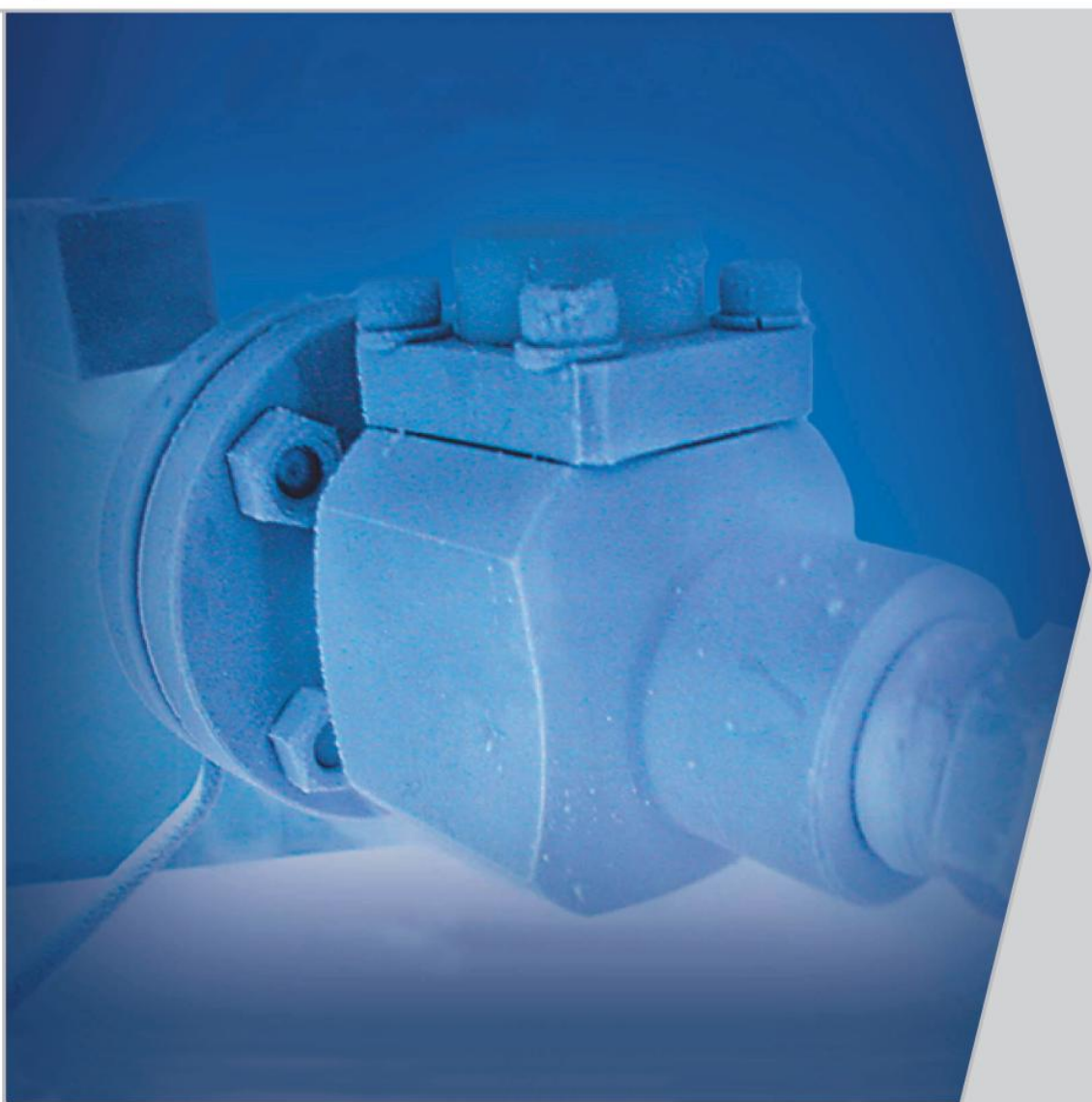


# **Hy-Lok** Cryogenic Valves

*Needle, Ball Valves*

Catalog No. H - CRYO100  
May 2006



**HY-LOK CORPORATION**

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## Quality System Certificates

- ISO 9001
- ASME QSC
- API Q1 & 6D

## HSE Management Certificates

- ISO 14001
- OHSAS 18001

## Type Approval Certificates

## LR Type Approval Certificate

This is to certify that the submitted product has been tested with satisfactory results in accordance with the relevant requirements of the LR Type Approval regime

The certificate is issued for:

**PRODUCER**

Hy-Lok Corporation

**PLACE OF PRODUCTION**

1807, Jeongso-dong, Kyeongsu-gu,  
Seoul, 04040 Korea

**DESCRIPTION**

Composite window valves with extended lifespan

**TYPE**

CR2000 valve

**APPLICATION**

Marine window valves and engine cooling systems in ships to  
category of Specialized Goods in bulk

**STANDARDS**

Part 3 of Lloyd's Register's Rules and Regulations for the  
Construction and Classification of Ships for the Category of  
Specialized Goods in bulk  
Chapter 1, Chapter 12 of Lloyd's Register's Rules and Regulations for the  
Construction of Ships

**RATING**

Notified under 10 and 16 Tonnage  
Minimum pressure condition: 10 barg  
Minimum service temperature: -70 °C  
Representative samples of 10 units at 20 and 25 bar service tested in accordance with BS 6841: 1984. Values for composite window  
valves 10-16 Tonnage, Category of Specialized Goods

