

 **RAPHAEL**

Product brochure

TRS/TRL INFINITY

Resilient Seated Gate Valve



RESILIENT SEATED GATE VALVES

INFINITY

The latest in RAPHAEL's proven range of valves, the INFINITY represents a new generation of resilient seated gate valves [DN40-700]. As well as boasting of the latest technological advances and unique technical features, INFINITY has been 100% designed and manufactured in Europe using high quality materials and the latest manufacturing technologies, to guarantee, to our valuable customers, an extraordinary lifetime, outstanding operability and unique safety features.

FUNCTIONS

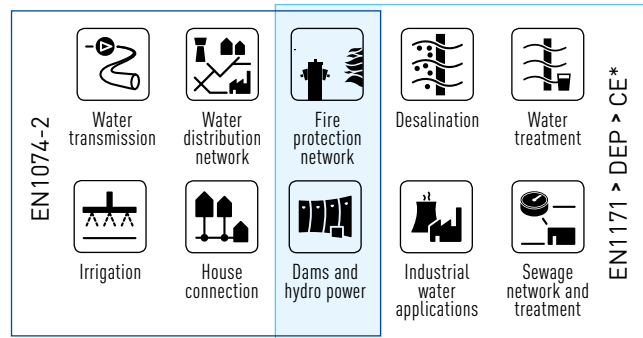
Isolation resilient seated gate valves, with wedge fully encapsulated in elastomer, for ON/OFF duty, and operation by means of handwheel or T-key.

ADVANTAGES

- L **Low operating torque:** INFINITY and its new wedge and stem technology ensures smooth functionality with outstanding low torque values.
- L **Longer service life:** new guiding system for the wedge with male composite sliding skate in order to easily achieve the 2500 cycles endurance test required by European standards.
- L **Corrosion resistance:** GSK/RAL-GZ coating in standard with epoxy thickness of 250 microns minimum. Threadless bonnet up to DN300 that allows continuous coating. High quality materials.
- L **Low head loss:** clear way and straight bore design from DN40 up to DN600 in order to allow a free path without restriction of the fluid.
- L **Bubble tight shut off:** new wedge design with increased thickness of the elastomer at the sealing areas to improve tightness.
- L **High minimum resistant torque:** Innovative design of the thrust system for minimum strength torque that exceeds current standards.



APPLICATIONS



* See page 7 for gate valves which are subjected to CE marking according to the European "Pressure Equipment Directive" 2014/68/EU (PED).

USES

- L **On networks, gate valves can be:**
 - Used both as part of new works and renovations.
 - Installed outside, buried in the ground, in valves' room, or in buildings.
- L **The use of gate valves allows user:**
 - To balance the distribution of water at all points in the mesh network (in open or closed position).
 - To isolate control valves, fire hydrants, air valves, pumps, etc. for their maintenance.
 - To perform maintenance on the network (isolation of part of the network).
 - To stop the flow in the case of failure or pipe incident.
 - To drain water tanks or sections of the water network.

CHARACTERISTICS

- └ Made of **high quality materials** according to the relevant standards.
- └ Clear way and **straight bore**, so the flow is optimum with minimum head losses.
- └ **Replaceable packing** under pressure thanks to bayonet stuffing nut.
- └ **Three independant O-rings** to guarantee the tightness throughout the stem. Two O-rings above the collar and one below (up to DN300).
- └ **Patented* three locking tab for bayonet system** up to DN300, with clamping ring to avoid self dismantling, leakage and ejection risk.
- └ **Innovative dust guard** made of three O-rings integrated into one single piece that prevent ingress of dirt at the stem level, and ensures full isolation (up to DN300).
- └ Wedge **fully encapsulated** in EPDM for a better resistance to corrosion.
- └ Integral male composite sliding skate as guiding system for **easy operation** under maximum differential pressure.
- └ Body bonnet bolts are protected with hot melt glue.
- └ **Rounded surfaces** of the body ensure a uniform coating and protection of the highest quality.
- └ **Excellent corrosion resistance** thanks to the fully coated bonnet (not threads) and GSK-RAL GZ coating with minimum 250 microns of epoxy. Rilsan or enamel coating also available.
- └ Stem in **stainless steel**.
- └ **Maintenance free**.
- └ Designed to be operated by **handwheel or T-key**.
- └ **Approved** by major organizations worldwide for drinking water.
- └ In conformity with **Israeli standards** IS61 and IS5452, as well as **European standards** EN 1074-2 (annex A) and EN 1171 (category 3).
- └ **100% tested** according to IS61 and EN 12166-1 standards.

(*) List of the countries on request.



APPROVALS



TRS PN16 / TRL PN16
DN50-80-100-150-200-250-300

TECHNICAL DATA

- └ **Nominal Diameter (DN):**
DN40 to DN700.
- └ **Body length to EN558:**
Series 14: short body-TRS (F4).
Series 15: long body-TRL (F5).
- └ **Closing direction:**
Clockwise closing (CC).
Anticlockwise closing (ACC).
- └ **Nominal Pressure (PN/PFA/PS):**
PN16, PN25.
- └ **Flange Drilling:** PN10, PN16 or PN25 according to EN 1092-2, AS 2129 Table D (ASTD).
- └ **Medium Temperature (EN1074-2):**
 - Epoxy coating: -10 to 50°C
 - Enamel coating: -10 to 50°C (up to 70°C under request, in the case of EN1171).
- └ **Water tightness:**
Rate A according to EN 12266-1.
- └ **Maximum Velocity:**

PN/PFA/PS	EN1074-2
10 bar	3 m/s
16 bar	4 m/s
25 bar	5 m/s

OPTIONS/VARIANTS

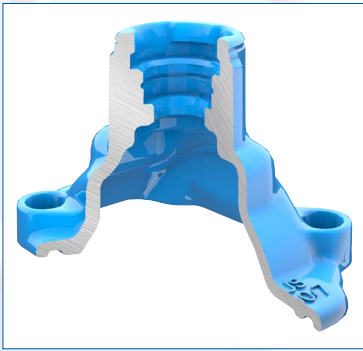
- └ Epoxy 300 microns mini, others ...
- └ Electric actuator, Pneumatic/ Hydraulic cylinder, others ...
- └ Visual mechanical position indicator with optional electrical limit switch.
- └ Configuration for sea water, sewage water and hot water.
- └ Valve complying to BS5163 type B.
- └ Wedge fully encapsulated in NBR or hot EPDM (up to 70°C).
- └ Bolts in stainless steel A4.
- └ Accessories (handwheel, captop, stem extension, others ...).

TECHNICAL ADVANTAGES



FOR ENAMELED VERSION, THE VALVE INTEGRATES AN EDGE PROTECTION (1) PLACED ALL AROUND BETWEEN THE BODY AND THE BONNET.

