CNC FLOW CONTROL

NON-SLAM PISTON CHECK VALVE

Guardian Series

C&C

C&C is a product brand of CNC Flow Control

ABOUT CNC FLOW CONTROL

Founded in 2017, CNC Flow Control is new only in name. Headquartered in Houston, this single business entity unifies several trusted valve and flow line brands from across industry, creating an experienced, collaborative and diverse team. From extensive, long range projects to same-day delivery of commodity valves, our team is dedicated to understanding customers' needs in order to ensure exceptional service and the best solutions.

A full service Valve Repair & Modification Shop is on site at the manufacturing facility as well as an in-house engineering team for technical assistance and expertise. Product brands in the CNC Flow Control family include C&C, SMITH, Diamond Gear, Econ and Force.

ABOUT C&C

C&C's breadth of available products is diverse. From hammer unions to ball valves, C&C products complement most any stocking portfolio. C&C has provided the market with quality valves and fittings for nearly two decades. Today, C&C products are seen in almost all upstream oil and gas applications throughout North America.

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FLOW CONTROL SOLUTIONS FOR THE PETROLEUM & NATURAL GAS INDUSTRIES

Industry Specific Solutions

Production, transportation, storage and processing of oil and gas require the highest quality piping components. This is our world.

In conjunction with our sister companies, we supply customers with valves, hammer unions, couplings, gears, connectors, actuators and other valve accessories for high pressure process and piping for oil and gas facilities, both above ground and offshore.

World Class and Worldwide Service

We are dedicated to providing our customers with the best — the best brands, the best service and the best quality. Whether you require an automated valve for a highly engineered project or a replacement valve delivered same day, we are here to help. Our industry experience, product selection and access to a global network of partners enable us to tailor a solution to solve your most difficult problem.

Expanding Our Product Portfolio

While others are collapsing their portfolios and cutting costs, we have an aggressive strategy to provide complimentary products to currently served markets and increase service levels in order to establish ourselves as your single source provider for valve and flow control solutions.

Guardian Series piston-style check valves are designed for horizontal service. They must be special ordered for vertical flow service when intended for that purpose.

STANDARDS

- Design/Materials: API 6D, ASME B16.34
- End to End: ASME B16.10
- Flanged End: ASME B16.5
- Testing: API 598/API 6D, CSA Z245.15-17
- API 6D Monogrammed
- PED 2014/68/EU

SPECIFICATIONS

- Sizes 2” – 12”
- Class 150 – 1500
- Full Material Traceability
- Large Material Selection
- 100% Factory Testing
- Non-Slam Design
- Conforms to NACE MR0175/ISO 15156

APPLICATIONS

- Compression Stations
- Metering Skids
- Gas Gathering
- Natural Gas Plants
- Reciprocating Compressors
- Chemical Processing

