PROCO

The Expansion Joint and Check Valve People

ProFlex™ Rubber Check Valves Series 700

PROCO SERIES 700

The PROCO Series 700 *ProFlex*™ Rubber Check Valves are a cost effective way to control back pressures from sewage treatment plants, outfalls and tidal operations. They are a fully passive flow device requiring neither maintenance nor any outside sources of power or manual assistance to operate.

The PROCO Series 700 *ProFlex*™ Check valves are offered as direct replacements for ineffective and maintenance ridden flap type check valves, commonly known to seize, rust and bind in unwanted positions. Unlike flap type valves, the *ProFlex*™ rubber check valves will handle large obstructions without jamming or having swing gates binding open. Specify the PROCO Series 700 *ProFlex*™ rubber check valves to provide backflow protection from (1) Sewage slurries, (2) Outfalls to ocean fronts from heavy rainfall activity, (3) Prevention from land erosion due to back flow conditions, (4) Protection from saltwater to fresh water ponds and catch basins and numerous other water based applications. Our history in the manufacture of rubber piping products dates back to 1930. When an engineered solution is needed to solve a piping or backflow problem, call PROCO.

The Proco Series 700 ProFlex™ Rubber Check Valves are available in the following styles:

- **Style 710: Flanged**: Designed to bolt directly to existing flanges or new installations, flanges are drilled to ANSI 125/150# standard. Other drilling standards are also available upon request. The style 710 can be installed in either vertical or horizontal applications.

- **Style 710TT: Flanged Blending System Valves**: The Patented Torsionally twisted valve is designed to bolt directly on existing or any new installations. This valve is supplied to ensure proper mixing in potable water reservoirs and tanks. The torsional design ensures quick and accurate blending which provides a properly blended volume of potable water.

  The Hydraulic Blending Analysis provided by Proco (based on CFD and engineered scale modeling) supplies the contractor/end user with strategic location points for each valve. All valves will be ANSI/NSF-61 certified.

- **Style 711/731 Flanged/Slip-on Slope Bottom Check Valve**s: Designed for installation on pre-existing or new pipe lines such as manholes, outfalls, vaults, where the outfall invert of the pipe is close to the floor of the manhole or outfall. Can be engineered into the pipe layout with little concern for outfall clearance due to its "low slope" design.

Table 1: Available Materials • Temperatures

For Specific Elastomer Recommendations, See: **PROCO™ "Chemical To Elastomer Guide"**

PROCO Material Codes	Cover [3] Elastomer	Tube Elastomer	Maximum Operating Temp. °F (°C)	
BB	Chlorobutyl	Chlorobutyl	250°	(121°)
EE	EPDM	EPDM	250°	(121°)
NH	Neoprene	CSM	212°	(100°)
NN	Neoprene	Neoprene	225°	(107°)
NN-NSF61 [2]	Neoprene	Neoprene	225°	(107°)
PP	Nitrile	Nitrile	212°	(100°)
NR	Neoprene	Natural Rubber	180°	(82°)

Notes: ProFlex™ is a trademark of PROCO Products, Inc.
All products are reinforced with polyester tire cord.
1. Styles with Neoprene covers meet all requirements of U.S.C.G.
2. NN-NSF/61 UL Classified Water Quality
3. Other materials available. Please contact Proco Products

- **Style 720: Flanged In-line**: Designed to fit directly inside of an existing pipe. Supplied with a flat face rubber flange which allows installation between existing pipe flanges eliminating the requirement for a valve body. Flanges are drilled to ANSI 125/150# standard. Other drilling standards are also available upon request.

- **Style 730: Sleeve Type**: Designed to easily slip over an existing pipe, and is affixed with heavy-duty stainless steel clamps. Can be installed in either a vertical or horizontal application.

- **Style 730M: Molded Type**: Molded Type : A economical engineered valve, available in smaller pipe diameter ranging from 3/4" -6" nominal sch 40 pipe size.
  Designed to prevent odors and low back pressures from seeping back up the stream channel. Supplied with stainless steel gear clamps.