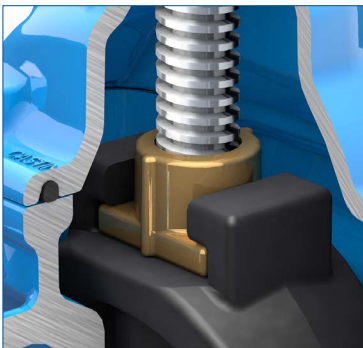
TECHNICAL ADVANTAGES



01: Due to our PATENTED* three locking tab bayonet system, The INFINITY gate valve has no threads, enabling a **continuous coating** and therefore avoiding corrosion problems.

Moreover, it is easy to remove the stuffing nut, with the valve under pressure and fully open, in order to change the O-ring.

* List of the countries on request.



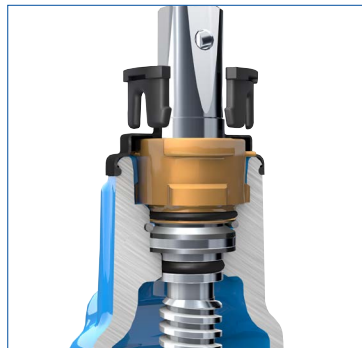
02: Free wedge nut, **reduces the stem bending forces** and at the same time enables it to be easily replaced.



03: The more compact new cap, reduces the water retention areas in order to **reduce the risk of bacterial growth**.



04: Stem and collar made in one piece in stainless steel for **better resistance to axial load and to withstand higher operating torques**. Washers with PTFE coating (1) placed above and under the collar allow to reduce friction torque and protect coating inside the Bonnet.



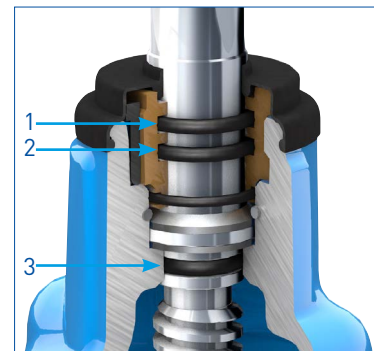
05: The three locking tabs for bayonet system as well as clamping ring prevent self-dismantling, caused mainly by over-torques and vibrations, to avoid risk of leakage and also **prevent incidents and ensures the safety of all personnel on site**.



06: Dust guard integrating three O-ring shape, **prohibiting the introduction of foreign bodies** at the stem.



07: Male guiding system with composite sliding skate (1) reduces the wear of the wedge against the body, allowing a smooth functionality and a longer life time of the valve. Furthermore, the increased thickness of the elastomer at the sealing areas improves product resilience to the usual small impurities encountered in networks.



08: Triple seal at the operating stem to ensure tightness with the test of time (2500 cycles).



09: Our **new male composite sliding skate technology** minimizes the wedge friction against the body ensuring a low operating torque even under high differential pressure and preventing damage or corrosion generated by the friction.

COATING

OPTIMUM PROTECTION

The INFINITY resilient seated gate valve has been designed with even more rounded surfaces and more ergonomic shapes that allow more uniform coating and ensure protection of the highest quality.

The epoxy powder used by BELGICAST is approved for use with potable water by the most prestigious institutions worldwide.

Our new state-of-the-art coating line installed in BELGICAST, based on an innovative process with fluidized bath and dipping robot, ensures an excellent adhesion, as well as controlled thicknesses and perfect continuity of the coating without porosity.

└ GSK/RAL-GZ coating in standard with a minimum epoxy thickness of 250 microns

BELGICAST painting facilities are approved by the **GSK Quality Assurance Association** for Heavy-Duty Corrosion Protection of Valves and Fittings with Powder Coating.

INFINITY resilient seated gate valves are awarded by the **RAL-GZ 662 Quality Mark (Gütezeichen)** delivered by the GSK Quality Assurance Association. Obtaining this quality mark requires a quality-assurance in accordance with the current regulations, as well as strenuous additional requirements in order to ensure the highest level of quality and performance of the coating:

- Minimum coating thickness of 250 microns,
- Use of powder GSK approved,
- Coating line GSK approved,
- Regular monitoring of the process and its parameters,
- Product approval with the coating,
- Regular coating test (coating thickness, freedom from porosity, impact resistance, wetting, tensile adhesive strength,...),
- Two audits per year carried out by a third party body.



RAL GÜTEZEICHEN
DEUTSCHE VERBÄNDERUNGSGEMEINSCHAFT
 FÜR QUALITÄTSSICHERUNG

TEMPERATURES

Depending on the applied anticorrosive coating, the INFINITY gate valve is suitable for the following continuous operating temperatures:

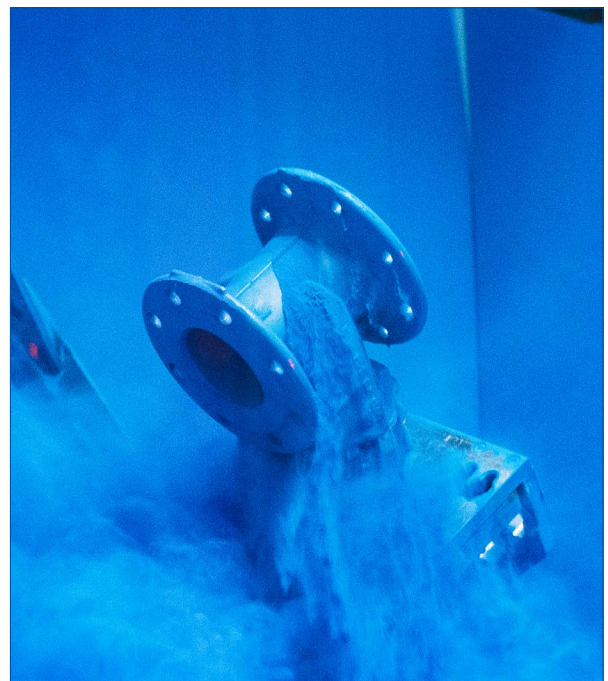
- └ Epoxy powder protection: -10 °C to 50°C.
- └ Enamel protection: -10 °C to 50°C (70°C under request).



└ Permanent protection with enamel

Optionally, BELGICAST can manufacture gate valves completely enamelled. Vitreous enamel is highly resistant to corrosion, abrasion, sunlight and sedimentation due to its low porosity and smooth surface. The enamel is vitrified at 720° C and forms a perfect and permanent bond at the foundry.

BELGICAST's extensive experience in the manufacture of gate valves, together with modern enamel equipment, allows production of the highest quality.



QUALITY & TESTING

Quality control

- 100% of BELGICAST resilient seated gate valves are tested according to standards below, or as per customer requirements.
- ISRAELI STANDARD IS61 & IS5452
- EN 12266-1, EN 1074-1, EN 1074-2.

Testing pressures

- Shell tightness: 25 bar at room temperature.
- Seat tightness: 17.6 bar at room temperature.

Minimum test duration (in seconds)

Nominal diameter DN	Shell	Seat
Up to DN50 included	15	15
From DN65 up to DN150 included	60	60
From DN200 up to DN300 included	120	120
DN350 and above	300	120

Maximum allowable seat leakage

The criterion for seat leakage of BELGICAST resilient seated gate valves is
Rate A: no visually detectable leakage for the duration of the test ("zero drops").



