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Catalog No. H-CRYO100  
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# Cryogenic Valves

## Needle, Ball Valves



**HY-LOK CORPORATION**

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## Why Cryogenic Valve?

"Cryogenic Service" refers to service condition where temperature are significantly below normal atmospheric temperatures. Definitions vary, but often any temperature below -50°F (-45°C) is considered cryogenic. The bonnet of Ball and Needle valve is of the extended type with sufficient length and vapour space between body and stuffing box in order to maintain the gland packing sufficiently near ambient temperature to prevent icing of the top works and keep the packing soft and pliable for optimum sealing characteristics.

## Focus on Quality

As an ISO 9001 certified manufacturer, Hy-Lok is committed to the highest degree of excellence.

Hy-Lok cryogenic valves are produced under special conditions to ensure tight machining tolerances, high quality surface finish and meticulous material selection.

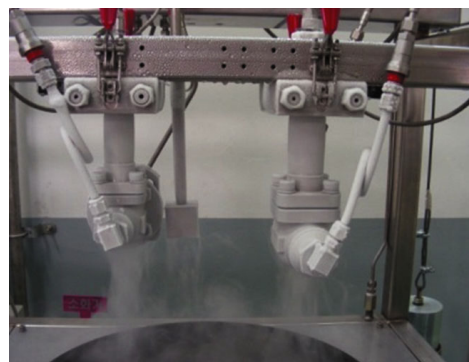
The quality control department is responsible for ensuring that all the specifications throughout the process, including material acquisition, machining, welding, cleaning, assembly, pressure testing, packing and final inspection are maintained and full material test reports are available upon customer requests.

## Cryogenic Valve Test

In order to maintain valve reliability, Hy-Lok has an in-house testing facility for cryogenic valves to ensure the quality of the valves and their functionality.

These tests include valve leakage, torques and cycling under typical cryogenic conditions.

The tests are carried out in a cryogenic bath or in-line under pressure according to standard requirements of international standards such as BS 6364.



# Cryogenic Service

## Introduction

Hy-Lok Cryogenic Needle Valves have been designed and engineered for use at pressures up to 300 psi (21 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.

Flanged, Screwed, Butt-weld ends are in standard connection and both reduced and full bore are available from 1/2" to 1" size.

## Features and Benefits

- Long Cycle Life, Packing below thread design
- Metal seat to bubble tight shut-off at all the time
- Anti-blow out proof stem, one piece design
- Rising Stem
- Easy maintenance in-line guarantee
- Compact and easy operation
- Self aligning disc construction
- Bolted extension bonnet
- Dust cap functions as position indicator as well
- Position Indicator
- Fire Tested to API 6FA & API 607

## Standards

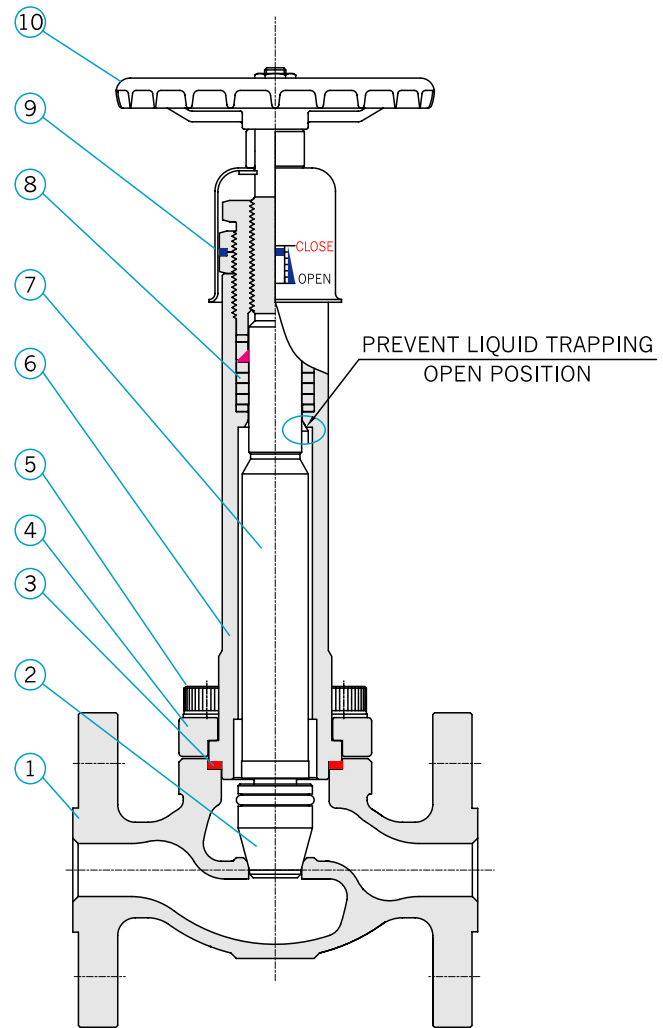
- The body designed and manufactured in accordance with ANSI B16.34
- Flange dimension in accordance with ANSI B16.5
- Welding ends in accordance with ANSI B16.25
- Fire Tested to API 6FA & API 607
- Cryogenic Test in accordance with BS 6364

## Specifications

- Pressure Rating  
750 psi (52bar) 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 : 1/2" to 1"  
Flanged Ends : 1/2" to 1"  
Butt-weld Ends : 1/2" to 1"