- **Style 730CBD: Coarse Bubble Diffusers**: Designed to provide excellent coarse bubble diffusion in settling ponds, tanks, reservoirs, Supplied with a stainless steel Hex nipple, PVC adapter and variable orifices, makes this the valve of choice.

- **Style 740: Slip In-Inline**: Designed to slip directly inside of an existing pipe. Supplied with a stainless steel expandable clamp to secure it in place.

- **Style 750: Jacketed**: Designed with a full metal enclosure which allows easy installation in existing piping systems. Utilizes the Style 710 as the check valve.

- **Style 770/780: Wafer Style**: Designed with a metal or plastic orifice plate and a rubber disk , this valve is an ideal valve to provide high back pressure capability on clean water applications.

- **Style 790: Low Headloss In-Line**: Designed as an all one piece constructed valve, the Style 790 is one of lowest headloss valves on the market. A passive flow device ensuring no delamination.

ELASTOMERS: All of the PROCO Series 700 *ProFlex*™ Rubber Check Valves are available in a various selection of elastomers including ANSI/NSF-61 certified product under UL Certification #MH47689. The PROCO Series 700 *ProFlex*™ Rubber Check Valves will not freeze or deform and function solely on the inlet and back pressures which will be present in each application.

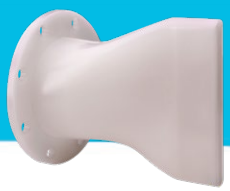
Each valve is carefully constructed using the finest of engineered materials and some of the most experienced rubber technicians in the industry. All check valves are engineered in precise detail to ensure proper operation and will provide years of unhindered operation and trouble free service.

Benefits of the PROCO Series 700 ProFlex™ Rubber Check Valves:

- **All rubber construction resists abrasive slurries**
- **Barnacle resistant Neoprene is standard construction, with ANSI/NSF-61 certified valves also available**
- **Very quiet operation with no water hammer**
- **Its unique design prevents backflow**
- **Negligible maintenance and energy costs**
- **Will not warp or freeze**
- **Quick interchange with any flap type check valve**
- **Available in sizes 1"– 96"**
- **Available with special I.D to suit concrete pipe**

Proco Style 710

ProFlex™ Flanged Rubber Check Valves



Proco Style 710TT

ProFlex™ ANSI/NSF-61 Flanged Blending System Valves

Covered by U.S. Patent No. 11,396,951

Proco Style 711

ProFlex™ Flanged Slope Bottom Check Valves

Covered by US Patent Number 11,221,081

Proco Style 720

ProFlex™ In-line Flanged Rubber Check Valves

Proco Style 730

ProFlex™ Slip-on Rubber Check Valves

Proco Style 730M

ProFlex™ Low Pressure Molded Rubber Check Valves

Proco Style 730CBD

ProFlex™ Coarse Bubble Diffusers

Proco Style 731

ProFlex™ Slip-on Slope Bottom Check Valves

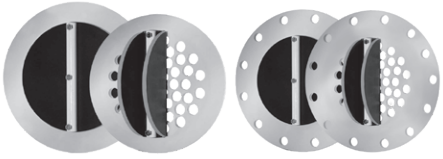
Covered by US Patent Number 11,221,081

Proco Style 740

ProFlex™ Slip-in Style In-line Rubber Check Valves

Proco Style 750

ProFlex™ Jacketed In-line Flanged Rubber Check Valves



Proco Style 770/780

ProFlex™ Wafer Style In-line Flanged Rubber Check Valves

Proco Style 790

ProFlex™ Low Headloss In-line Rubber Check Valves

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PROCO STYLE 711

ProFlex™ Flanged Slope Bottom Check Valves

The **Proco Style 711 ProFlex™** check valves are engineered for installation on pre-existing pipe lines such as manholes, outfalls, vaults, where the outfall invert of the pipe is close to the floor of the manhole or outfall. When a new installation is being designed, the 711 valves can be engineered into the pipe layout with little concern for outfall clearance due to its "low slope" design.

