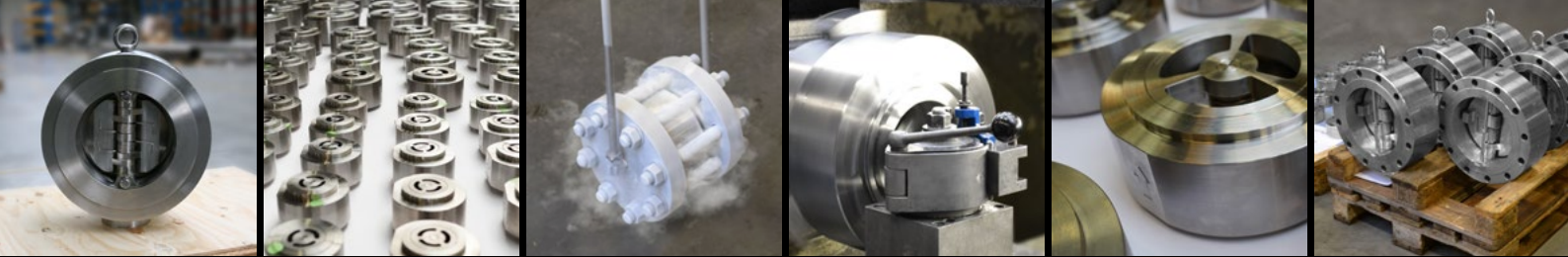


Disc Check Valves

& Other Special Check Valves



.ICARUS



CHECK VALVES MANUFACTURER & SERVICE PROVIDER

ICARUS

Company Profile

Since 1991, ICARUSSA has been an ambitious Dual Plate check valve manufacturer with its own workshop and design office in Belgium. In addition to its production activity, ICARUS is also a single source supplier of complete piping packages, offering experienced services such as project management, design and quality control.

ICARUS is part of a group of valve manufacturers including Saccap and Coyard, two French valve companies approved by major actors of the oil industry. With the aim of always achieving the highest quality for our products, we are using first class European suppliers.

Based on each company's specificities and strengths, we are able to produce a wide range of tailor-made valves (Dual Plate check valves, casted and forged Gate / Globe / Check valves) for onshore, offshore and subsea applications.

Established as a reliable supplier by major oil and gas companies, our global presence and our experience guarantee the management of most complex projects with a high level of engineering knowledge.

Market & Customers

For more than 30 years now, internationally renowned chemical, petrochemical and engineering companies, subcontractors and end-users have entrusted ICARUS with their most critical orders worldwide.

Our flexibility as well as our professionalism allow us to adapt our service to a large scale of projects such as emergency repairs, refurbishments, shutdowns or long-term projects.

Designed & Manufactured Valves

Upon customer requirements and needs, at ICARUS workshop, we manufacture Dual Plate check valves from 2" to 24", and pressure class 150 to 2500 in different material grades.

We are also qualified to design:

- Compact flanges according to NORSOK L-005 - NCF-4 and NCF-5 custom-made for offshore and subsea markets
- ASME B16.5 / API6A flanges including cladding in alloy 625, 825...
- Special forged components "inhouse" designed: swivel ring flanges, buckle arrestors, pipe anchors, wyes, barred tees, clamp connectors...

- Prefabricated spools
- Manifold with extruded outlets
- ...

Additional Products

- Pipes and tubes:
 - seamless / welded / finned / studed
- Line pipes and bends
- Fittings:
 - BW, SW & threaded (NPT / BSP)
- Flanges
- Outlet fittings:
 - weld / sock / thread... o'let
- Plates and sheets
- Special products (custom-made)

Materials

- Standard stainless steel (304L, 316 L, 321)
- High temperature (304H, 321H, 347H, 800HT) & low temperature carbon steel
- Corrosion resistance (duplex & super duplex, nitric: 310L, 904L, Uranus S1®...)
- Nickel alloy (Alloy 400, 600, 601, 625, 825, C276...)
- Low Alloy steel (P5, 9, 11, 22, 91), Carbon steel (gr B, gr 3, gr 6, X52, X60, X65, X70)
- Titanium
- ...