EUROPEAN DIRECTIVE

European directive 2014/68/EU (PED) must be respected in all the countries of the European Union for all equipment under pressure. Valves which are subjected to this European directive are the object of a «CE» marking and also a CE declaration of conformity.

Are excluded from the scope of this directive the networks for the supply, distribution and discharge of water and associated equipment and headraces such as penstocks, pressure tunnels, pressure shafts for hydroelectric installations and their related specific accessories. In this context:

- └ "water" means: potable water, waste water and effluent, and sewage,
- └ "Networks and associated equipment" means: complete systems for the supply distribution and discharge of water. They extend up to the point of use in buildings, industrial sites and plants, and include equipment closely related to these networks such as water meter and line valves. Pressure vessels, such as expansion vessels, however are not considered to be part of such 'networks and associated equipment' and are therefore not excluded.

Within the scope of the directive, the requirements on resilient seated gate valves are given in the table beside in the case of liquid from group 2.

For the gate valves which are subjected to "CE" marking (see table beside), the document of "CE" declaration of conformity is available on request.

DN	Fluid group	Fluid Type	For PN/PS max = 16 bars		For PN/PS max = 25 bars	
			CATEGORY	CE MARKING	CATEGORY	CE MARKING
40	2	Liquid having vapor pressure max at 1513 mbar, at 70°C max.	Art 4, Par 3	n.a.*	Art 4, Par 3	n.a.*
50	2		Art 4, Par 3	n.a.*	Art 4, Par 3	n.a.*
60	2		Art 4, Par 3	n.a.*	-	-
65	2		Art 4, Par 3	n.a.*	Art 4, Par 3	n.a.*
80	2		Art 4, Par 3	n.a.*	Art 4, Par 3	n.a.*
100	2		Art 4, Par 3	n.a.*	Art 4, Par 3	n.a.*
125	2		Art 4, Par 3	n.a.*	Art 4, Par 3	n.a.*
150	2		Art 4, Par 3	n.a.*	Art 4, Par 3	n.a.*
200	2		Art 4, Par 3	n.a.*	Art 4, Par 3	n.a.*
250	2		Art 4, Par 3	n.a.*	Cat 1	Yes
300	2		Art 4, Par 3	n.a.*	Cat 1	Yes
350	2		Cat 1	Yes	-	-
400	2		Cat 1	Yes	-	-
450	2		Cat 1	Yes	-	-
500	2	Cat 1	Yes	-	-	
600	2	Cat 1	Yes	-	-	
700	2	Cat 1	Yes	-	-	

(*): according to the max working pressure defined, max temperature defined, and fluid group defined, the "CE marking" is not necessary in the present case.

MATERIALS & DIMENSIONS

TRS (F4) / TRL (F5) - DN40/300 - PN10/16

[according to EN1074-2 (annex A) and EN1171 (category 3)]



Item	Description	N°	Material	Standard
1	Body	1	EN-GJS-500-7 ²⁾	EN 1563
2	Bonnet	1	EN-GJS-500-7 ²⁾	EN 1563
3	Wedge	1	EN-GJS-500-7	EN 1563
4	Wedge coating	1	EPDM ¹⁾	EN 681-1
5	Stem	1	1.4021 ⁵⁾	EN 10088
6	Wedge lock nut	1	Copper alloy CW617N	EN 12165
7	Body-bonnet gasket	1	EPDM ¹⁾	EN 681-1
8	Lower stem washer	1	Steel+PTFE	-
9	O-ring (stem)	1	EPDM ¹⁾	EN 681-1
10	Stuffing nut (bayonet)	1	Copper alloy CW617N	EN 12165
11	O-ring (stuffing nut)	2	NBR	ASTM D2000
12	O-ring (stuffing nut/bonnet)	1	NBR	ASTM D2000
13	Body bonnet bolting	acc/DN	Steel 12.9 Geomet coated	EN 10213-2 / DIN 912
14	Dust guard	1	EPDM	EN 681-1
15	Handwheel	1	Stamped steel ³⁾	EN 10130
16	Handwheel bolting	1	1.4301	EN 10088 / DIN 933
17	Handwheel washer	1	1.4301	EN 10088 / DIN 9021
18	Square cap	1	EN-GJS-500-7 ³⁾	EN 1563
19	Square cap bolting	1	1.4301	EN 10088 / DIN 912
20	Square cap plug	1	Lupolen	-
21	Wedge sliding skate ⁴⁾	2	Composite	-
22	Locking tabs	3	Composite	-
23	Clamping ring	1	1.4301	EN 10088
24	Upper inclined stem washer	1	Steel+PTFE	-

Materials table for filtered raw water and potable water. Please consult us for others fluids.

1) or NBR, depending on the approval and on the application. 2) GSK blue epoxy coating (Ral 5015), or rilsan, or enamel.