The new Style 711 check valves allow the valves to be installed without any costly and labor intensive changes to the existing structure. The 711 is engineered to crack open at 1-2" of head pressure and with its unique engineered sloping bottom, the valve ensures zero potential for standing water. With its all elastomer design, the valve can be installed without concern for the future seizing or rusting which can cause premature failure and maintenance issues.

How Does it Work?

The advantage to the Style 711 is the sloping bottom which has been developed to offset the issues commonly affiliated with other flat bottom valves which often entrap solids and flows due to its design. The 711 has been carefully designed to prevent this issue and has a minimal slope which allows complete drainage yet still ensures easy installs on minimal clearance areas.

The Style 711 has been engineered to provide a full port which is important in dealing with headloss and jet velocities.
The valve is manufactured with 100% algae and barnacle resistant rubber and is also 100% fire resistant.

Advantages:

- Unique bottom slope design ensures 100% drainage
- Installs in flat outfall designs
- Available in both flanged and slip-on design
- An excellent choice for manholes and outfall installation
- Ensures sealing from rubbish and small solids

Materials of Construction

All ***ProFlex*™ 711** Rubber Duckbill Check Valves are supplied with 316ss retaining rings and can also be supplied with 304ss, Galvanized, Epoxy coated, FRP material if required or Encapsulated Steel Rubber Flange.

Style 711

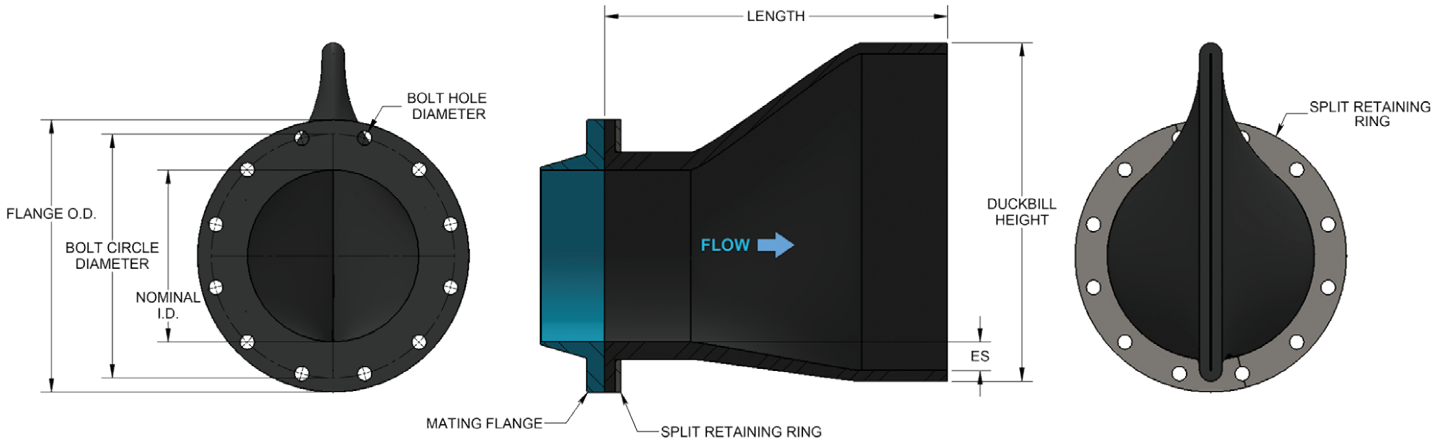
Diameter		Standard Dimensions						Approx. Weight	
		Length		Duckbill Height		Eccentric Slope			
in.	mm	in.	mm	in.	mm	in.	mm	lbs	kgs
4	100	10.9	276	8.7	222	1.0	25	15	6.8
6	150	13.3	338	14.9	378	2.0	50	23	10.4
8	200	14.1	359	17.9	454	2.0	50	36	16.3
10	250	17.8	451	20.4	518	2.0	50	52	23.6
12	300	23.8	605	23.9	608	2.0	50	53	24.0
14	350	25.2	640	26.7	678	2.0	50	64	29.0
16	400	27.8	705	31.0	788	2.0	50	93	42.2
18	450	29.9	760	33.0	838	2.0	50	135	61.2
20	500	30.9	785	37.7	958	2.0	50	155	70.3
24	600	38.2	970	43.1	1096	2.0	50	235	106.6
30	750	44.0	1118	53.2	1352	3.0	76	565	256.3
32	800	45.3	1150	54.5	1384	3.0	76	618	280.5
36	900	52.4	1330	66.5	1690	3.0	76	725	328.9
40	1000	52.8	1340	69.5	1766	3.0	76	852	386.3
42	1050	55.0	1398	71.6	1818	3.0	76	915	415.0
48	1200	60.6	1540	81.5	2070	3.9	100	1035	469.5
54	1350	63.6	1615	89.8	2280	3.9	100	1165	528.4
60	1500	67.5	1715	94.9	2410	3.9	100	1255	569.3
64	1600	68.5	1740	101.6	2580	3.9	100	1367	619.9
66	1650	69.7	1770	103.9	2640	3.9	100	1423	645.2
72	1800	74.8	1900	115.9	2945	3.9	100	1590	721.2
78	1950	79.1	2010	124.0	3150	3.9	100	1758	797.2
84	2100	87.8	2230	125.6	3190	3.9	100	1925	873.2
96	2400	94.9	2410	137.4	3490	3.9	100	2260	1025.1