Quality

Quality control is committed to delivering zero-defect valves. Thus, we set up a strict quality control system from raw material to finished products.

At our workshop we have equipment and qualified workers to undertake performance testing as follows:

- Non-destructive testing: hardness, PMI, dye penetrant, ferrite, US, X-ray, magnetic testing...
- Pressure testing: hydro & gas
- Destructive testing: corrosion & impact test
- Cryogenic testing

In addition, ICARUS is certified ISO 9001 / ISO 14001 / OHSAS 18001.

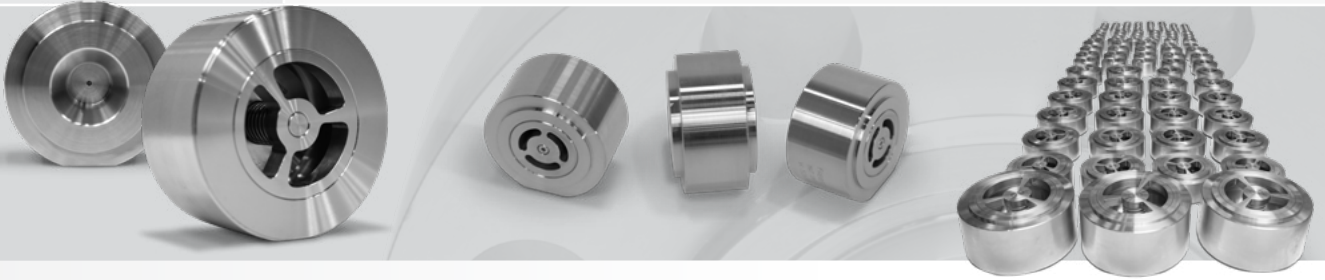


DISC CHECK VALVES

PRODUCT RANGE

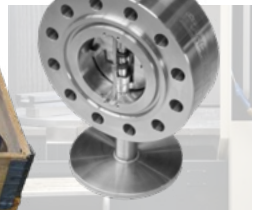
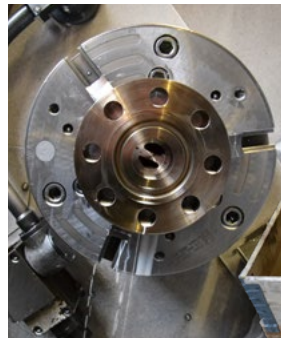
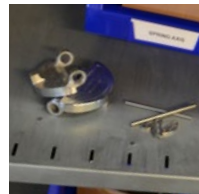
	CLASS 150	CLASS 300	CLASS 600	CLASS 900
Disc Check	1" - 8"			

Options	Cryogenic - Oxygen Service - High Temperature - Special / Low Flow Conditions...
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INHOUSE PRODUCTION

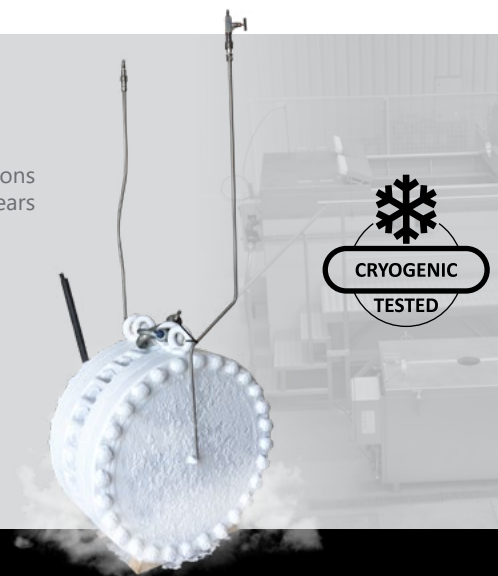
- Inhouse machining, assembly & testing (hydro / gas...)
- Low/high pressure gas testing according to API 598, API 6A & ISO 5208
- Inhouse quality control : MPE / DPE / Visual / Dimensional...
- Castings and forgings coming from top quality European partners
- Stock of trim components in the most common grades



Cryogenic valves

Disc Plate check valves are fit for cryogenic applications thanks to specific design and lapping based on years of experience in LNG and FLNG projects. Low temperature pressure tests are performed in our test benches according to BS6364 or specific project requirements.