**PERFORMANCE TEST**

The following testing has been conducted:

- 1) Operating frequency test
- 2) Static leakage test
- 3) Burst leakage test

**Certificate No.**

LR 03/086

**Issue Date**

09 December 2010

**Expiry Date**

09 December 2015

**Issue**

1 of 2

*[Signature]* N. Sengupta

Deputy Director, Technical Services

Lloyd's Register Asia Regional Office  
17 Robinson Road, Singapore 048533

*LR (Needle)*

[illegible]

*LR (Ball)*

 KOREAN REGISTER OF PATENTS 한국특허청	
<b>TYPE APPROVAL CERTIFICATE</b> <b>형식승인증서</b>	
Certificate No. 100180204-99(01)	Date of Approval: 12/04/2002
Product 19204	
Manufacturer 197140K Corporation 1407-5, Songjeong-dong, Songjeong, Kangwon, Korea	
Product Description 12 property: 19204, 19205, 19206, 19207, 19208, 19209, 19210, 19211, 19212, 19213, 19214, 19215, 19216, 19217, 19218, 19219, 19220, 19221, 19222, 19223, 19224, 19225, 19226, 19227, 19228, 19229, 19230, 19231, 19232, 19233, 19234, 19235, 19236, 19237, 19238, 19239, 19240, 19241, 19242, 19243, 19244, 19245, 19246, 19247, 19248, 19249, 19250, 19251, 19252, 19253, 19254, 19255, 19256, 19257, 19258, 19259, 19260, 19261, 19262, 19263, 19264, 19265, 19266, 19267, 19268, 19269, 19270, 19271, 19272, 19273, 19274, 19275, 19276, 19277, 19278, 19279, 19280, 19281, 19282, 19283, 19284, 19285, 19286, 19287, 19288, 19289, 19290, 19291, 19292, 19293, 19294, 19295, 19296, 19297, 19298, 19299, 19300, 19301, 19302, 19303, 19304, 19305, 19306, 19307, 19308, 19309, 19310, 19311, 19312, 19313, 19314, 19315, 19316, 19317, 19318, 19319, 19320, 19321, 19322, 19323, 19324, 19325, 19326, 19327, 19328, 19329, 19330, 19331, 19332, 19333, 19334, 19335, 19336, 19337, 19338, 19339, 19340, 19341, 19342, 19343, 19344, 19345, 19346, 19347, 19348, 19349, 19350, 19351, 19352, 19353, 19354, 19355, 19356, 19357, 19358, 19359, 19360, 19361, 19362, 19363, 19364, 19365, 19366, 19367, 19368, 19369, 19370, 19371, 19372, 19373, 19374, 19375, 19376, 19377, 19378, 19379, 19380, 19381, 19382, 19383, 19384, 19385, 19386, 19387, 19388, 19389, 19390, 19391, 19392, 19393, 19394, 19395, 19396, 19397, 19398, 19399, 19400, 19401, 19402, 19403, 19404, 19405, 19406, 19407, 19408, 19409, 19410, 19411, 19412, 19413, 19414, 19415, 19416, 19417, 19418, 19419, 19420, 19421, 19422, 19423, 19424, 19425, 19426, 19427, 19428, 19429, 19430, 19431, 19432, 19433, 19434, 19435, 19436, 19437, 19438, 19439, 19440, 19441, 19442, 19443, 19444, 19445, 19446, 19447, 19448, 19449, 19450, 19451, 19452, 19453, 19454, 19455, 19456, 19457, 19458, 19459, 19460, 19461, 19462, 19463, 19464, 19465, 19466, 19467, 19468, 19469, 19470, 19471, 19472, 19473, 19474, 19475, 19476, 19477, 19478, 19479, 19480, 19481, 19482, 19483, 19484, 19485, 19486, 19487, 19488, 19489, 19490, 19491, 19492, 19493, 19494, 19495, 19496, 19497, 19498, 19499, 19500, 19501, 19502, 19503, 19504, 19505, 19506, 19507, 19508, 19509, 19510, 19511, 19512, 19513, 19514, 19515, 19516, 19517, 19518, 19519, 19520, 19521, 19522, 19523, 19524, 19525, 19526, 19527, 19528, 19529, 19530, 19531, 19532, 19533, 19534, 19535, 19536, 19537, 19538, 19539, 19540, 19541, 19542, 19543, 19544, 19545, 19546, 19547, 19548, 19549, 19550, 19551, 19552, 19553, 19554, 19555, 19556, 19557, 19558, 19559, 19560, 19561, 19562, 19563, 19564, 19565, 19566, 19567, 19568, 19569, 19570, 19571, 19572, 19573, 19574, 19575, 19576, 19577, 19578, 19579, 19580, 19581, 19582, 19583, 19584, 19585, 19586, 19587, 19588, 19589, 19590, 19591, 19592, 19593, 19594, 19595, 19596, 19597, 19598, 19599, 19600, 19601, 19602, 19603, 19604, 19605, 19606, 19607, 19608, 19609, 19610, 19611, 19612, 19613, 19614, 19615, 19616, 19617, 19618, 19619, 19620, 19621, 19622, 19623, 19624, 19625, 19626, 19627, 19628, 19629, 19630, 19631, 19632, 19633, 19634, 19635, 19636, 19637, 19638, 19639, 19640, 19641, 19642, 19643, 19644, 19645, 19646, 19647, 19648, 19649, 19650, 19651, 19652, 19653, 19654, 19655, 19656, 19657, 19658, 19659, 19660, 19661, 19662, 19663, 19664, 19665, 19666, 19667, 19668, 19669, 19670, 19671, 19672, 19673, 19674, 19675, 19676, 19677, 19678, 19679, 19680, 19681, 19682, 19683, 19684, 19685, 19686, 19687, 19688, 19689, 19690, 19691, 19692, 19693, 19694, 19695, 19696, 19697, 19698, 19699, 19700, 19701, 19702, 19703, 19704, 19705, 19706, 19707, 19708, 19709, 19710, 19711, 19712, 19713, 19714, 19715, 19716, 19717, 19718, 19719, 19720, 19721, 19722, 19723, 19724, 19725, 19726, 19727, 19728, 19729, 19730, 19731, 19732, 19733, 19734, 19735, 19736, 19737, 19738, 19739, 19740, 19741, 19742,	