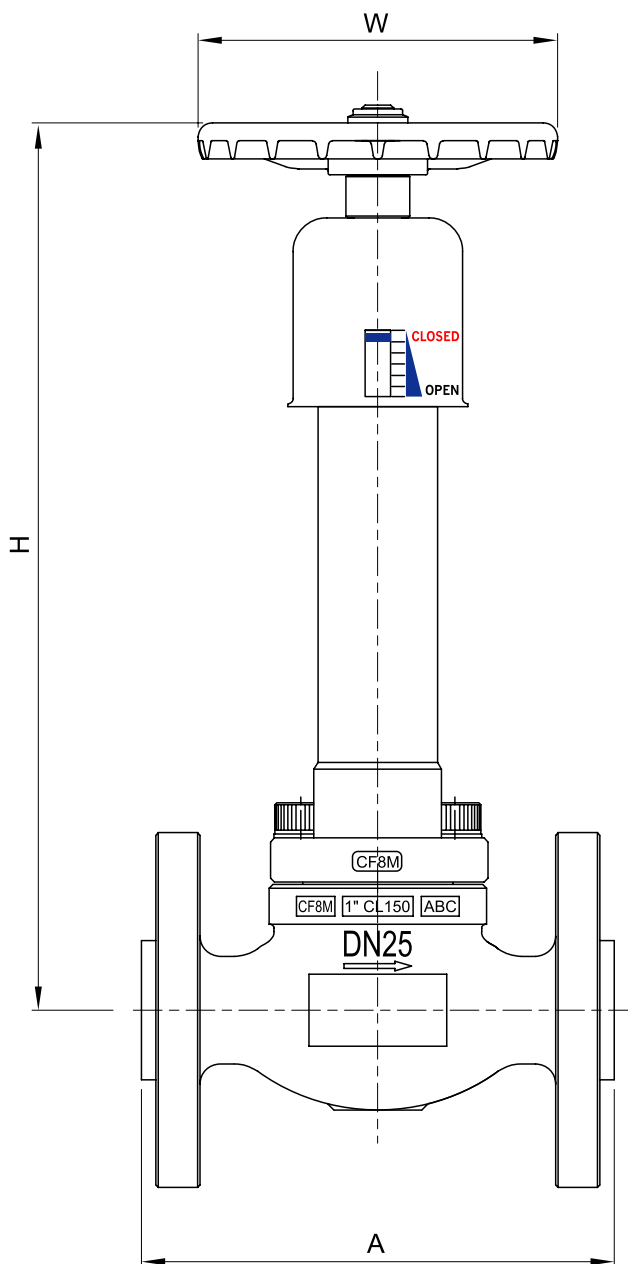
## Pressure Tests

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



## Material of Construction

No.	Description	Material
1	Body	ASTM A351 CF8M, CF3M
2	Non Rotating Disc	SS 316
3	Bonnet Gasket	Graphite & SS316
4	Bolted Bonnet	ASTM A351 CF8M
5	Bonnet Bolt	ASTM A320 B8M.2
6	Extension Bonnet	SS316
7	Extension Stem	SS316
8	Stem Packing	Graphite
9	Position Indicator	SS316
10	Hand Wheel	ASTM A240 TP304



## Flanged Ends

PN 20 - Class 150 lbs  
DN 15 to 25 - 1/2" to 1"

## Type

Bolted Type  
Rising Stem  
Back Seat

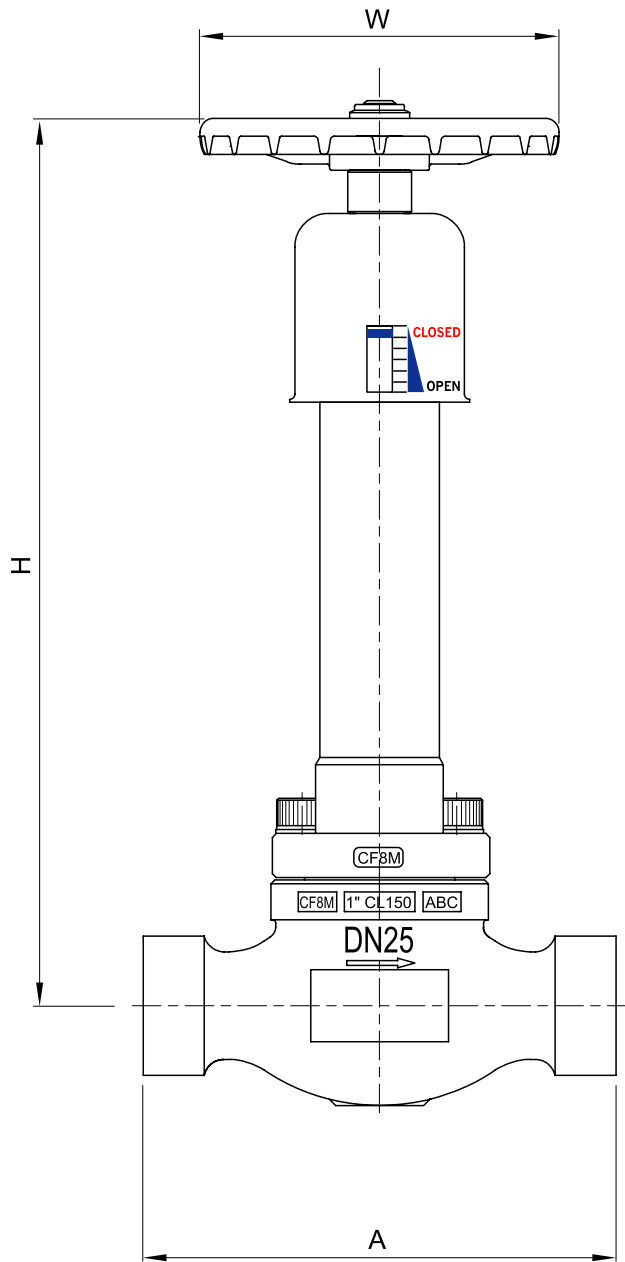
## Operating

Stainless Steel Handwheel

Dimensions in mm

DN	1/2"	3/4"	1"
A	114	140	140
H	198	260	260
$\phi W$	80	100	100
Weight RF (kg)	2.93	5.0	5.44

# Cryogenic Needle Valve



## Screwed Ends

PN 20 - Class 150 lbs  
 DN 15 to 25 - 1/2" to 1"

