

# Masoneilan™ 74000 Series

Erosion Resistant  
Control Valves



# Table of Contents

Features .....	2	General Data.....	4
High Performance Materials.....	2	74000 Series Specifications.....	5
74000 Series Heavy Oil Valve.....	2	74000 Series Materials .....	6-9
Numbering System.....	3	74000 Series Dimensions.....	10

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## Features

Masoneilan™ 74000 Series erosion resistant valves are designed for special applications such as hydrocarbon service involving severe operating conditions where high temperatures and/or high pressures, high pressure drops, severe coking conditions, erosive fluid particles, and flashing liquids are encountered. They are particularly adapted to pressure or level control systems and emergency blowdown or dropout service.

The inner body contours are streamlined to give maximum throat efficiency and freedom from erosion and to eliminate pockets causing flow reversal and eddy currents.

Provision is made for the introduction of a flushing medium which may be necessary when passing fluids containing solid particles, or to prevent coke formation in refinery service at extremely high temperatures.

The direct actuator is used air-to-push-down action and the reverse actuator for air-to-push-up action. Direct or reverse actuator can be used, depending on action desired.

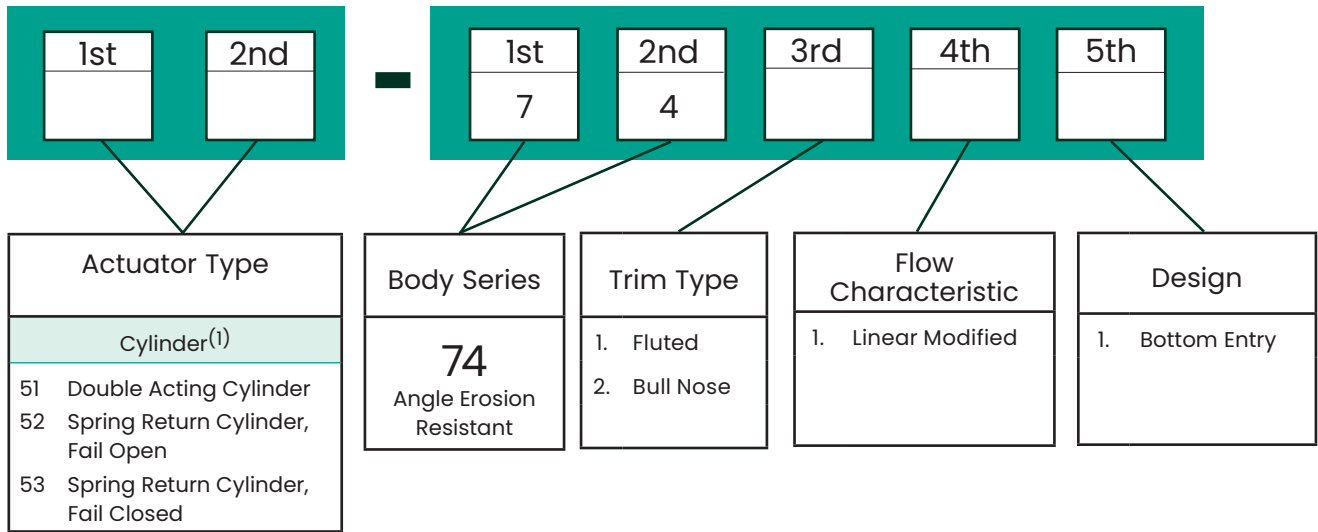
## High Performance Materials

Materials of construction have been selected for high performance and long life.

## Heavy Oil Valve

The Masoneilan 74000 series control valve is designed to properly handle the difficult service associated with resid hydroprocessing of heavy oils. Such applications commonly include high temperatures, high pressures, erosive particulate and multi-phase flow. The 74000 series is designed as the superior solution for these application difficulties.

# Numbering System



1. Piston actuator preferred solution for stability purpose.

# 74000 Series Control Valve

## Rugged Design

The 74000 Series control valve is designed with rugged top guiding to resist vibration associated with high pressure letdown or multi-phase service. Designs featuring Masoneilan's axial flow fluted plug provide additional lower guiding for added stability and vibration resistance. High thrust and high stiffness actuation further extends service life in difficult applications.

## Hardened Trim

The 74000 Series is designed for severely erosive applications and thus requires specialty materials to provide high hardness on critical surfaces. Trim components include application-specific materials including tungsten carbide on moving components and ceramics on stationary components.