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ABS

Pioneer in development of cryogenic valves for LNG, Hy-Lok is always keeping its Valves on the cutting edge of technology to provide high performance valves to the great satisfaction of its clients as attested by numerous references.

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## CRYON Series Needle Valves

### Introduction

CRYON series valves have been designed and engineered for use at pressures up to 750 psi (52 bar) and temperatures down to -320 °F (-196 °C). (Stainless Steel extended needle valve with the non-rotating disc design for bubble tight shut-off)

The valve is of the bolted bonnet easy maintenance in-line, with lower bolting torques than union bonnet. Screwed, flanged, butt-weld ends are in standard connection and both reduced and full bore are available from 1/2" to 1-1/2" size.

### Features and Benefits

- Austenite Stainless Steel construction for marine service
- Long cycle life, packing blow thread design
- Metall seat to bubble tight shut-off at all the time
- Anti-blow out proof stem, one piece design
- Non rotating seat contact
- Easy maintenance in-line guarantee
- Compact and easy operation
- Self aligning disc construction
- Bolted extension bonnet
- Dust cap functions as position indicator as well
- Fire safe design to BS 6755 Part 2

### Specifications

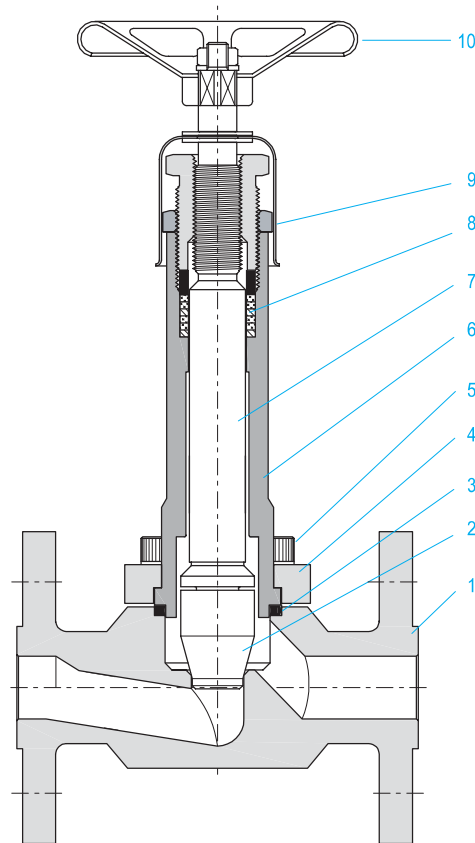
- Pressure Rating  
750 psi (52 bar) at -320 °F to 100 °F (-196 °C to 38 °C)
- Temperature Rating  
-320 °F to 700 °F (-196 °C to 371 °C)
- Size Range  
Screwed ends : 3/8" to 1"  
Flanged ends : 1/2" to 1-1/2"  
Butt - weld ends : 1/2" to 1-1/2"

### Pressure Tests

- Ambient Test(100%) : Nitrogen  
Shell Test : 1.5 times working pressure  
Seat Test : 1.1 time working pressure
- Cryogenic Test(10%) : Helium  
Shell Test : 1.5 times working pressure  
Seat Test : 1.1 times working pressure

