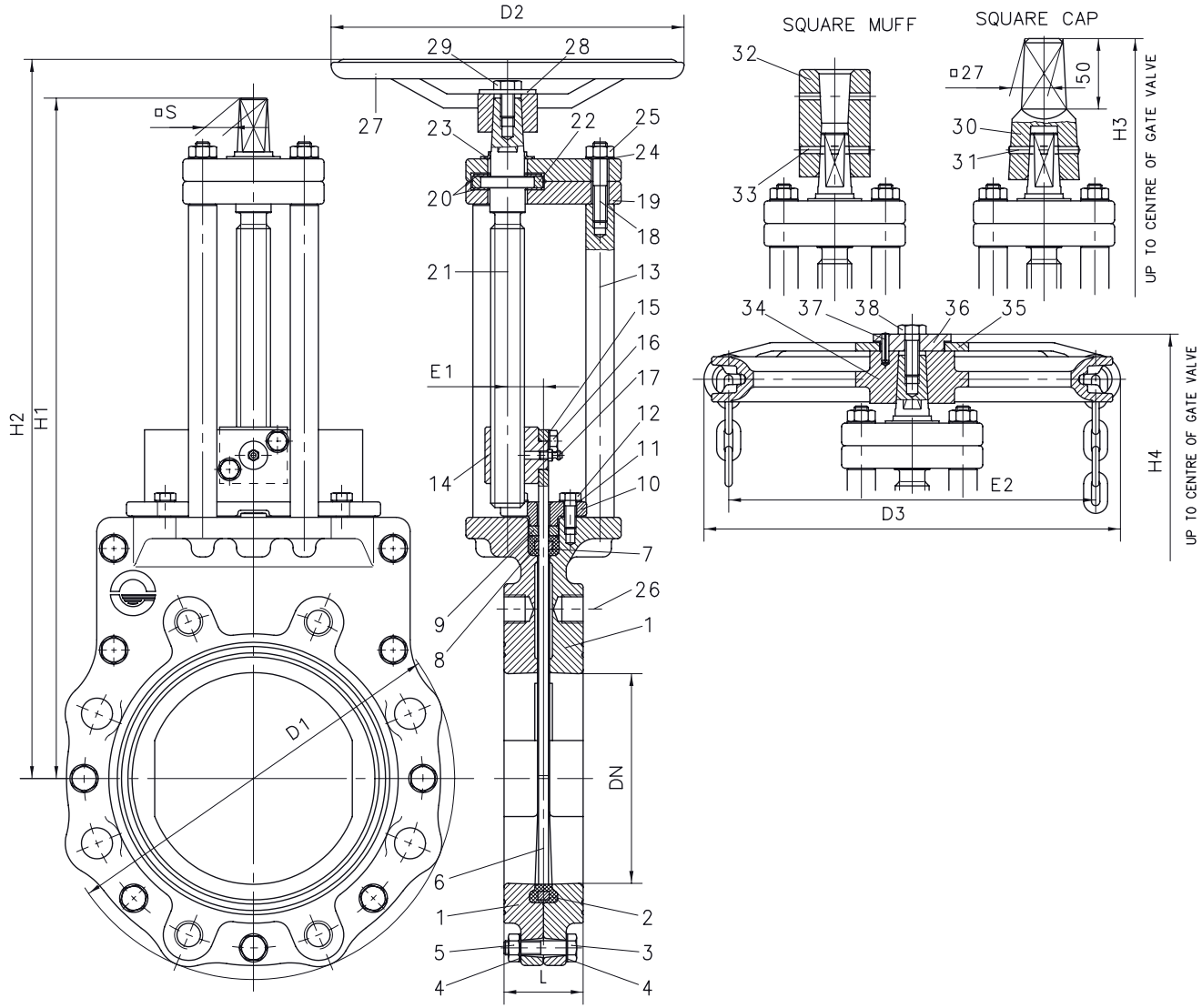
If EPDM profile seals are used for the ERU Knife Gate Valve K1, the parts of EPDM must not get in contact with oil or grease, as the EPDM would swell.
For a recommended lubricant see section "Maintenance".

ERU Knife Gate Valves K1 of this design are suitable for "ON-OFF" operation.
For explicit regulating service, special designs have to be used, e.g. design with regulating orifice.