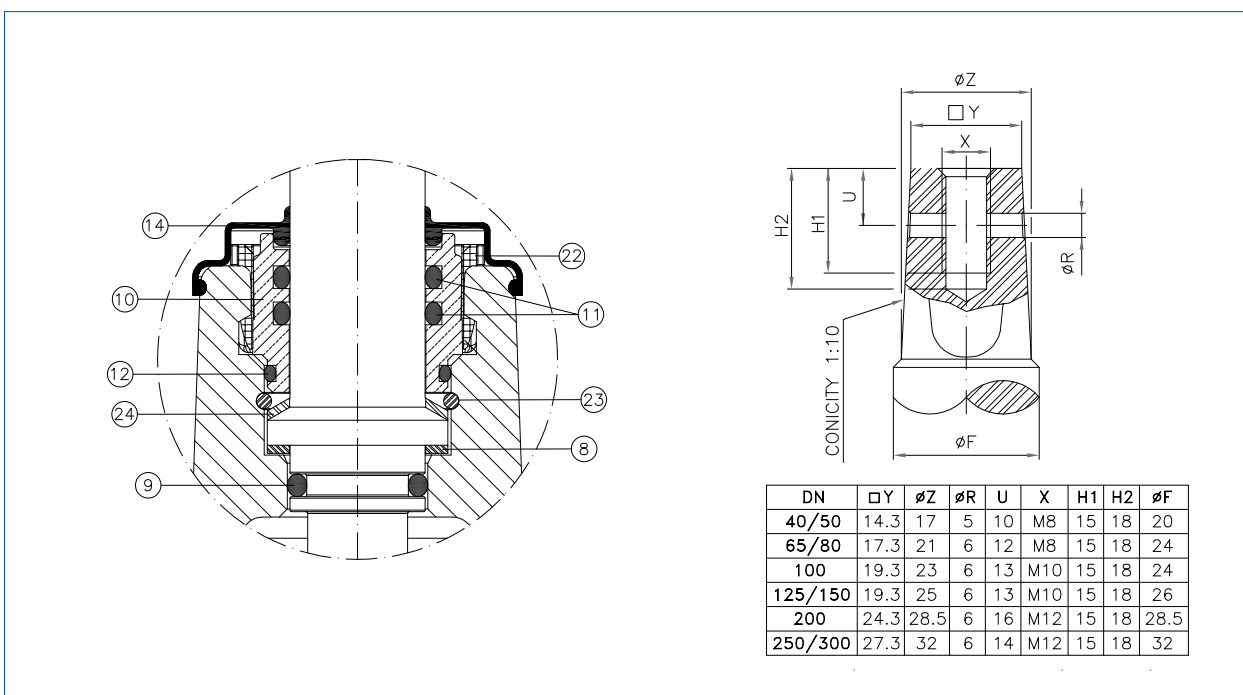
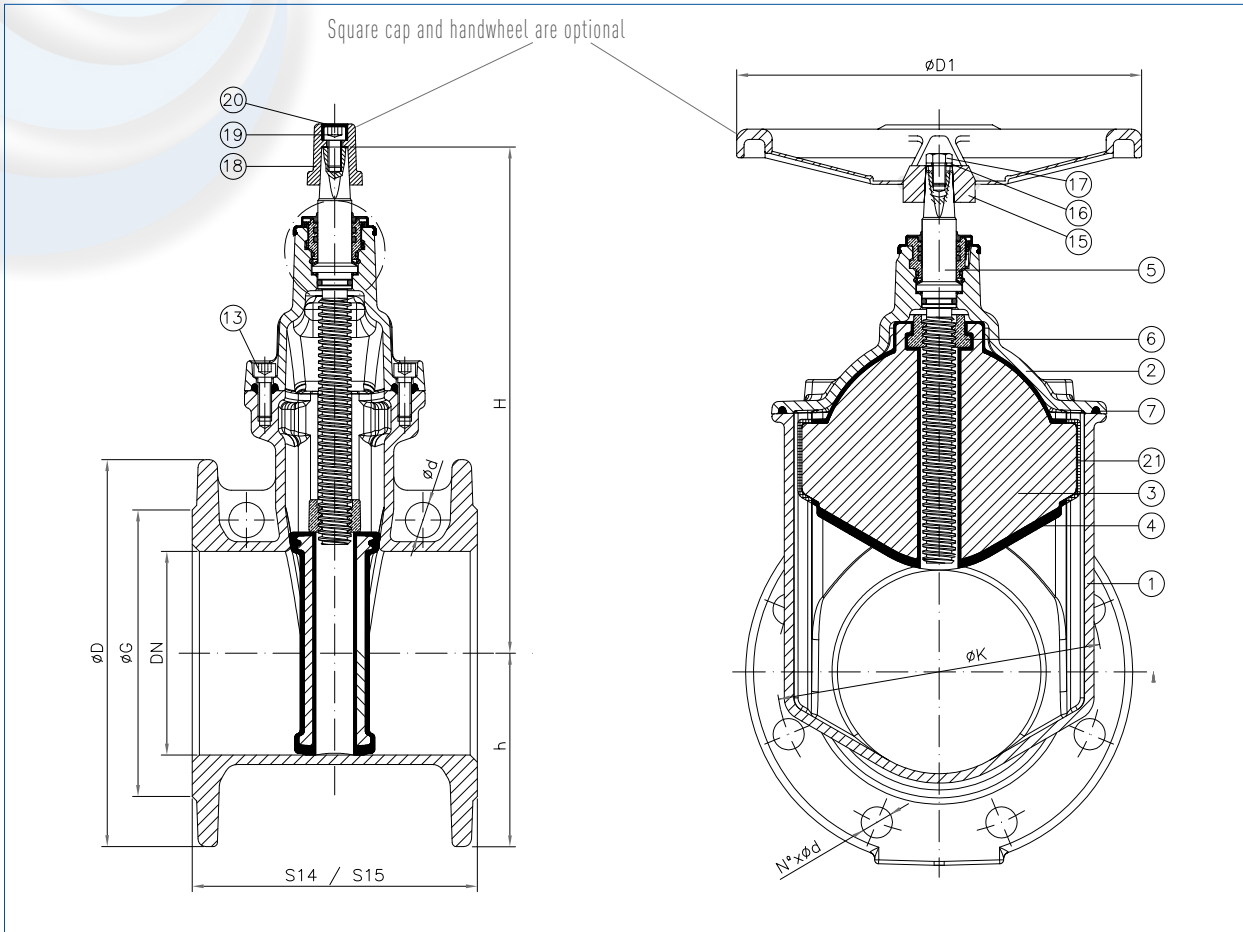
3) black epoxy coating. 4) DN40/50 without wedge sliding skates. 5) Stem also available in stainless steel 316L (1.4404).

DN	øD (mm)	EN 1092-2 PN10			EN 1092-2 PN16			AS 2129 Table D (ASTD)		EN 558 (DIN 3202)		H (mm)	h (mm)	ød (mm)	øD1 (mm)	No. of turns for closing	Weight (kg)	
		øK (mm)	øG (mm)	n°xd	øK (mm)	øG (mm)	n°xd	øK (mm)	n°xd	S14 (TRS) (mm)	S15 (TRL) (mm)						S14 (TRS)	S15 (TRL)
40	150	110	84	4x19	110	84	4x19	98	4x15	140	240	179	75	-	150	11,5	6,7	7,3
50	165	125	99	4x19	125	99	4x19	114	4x19	150	250	202	83	-	150	14	8,3	8,8
65	185	145	118	4x19	145	118	4x19	127	4x19	170	270	242	93	20	150	15	12,3	13
80	200	160	132	8x19	160	132	8x19	146	4x19	180	280	265	100	20	200	18	13,7	14,9
100	220	180	156	8x19	180	156	8x19	178	4x19	190	300	290	110	20	200	21,5	16,4	17,9
125	250	210	184	8x19	210	184	8x19	210	8x19	200	325	345	125	25	300	27	22,5	25,2
150	285	240	211	8x23	240	211	8x23	235	8x19	210	350	378	143	25	300	32	28,2	31,6
200	340	295	266	8x23	295	266	12x23	292	8x19	230	400	465	170	30	400	41,5	46,9	54,2
250	400	350	319	12x23	355	319	12x28	356	8x23	250	450	554	200	30	400	43	69,5	78,8
300	455	400	370	12x23	410	370	12x28	406	12x23	270	500	635	228	30	500	51	96,5	114,5

On request : lateral intakes option only for DN80, DN100 and DN150 TRL.