### Applications

- Cryogenic, LNG, LPG, and Nitrogen

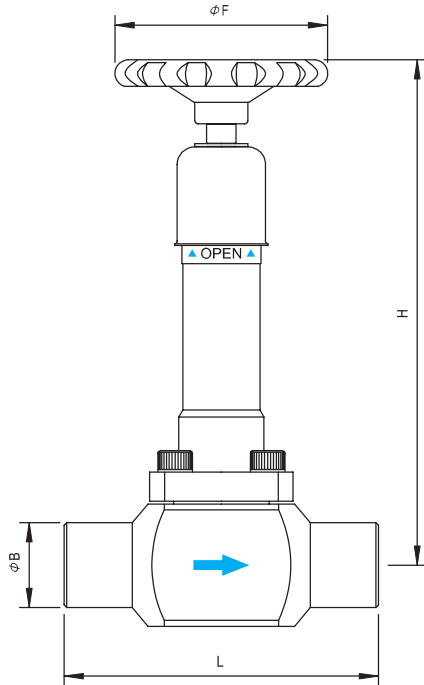


### Materials of Construction

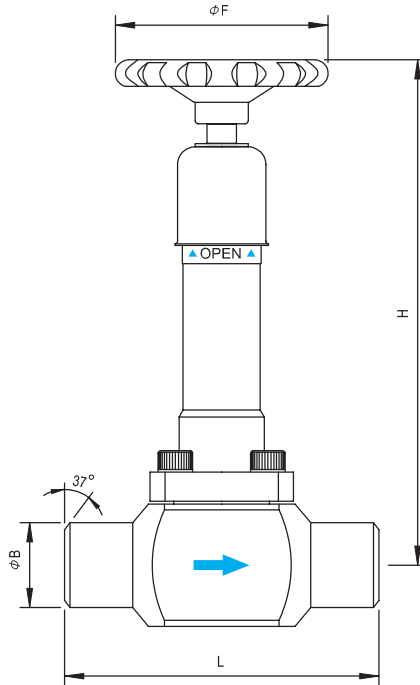
No.	Description	Material
1	Body	ASTM A182 F316/A351 CF 8M
2	Non Rotating Disc	ASTM A479 TP316
3	Bonnet Gasket	Graphite & SS 316
4	Bolted Bonnet	ASTM A479 TP316
5	Bonnet Bolt	ASTM A320 B8M.2
6	Extension Bonnet	ASTM A182 F316/A351 CF 8M
7	Extension Stem	ASTM A479 TP316
8	Stem Packing	Graphite
9	Position Indicator	SS 316
10	Hand Wheel	ASTM A240 TP304

## CRYON Series Needle Valves

### Screwed Ends



### Butt-weld Ends



### Screwed Ends Dimensions & Weights

Basic Ordering Number	Connection Size		Dimensions(mm)				Flow Data		Weight
	Inlet	Outlet	B	L	H	F	Cv	Kv	Kg
CRYON - 6N	3/8" Female NPT	3/8" Female NPT	22.0	114.0	198.0	80.0	3.6	3.1	2.7
CRYON - 8N	1/2" Female NPT	1/2" Female NPT	26.0						
CRYON - 12N	3/4" Female NPT	3/4" Female NPT	32.0	140.0	260.0	100.0	13.2	11.3	3.9
CRYON - 16N	1" Female NPT	1" Female NPT	42.0						

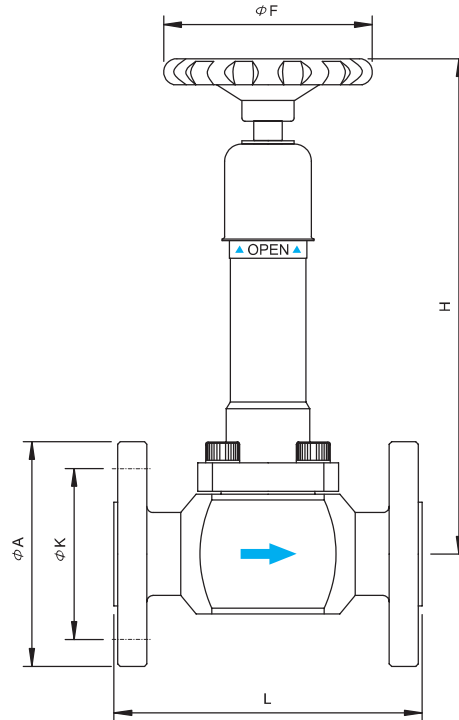
### Butt-weld Ends Dimensions & Weights

Basic Ordering Number	Connection Size		Dimensions(mm)				Flow Data		Weight
	Inlet	Outlet	B	L	H	F	Cv	Kv	Kg
CRYON - 8BW	1/2" X SCH40	1/2" X SCH40	21.3	114.0	198.0	80.0	3.6	3.1	2.7
CRYON - 12BW	3/4" X SCH40	3/4" X SCH40	26.7						
CRYON - 16BW	1" X SCH40	1" X SCH40	33.4	140.0	260.0	100.0	13.2	11.3	3.9
CRYON - 20BW	1-1/4" X SCH40	1-1/4" X SCH40	42.2						
CRYON - 24BW	1-1/2" X SCH40	1-1/2" X SCH40	48.3	223.0	260.0	120.0	26.5	22.7	4.2

All dimensions are in millimeters unless otherwise specified. Dimensions are for reference only, subject to change.