DESIGN HIGHLIGHTS

1 ACCESSIBILITY
Full accessibility to valve internals through the cover means reduced maintenance down time.

2 SPRING LOADED
Valve is spring assisted to ensure piston is seated and positive shutoff is achieved.

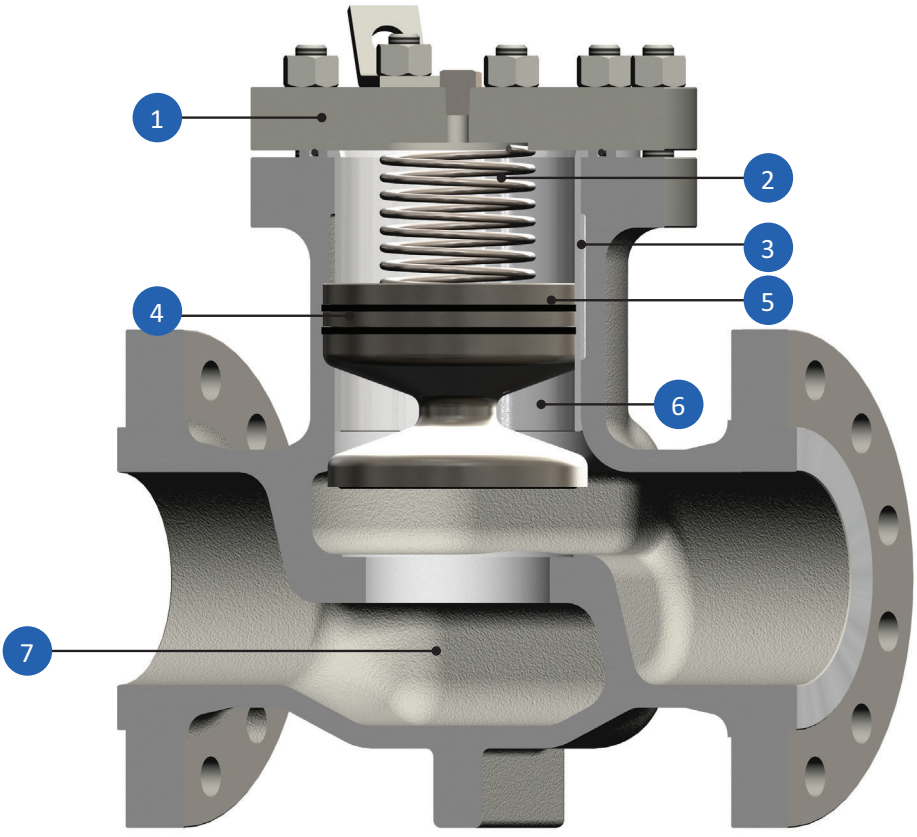
3 SLEEVE
Positively retained sleeve with smooth finish provides long lasting, trouble free operation.

4 FAST ACTING
Quick opening is achieved by installation of a ball check valve located inside the piston.

5 ORIFICE
By dampening the piston's response to changes in flow, the orifice is able to control the closing speed of the non-slam piston design.

6 BACKFLOW
The design of the piston is such that the greater the backflow pressure, the tighter the seal between the body and piston.

7 APPLICATION SPECIALIST
The piston check valve succeeds where other check valves fail - pulsating and reciprocating applications. The unique design of the piston check orifice is specially suited to dampen the piston's response to sudden or rapid changes in flow, typically found immediately downstream of a pump or compressor.