## Type

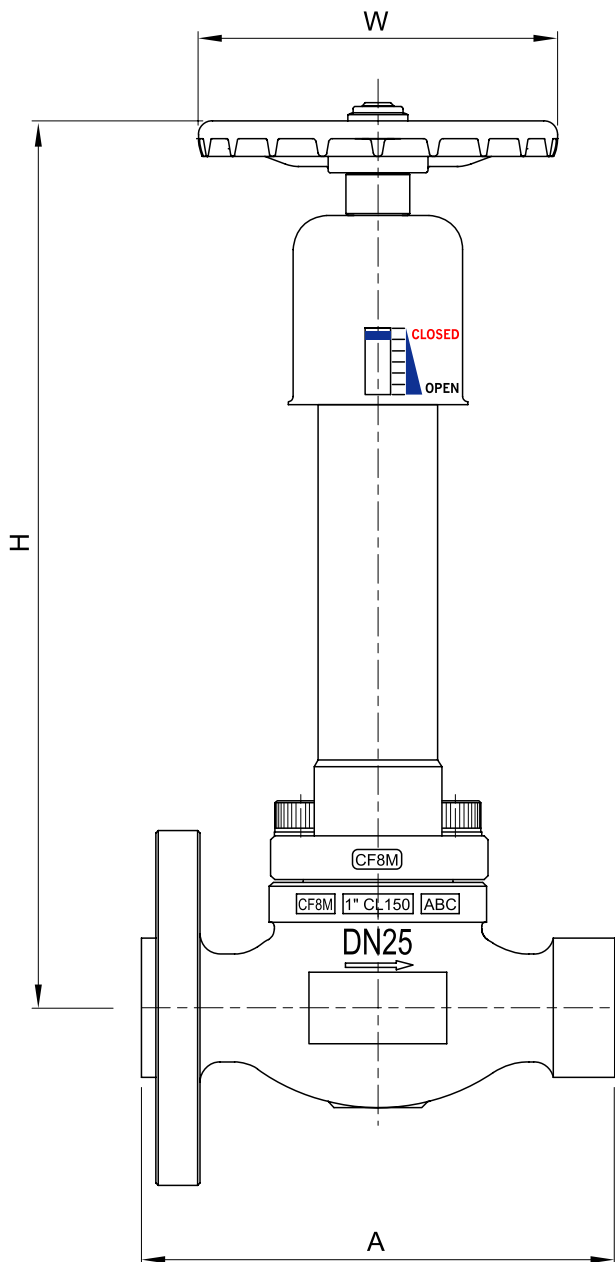
Bolted Type  
 Rising Stem  
 Back Seat

## Operating

Stainless Steel Handwheel

Dimensions in mm

DN	1/2"	3/4"	1"
A	114	140	140
H	198	260	260
$\phi W$	80	100	100
Weight RF (kg)	2.2	3.7	3.7



## Flanged to Screwed Ends

**PN 20 - Class 150 lbs**  
**DN 15 to 25 - 1/2" to 1"**

### Type

Bolted Type  
 Rising Stem  
 Back Seat

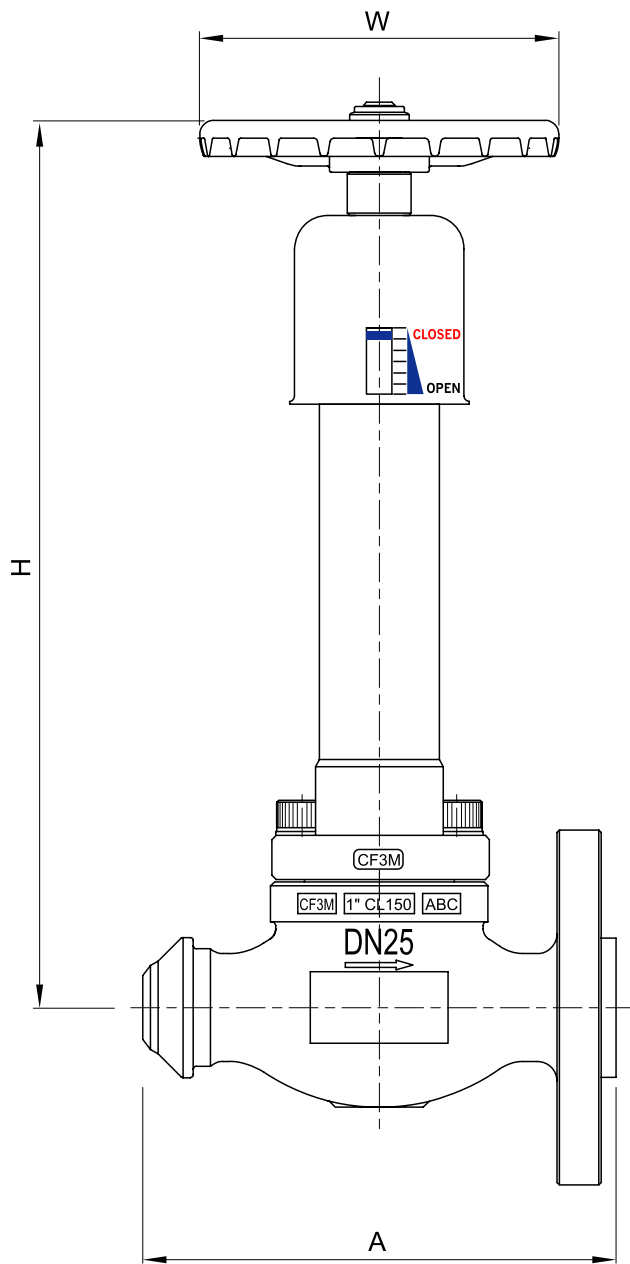
### Operating

Stainless Steel Handwheel

Dimensions in mm

DN	1/2"	3/4"	1"
A	114	140	140
H	198	260	260
$\phi W$	80	100	100
Weight RF (kg)	2.6	4.5	4.6