## Options

- Fluted plug for improved control
- Dual guiding for added stability
- Flushing connection to prevent coking

## Typical Applications

- Resid Hydroprocessing
- Extremely Erosive Hydrocarbons

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## General Data

### Flow

**Direction** Flow-To-Close (FTC)

### Body

**Type:** Angle Body

**Sizes:** 1" to 12" (DN 25 to 300)  
with expanded outlets  
(see following Specification Table)

**Ratings:** ASME Class 600 and ASME Class 2500

**End**

**Connections:** Flanged or Hubs

### Trim

**Plug type:** Bull Nose: Top Guided  
Fluted: Top and Bottom Guided

**Trim size:** Full capacity  
Reduced capacity

**Seat leakage:** Class IV (standard)

**Cv Ratio:** 50:1

**Flow**

**Characteristic:** Modified Linear

**Bonnet Type** Integral

### Actuator

**Mounting:** Direct mount

**Type:** Double-acting cylinder  
Spring return cylinder

### Construction

**Type** Two-piece body  
(see page 9 tables)

### Materials

**Body :** 347 Stainless Steel

**Trim :** Inconel 718, Ceramic &  
Tungsten Carbide  
(See Materials Table)

# 74000 Series Specifications

## Rating Pressure Class 2500

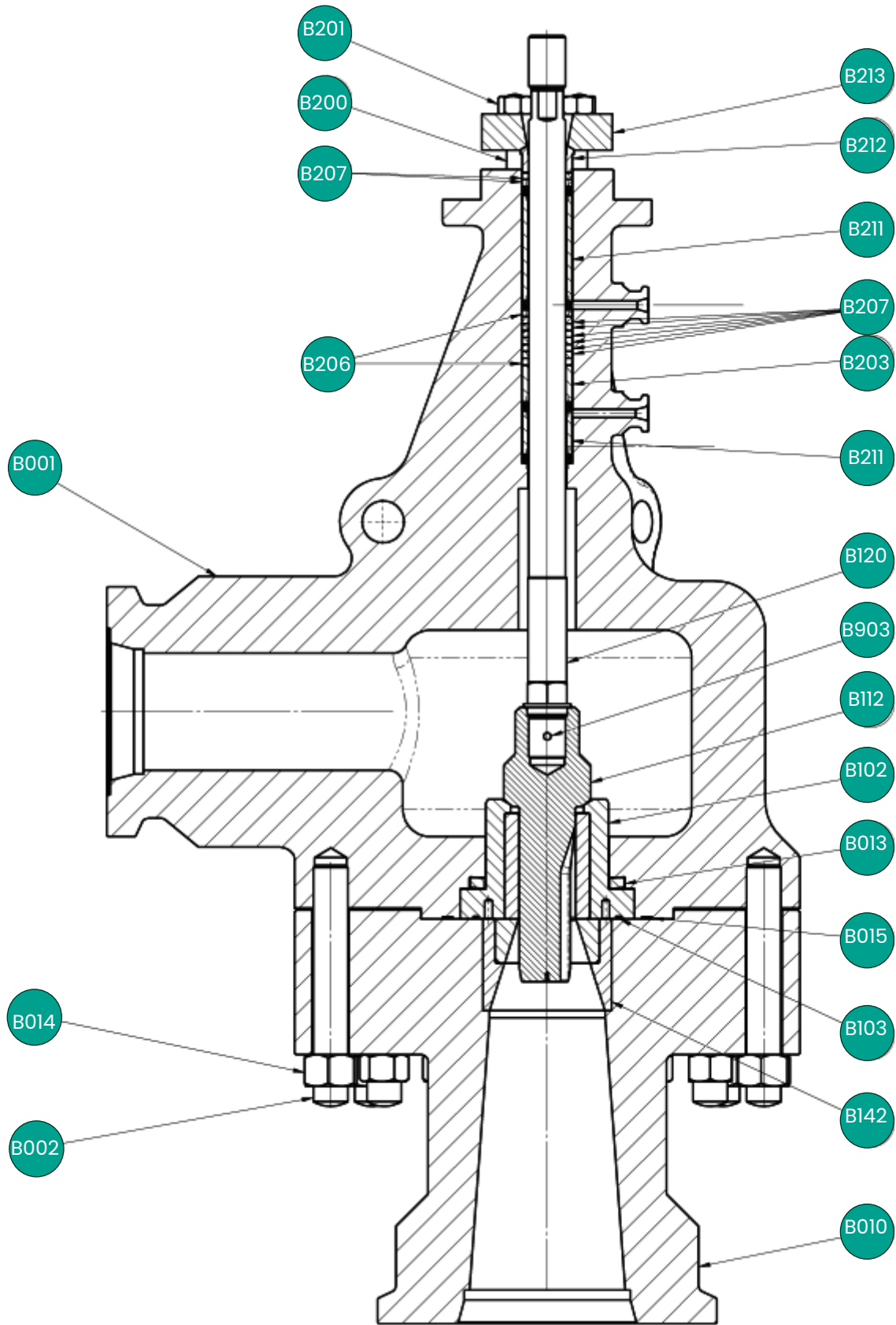
Size	Trim	Size	Rating	End Connection	Trim Fluted	Trim Bull Nose
Inlet (in)	Inch	Outlet (in)	Pressure Class		Cv	Cv
2	2	3	CL2500	HUB/RTJ	7	18
3	2 Reduced	4			12	18
3	2	4			22	30
4	3	6			35	40
6	4 Reduced	8			55	65
6	4	8			95	120
8	6 Reduced	10			95	120
8	6	10			155	215
10	8	12			260	340