MATERIALS & DIMENSIONS

TRS (F4) / TRL (F5) - DN40/300 - PN10/16



MATERIALS & DIMENSIONS

TRS (F4) / TRL (F5) - DN350/700 - PN10/16

(according to EN1074-2 (annex A) and EN1171 (category 3))



Item	Description	N°	Material	Standard
1	Body	1	EN-GJS-500-7 ²⁾	EN 1563
2	Bonnet	1	EN-GJS-500-7 ²⁾	EN 1563
3	Wedge	1	EN-GJS-500-7	EN 1563
4	Wedge coating	1	EPDM ¹⁾	EN 681-1
5	Stem	1	1.4021 ⁴⁾	EN 10088
6	Wedge lock nut	1	Copper alloy CW617N	EN 12165
7	Body bonnet gasket	1	EPDM ¹⁾	EN 681-1
8	Lower packing bushing	1	POM	-
9	O-ring (stem)	2	EPDM ¹⁾	EN 681-1
10	Upper packing bushing	1	POM	-
11	O-ring int (upper packing bushing)	2	NBR	ASTM D2000
12	O-ring ext (upper packing bushing)	1	NBR	ASTM D2000
13	Body bonnet bolt	acc/DN	Steel 8.8 Geomet coated	EN ISO898-1
14	Dust guard	1	EPDM	EN 681-1
15	Handwheel	1	Stamped steel ³⁾	-
16	Handwheel bolt	1	1.4301	EN 10088
17	Handwheel washer	1	1.4301	EN 10088
18	Square cap	1	EN-GJS-500-7 ³⁾	EN 1563
19	Square cap bolt	1	Steel 8.8 Geomet coated	EN ISO898-1
20	Square cap plug	1	Lupolen	-
21	Wedge sliding skate	2	Composite	-
22	Upper bonnet	1	EN-GJS-500-7 ²⁾	EN 1563
23	O-ring (lower packing bushing)	1	EPDM ¹⁾	EN 681-1
24	Axial ball bearing	2	Stainless steel	-
25	Bonnet-upper bonnet O-ring	1	NBR	ASTM D2000
26	Bonnet-upper bonnet bolt	4	Steel 8.8 Geomet coated	EN ISO898-1
27	Eyebolt	2	Steel 8.8 JS500 coated	EN ISO898-1
28	Cotter	1	Steel 8.8	EN ISO898-1
29	Packing washer	1	254 SMO	DIN 1.4547

Materials table for filtered raw water and potable water. Please consult us for others fluids.

1) or NBR, depending on the approval and on the application. 2) GSK blue epoxy coating (Ral 5015), or rilsan. 3) black epoxy coating. 4) Stem also available in stainless steel 316L (1.4404).

FOR VALVES WITH MAXIMUM WORKING PRESSURE OF 16 BAR:

DN	EN 1092-2 PN 10				EN 1092-2 PN 16				AS 2129 Table D (AS1D)		EN 558 (DIN 3202)		H (mm)	L (mm)	B (mm)	øD1 (mm)	No. of turns for closing	Weight kg			
	øD (mm)	øK (mm)	øG (mm)	no. x d	øD (mm)	øK (mm)	øG (mm)	no. x d	øK (mm)	no. xd	S14 (TRS) (mm)	S15 (TRL) (mm)						S14 (TRS)		S15 (TRL)	
																		PN10	PN16	PN10	PN16
350	520	460	429	16x23	520	470	429	16x28	470	12x27	290	550	812	260	506	600	51	190	190	213	213
400	580	515	480	16x28	580	525	480	16x31	521	12x27	310	600	905	290	606	600	58	274	274	311	311
450	640	565	530	20x28	640	585	548	20x31	584	12x27	330	650	1002	320	672	600	65	310	309	363	362
500	715	620	582	20x28	715	650	609	20x34	641	16x27	350	700	1054	358	748	600	72	398	396	445	443
600	840	725	682	20x31	840	770	720	20x37	756	16x31	390	800	1285	420	955	800	87	670	668	776	774
700*	895	840	794	24x31	910	840	794	24x37	845	20x31	-	900	1285	455	955	800	87	-	-	970	975

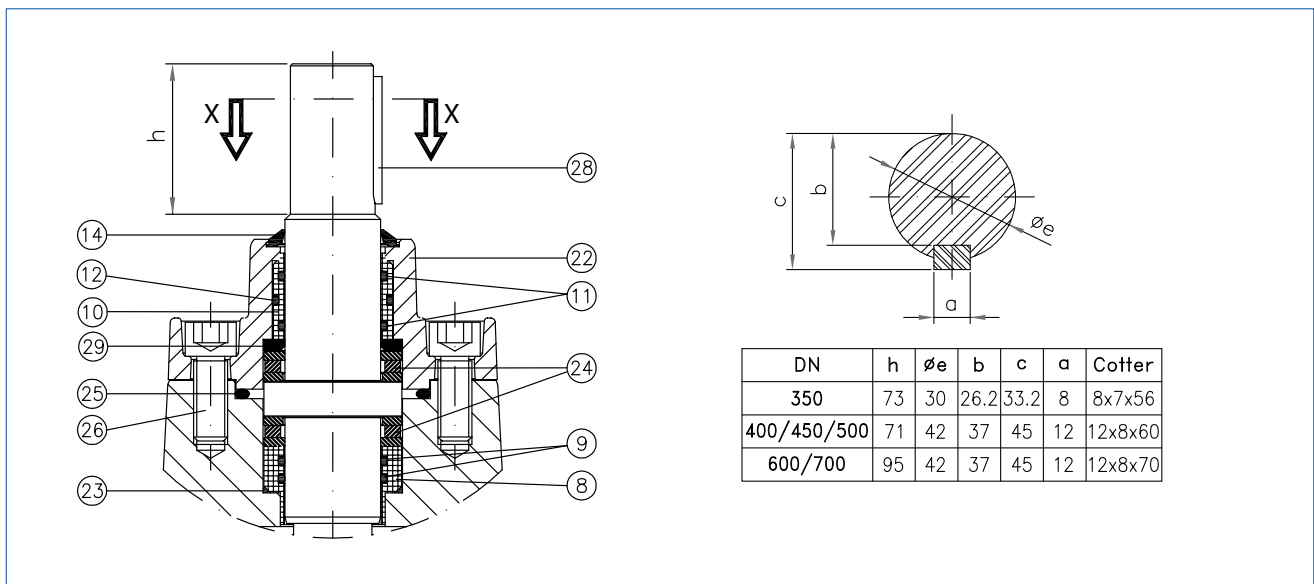
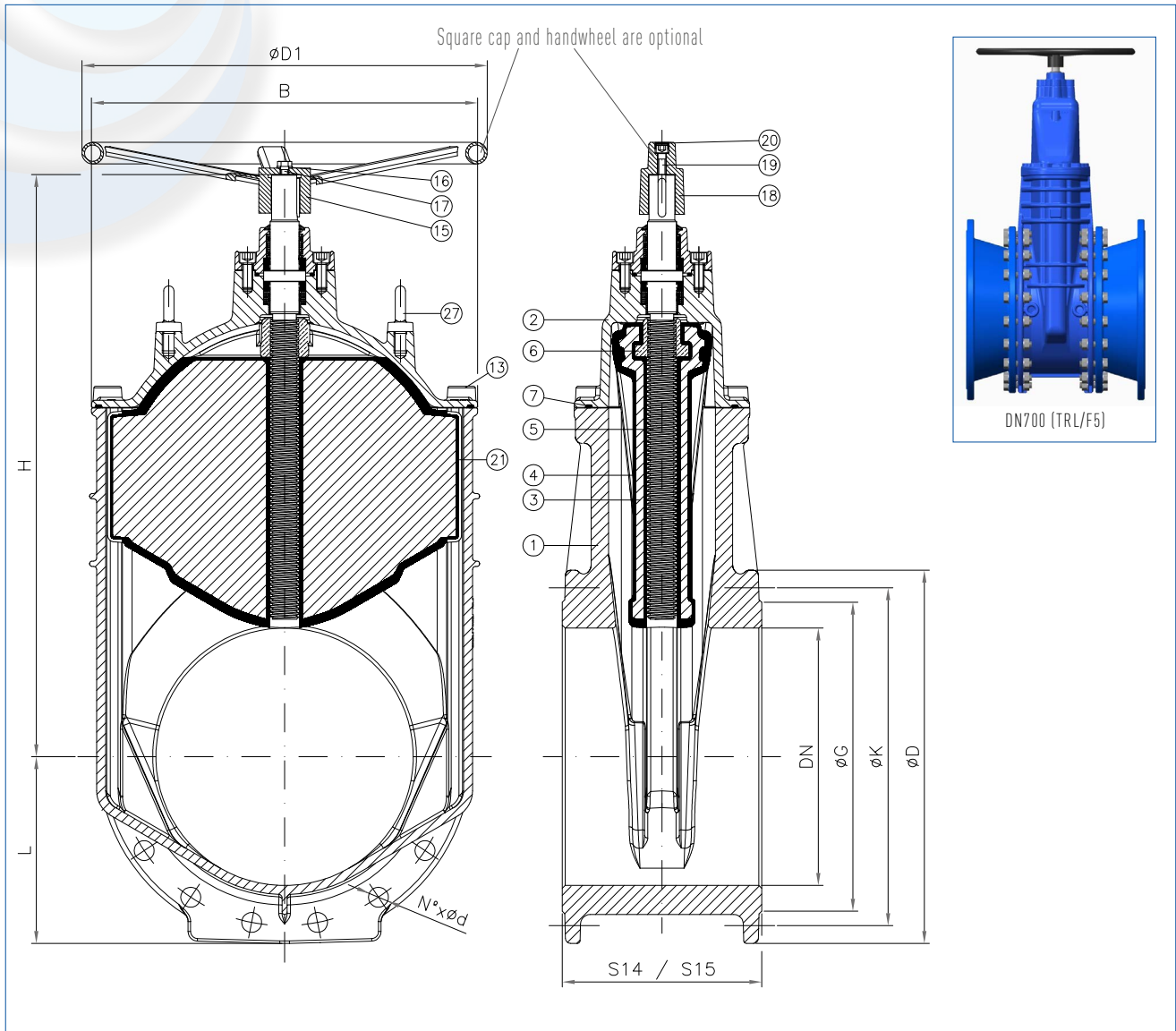
FOR VALVES WITH MAXIMUM WORKING PRESSURE OF 10 BAR:

DN	EN 1092-2 PN10				EN 558 (DIN 3202)		H (mm)	L (mm)	B (mm)	øD1 (mm)	No. of turns for closing	Weight (kg)	
	øD (mm)	øK (mm)	øG (mm)	n°xd	S14 (TRS) (mm)	S15 (TRL) (mm)						S14 (TRS)	S15 (TRL)
600	780	725	682	20x31	390	-	1285	390	955	800	87	553	-
700*	895	840	794	24x31	-	900	1285	447.5	955	800	87	-	815

On request - by-pass option only for DN350 to DN700 TRL and DN600 to DN700 TRS.
* Reduced bore of 600 mm. Valves produced from DN600/S14 with flanged conical adapters bolted on each side (see next page).

MATERIALS & DIMENSIONS

TRS (F4) / TRL (F5) - DN350/700 - PN10/16



MATERIALS & DIMENSIONS

PN25 - DN40/300

(According to EN1074-2 (annex a) and EN1171 category3))



Item	Description	N°	Material	Standard
1	Body	1	EN-GJS-500-7 ²⁾	EN 1563
2	Bonnet	1	EN-GJS-500-7 ²⁾	EN 1563
3	Wedge	1	EN-GJS-500-7	EN 1563
4	Wedge coating	1	EPDM ¹⁾	EN 681-1
5	Stem	1	1.4021	EN 10088
6	Wedge lock nut	1	Copper alloy CW617N	EN 12165
7	Body-bonnet gasket	1	EPDM ¹⁾	EN 681-1
8	Lower stem washer	1	Steel+PTFE	-
9	O-ring (stem)	1	EPDM ¹⁾	EN 681-1
10	Stuffing nut (bayonet)	1	Copper alloy CW617N	EN 12165
11	O-ring (stuffing nut)	2	NBR	ASTM D2000
12	O-ring (stuffing nut/bonnet)	1	NBR	ASTM D2000
13	Body bonnet bolting	acc/DN	Steel 12.9 Geomet coated	EN 10213-2 / DIN 912
14	Dust guard	1	EPDM	EN 681-1
15	Handwheel	1	Stamped steel ³⁾	EN 10130
16	Handwheel bolting	1	1.4301	EN 10088 / DIN 933
17	Handwheel washer	1	1.4301	EN 10088 / DIN 9021
18	Square cap	1	EN-GJS-500-7 ³⁾	EN 1563
19	Square cap bolting	1	1.4301	EN 10088 / DIN 912
20	Square cap plug	1	Lupolen	-
21	Wedge sliding skate ⁴⁾	2	Composite	-
22	Locking tabs	3	Composite	-
23	Clamping ring	1	1.4301	EN 10088
24	Upper inclined stem washer	1	Steel+PTFE	-

Materials table for raw water and potable water. Please consult us for others fluids.