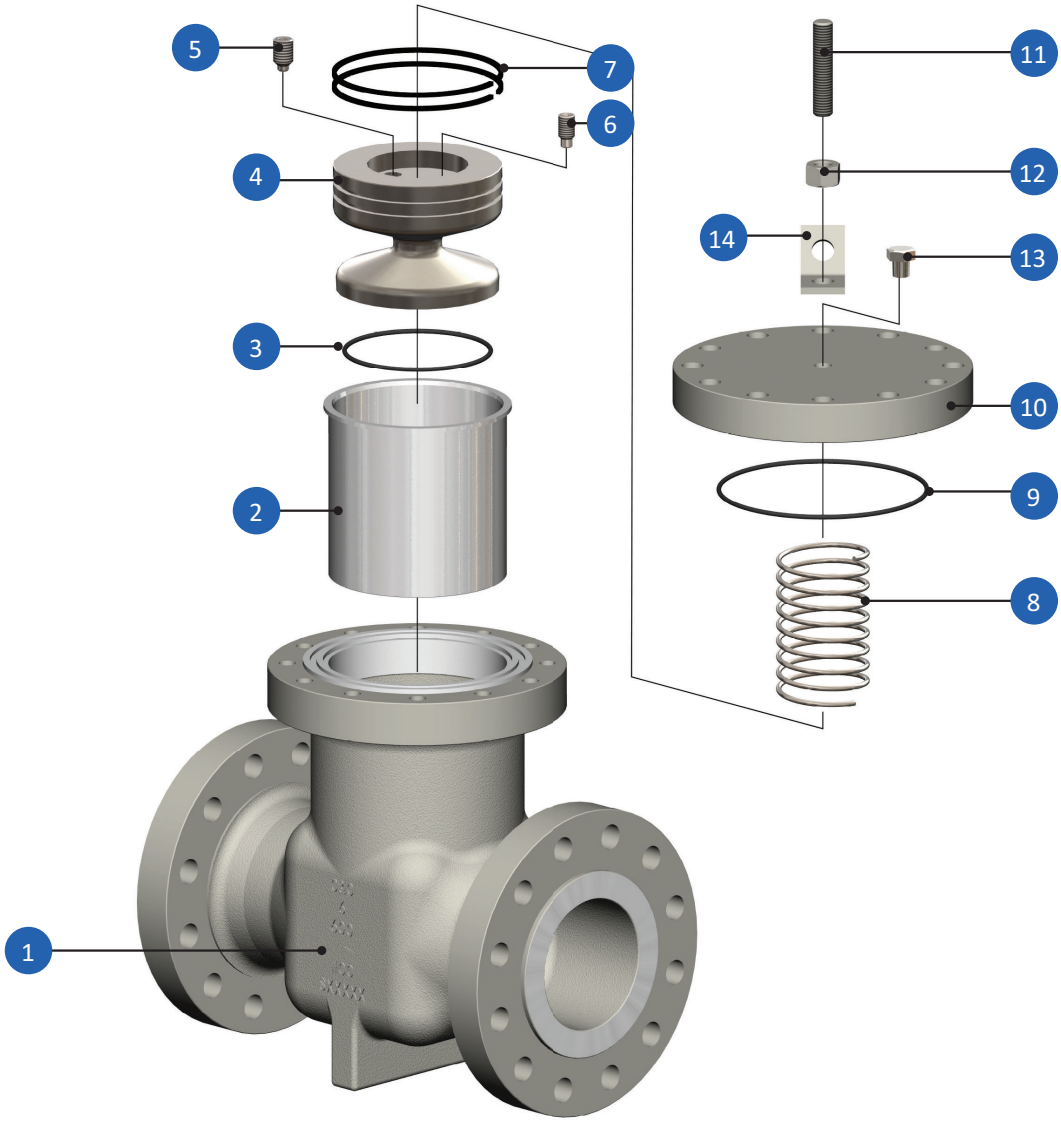


STANDARD MATERIALS OF CONSTRUCTION

ITEM	COMPONENT	MATERIAL	SPECIFICATION
1	**Body**	Carbon Steel + 410 Overlay	ASTM A216 WCC+ UNS S41000
2	**Liner**	Carbon Steel	AISI 1020 + ENP
3	**Piston Seal**	Rubber	LT HNBR 90
4	**Piston**	Stainless Steel	ASTM A182 F6a
5	**Ball Check Valve**	Stainless Steel	ASTM A276 316
6	**Orifice Screw**	Carbon Steel	ASTM A193 B7M
7	**Piston Ring**	Carbon Steel	AISI 1066/Nitriding
8	**Spring**	Inconel® X-750	UNS N07750

ITEM	COMPONENT	MATERIAL	SPECIFICATION
9	**Cover Seal**	Rubber	LT HNBR 90
10	**Cover**	Carbon Steel	ASTM A105N
11	**Stud**	Carbon Steel	ASTM A193 B7M
12	**Nut**	Carbon Steel	ASTM A194 2HM
13	**Plug**	Stainless Steel	ASTM A276 316
14	**Lifting Lug**	Carbon Steel	ASTM A283 Gr.D

Consult factory for list of material options and specifications per valve size and pressure class, as components may vary according to design.



HOW TO ORDER

EXAMPLE:

A 6”, Class 600, API 6D Non-Slam Piston Check Valve with Raised Face Flanged End Connections, WCC Carbon Steel Body, 410 SS Piston with Integral Seats and LT HNBR 90 Seals is written as 606PCNRC4IB.