## CRYON Series Needle Valves

### Flanged Ends



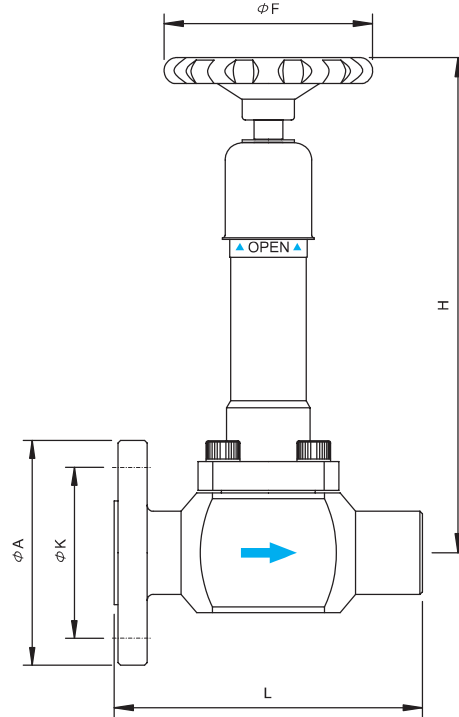
### Flanged Ends Dimensions & Weights

Basic Ordering Number	Connection Size		Dimensions(mm)					Flow Data		Weight
	Inlet	Outlet	A	K	L	H	F	Cv	Kv	Kg
CRYON - 8FA	1/2" CL150 RF	1/2" CL150 RF	88.9	60.3	114.0	198.0	80.0	3.6	3.1	4.5
CRYON - 12FA	3/4" CL150 RF	3/4" CL150 RF	98.4	69.8	140.0	260.0	100.0	13.2	11.3	6.9
CRYON - 16FA	1" CL150 RF	1" CL150 RF	107.9	79.4		260.0	120.0	26.5	22.7	7.5
CRYON - 20FA	1-1/4" CL150 RF	1-1/4" CL150 RF	117.5	88.9	223.0	260.0	120.0	26.5	22.7	9.0
CRYON - 24FA	1-1/2" CL150 RF	1-1/2" CL150 RF	127.0	98.4		260.0	120.0	26.5	22.7	10.4

All dimensions are in millimeters unless otherwise specified. Dimensions are for reference only, subject to change.

## CRYON Series Needle Valves

### Flanged to Screwed Ends



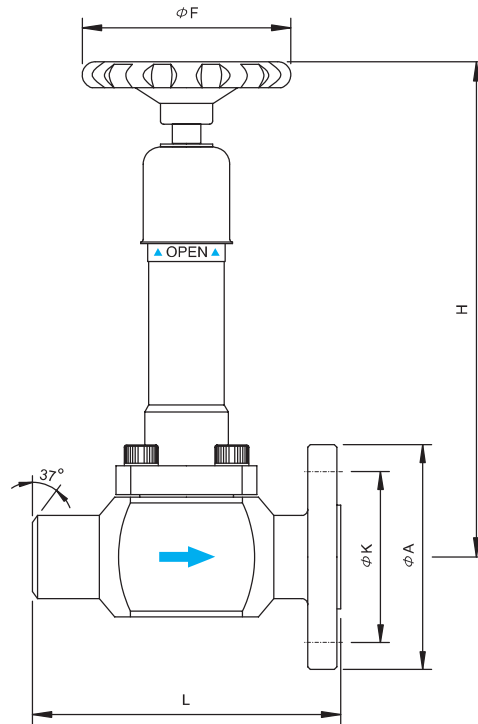
### Flanged to Screwed Ends Dimensions & Weights

Basic Ordering Number	Connection Size		Dimensions(mm)					Flow Data		Weight Kg
	Inlet	Outlet	A	K	L	H	F	Cv	Kv	
CRYON - 8FA6N	1/2" CL150 RF	3/8" NPT	88.9	60.3	114.0	198.0	80.0	3.6	3.1	3.6
CRYON - 8FA8N	1/2" CL150 RF	1/2" NPT								
CRYON - 12FA8N	3/4" CL150 RF	1/2" NPT	98.4	69.8	140.0	260.0	100.0	13.2	11.3	5.4
CRYON - 12FA12N	3/4" CL150 RF	3/4" NPT								
CRYON - 16FA8N	1" CL150 RF	1/2" NPT	107.9	79.4	140.0	260.0	100.0	13.2	11.3	5.7
CRYON - 16FA12N	1" CL150 RF	3/4" NPT								
CRYON - 16FA16N	1" CL150 RF	1" NPT								
CRYON - 20FA8N	1-1/4" CL150 RF	1/2" NPT	117.5	88.9	223.0	260.0	120.0	26.5	22.7	6.6
CRYON - 20FA12N	1-1/4" CL150 RF	3/4" NPT								
CRYON - 20FA16N	1-1/4" CL150 RF	1" NPT								
CRYON - 24FA8N	1-1/2" CL150 RF	1/2" NPT	127.0	98.4	223.0	260.0	120.0	26.5	22.7	7.3
CRYON - 24FA12N	1-1/2" CL150 RF	3/4" NPT								
CRYON - 24FA16N	1-1/2" CL150 RF	1" NPT								

All dimensions are in millimeters unless otherwise specified. Dimensions are for reference only, subject to change.

## CRYON Series Needle Valves

### Butt-weld to Flanged Ends



### Butt-weld to Flanged Ends Dimensions & Weights

Basic Ordering Number	Connection Size		Dimensions(mm)					Flow Data		Weight
	Inlet	Outlet	A	K	L	H	F	Cv	Kv	Kg
CRYON - 8BW8FA	1/2" X SCH40	1/2" CL150 RF	88.9	60.3	114.0	198.0	80.0	3.6	3.1	3.6
CRYON - 12BW12FA	3/4" X SCH40	3/4" CL150 RF	98.4	69.8	140.0	260.0	100.0	13.2	11.3	5.4
CRYON - 16BW16FA	1" X SCH40	1" CL150 RF	107.9	79.4						5.7
CRYON - 20BW20FA	1-1/4" X SCH40	1-1/4" CL150 RF	117.5	88.9	223.0	260.0	120.0	26.5	22.7	6.6
CRYON - 24BW24FA	1-1/2" X SCH40	1-1/2" CL150 RF	127.0	98.4						7.3

All dimensions are in millimeters unless otherwise specified. Dimensions are for reference only, subject to change.