# Cryogenic Needle Valve



## Butt-weld to Flanged Ends

PN 20 - Class 150 lbs  
 DN 15 to 25 - 1/2" to 1"

### Type

Bolted Type  
 Rising Stem  
 Back Seat

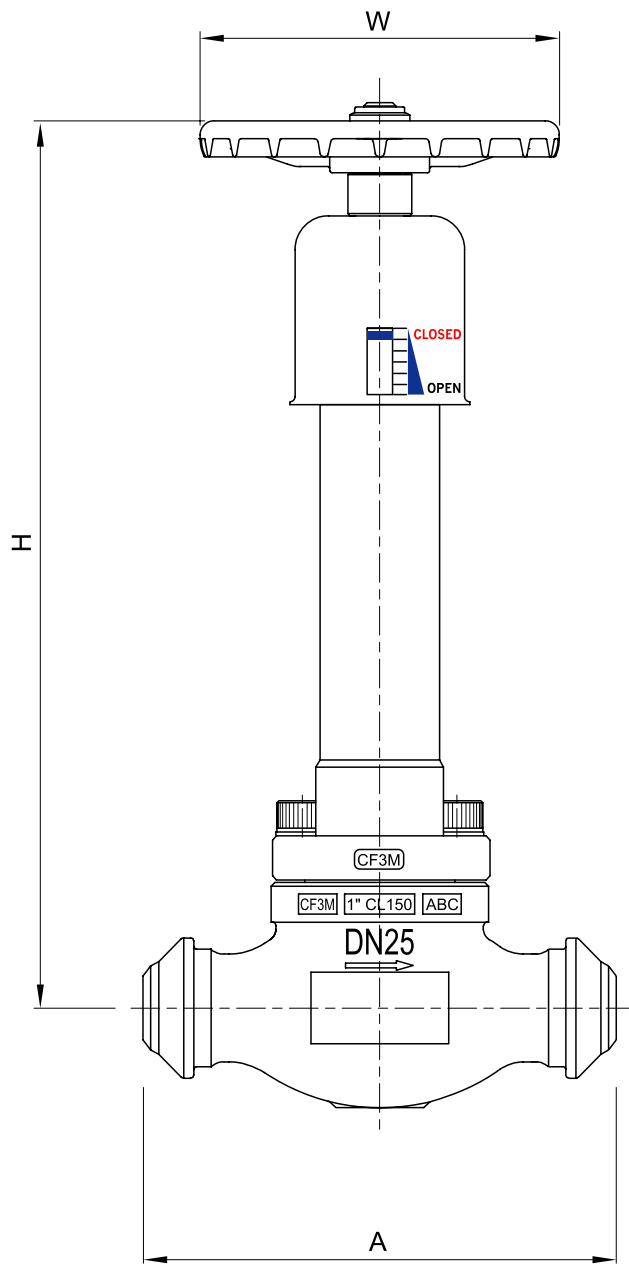
### Operating

Stainless Steel Handwheel

Dimensions in mm

DN	1/2"	3/4"	1"
A	114	140	140
H	198	260	260
$\phi W$	80	100	100
Weight RF (kg)	2.6	4.5	4.6





### Butt-weld Ends

PN 20 - Class 150 lbs  
 DN 15 to 25 - 1/2" to 1"

### Type

Bolted Type  
 Rising Stem  
 Back Seat

### Operating

Stainless Steel Handwheel

Dimensions in mm

DN	1/2"	3/4"	1"
A	114	140	140
H	198	260	260
$\phi W$	80	100	100
Weight RF (kg)	2.2	3.7	3.7

# Cryogenic Ball Valve

## Introduction

Hy-Lok Cryogenic Ball Valves have been designed and engineered for use at pressures up to 2,300psi (160 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 easy maintenance in-line.

Flanged, Screwed, Butt-weld ends are in standard connection and both reduced and full bore are available from 1/2" to 2" size.

## Features and Benefits

- Easy in-line maintenance
- Trunnion mounted ball for ease of operation at high pressure
- Fewer potential leak paths
- Face to face
- Anti static design
- Anti blow-out stem
- Pressure Relief Hole

## Standards

- The body designed and manufactured in accordance with ANSI B16.34
- Flange dimension in accordance with ANSI B16.5
- Welding ends in accordance with ANSI B16.25
- Fire Tested to API 6FA & API 607
- Cryogenic Test in accordance with BS 6364