On the picture:
a 30" Dual Plate check valve
after successful testing at -196°C

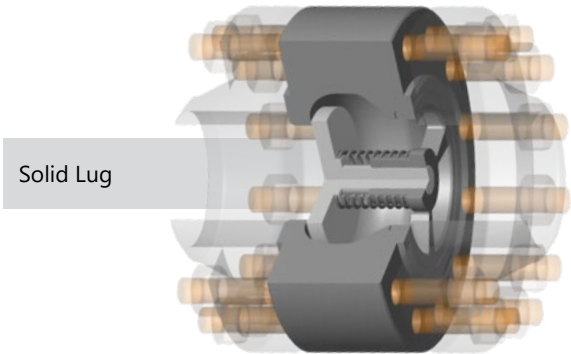
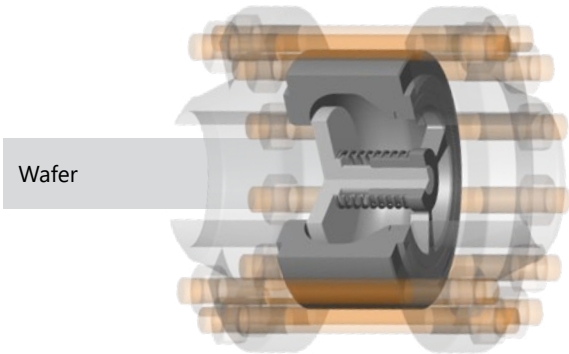


PRODUCT SHEET

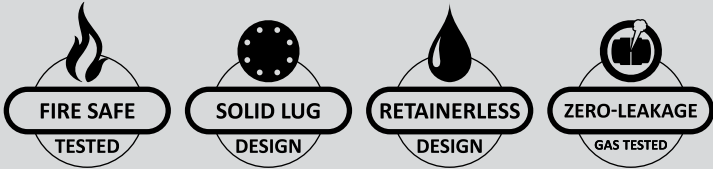
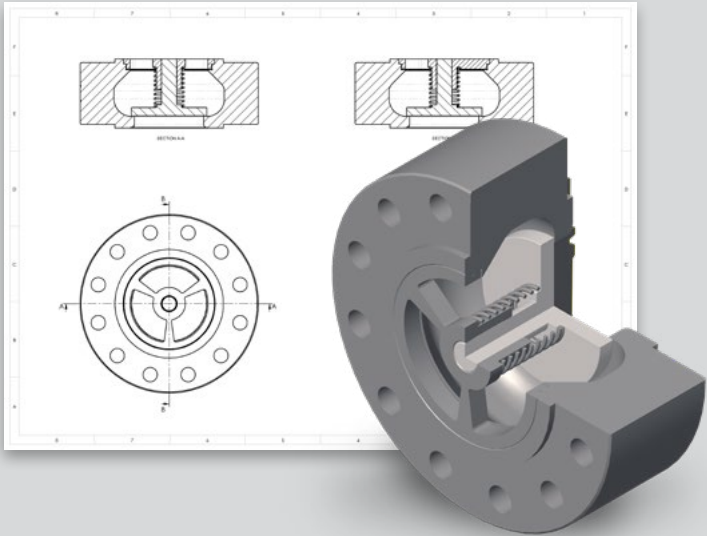


Sizes	from 1" to 8"
Pressure Ratings	ANSI: 150 to 900
Material	Carbon Steel / Stainless Steel / Duplex Steel / Aluminium Bronze / High Nickel Alloys / Titanium... Forged or cast construction
Seats	Metal to metal (option: hardfacing)
End Connections	Wafer / Solid lug

Note: This table describes the typical range of products. Other sizes or configurations are available on demand.