## Rating Pressure Class 600

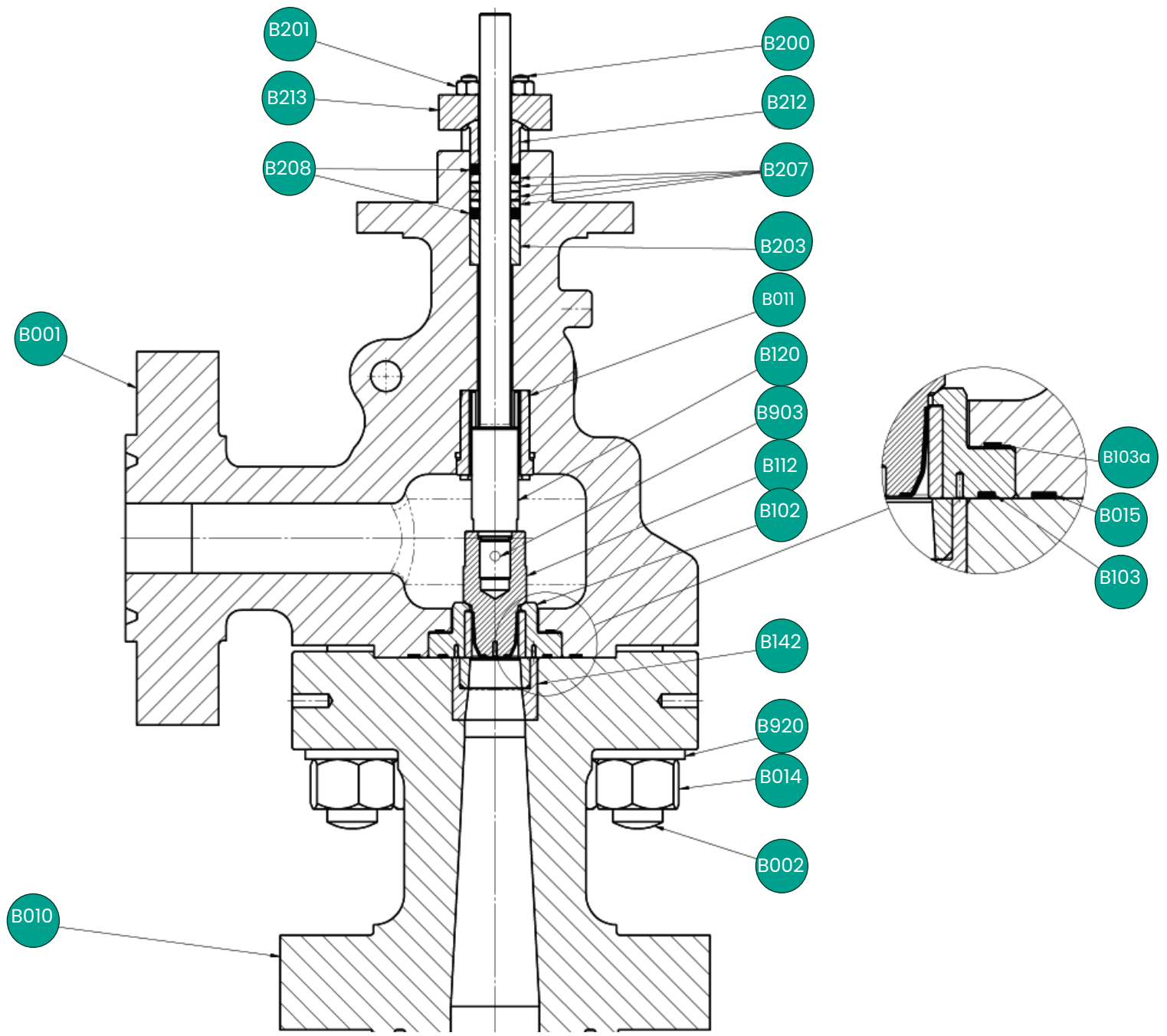
Size	Trim	Size	Rating	End Connection	Trim A Fluted	Trim B Bull Nose
Inlet (in)	Inch	Outlet (in)	Pressure Class		Cv	Cv
4	4 Reduced	6	CL600	RF/RTJ	55	65
4	4	6			95	120
6	6 Reduced	8			95	120
6	6	8			155	215
6	8	8			260	340
8	10 Reduced	10			400	560
8	10	10			530	730