## Pressure Rating

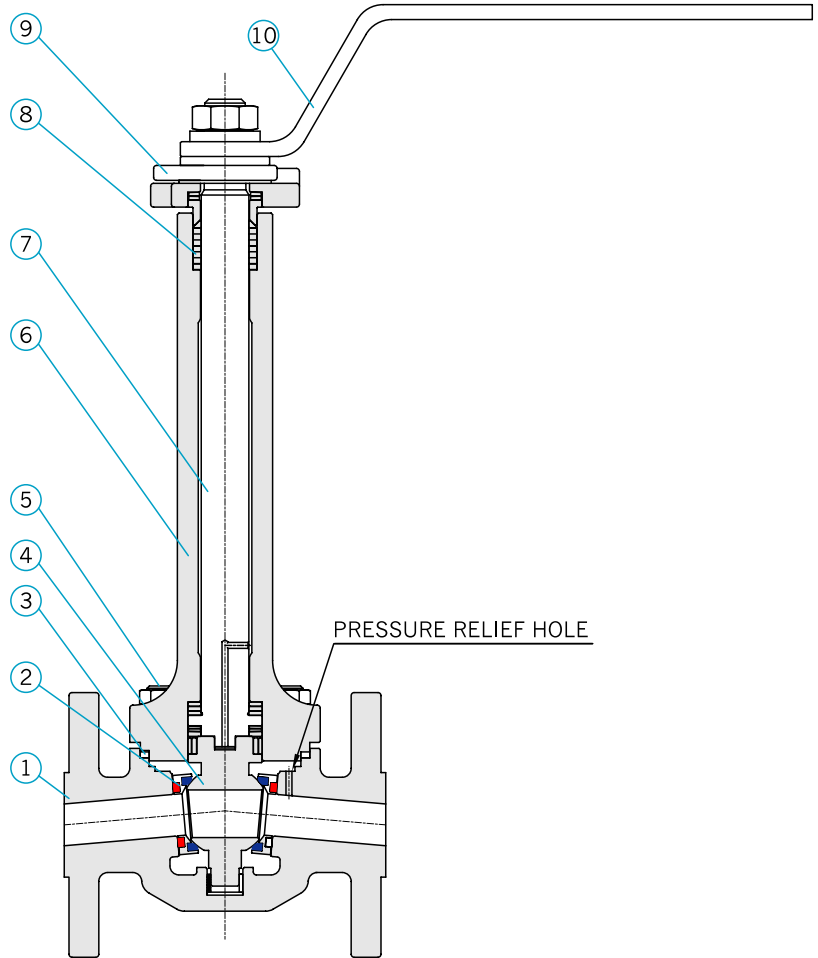
- ANSI Class 150 / 300 / 600 / 900

## End Connection

- Flanged, Screwed, Butt-weld

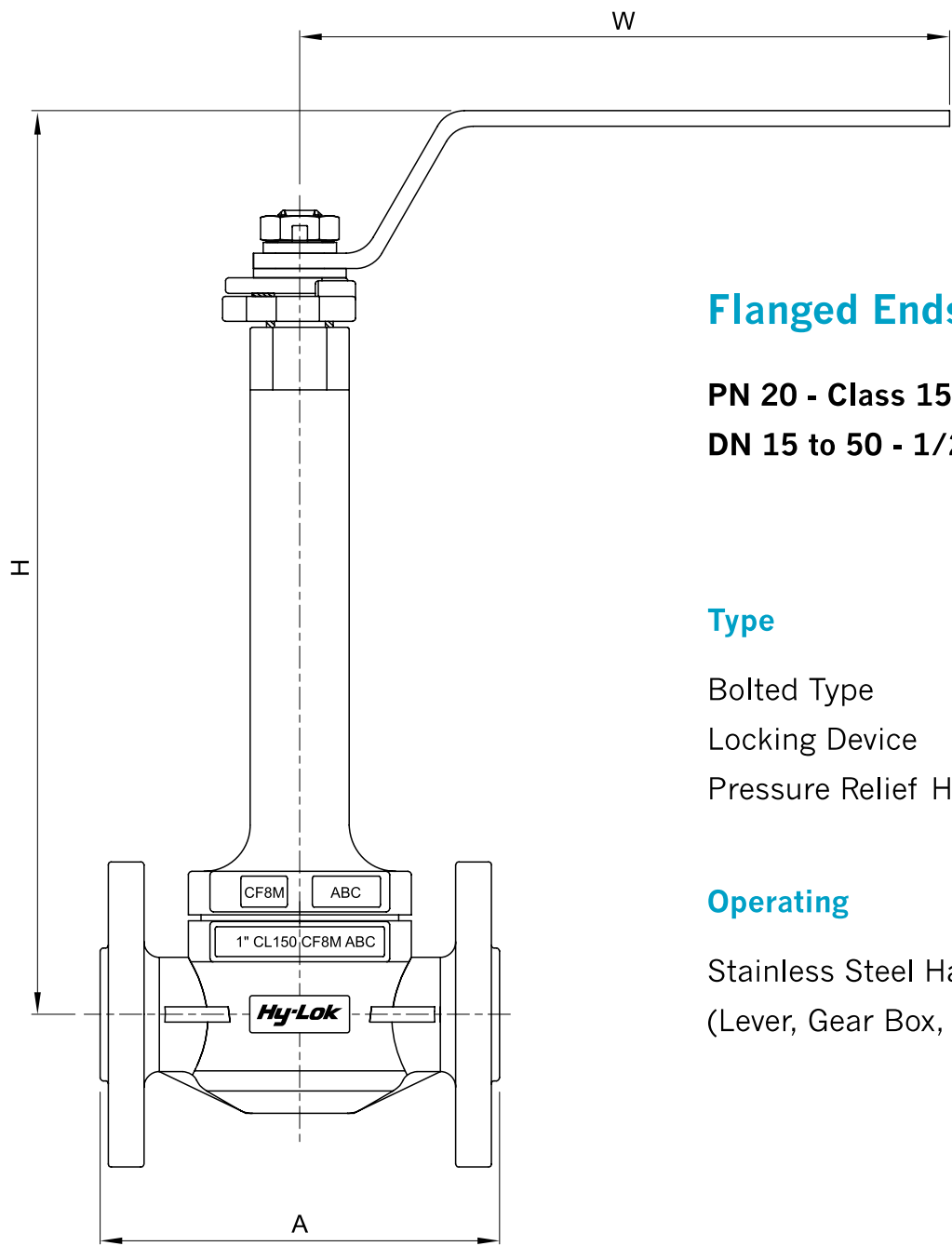
## Specifications

- Size Range  
Screwed Ends : 1/2" to 1"  
Flanged Ends : 1/2" to 2"  
Butt-weld Ends : 1/2" to 2"



## Material of Construction

No.	Description	Material
1	Body	ASTM A351 CF8M, CF3M
2	Ball Seat	PCTFE & Graphite
3	Bonnet Gasket	Graphite & SS316
4	Trunnion Ball	SS316
5	Stud Bolt	ASTM A320 B8M.2
6	Bolted Bonnet	SS316
7	Extension Stem	SS316
8	Stem Packing	Graphite
9	Locking Device	SS316
10	Lever Handle	SS316