A	B	C	D	E	F	G	H	I
6	06	PC	N	R	C	4	I	B

A	Size	
	INCHES	DN
2	2"	50
3	3"	80
4	4"	100
6	6"	150
8	8"	200
10	10"	250
12	12"	300

B	Pressure Class
01	Class 150
03	Class 300
06	Class 600
09	Class 900
15	Class 1500

C	Valve Type
PC	API 6D Non-Slam Piston Check Valve

D	Port
N	Full (Non-Piggable)

E	End Connection
R	RF Flange
J	RTJ Flange

F	Body Material	
C	Carbon Steel	ASTM A216 WCC
L	Low Temperature Carbon Steel	ASTM A352 LCC
S	Stainless Steel	ASTM A351 CF8M

G	Piston Material	
4	410 Stainless Steel	ASTM A182 F6a Cl.2
S	316 Stainless Steel	ASTM A182 F316

H	Seat Material
I	Integral

I	Seal Material
B	LT HNBR 90
V	LT Viton® 90

Warning: Metallic materials selected using ANSI/NACE MR0175/ISO 15156 are resistant to cracking in defined H2S containing environments in oil and gas production but not necessarily immune to cracking under all service conditions. It is the equipment user’s responsibility to select materials suitable for the intended service.

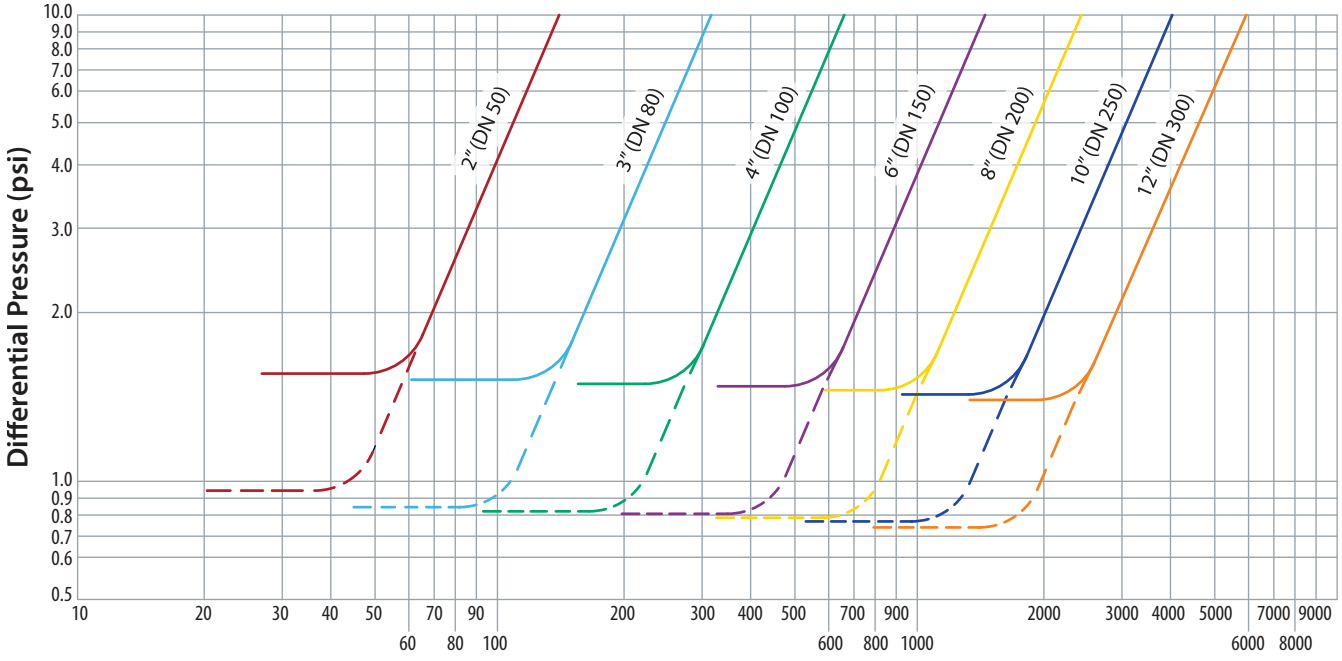
Consult factory for list of material options.