DESIGN

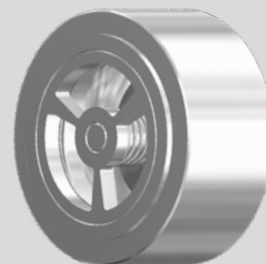
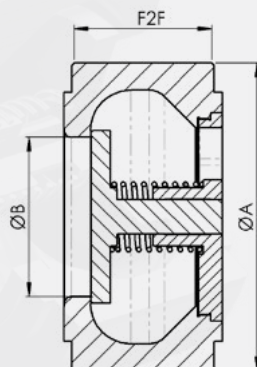
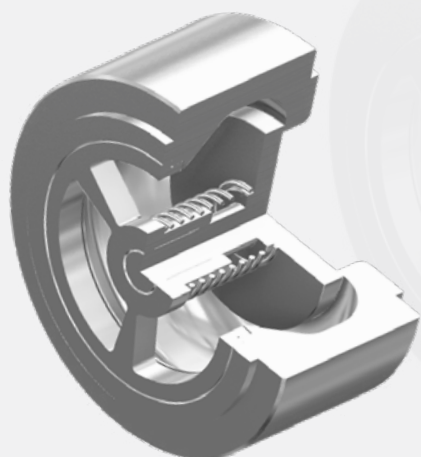


According to:

- API 594 ■ API 6D ■ API 6FD
- EN 16767
- Customer specifications

WEIGHT & DIMENSIONS TABLE

DISC CHECK **WAFER TYPE**



Design acc. to API 594

Flanges acc. to ASME B16.5

Seats: Metal-Metal
(soft seats available on request)

Connection: RF or RTJ
(HUB and BW available on request)

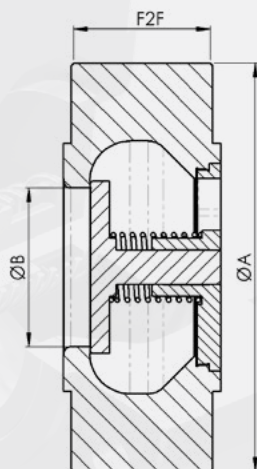
Size	25	40	50	65	80	100	150	200
	1"	1"1/2	2"	2"1/2	3"	4"	6"	8"
B (mm)	25	40	48	60	74	96	138	190
CLASS 150								
F2F (mm)	40	55	60	67	73	73	99	127
A (mm)	66,8	85,9	104,9	124	136,7	174,8	222,3	279,4
Weight (kg)	1	1,5	3	4,5	6	10	20	32
CLASS 300								
F2F (mm)	45	55	60	67	73	79	99	127
A (mm)	73,2	95,3	111,3	130,3	149,4	181,1	251	308,1
Weight (kg)	1	2	3,5	5	6,4	11	27	40
CLASS 600								
F2F (mm)	45	55	60	67	73	79	137	165
A (mm)	73,2	95,3	111,3	130,3	149,4	193,8	266,7	320,8
Weight (kg)	1	2	3,5	5	6,4	12,5	31,6	64
CLASS 900								
F2F (mm)	50	65	70	83	83	102	159	206
A (mm)	79,5	98,6	143	165,1	168,4	206,5	289,1	358,9
Weight (kg)	1	3	9	11	12	18,5	49	115

Weight is based on a classic density for steels : 7800 kg/m³

Note: This table describes the typical range of products. Other sizes or configurations are available on demand.
Data based on the API 594 Standard.