### Flanged Ends

**PN 20 - Class 150 lbs**  
**DN 15 to 50 - 1/2" to 2"**

### Type

- Bolted Type
- Locking Device
- Pressure Relief Hole

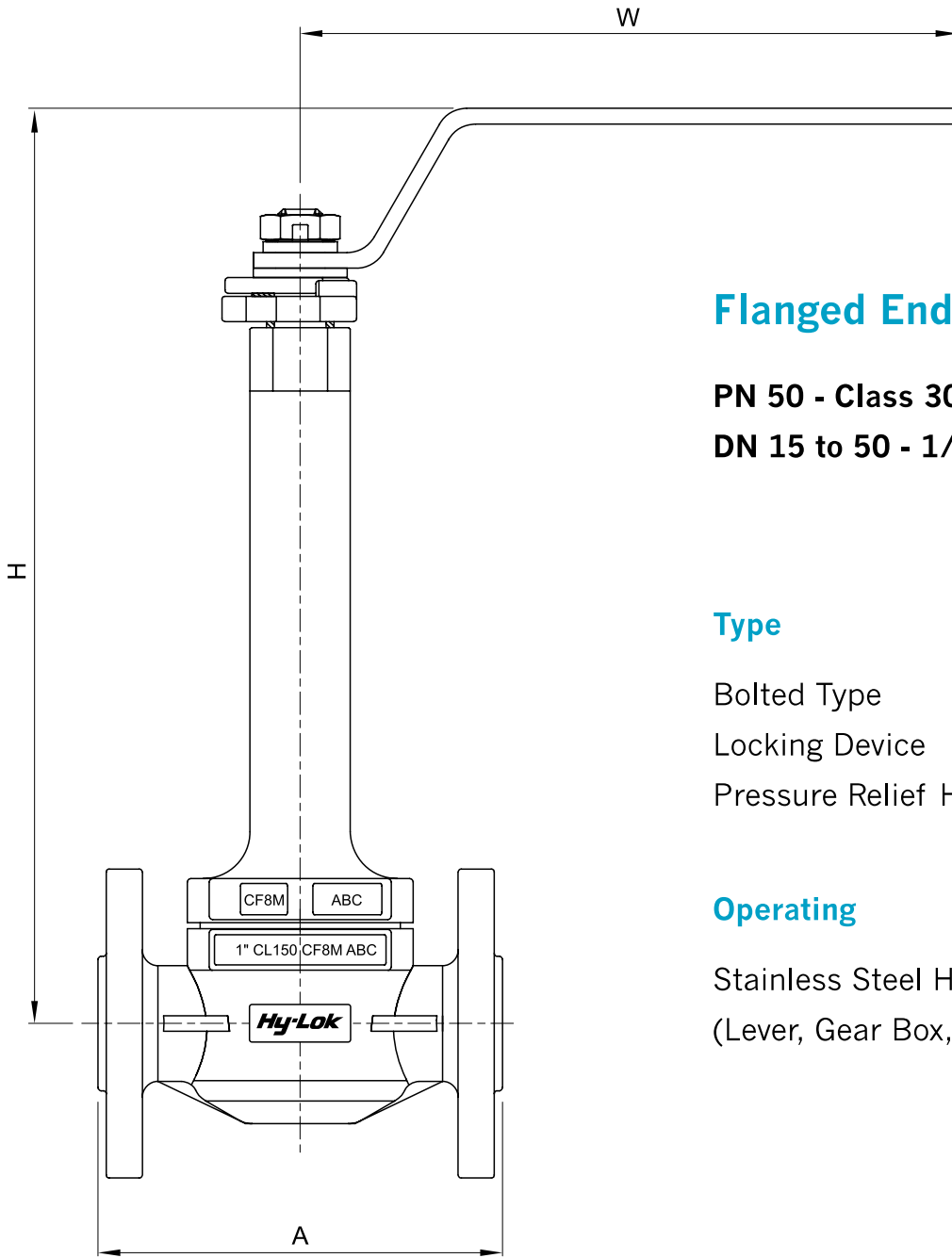
### Operating

Stainless Steel Handle  
 (Lever, Gear Box, Actuator)

Dimensions in mm

DN	1/2"	3/4"	1"	1-1/2"	2"
A	108	117	127	165	210
H	275	290	290	330	330
W	210	230	230	260	260
Weight RF (kg)	3.5	4.5	7.0	10.5	20