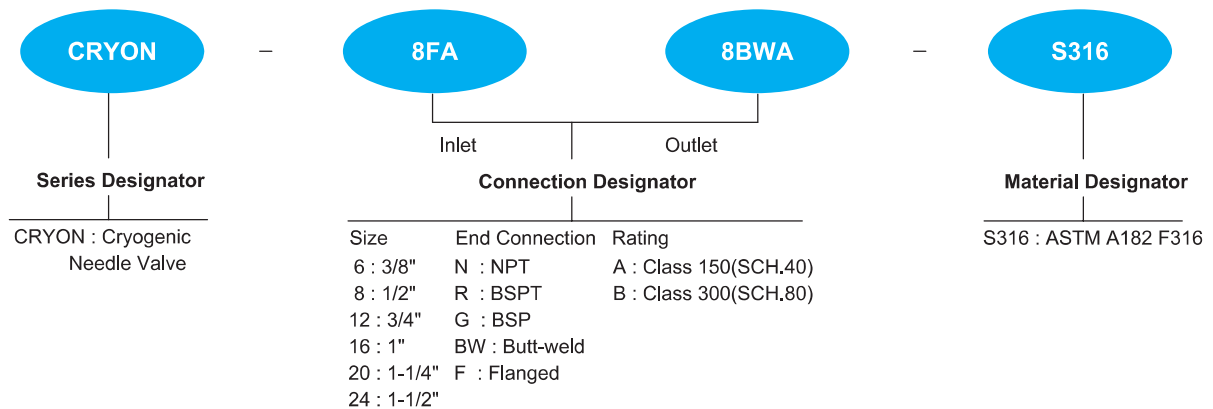
## CRYON Series Needle Valves

### Ordering Information

The correct ordering number is easily derived from the following numbering system. The four designators required are coded as shown below. \*Note : if the inlet and outlet connections are the same, eliminate the inlet connection designator.

### Numbering System

Example :



## CRYOT Series Trunnion Ball Valves

### Introduction

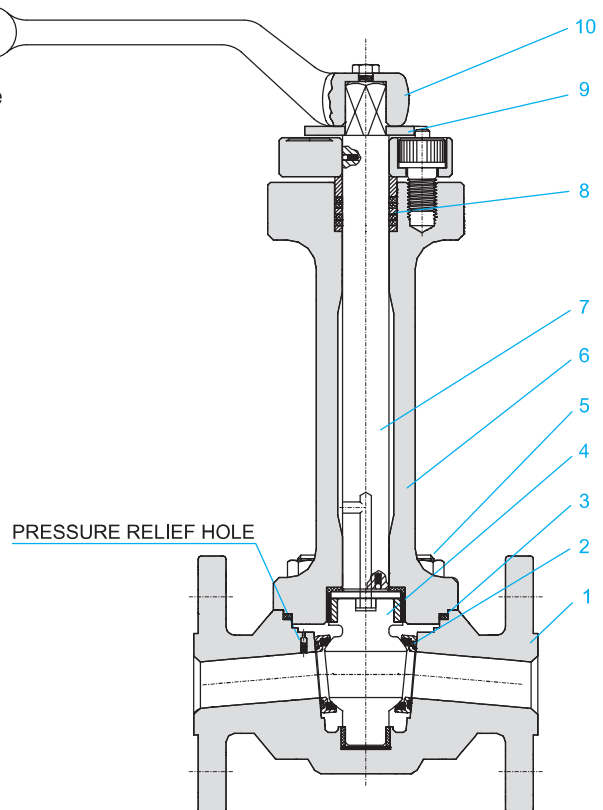
CRYOT series valves have been designed and engineered for use at pressures up to 750 psi (52 bar) and temperatures down to -320 °F (-196 °C). (Stainless Steel extended ball valve with trunnion mounted ball) The valve is of the top entry bolted bonnet easy maintenance in-line. Screwed, flanged, butt-weld ends are instandard connection and both reduced and full bore are available from 1/2" to 1-1/2" size.

### Features and Benefits

- Austenite Stainless Steel construction for marine service
- Long cycle life
- trunnion mounted ball
- Pressure relief device
- Anti-blow out proof stem, two-piece ball & stem
- Anti-static device
- Easy maintenance in-line guarantee
- Low operating torque
- Positive handle stops
- Bolted extension bonnet
- Locking device
- Fire safe design to BS 6755 Part 2

### Specifications

- Pressure Rating  
750 psi (52 bar) at -320 °F to 100 °F (-196 °C to 38 °C)
- Temperature Rating  
-320 °F to 250 °F (-196 °C to 120 °C)
- Size Range  
Screwed ends : 3/8" to 1"  
Flanged ends : 1/2" to 1-1/2"  
Butt - weld ends : 1/2" to 1-1/2"



### Pressure Tests

- Ambient Test(100%) : Nitrogen  
Shell Test : 1.5 times working pressure  
Seat Test : 1.1 time working pressure
- Cryogenic Test(10%) : Helium  
Shell Test : 1.5 times working pressure  
Seat Test : 1.1 times working pressure