2 Design Features

Drawing 3E 65931
ERU Knife Gate Valve K1 with square end operating variants.



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Parts lists and sets of spare parts (for drawing 3E 65931)

1.	Replace profile seal	Set 1	every 2 years
2.	Replace U-shaped sealing element	Set 2	every 5 years
3.	Replace stem	Set 3	if necessary
4.	Replace stem nut	Set 4	if necessary

Item.	Description	Set1	Set2	Set3	Set4
1	Body component				
2	U-Shaped sealing element		X		
3	Hexagon bolt				
4	Washer				
5	Hexagon nut				
6	Gate				
7	Profil seal	X	X		
8	Guide tape	X	X		
9	Compressor				
10	Cover plate				
11	Washer				
12	Hexagon bolt				
13	Stud bolt				
14	Stem nut			X	X
15	Washer				
16	Hexagon bolt				
17	Conic.lubr.nipple/Prot.cap				
18	Gudgeon				
19	Bearing plate				
20	Stop ring			X	
21	Stem			X	
22	Distance washer				
23	Gasket				
24	Washer				
25	Hexagon nut				
26	Taper plug				
27	Handwheel				
28	Washer				
29	Hexagon bolt				
30	Square cap				
31	Close-tolerance grooved pin				
32	Square muff				
33	Straight grooved pin				
34	Chainwheel				
35	Sealing element				
36	Collar disc				
37	Straight grooved pin				
38	Hexagon bolt				

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Dimensioned table (for drawing 3E 65931)

DN	D1	D2	D3	E1	E2	H1	H2	H3	H4	L	□S
50	165	200	212	19,5	177	300	321	365	313	43	14
65	185	200	212	19,5	177	325	346	390	338	46	14
80	200	200	212	19,5	177	355	376	420	368	46	14
100	220	250	248	22	213	393	418	460	408	52	17
125	250	250	248	22	213	433	458	500	448	56	17
150	285	250	295	25,5	260	486	507	553	501	56	19
200	341	300	295	25,5	260	587	624	654	602	60	19
250	395	300	295	32	260	701	736	768	716	68	19
300	445	400	342	35	307	820	853	891	835	78	24

3 Performance and Mode of Operation

ERU Knife Gate Valves K1 are wafer-type single-door gate valves with short face-to-face dimension. A special type of these valves, e.g. with regulating orifice, is also suitable for regulating purposes. The solid gate slides in a long gate guide between two body components. It seals on its periphery against a rubber-resilient, steel-reinforced, enclosed U-shaped sealing element. Where the gate leaves the body, tightness to the outside is ensured by a resiliently prestressed profile seal which can be readjusted. For reducing wear and tear of the profile seal and the actuating elements the prestress can be reduced to the dimension required for the actual operating pressure.

The Gate Valves were tested for tightness and resistance to DIN EN 12266 and DIN EN 1074 at the manufacturer's plant. They are designed for flow acting from any direction.

4 Storage

Store ERU Knife Gate Valves K1 in their closed position. Rubber-coated components, as e.g. the sealing element between the body parts, have to be protected against direct solar radiation. Avoid the effects of radiant heat, e.g. from heaters.

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5 Installation into the Pipeline - Mounting

Remove all packing material from the valve. Prior to installation, check the pipeline for impurities and foreign bodies and clean it if necessary.

+ **There must be free access all around the valve for operation and maintenance.**

In case of flow media containing solid matters as e.g. sand etc. and installation into horizontal pipelines the stem or the piston rod should not be installed with an inclination of more than 30º towards the horizontal. Thus, free flushing of the travel range of the gate is possible.
In case of deviating installation positions, especially with suspended stem or piston rod, deposits around the gate have to be expected. This could lead to malfunctions which increase maintenance work.
During installation of the valve, the distance between the pipe flanges should exceed the valve face-to-face dimension by at least 20 mm. Thus, the raised faces will not be damaged and the gaskets can be inserted. Steel-reinforced rubber seals to DIN 2690 are recommended for use as flange gaskets, for slip-on flanges they are absolutely necessary (consider resistance to flow medium and temperature).
The mating pipe flanges must be plain-parallel and concentric.

Tighten the connecting bolts evenly (without distortion) and crosswise. The pipeline mustn't by any means be pulled up to the valve.