Viton® is a registered trademark of DuPont Dow Elastomers.

Gas Booster Compressor For Vapor Recovery Unit

TECHNICAL DATA

PRESSURE LOSS CURVES



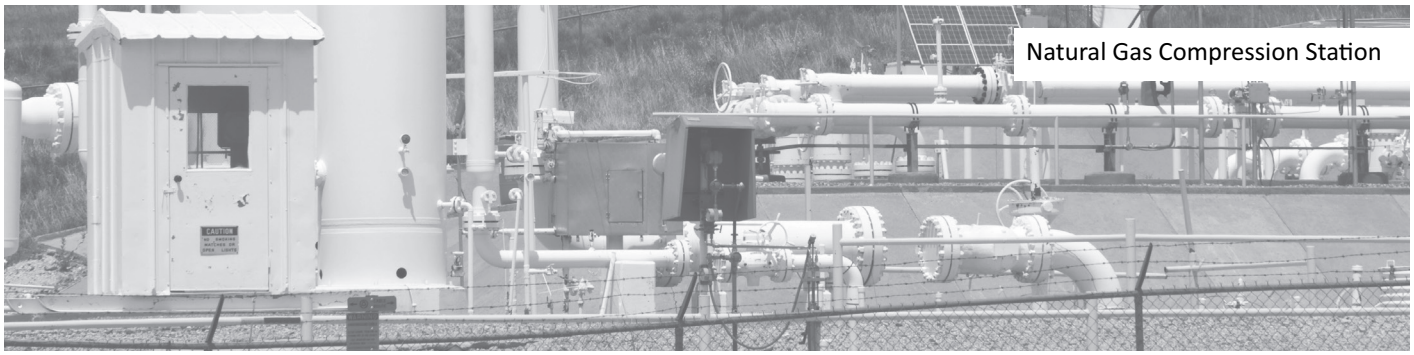
Dotted lines represent pressure loss for valves without springs

C_V FOR PISTON CHECK VALVE

CV VALUE OF FULLY OPEN VALVE	
SIZE	**CV**
2"	43
3"	106
4"	205
6"	470
8"	855
10"	1350
12"	1935

TEMPERATURE LIMITS

MATERIAL TEMPERATURE LIMITS						
MATERIAL		**SPECIFICATION**	**FAHRENHEIT (°F)**		**CELSIUS (°C)**	
			MIN.	**MAX.**	**MIN.**	**MAX.**
BODY	**Carbon Steel**	ASTM A216 WCC	-20	800	-29	427
	Low Temp Carbon Steel	ASTM A352 LCC	-50	650	-46	343
	Stainless Steel	ASTM A351 CF8M	-325	1500	-196	816
SEAL	**Rubber**	LT HNBR 90	-50	320	-46	160
	Rubber	LT Viton® 90	-49	390	-45	200



Natural Gas Compression Station

SERVICE CAPABILITIES

Trusted Partner. Reliable Solutions.

Our extensive product and application expertise allows us to be more than just a supplier. Our customers view us as the people they trust to integrate flow controls with their equipment and ensure the successful achievement of their project goals. Our increased involvement with a diverse range of projects, spanning an array of industries provides us with a multitude of references for successful integration.

PEOPLE

- Product and Application Know-How
- Technically Trained Sales Staff
- Exceptional Customer Service

PRODUCTS

- Ball, Butterfly, Check, Gate, Needle, Globe and Plug Valves, Adapters, Fittings, Gaskets, Joints, Couplings, Seals and Hammer Unions
- Product Leadership—Quality, Reliable and Innovative Products
- Replacement and Spare Parts
- ISO 9001:2015 Certified Organization

SERVICES

- Distribution Network Located throughout North, Central, and South America
- Customer Specific Labeling and Packaging
- Strategic Account Partnerships
- Express Delivery
- Quality and Materials Assurance
- Valve Customization and Automation

Valve Quality Development Team

Before the decision is made to brand a product C&C, our Valve Quality Development Team conducts comprehensive manufacturers audits and inspections on both the product and the manufacturer's production and testing process. These stringent audits and inspections ensure the manufacturer's ability to produce and provide products of consistent quality demanded by our customers and in accordance with documented procedures. Once manufacturers are qualified, the VQDT performs onsite witnessing and inspections of the product prior to releasing it for shipment. This added capability and oversight differentiates us from other suppliers.