1. Outlet Size is always larger than inlet size to allow for fluid vaporization.

# 74000 Series Materials



74000 Series with fluted trim, hubbed ends, and flashing and leak off connections



74000 Series with bull nose trim and RTJ flanged ends

# 74000 Series Materials

TAG	VALVE BODY S/A PART DESCRIPTION	TAG	VALVE BODY S/A PART DESCRIPTION
B001	VALVE BODY	B015	BODY GASKET
B707	LEAK OFF FLANGE	B010	LOWER FLANGE
B707	FLUSHING FLANGE	B014	BODY NUT
B711	GASKET BODY CONNECTION	B002	BODY STUD
B119	PLUG/STEM S/A	B920	BODY NUT FLAT WASHER (For CL2500)
B112	FLUTED OR BULL NOSE PLUG	B203	UPPER GUIDE BUSHING
B120	PLUG STEM	B011	BULL NOSE GUIDE
B903	PLUG PIN	B211	PACKING/PURGING SPACER
B103	SEAT RING GASKET	B207	PACKING RING
B103a	SEAT RING UPPER GASKET (FOR TRIM ≤ 2")	B208	ANTI EXTRUSION RING
B013	CONICAL SPRING (FOR TRIM >2")	B212	PACKING FOLLOWER
B102	SEAT RING S/A	B213	PACKING FLANGE
B102a	SEAT RING HOUSING	B200	PACKING STUD
B102b	SEAT RING INSERT	B201	PACKING NUT
B142a	VENTURI HOUSING	B714	DISC SPRING
B142b	VENTURI INSERT		

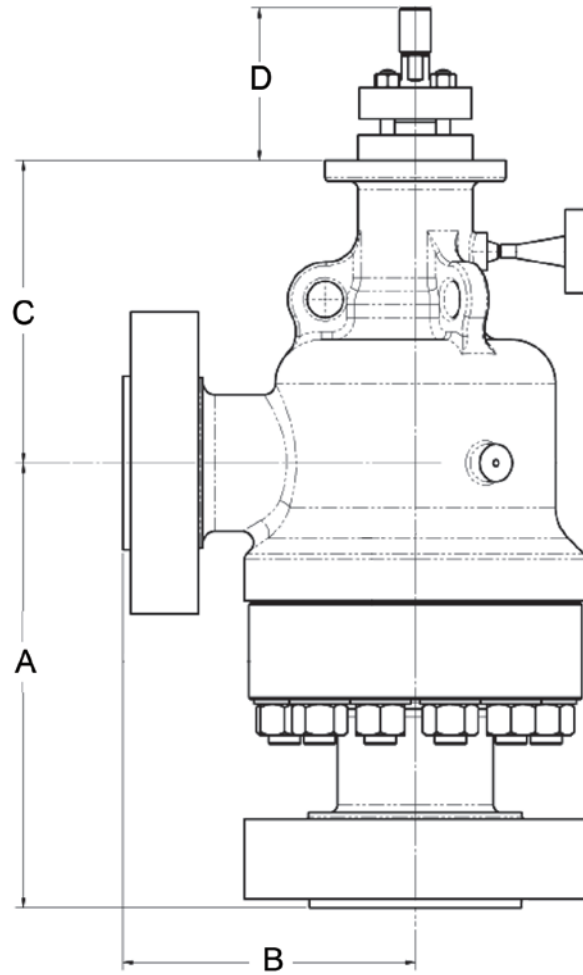


## Valve Body Construction: CF8C (347) Stainless Steel

74000 347 Stainless Steel Construction is PED compliant and NACE MR 01-03 and MR 01-75 2002 and before.