### Applications

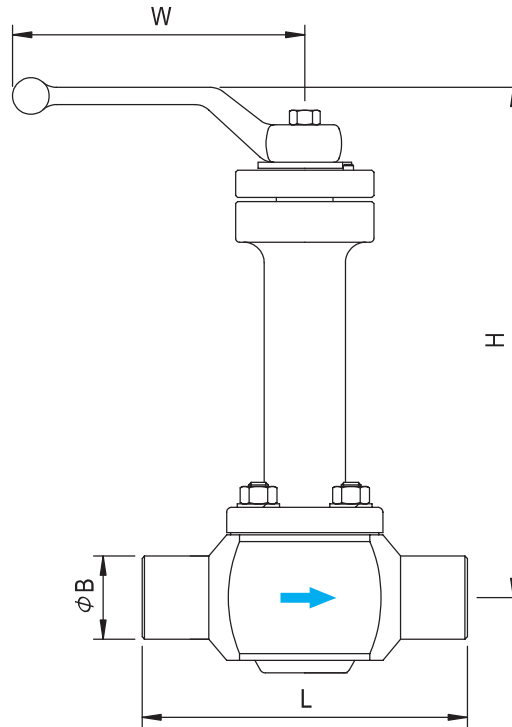
- Cryogenic, LNG, LPG, and Nitorogen

### Materials of Construction

No.	Description	Material
1	Body	ASTM A182 F316/A351 CF 8M
2	Ball Seat	PCTFE & Graphite
3	Bonnet Gasket	Graphite & SS 316
4	Trunnion Ball	ASTM A479 TP316
5	Stud Bolt	ASTM A320 B8M.2
6	Bolted Bonnet	ASTM A182 F316/A351 CF 8M
7	Extension Stem	ASTM A479 TP316
8	Stem Packing	Graphite
9	Locking Device	SS 316
10	Lever Handle	SS 316

## CRYOT Series Trunnion Ball Valves

### Screwed Ends



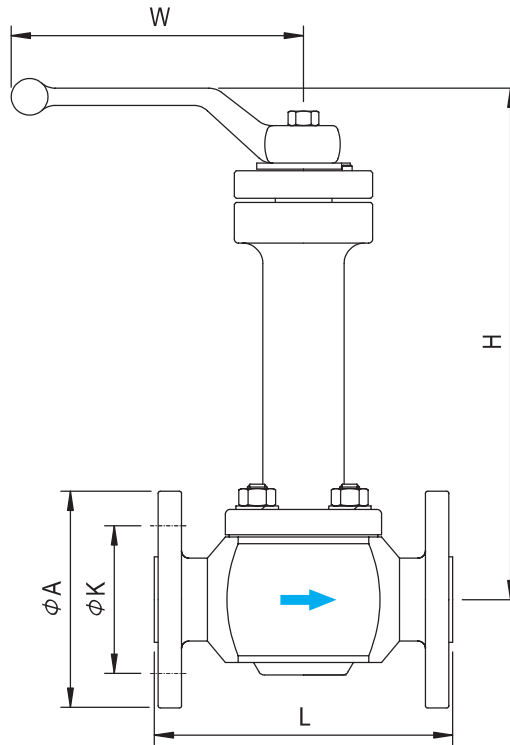
### Screwed Ends Dimensions & Weights

Basic Ordering Number	Connection Size		Dimensions(mm)				Flow Data		Weight
	Inlet	Outlet	B	L	H	W	Cv	Kv	
CRYOT - 6N	3/8" Female NPT	3/8" Female NPT	22.0	115.0	210.0	140.0	12.0	10.3	4.7
CRYOT - 8N	1/2" Female NPT	1/2" Female NPT	26.0	115.0	210.0	140.0			
CRYOT - 12N	3/4" Female NPT	3/4" Female NPT	32.0	140.0	210.0	240.0	31.0	26.6	7.4
CRYOT - 16N	1" Female NPT	1" Female NPT	42.0	160.0	210.0	240.0	38.0	32.6	12.2

All dimensions are in millimeters unless otherwise specified. Dimensions are for reference only, subject to change.