API 6D Pressure Test Capability

Reports providing proof of quality and testing are available to our customers. Additional tests can be provided upon request.

- Positive Material Identification
- Material Test Reports
- Non-Destructive Testing
- Quality and Technical Documentation
- Supplementary Testing per Customer Requirements

Proof of Product Quality and Compliance

SERVICE CAPABILITIES

Additional API 6D Offerings

2 PIECE CAST TRUNNION BALL VALVE

ATLAS SERIES

The C&C Cast Trunnion Mounted Ball Valve's split body construction complies with API 6D, ASME B16.34, API 608, API 607 and other relevant ASTM specifications. With a variety of material selections available as well as ISO 5211 complaint direct mount actuator pad, the Cast Trunnion Ball Valve can be customized and automated to suit a complete range of oil and gas applications.

- Sizes 2" to 16", ASME Class 150 through 1500
- API 6D Monogrammed, ISO 14313, CSA Z245.15-17
- NACE MR0175/ISO 15156-1
- Material Traceability to ASME B31.1
- Compliant with ASME B16.5, B16.10 and ISO 5211
- PED 2014/68/EU Annex III, Module H
- Fire Safe: API 607 7th Edition
- Fugitive Emissions: API 641

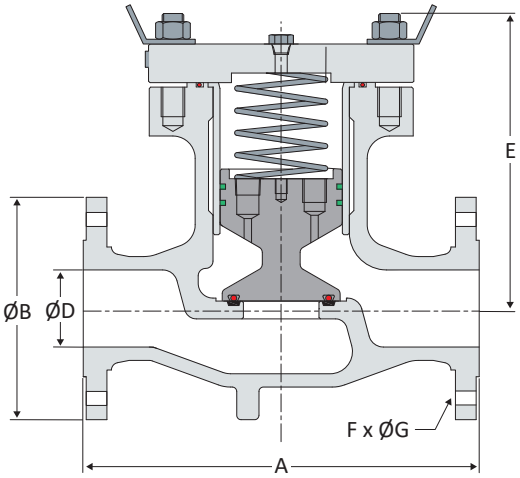
3 PIECE FORGED TRUNNION BALL VALVE

TRIDENT SERIES

The C&C 3 piece Forged Trunnion Mounted Ball Valve complies with API 6D, ASME B16.34, API 608, API 607 and other relevant ASTM specifications. It is suited for pipeline and other applications within the global energy infrastructure where zero leakage positive shutoff is critical. API Monogrammed and compliant with all relevant industry specifications, C&C trunnion ball valves should be an integral component of your piping network.

- Sizes 2" to 36", ASME Class 150 through 2500
- API 6D Monogrammed, ISO 14313, CSA Z245.15-17
- NACE MR0175/ISO 15156-1
- PED 2014/68/EU Annex III, Module H
- Compliant with ASME B16.5, B16.10 and ISO 5211
- Material Traceability to ASME B31.1
- Fire Safe: API6FA/API 607 7th Edition
- Fugitive Emissions: API 641