Notes: Higher back pressures can be provided by using internal vacuum supports and/or engineered Hi-Tensile reinforcement, contact PROCO.

1. *Dimensions are approximate and may change due to pipe dimension changes, inlet, back pressures and flow rates.*
2. *Larger sizes available upon request.*
3. *Weights are approximate.*

The ProFlex™ Slope-Bottom Style 711 & 731 Check Valves are covered by US PATENT NUMBER 11,221,081

Detail of the ***ProFlex***™ Flanged/Slip-On Slope Bottom Check Valve; Style 711



The ProFlex™ Slope-Bottom Style 711 & 731 Check Valves are covered by US PATENT NUMBER 11,221,081

Frequently Asked Questions

ProFlex™ Check Valves

1. Does the *ProFlex*™ rubber check valve have to be installed in a certain position?
Yes; it should be installed in a vertical position with the bill being the vertical. In zero clearance situations the valve can be rotated up to 30-35 Deg to gain bottom clearance if required.

2. In which degree can the *ProFlex*™ rubber check valve be installed?
Because the valve is not reliant on any hinges, gates, or weights the *ProFlex*™ rubber check valve can be installed in any angle from vertical to horizontal.

3. What is "Back Pressure"?
When the *ProFlex*™ rubber check valve is submerged in a liquid it is subjected to external pressure. It is critical that the maximum depth that the valve will be submerged is specified as this will be considered the maximum back pressure that the valve will be subjected to.

4. What is the cracking pressure to allow the valve to open?
It typically takes 1" to 2" of head pressure over back pressure to crack open all 700 series valve(s). For the Series 790 it will take approximately 33-50% of pipe diameter to flush the valve completely. Contact Proco for further assistance.

5. What back pressures can the *ProFlex*™ rubber check valve withstand?
Back pressures are in direct relation to the size of the valve, on the smaller diameters it is acceptable to specify up to 200 psi of back pressure and on larger diameters a back pressure limitation would be approximately 12 psi. Each *ProFlex*™ rubber check valve is manufactured to the exact line pressure, back pressure and flow rates which we require from you for manufacture. Proco can even supply valves up to 650 psi utilizing internal back pressure supports.

6. What are the most common installations?
The *ProFlex*™ 710 flanged rubber check valve is bolted directly to a head wall replacing an existing flap gate, the *ProFlex*™ 730 sleeved type rubber check valves are clamped directly to a fabricated flanged nipple or clamped directly to an existing pipe.

7. Can I use the *ProFlex*™ rubber check valve on potable water applications?
The *ProFlex*™ rubber check valves are available with an ANSI/NSF-61 certified elastomer. Due to the large demand for clean water and potable applications, this will eliminate the concerns commonly affiliated with contaminants or leaching of elastomers in potable water systems.