## CRYOT Series Trunnion Ball Valves

### Flaged Ends



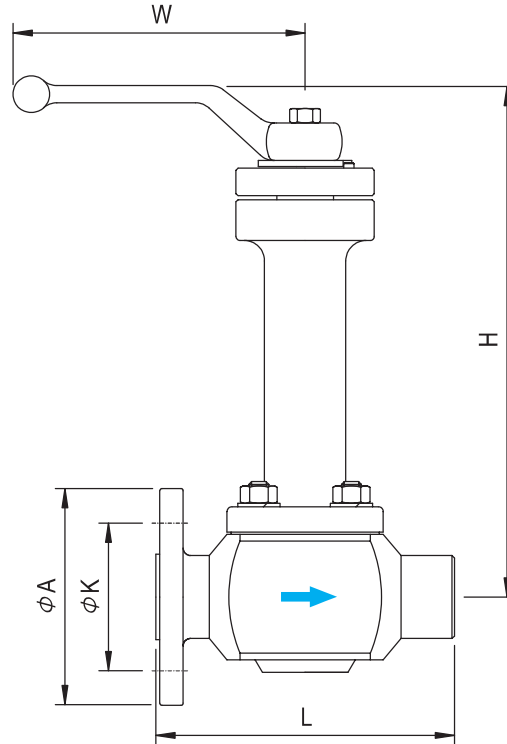
### Flaged Ends Dimensions & Weights

Basic Ordering Number	Connection Size		Dimensions(mm)					Flow Data		Weight
	Inlet	Outlet	A	K	L	H	W	Cv	Kv	Kg
CRYOT - 8FA	1/2" CL150 RF	1/2" CL150 RF	88.9	60.3	115.0	210.0	140.0	12.0	10.3	6.5
CRYOT - 12FA	3/4" CL150 RF	3/4" CL150 RF	98.4	69.8	140.0	210.0	240.0	31.0	26.6	10.4
CRYOT - 16FA	1" CL150 RF	1" CL150 RF	107.9	79.4	160.0	210.0	240.0	38.0	32.6	15.8
CRYOT - 12FA	1-1/4" CL150 RF	1-1/4" CL150 RF	117.5	88.9	200.0	240.0	240.0	90.0	77.1	17.2
CRYOT - 16FA	1-1/2" CL150 RF	1-1/2" CL150 RF	127.0	98.4	220.0	240.0	240.0	100.0	85.7	20.9

All dimensions are in millimeters unless otherwise specified. Dimensions are for reference only, subject to change.

## CRYOT Series Trunnion Ball Valves

### Flanged to Screwed Ends



### Flanged to Screwed Ends Dimensions & Weights

Basic Ordering Number	Connection Size		Dimensions(mm)					Flow Data		Weight
	Inlet	Outlet	A	K	L	H	W	Cv	Kv	Kg
CRYOT - 8FA6N	1/2" CL150 RF	3/8" NPT	88.9	60.3	115.0	210.0	140.0	12.0	10.3	5.6
CRYOT - 8FA8N	1/2" CL150 RF	1/2" NPT								
CRYOT - 12FA8N	3/4" CL150 RF	1/2" NPT	98.4	69.8	140.0	210.0	240.0	31.0	26.6	8.9
CRYOT - 12FA12N	3/4" CL150 RF	3/4" NPT								
CRYOT - 16FA8N	1" CL150 RF	1/2" NPT	107.9	79.4	160.0	210.0	240.0	38.0	32.6	14.0
CRYOT - 16FA12N	1" CL150 RF	3/4" NPT								
CRYOT - 16FA16N	1" CL150 RF	1" NPT								
CRYOT - 20FA8N	1-1/4" CL150 RF	1/2" NPT	117.5	88.9	200.0	240.0	240.0	90.0	77.1	14.8
CRYOT - 20FA12N	1-1/4" CL150 RF	3/4" NPT								
CRYOT - 20FA16N	1-1/4" CL150 RF	1" NPT								
CRYOT - 24FA8N	1-1/2" CL150 RF	1/2" NPT	127.0	98.4	220.0	240.0	240.0	100.0	85.7	17.8
CRYOT - 24FA12N	1-1/2" CL150 RF	3/4" NPT								
CRYOT - 24FA16N	1-1/2" CL150 RF	1" NPT								

All dimensions are in millimeters unless otherwise specified. Dimensions are for reference only, subject to change.

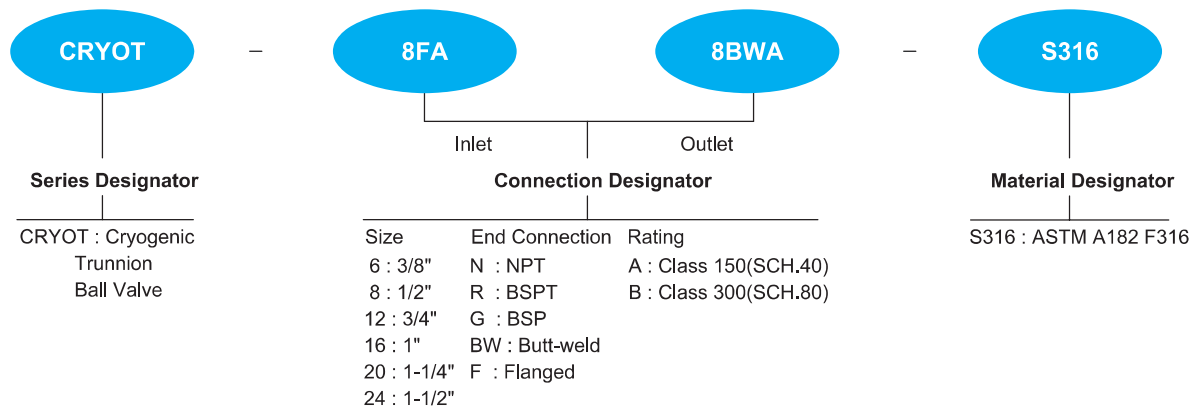
## CRYOT Series Trunnion Ball Valves

### Ordering Information

The correct ordering number is easily derived from the following numbering system. The four designators required are coded as shown below. \*Note : if the inlet and outlet connections are the same, eliminate the inlet connection designator.

### Numbering System

Example :



RUGVÆNGET 19 C  
2630 TAASTRUP  
INFO@PGFLOWTEKNIK.DK  
WWW.PGFLOWTEKNIK.DK