# Cryogenic Ball Valve



## Flanged Ends

**PN 50 - Class 300 lbs**  
**DN 15 to 50 - 1/2" to 2"**

## Type

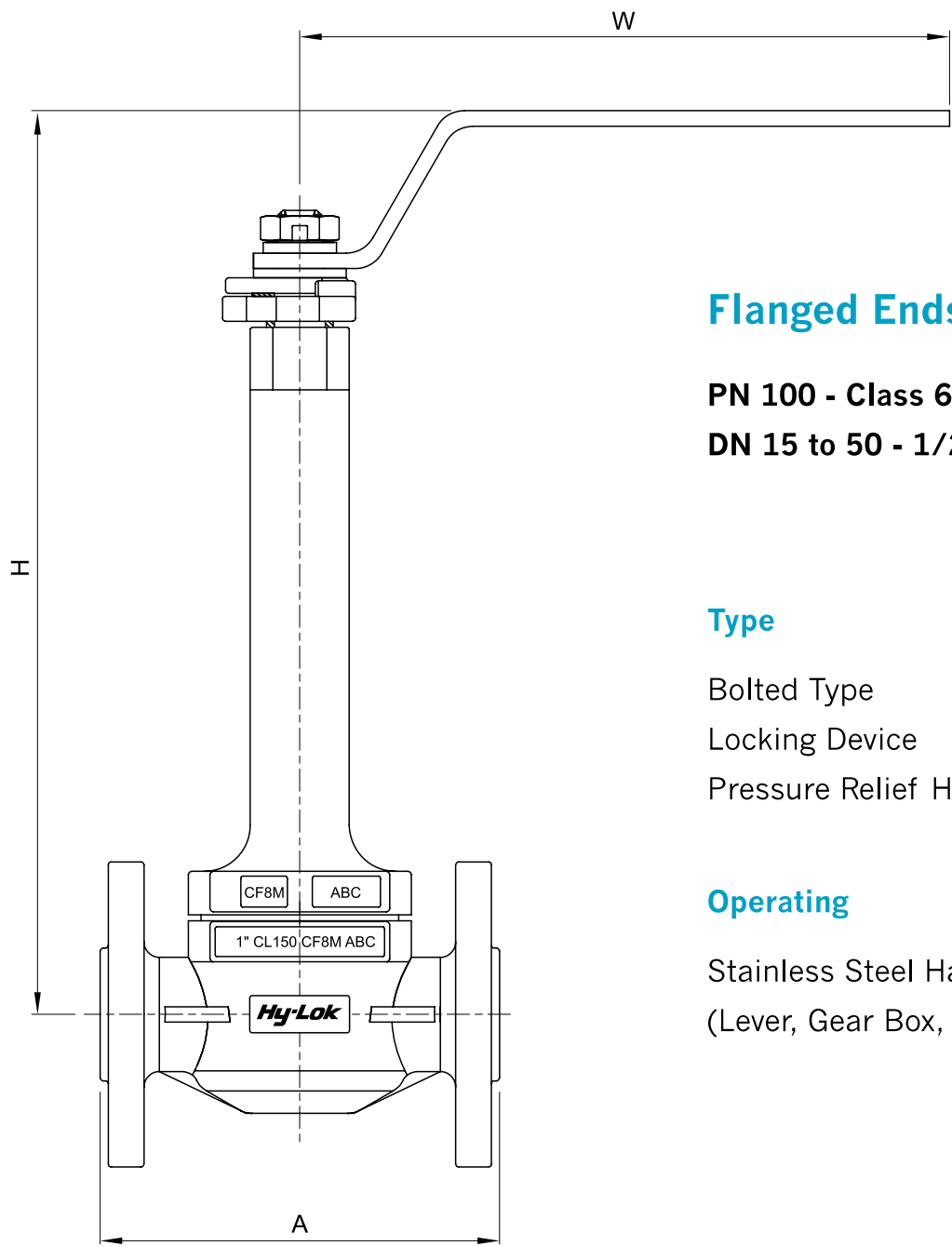
- Bolted Type
- Locking Device
- Pressure Relief Hole

## Operating

Stainless Steel Handle  
 (Lever, Gear Box, Actuator)

Dimensions in mm

DN	1/2"	3/4"	1"	1-1/2"	2"
A	140	152	165	190	216
H	290	295	300	320	335
W	210	230	230	260	269
Weight RF (kg)	5	7	10	18	26



### Flanged Ends

PN 100 - Class 600 lbs  
 DN 15 to 50 - 1/2" to 2"