WEIGHT & DIMENSIONS TABLE

DISC CHECK **SOLID LUG**



Design acc. to API 594

Flanges acc. to ASME B16.5

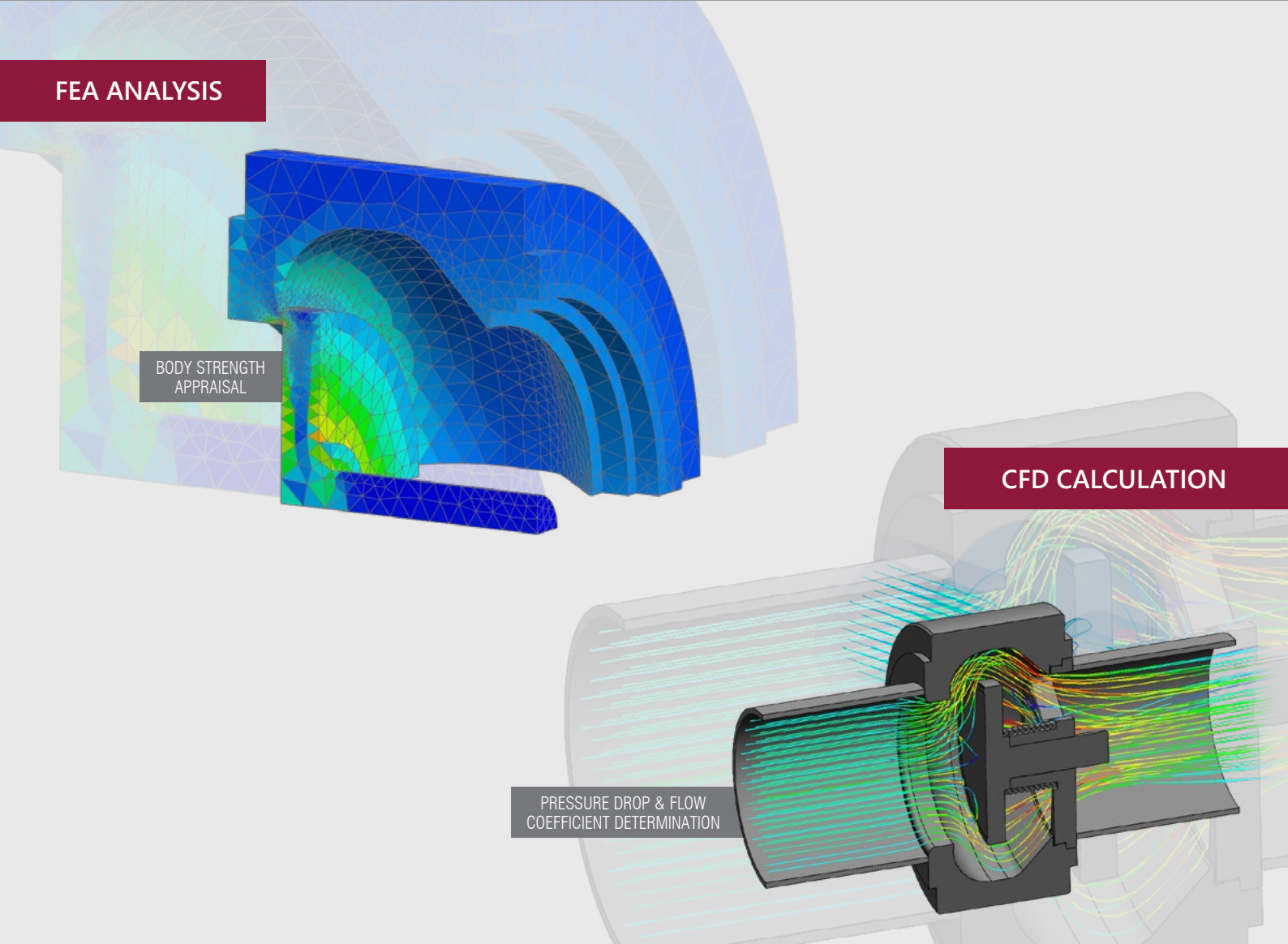
Seats: Metal-Metal
(soft seats available on request)

Connection: RF or RTJ
(HUB and BW available on request)

Size	25	40	50	65	80	100	150	200
	1"	1"1/2	2"	2"1/2	3"	4"	6"	8"
B (mm)	25	40	48	60	74	96	138	190
CLASS 150								
F2F (mm)	40	55	60	67	73	73	99	127
A (mm)	110	125	150	180	190	230	280	340
Weight (kg)	3,5	4,5	7	9,5	12	19	36	59
CLASS 300								
F2F (mm)	45	55	60	67	73	79	99	127
A (mm)	125	155	165	190	210	255	320	380
Weight (kg)	4	6	7,5	11	12,5	23	52	78
CLASS 600								
F2F (mm)	45	55	60	67	73	79	137	165
A (mm)	125	155	165	190	210	275	355	420
Weight (kg)	4	6	7,5	11	12,5	29,5	76,6	126
CLASS 900								
F2F (mm)	50	65	70	83	83	102	159	206
A (mm)	150	180	215	245	240	290	380	470
Weight (kg)	4,5	10	17	23	23	44,5	110	211

Weight is based on a classic density for steels : 7800 kg/m³

Note: This table describes the typical range of products. Other sizes or configurations are available on demand.
Data based on the API 594 Standard.