DIMENSIONS



DIMENSIONS IN INCHES (IN)							
CLASS	SIZE	A	ØB	ØD	E	F X ØG	APPROX. WEIGHT (LB)
150	2"	10.50*	6.00	1.94	8.03	4 x 3/4	71
	3"	12.50*	7.50	2.94	8.94	4 x 3/4	107
	4"	14.00 *	9.00	3.94	10.76	8 x 3/4	165
	6"	17.50*	11.00	5.94	13.82	8 x 7/8	281
	8"	19.50	13.50	7.94	16.46	8 x 7/8	484
	10"	24.50	16.00	9.94	18.50	12 x 1	730
	12"	27.50	19.00	11.94	22.50	12 x 1	966
300	2"	10.50	6.50	1.94	8.03	8 x 3/4	74
	3"	12.50	8.25	2.94	8.94	8 x 7/8	120
	4"	14.00	10.00	3.94	10.76	8 x 7/8	198
	6"	17.50	12.50	5.94	14.17	12 x 7/8	376
	8"	21.00	15.00	7.94	17.09	12 x 1	695
	10"	24.50	17.50	9.94	18.50	16 x 1-1/8	974
	12"	28.00	20.50	11.94	22.50	16 x 1-1/4	1265
600	2"	11.50	6.50	1.94	8.18	8 x 3/4	84
	3"	14.00	8.25	2.94	9.13	8 x 7/8	141
	4"	17.00	10.75	3.94	11.26	8 x 1	240
	6"	22.00	14.00	5.94	15.16	12 x 1-1/8	593
	8"	26.00	16.50	7.94	17.91	12 x 1-1/4	942
	10"	31.00	20.00	9.94	18.50	16 x 1-3/8	1625
	12"	33.00	22.00	11.94	22.50	20 x 1-3/8	2220
900	2"	14.50	8.50	1.94	9.00	8 x 1	181
	3"	15.00	9.50	2.94	9.80	8 x 1	182
	4"	18.00	11.50	3.94	12.15	8 x 1-1/4	320
	6"	24.00	15.00	5.94	16.45	12 x 1-1/4	728
	8"	29.00	18.50	7.94	19.38	12 x 1-1/2	1266
	10"	33.00	21.50	9.94	18.50	16 x 1-1/2	1932
	12"	38.00	24.00	11.94	22.50	20 x 1-1/2	2635
1500	2"	14.50	8.50	1.94	9.00	8 x 1	181
	3"	18.50	10.50	2.94	11.50	8 x 1-1/4	371
	4"	21.50	12.25	3.94	13.25	8 x 1-3/8	485
	6"	27.75	15.50	5.69	19.00	12 x 1-1/2	1478

DIMENSIONS IN MILLIMETERS (MM)							
CLASS	SIZE (DN)	A	ØB	ØD	E	F X ØG	APPROX. WEIGHT (KG)
150	50	267*	150	49	204	4 x 19	32
	80	318*	190	74	227	4 x 19	49
	100	356*	230	100	273	8 x 19	75
	150	445*	280	150	351	8 x 22	127
	200	495	345	201	418	8 x 22	220
	250	622	405	252	470	12 x 25	331
	300	699	485	303	572	12 x 25	438
300	50	267	165	49	204	8 x 19	34
	80	318	210	74	227	8 x 22	54
	100	356	255	100	273	8 x 22	90
	150	445	320	150	360	12 x 22	171
	200	533	380	201	434	12 x 25	315
	250	622	445	252	470	16 x 29	442
	300	711	520	303	572	16 x 32	574
600	50	292	165	49	208	8 x 19	38
	80	356	210	74	232	8 x 22	64
	100	432	275	100	286	8 x 25	109
	150	559	355	150	385	12 x 29	269
	200	660	420	201	455	12 x 32	427
	250	787	510	252	470	16 x 35	737
	300	838	560	303	572	20 x 35	1007
900	50	368	215	49	229	8 x 25	82
	80	381	240	74	249	8 x 25	83
	100	457	290	100	309	8 x 32	145
	150	610	380	150	418	12 x 32	330
	200	737	470	201	492	12 x 38	574
	250	838	545	252	470	16 x 38	876
	300	965	610	303	572	20 x 38	1195
1500	50	368	215	49	229	8 x 25	82
	80	470	265	74	292	8 x 32	168
	100	546	310	100	337	8 x 35	220
	150	705	395	144	483	12 x 38	670

* All lengths listed are Manufacturer's Standard.
All weights listed are estimated.

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