If the distance between the flanges is too large for the valve, use thicker gaskets to cover the difference.

ERU Knife Gate Valves K1 are
- clamped between two flanges of the pipeline (wafer type) or
- screwed to the end flange of the pipeline as end-of-line valves.

The screwed connection with the pipeline is made from flange to flange by means of bolts in the through-going holes. For the threaded blind holes the screwed connection is made by means of stud bolts or bolts in the body components.

It is possible to roughly fasten the valve by means of the threaded holes.

The necessary connecting elements for the corresponding installation position are shown in drawing No. **4E127 920**.

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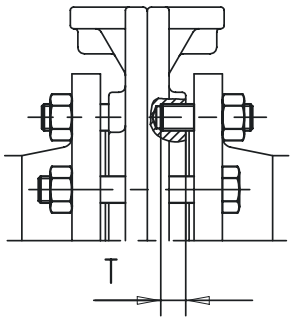
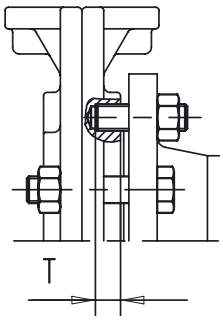
Connecting elements for flange connection; drawing: 4E127920

WAFER TYPE

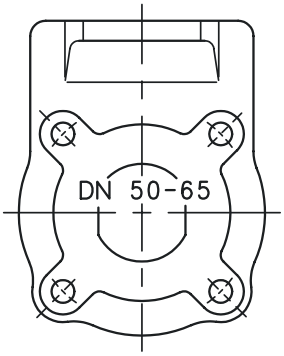


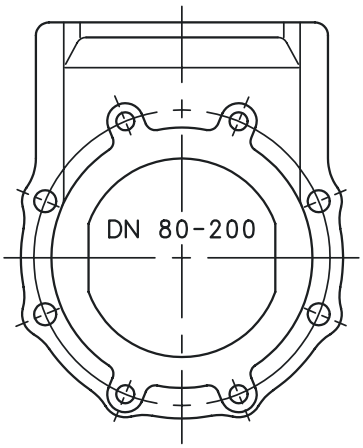
LUG TYPE

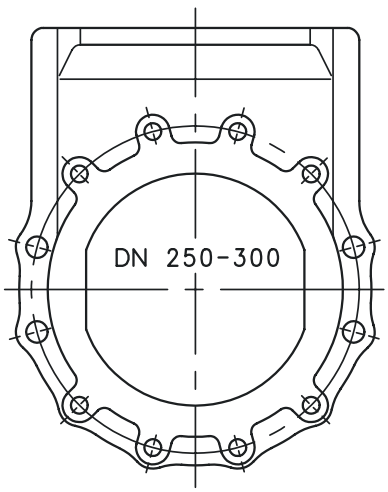


DN	FLANGES				WAFER TYPE VALVE									
	CONNECTING DIM.				THREADED HOLE○						THROUGH-GOING HOLE ○			
					DESIGN.1 *) OR DESIGN.2 *)									
	DIN	PITCH CIRCLE Ø	FLANGE OUTSIDE Ø	DEPTH OF THREAD T	GUDGEON DIN939		HEX.NUT DIN EN 24034		HEX.BOLT DIN EN 24018		HEX.BOLT DIN EN 24016		HEX.NUT DIN EN 24034	
					QTY	SIZE	QTY	SIZE	QTY	SIZE	QTY	SIZE	QTY	SIZE
50	2533	125	165	10	8	M16X25	8	M16	8	M16X30	-	-	-	-
65		145	185	12	8	M16X30	8	M16	8	M16X30	-	-	-	-
80		160	200	13	8	M16X30	8	M16	8	M16X35	4	M16X110	4	M16
100		180	220	15	8	M16X35	8	M16	8	M16X35	4	M16X120	4	M16
125		210	250	15	8	M16X35	8	M16	8	M16X40	4	M16X130	4	M16
150		240	285	15	8	M20X35	8	M20	8	M20X40	4	M20X130	4	M20
200	2532	295	340	16	8	M20X40	8	M20	8	M20X40	4	M20X140	4	M20
250		350	395	17	16	M20X40	16	M20	16	M20X45	4	M20X150	4	M20
300		400	445	20	16	M20X45	16	M20	16	M20X45	4	M20X160	4	M20
END-OF-LINE VALVE (LUG TYPE)														
50	2533	125	165	10	4	M16X25	4	M16	4	M16X30	-	-	-	-
65		145	185	12	4	M16X30	4	M16	4	M16X30	-	-	-	-
80		160	200	13	4	M16X30	4	M16	4	M16X35	4	M16X80	4	M16
100		180	220	15	4	M16X35	4	M16	4	M16X35	4	M16X80	4	M16
125		210	250	15	4	M16X35	4	M16	4	M16X40	4	M16X90	4	M16
150		240	285	15	4	M20X35	4	M20	4	M20X40	4	M20X90	4	M20
200	2532	295	340	16	4	M20X40	4	M20	4	M20X40	4	M20X100	4	M20
250		350	395	17	8	M20X40	8	M20	8	M20X45	4	M20X110	4	M20
300		400	445	20	8	M20X45	8	M20	8	M20X45	4	M20X120	4	M20