Ref. No.	Temperature Range	
	-29°C [-20°F]	480°C [896°F]
	Description	Standard Materials
	VALVE BODY S/A	GENERAL SUB-ASSEMBLIES
B001	VALVE BODY	ASTM A351 GRADE CF8C
B030	LEAK OFF FLANGE	ASTM A182 GRADE F347
B031	FLUSHING FLANGE	ASTM A182 GRADE F347
B112	FLUTED OR BULL NOSE PLUG	ASTM B637 GRADE NO7718 Tungsten Carbide Hard Facing
B112	BULL NOSE PLUG	STELLITE 6B (UNS R30016) + TUNGSTEN CARBIDE
B120	PLUG STEM	ASTM B637 GRADE NO7718
B903	PLUG PIN	ASTM B637 GRADE NO7718
B103	SEAT RING GASKET	316L ST ST SPIRAL W/ GASKET + GRAPHITE FILLER
B103a	SEAT RING UPPER GASKET (FOR TRIM ≤ 3")	316L ST ST SPIRAL W/ GASKET + GRAPHITE FILLER
B013	CONICAL SPRING (FOR TRIM >3")	INCONEL X-750
B102a	SEAT RING HOUSING	ASTM B637 GRADE NO7718
B102b	SEAT RING INSERT	CERAMIC
B142a	VENTURI HOUSING	ASTM B637 GRADE NO7718
B142b	VENTURI INSERT	CERAMIC
B015	BODY GASKET	316L ST ST SPIRAL W/ GASKET + GRAPHITE FILLER
B010	LOWER FLANGE	ASTM A351 GRADE CF8C
B014	BODY NUT	ASTM A194 Grade 8 (NACE NON EXPOSED) ASTM A194 Grade 8A (NACE EXPOSED)
B002	BODY STUD	ASTM A453 Grade 660
B920	BODY NUT FLAT WASHER (For CL2500)	SOLUTION ANNEALED 316L STAINLESS STEEL
B203	UPPER GUIDE BUSHING	STELLITE NO.6 OR EQUIVALENT
B203a	BULL NOSE GUIDE	HARDFACING STELLITE NO.6 ON SOLUTION ANNEALED 347H STAINLESS STEEL
B211	PACKING/PURGING SPACER	SOLUTION ANNEALED 347 STAINLESS STEEL
B207	PACKING RING	EXFOLIATED GRAPHITE
B208	ANTI EXTRUSION RING	EXFOLIATED GRAPHITE
B212	PACKING FOLLOWER	SOLUTION ANNEALED 316L STAINLESS STEEL
B213	PACKING FLANGE	SOLUTION ANNEALED 316L STAINLESS STEEL
B200	PACKING STUD	ASTM A193 Grade B8 Class 2 (NACE NON EXPOSED) ASTM A193 GR B7M, ELECTROLESS NICKEL PLATING (NACE EXPOSED)
B201	PACKING NUT	ASTM A194 Grade 8 (NACE NON EXPOSED) ASTM A194 Grade 2HM, Electroless Nickel Plating (NACE EXPOSED)
B714	DISC SPRING	ASTM B637 ALLOY NO7718
B704	FLOW ARROW	AUSTENITIC STAINLESS STEEL
B703	SERIAL PLATE	GENERAL SERVICE ANNEALED 316L STAINLESS STEEL
B017	DRIVE NUT	LOW CARBON STEEL DICHROMATE ZINC PLATED
B017	SCREW BODY/ACT. YOKE	A4-80 (ISO 3506) 316L STAINLESS STEEL

# 74000 Series Dimensions (mm)



Valve Size	ANSI Class	End Connection	A	B	C	D	Approx. Mass [kg]
2x2x3	CL2500	RTJ	392.5	285	274.5	154	230
2x2x3	CL2500	HUB	392.5	285	274.5	154	N/A
3x2x4	CL2500	RTJ	412.5	305	274.5	154	277.5
3x2x4	CL2500	HUB	412.5	305	274.5	154	N/A
4x3x6	CL2500	RTJ	480	355	307	154	420
4x3x6	CL2500	HUB	480	355	307	154	N/A
6x4x8	CL2500	RTJ	715	470	486	208	1270
6x4x8	CL2500	HUB	715	470	486	208	N/A
8x6x10	CL2500	RTJ	847.5	610	TBD	227	TBD
8x6x10	CL2500	HUB	847.5	610	TBD	227	N/A
10x8x12	CL2500	RTJ	921	710	563	227	2796
10x8x12	CL2500	HUB	921	710	563	227	N/A

Valve Size	ANSI Class	End Connection	A	B	C	D	Approx. Mass [kg]
4x4x6	CL600	RF or RTJ	399	295	313	154	243
6x6x8	CL600	RF or RTJ	651	388	404	157	796
6x8x8	CL600	RF or RTJ	658	388	404	157	TBD
8x10x10	CL600	RF or RTJ	674	415	463	159	951

Note: Measurements are in mm.



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