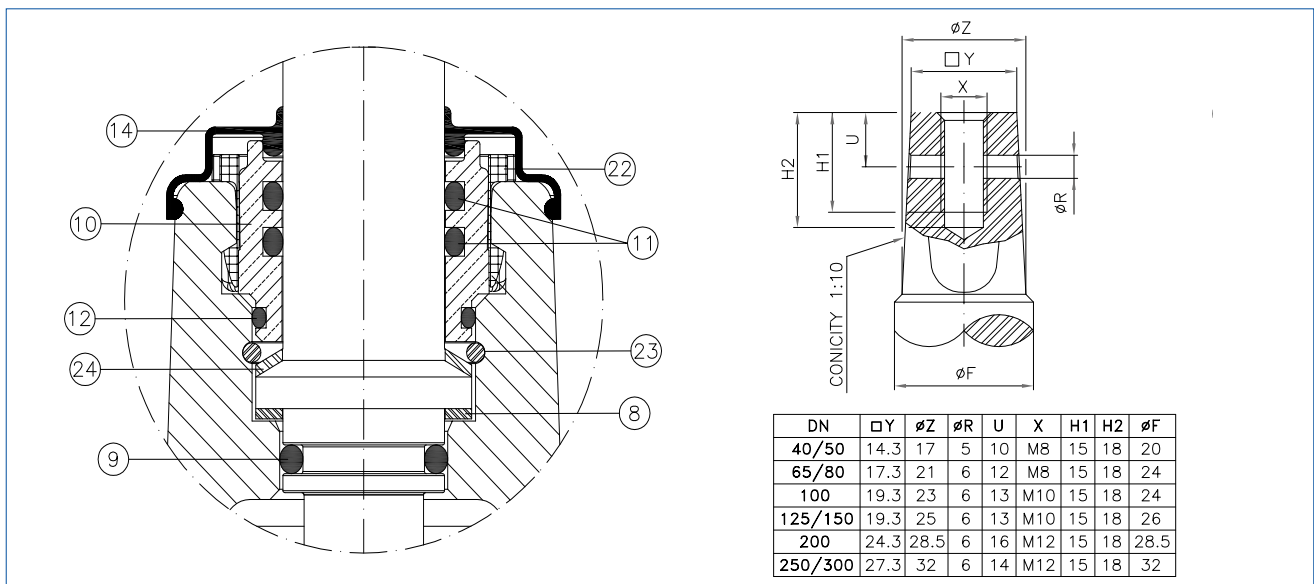
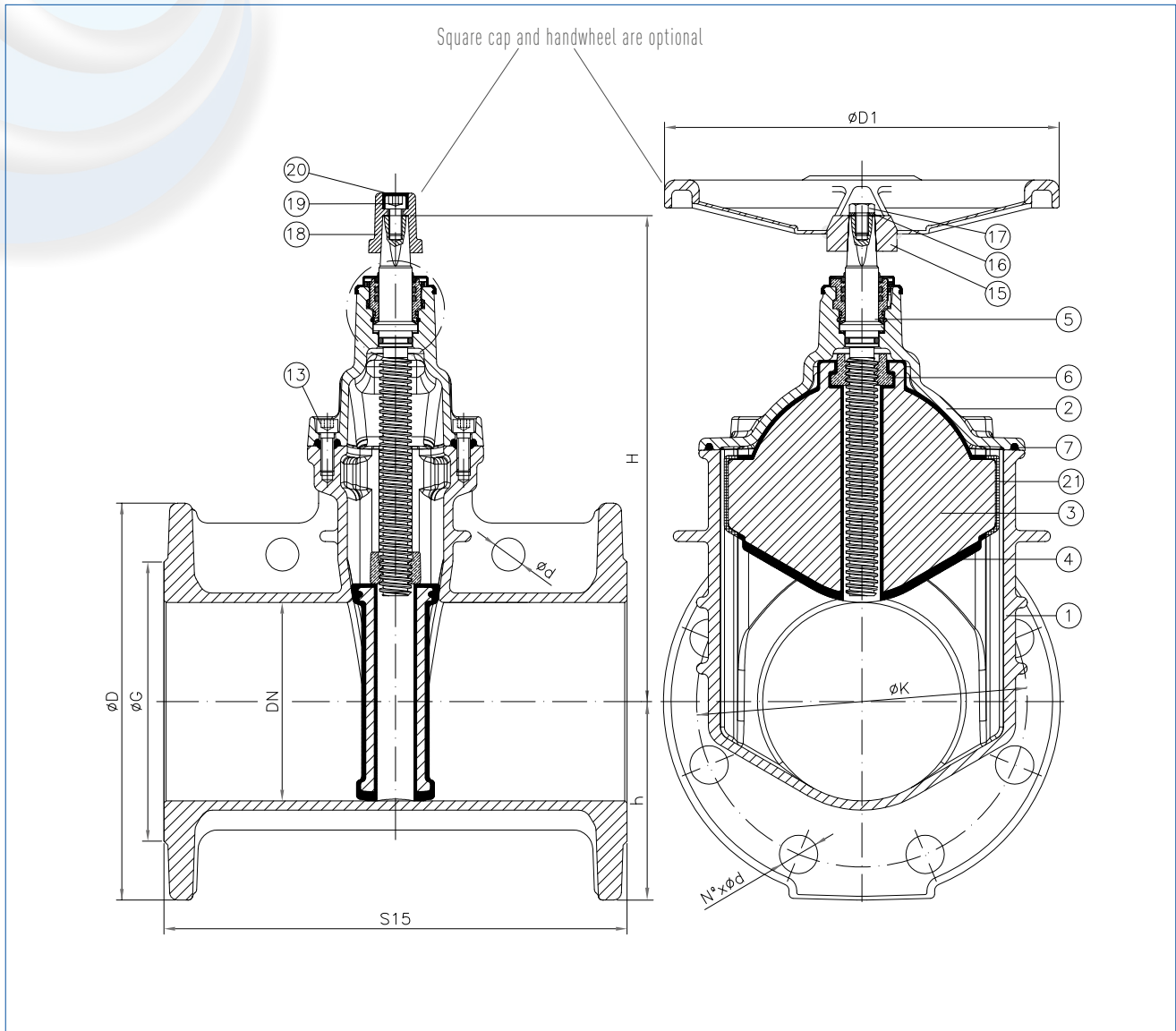
1) or NBR, depending on the approval and on the application. 2) GSK blue epoxy coating (Ral 5015), or rilsan, or enamel. 3) black epoxy coating. 4) DN40/50 without wedge sliding skates. 5) Stem also available in stainless steel 316L (1.4404).

DN	EN 10922 PN25				EN558 (DIN 3202)	H (mm)	h (mm)	ød (mm)	øD1 (mm)**	Y (mm)	øZ (mm)	øR (mm)	U (mm)	X (mm)	H1 (mm)	H2 (mm)	øF (mm)	No. of turns for closing	Weight (kg)
	øD (mm)	øK (mm)	øG (mm)	n°xd	S15 (F5) (mm)														
40	150	110	84	4x19	240	174	75	-	150	14,3	17	5	10	M8	15	18	20	11,5	7,8
50	165	125	99	4x19	250	197	83	-	150	14,3	17	5	10	M8	15	18	20	14	9,4
65	185	145	118	8x19	270	237	93	20	150	17,3	21	6	12	M8	15	18	24	15	13,6
80	200	160	132	8x19	280	260	100	20	200	17,3	21	6	12	M8	15	18	24	18	15,7
100	235	190	156	8x23	300	285	118	20	200	19,3	23	6	13	M10	15	18	24	21,5	20,7
125	270	220	184	8x28	325	340	135	25	300	19,3	25	6	13	M10	15	18	26	27	29
150	300	250	211	8x28	350	373	150	25	300	19,3	25	6	13	M10	15	18	26	32	37,6
200	360	310	274	12x28	400	460	180	30	400	24,3	28,5	6	16	M12	15	18	28,5	41,5	64,2
250	425	370	330	12x31	450	549	213	30	400	27,3	32	6	14	M12	15	18	32	43	94,8
300	485	430	389	16x31	500	630	243	30	500	27,3	32	6	14	M12	15	18	32	51	138,5