8. Can the *ProFlex*™ rubber check valve be installed on an "out of round" pipe?
Yes, please have the approximate dimensions from 4 different angles to provide proper sizing.

9. Can river currents and ocean waves damage the valves?
In most cases river currents and ocean waves will not damage the *ProFlex*™ rubber check valves, but if currents or waves in question are of an abnormal nature, it is suggested that side walls or rock pilings are utilized.

10. Can the *ProFlex*™ rubber check valve be used as a pressure relief valve?
The *ProFlex*™ rubber check valves have been designed to offer superior service as a backflow preventer and can also be considered as a pressure relief valve. Often used on reservoirs to prevent hydraulic lifting or floating of tanks.

11. Can PROCO make a special design to suit my requirements?
In most instances the *ProFlex*™ rubber check valve can be fabricated to suit different applications. Contact PROCO for your requirements.

12. What types of elastomer are available?
The *ProFlex*™ rubber check valves can be manufactured and supplied to withstand almost any type of media. Most commonly supplied is a barnacle and algae resistant Neoprene. Other common elastomers are EPDM, Nitrile, Natural Rubber, and elastomers to meet ANSI/NSF-61 and ANSI/NSF-372 specifications.

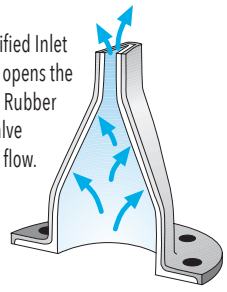
13. What types of materials are available for the backing rings and banding clamps?
ProFlex™ rubber check valves are supplied with 316 stainless steel backing rings and 304 stainless steel clamps as a standard. Other materials are available upon request.

14. Can the *ProFlex*™ 710 be supplied with special flanges or drilling?
Yes, the standard drilling pattern is ANSI 125/150# drilling, other drilling standards such as: ANSI 250/300#, BS-10, DIN NP-10 and DIN NP-16, JIS-5k and JIS-10K are available upon special request.

15. Can I install a *ProFlex*™ rubber check valve near a residential area?
Yes, one of the unique features of the *ProFlex*™ rubber check valve is the design of the bill section. While the bill will open and allow passage of fluid when head pressure is present, the bill will close and not allow children or animals to crawl inside when there is no head pressure.
Since the *ProFlex*™ rubber check valve is manufactured entirely of rubber compounds there is no chance of loud banging which is commonly heard from flap type valves.

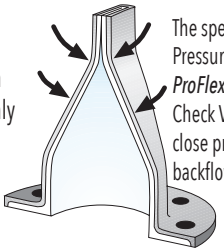
16. Can I use a *ProFlex*™ rubber check valve in winter conditions?
Yes, as in any installation the *ProFlex*™ rubber check valve will not be hindered by winter or sub-zero installations. If the valve is installed in a running water application the valve will continue to operate satisfactorily, due to the elastomers unique chemical makeup. If unusual circumstances occur the *ProFlex*™ rubber check valve will freeze without any damage and will return to operation upon thaw.

17. Will the *ProFlex*™ rubber check valve operate if buried in sand or sediment?
In normal conditions the discharge flow will create a small flow pattern which will then be followed by the flow velocity of the media. This velocity will flush the rest of the sediment away from the valve opening. This has been found to be unique only to the straight bill design as supplied by Proco.


The specified Inlet Pressure opens the *ProFlex*™ Rubber Check Valve allowing flow.

18. What is the maximum temperature that the *ProFlex*™ rubber check valve can handle?
Temperature can range from – 65 Deg to +400 Deg depending on the specified elastomer.

19. What is the life expectancy of the *ProFlex*™ Rubber check valves?
All of the *ProFlex*™ valves are manufactured with the highest grade of elastomers, which commonly are known to supply 35-50 years of service life.


The specified Back Pressure forces the *ProFlex*™ Rubber Check Valve to close preventing backflow.

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