Gathering a dynamic team for research, design and process, we use advanced 3D modelling, finite element analysis and process simulation software to test the safety, the reliability and the energy-saving potential of our products.

Flow Coefficient (C_v) for standard Disc check valves

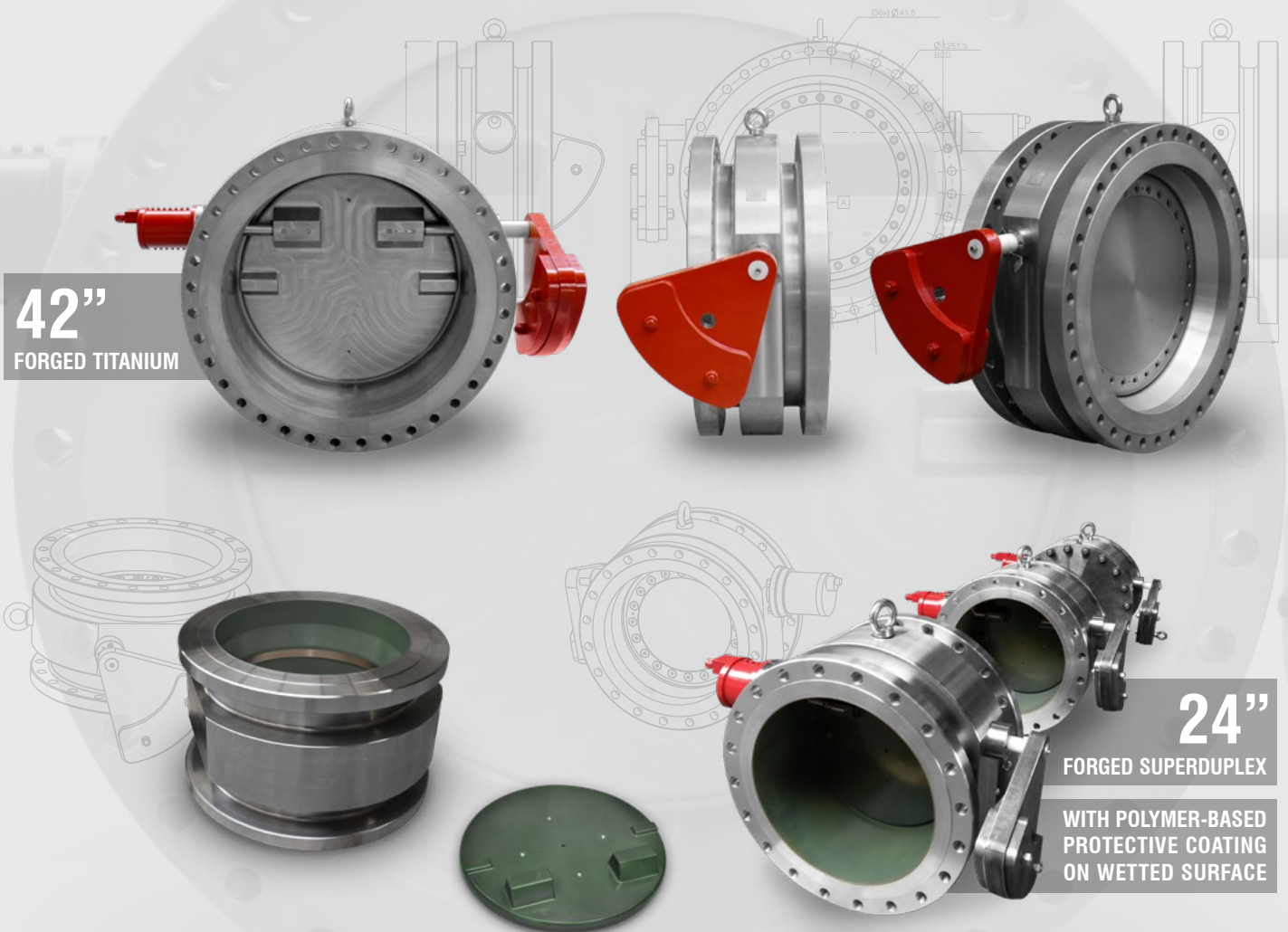
Size / Ratings	25	40	50	65	80	100	150	200
	1"	1"1/2	2"	2"1/2	3"	4"	6"	8"
150#	12	33	52	66	89	125	455	900
300#	11	33	52	66	89	120	455	900
600#	11	33	52	66	89	120	405	800
900#	10	31	48	60	75	105	355	650