BOLT LENGTHS APPLY TO WELDING NECK FLANGES TO DIN2632 PN10 AND GASKET TO DIN2690, 3MM THICK







○ THREADED HOLE

○ THROUGH-GOING HOLE

*) FOR FASTENING THE GATE VALVE TO THE PIPELINE, WE RECOMMEND DESIGN 1 (GUDGEON AND NUT) FOR THREADED HOLES, AS THIS DESIGN USES THE WHOLE DEPTH OF THE THREAD.

6 Initial Operation

Note: Before start-up spindle and spindle nut are to be greased.
(recommended lubricant see section “Maintenance”)

After installation, the valve has to be checked for smooth operation.

It has to be moved at the operating element over the whole travel (OPEN-CLOSED). When the gate – being opened - gets in contact with the bearing plate, the valve is in open position. The profile seal is adjusted (pretensioned) to nominal pressure at the manufacturer's factory. In case of lower working pressures, after having carried out the pressure test of the pipeline, the profile seal can be released to be adapted to the effective working pressure. For
this purpose, the bolts on the cover plate have to be loosened in an appropriate manner. By means of this measure you can reduce wear and tear of the components involved in the motion.

ATTENTION! The flow medium may penetrate. Wear safety clothing (safety goggles) in case of toxic or caustic media.

\+ **Extension of the operating elements, e.g. by lever or similar device, is not allowed, as it might cause damages!**

7 Operation

Trouble	Possible Causes	Remedy
Leakage at the cover plate	Prestress too low	Readjustment of cover plate see paragraph “8 Maintenance“
	Wearing of the profile seal	Replace profile seal
	Contamination (deposit on the gate)	With valve in open position: clean and grease gate
Seat leakage	Contamination of the gate	With valve in open position: clean and grease gate
	Defective U-shaped sealing element	Replace sealing element
Excessive operating forces	Contamination (deposit) on the gate	With valve in open position: clean and grease gate
	Stem running dry	Regrease thread
Operation blocked	Residues of flow medium are hardened	Relieve pipe section from pressure. Clean and grease all accessible surfaces of gate and stem.

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		Slacken cover plate. Slightly unscrew upper body bolts. Knock on the valve with a rubber mallet trying to operate the valve. If you are not successful: remove, dismantle, clean, replace damaged parts.
	Foreign bodies jammed in the seating zone	Move valve in OPEN position and repeat closing procedure

8 Maintenance

For inspection or repair, the valve – or parts thereof - must not be removed unless the pipe section in which the valve is installed has been isolated and made pressureless. If work is carried out in the vicinity of the valves, which leads to soiling (concrete work, masonry, painting, sandblasting and the like), the valves must be covered effectively.

ERU Knife Gate Valves K1 have to be moved regularly at short intervals (every half years) over the whole travel (OPEN-CLOSED). Depending on the flow medium and the local conditions at the site of application, the maintenance interval must be reduced or may be extended.
If the profile seal is found to be untight, retighten the hexagon bolts of the cover plate evenly. If it is no longer possible to retighten the cover plate, replace the sealing elements.

Check gate and stem regularly for contaminations, clean them if necessary and treat them with lubricant (rub in a thin layer).

Recommended lubricant: KLÜBERSYNTH VR69-252
company Klüber Lubrication, Munich

Spare parts and wearing parts according to: drawing **3E 65931**

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