MATERIALS & DIMENSIONS

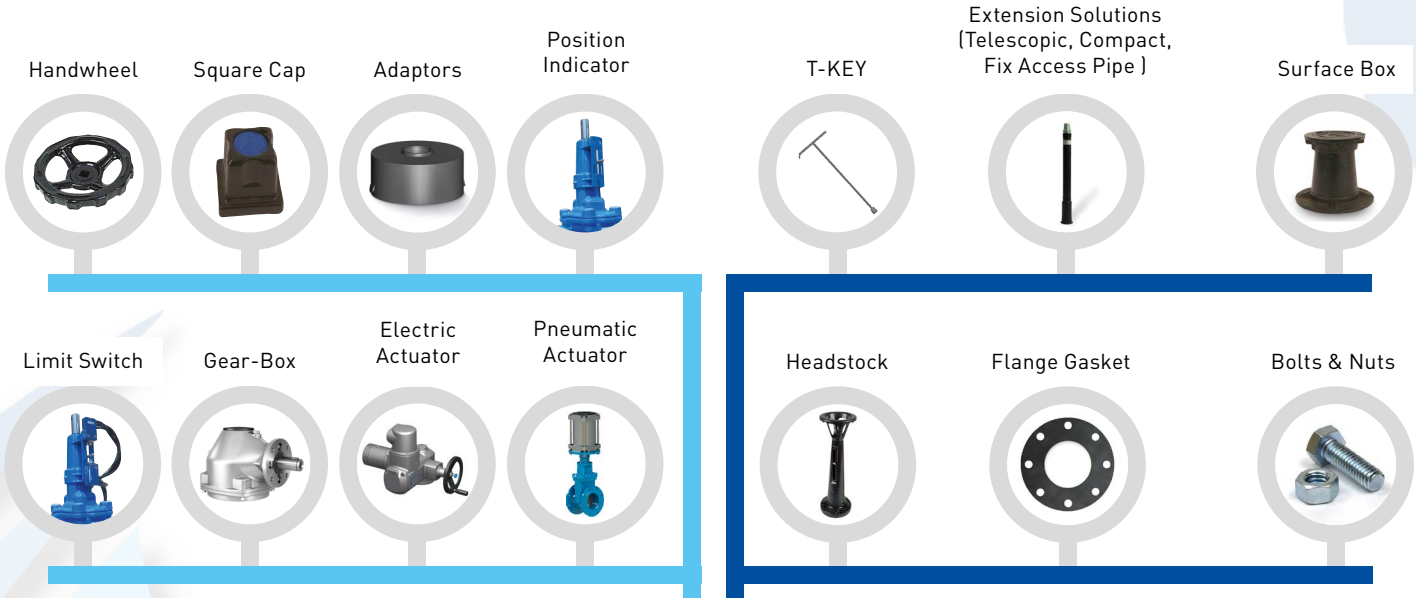
PN25 - DN40/300

(According to EN1074-2 (annex a) and EN1171 category3))



ACTUATION METHODS & ACCESSORIES

RAPHAEL offers a wide variety of actuation methods that will allow to choose the best option for each installation. The actuation can be made manually or by means of an electrical actuator with or without a gearbox. Also, we offer solutions for buried installations. Pneumatically actuated gate valves with a special design are also available for those installations where speed of actuation is a priority.



Valve with bare shaft

Manual actuation

Our resilient seated gate valves are designed to be operated with handwheel or T-key. In that later case, they need to be fitted with square cap. RAPHAEL offers handwheels with the right dimensions, according to the DN and operating torque. Our standard handwheels are made of pressed steel and we also offer ductile iron as an option. Regarding square cap tops, our products comply with the different national practices and standards. A cap plug (1), inserted inside, indicates the closing direction. Blue color for clockwise closing direction, red color for anti-clockwise closing direction.

Buried installations

One special case of manual actuation occurs when the valve is buried and the actuation has to be done from the surface. For those cases special stem extensions, fixed or telescopic, are offered to fit with different national practices and standards. We can offer customised solutions for each country when requested. For example, RAPHAEL offers adaptors to fit plastic or casting pipes for the French market and stem extensions according to GW 336 for the German market.

Electrical actuation

Another option is to operate the gate valve by means of an electric actuator. This solution also offers the possibility of installing a remote control, that allows the final user to monitor the operations of the valves. Special versions of the gate valves prepared for the actuator are equipped with top flanges according to ISO 5210. Actuators from different suppliers can be installed on this standard flange, which gives the customer the freedom to choose their actuator. RAPHAEL can provide the operating torques of the gate valves as well as guidance in choosing the right actuator for each DN.



INSTALLATION AND OPERATION INSTRUCTIONS

i GOOD TO KNOW BEFORE INSTALLATION

Before installation, in addition to the few informations given below, it is important to read the IOM manual.

└ Storage

- Leave the rubber wedge slightly open: if it is closed completely, the rubber suffers unnecessary compression. Remove the flange cover just before the installation.
- The gate valves should preferably be stored under cover. A long storage under extreme weather conditions can cause alterations of the coating and seals.

└ Assembly in pipe

- The assembly of the valve in the pipe is independent of the flow direction.
- When connecting the valve to the pipe, avoid the transmission of stress from the pipe to the valve body. For that, any pipe or pipe sections or valve not yet finally clamped in place must be provisionally supported to prevent abnormal stress on one or both sides of the valve.
- Tighten screws gradually in a star-shaped pattern, respecting the tightening torques.
- Once the valve is assembled, the threads of the bolts/rods should be greased with a graphite based waterproof grease (MOLYCOTE or similar) to prevent corrosion and facilitate subsequent dismantling operations.

└ Operation

- Each valve must be operated in respect of the operating torques given in our IOM manual, by means of a handwheel or a T-key ("Ring key and bar" is strictly prohibited). Do not use the valves for regulating mode.
- Do not use the valves with EPDM rubber with gaseous fluids such as propane, butane, natural gas and also with hydrocarbons fluids like petrol, diesel, ...

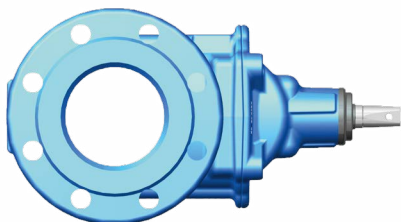
RECOMMENDED POSITIONS FOR GATE VALVES WITH FLANGES

└ From DN40 up to DN300:

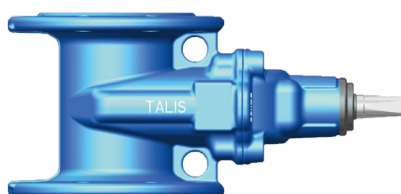
1) Ideal position:
vertical stem,
horizontal flow



2) Horizontal stem,
horizontal flow



3) Horizontal stem,
vertical flow

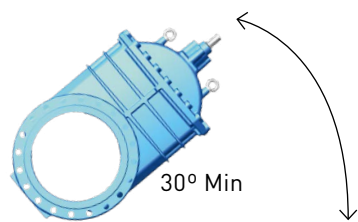


└ From DN350 up to DN700:

1) Ideal position:
vertical stem,
horizontal flow



2) Oblique stem,
horizontal flow





RAPHAEL VALVES INDUSTRIES (1975) LTD, founded in 1949, is the first Israeli manufacturer of water control valves. RAPHAEL's research department constantly strives to introduce new and innovative products and solutions for water control systems including water works, fire-protection and irrigation systems and other fields.

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