* : available on demand

Note: The coefficients above apply to our standard design. Specific values can be reached upon request and after a design adaptation to the particular flow conditions of your project.

SPECIFICATIONS

- Non slam type
- With counterweights
- With rotational damping system
- Custom face to face
- Machined from forged material



42"
FORGED TITANIUM

24"
FORGED SUPERDUPLEX

WITH POLYMER-BASED
PROTECTIVE COATING
ON WETTED SURFACE

PROJECT DETAILS

- Project: Kårstø Gas processing facilities
- Scope:
 - 1 check valve 42" 150Lbs RF in Titanium B381 F2
 - 3 check valves 24" 150Lbs RF in Super Duplex A182 F55

.ICARUS



	CLASS 150	CLASS 300	CLASS 600	CLASS 900	CLASS 1500	CLASS 2500	API 6A 3,000	API 6A 5,000	API 6A 10,000
ON/OFF BALL VALVES									
Floating Ball & DBB	1/2" - 10"	1/2" - 8"	1/2" - 6"	1/2" - 2"	1/2" - 1"	-			
Trunnion Ball & DBB	1/2" - 24"			1/2" - 16"	1/2" - 12"	1 13/16" - 7 1/16"			
THROUGH CONDUIT GATE									
Slab Gate	2" - 24"			1" - 24"	1" - 24"	1 13/16" - 7 1/16"			
Double Expanding Gate	2" - 24"			1" - 24"	1" - 24"	1 13/16" - 7 1/16"			
CHECK									
Dual Plate Check	2" - 30"			2" - 24"		1 13/16" - 7 1/16"			
Other Check	Upon request								
CASTING									
Gate		2" - 18"	2" - 14"						
Globe	2" - 24"	2" - 14"	2" - 10"	2" - 10"	2" - 8"	-			
Check (Swing)		2" - 14"	2" - 10"						
FORGING									
Gate							1 13/16" - 4 1/16"		
Globe	1/2" - 2"						1 13/16" - 4 1/16"		
Check (Swing, Piston and Ball)							1 13/16" - 4 1/16"		

Industrial valves are our major products, in which we propose Floating & Trunnion Mounted Ball valves, Double Block & Bleed Ball valves, Gate, Globe & Check valves (casting and forging), Dual Plate check valves and Through Conduit Gate valves. Our valves are designed and manufactured to provide reliability for the longest service life possible.

Thanks to an advanced production system, strict quality control and inspection procedures, we guarantee excellent performance for every product manufactured by our group.

Valves are available in a complete range of body/bonnet materials and trim.

Detailed technical information will be provided upon request.

.ICARUS

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www.icarus-be.com

SACCAP COYARD & ICARUS Group can efficiently respond to all of your design requests and meet your quality requirements. Our different departments are experienced to provide technical advice, professional project management, equipment maintenance and after-sale services.

We look forward to cooperating with you in a near future!

We regret to say that we shall in no way be held liable for any error or consequences resulting from a possible error related to the information contained in this brochure. When sent to press all the information was checked and, to the best of our knowledge, is correct.

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