### Type

- Bolted Type
- Locking Device
- Pressure Relief Hole

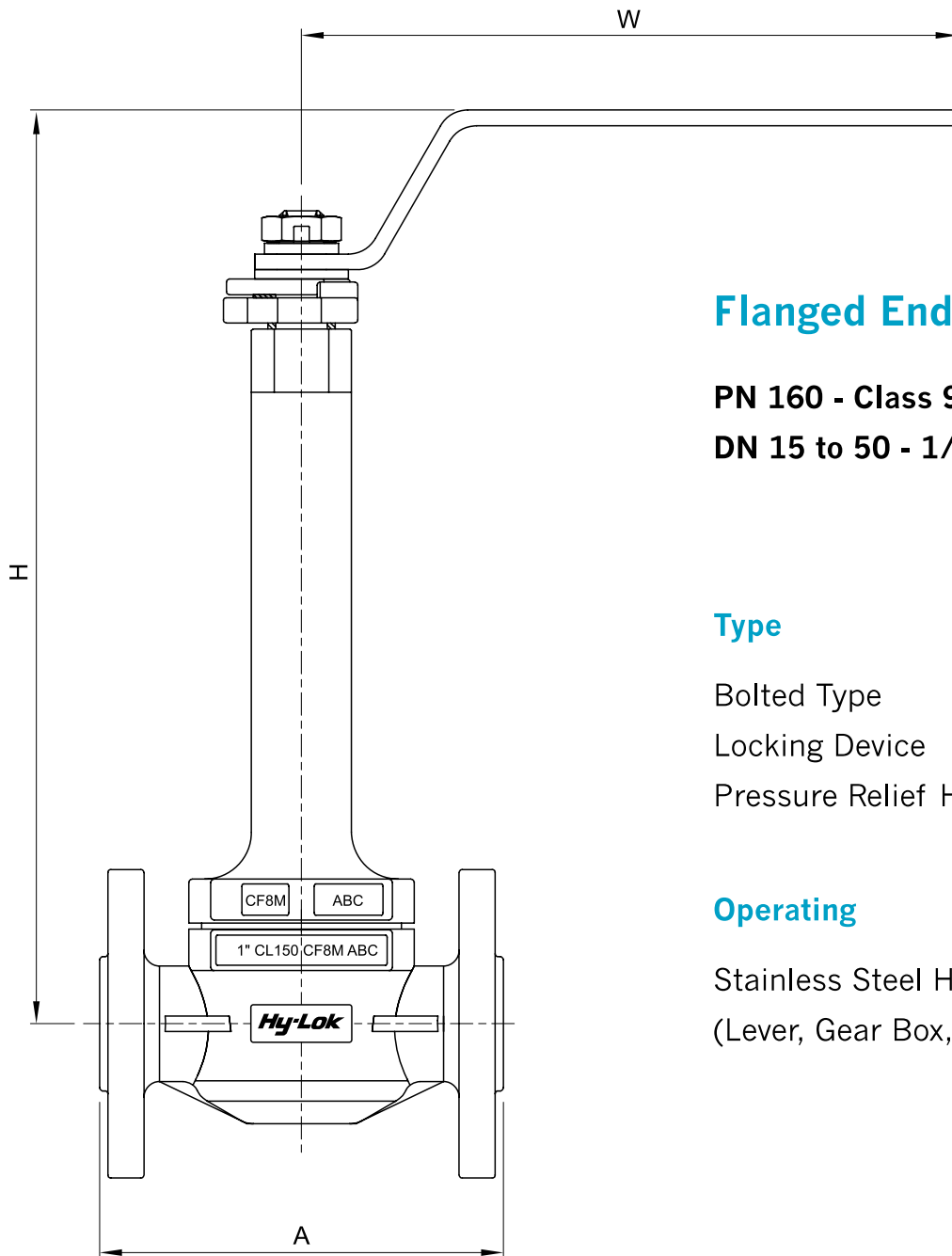
### Operating

Stainless Steel Handle  
 (Lever, Gear Box, Actuator)

Dimensions in mm

DN	1/2"	3/4"	1"	1-1/2"	2"
A	165	190	216	241	292
H	295	295	300	320	350
W	210	230	230	260	269
Weight RF (kg)	7	10	19	23	36

# Cryogenic Ball Valve



## Flanged Ends

**PN 160 - Class 900 lbs**  
**DN 15 to 50 - 1/2" to 2"**

## Type

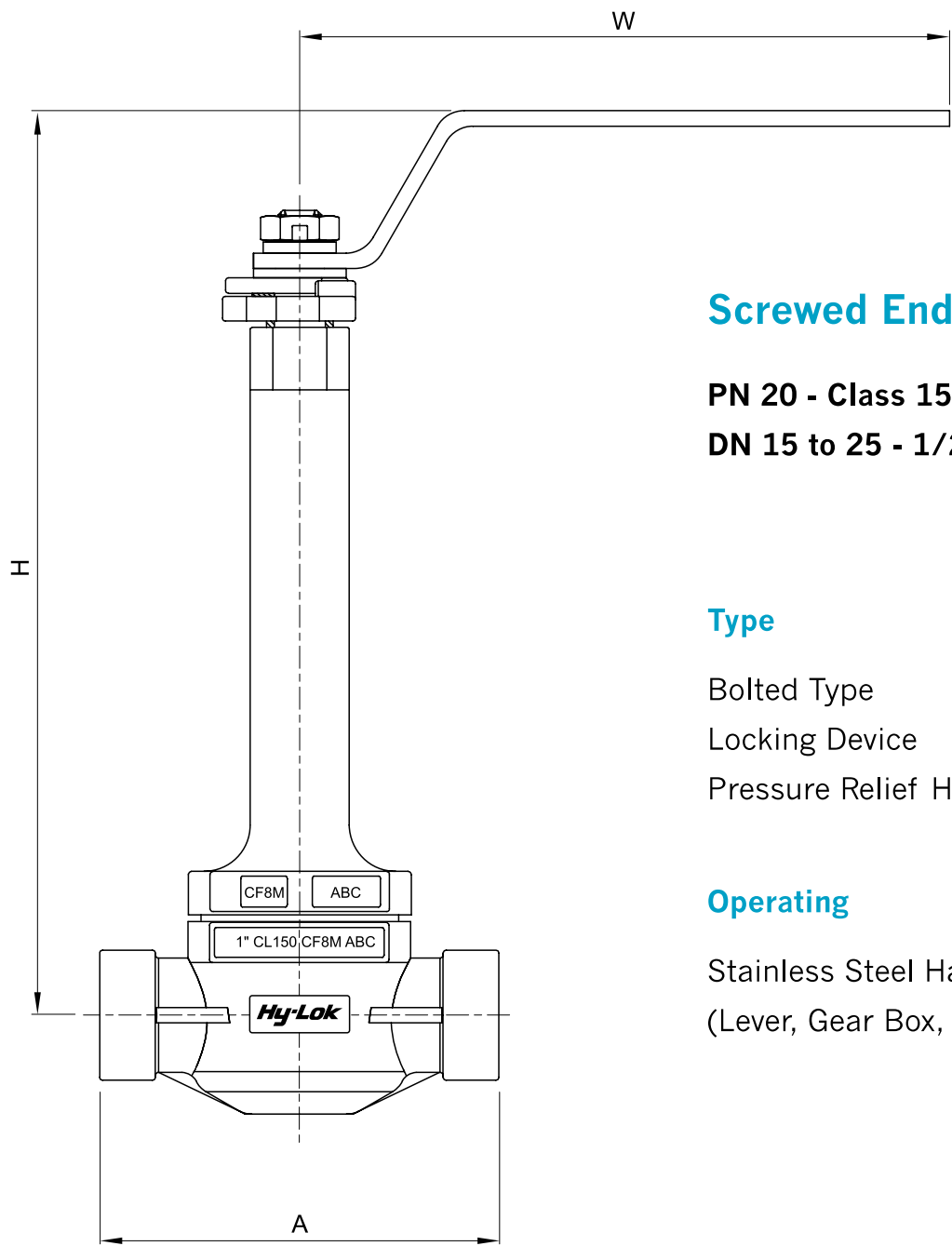
- Bolted Type
- Locking Device
- Pressure Relief Hole

## Operating

Stainless Steel Handle  
 (Lever, Gear Box, Actuator)

Dimensions in mm

DN	1/2"	3/4"	1"	1-1/2"	2"
A	216	229	254	305	368
H	300	300	305	355	370
W	230	260	260	350	450
Weight RF (kg)	14	17	22	50	67



### Screwed Ends

**PN 20 - Class 150 lbs**  
**DN 15 to 25 - 1/2" to 1"**

### Type

- Bolted Type
- Locking Device
- Pressure Relief Hole

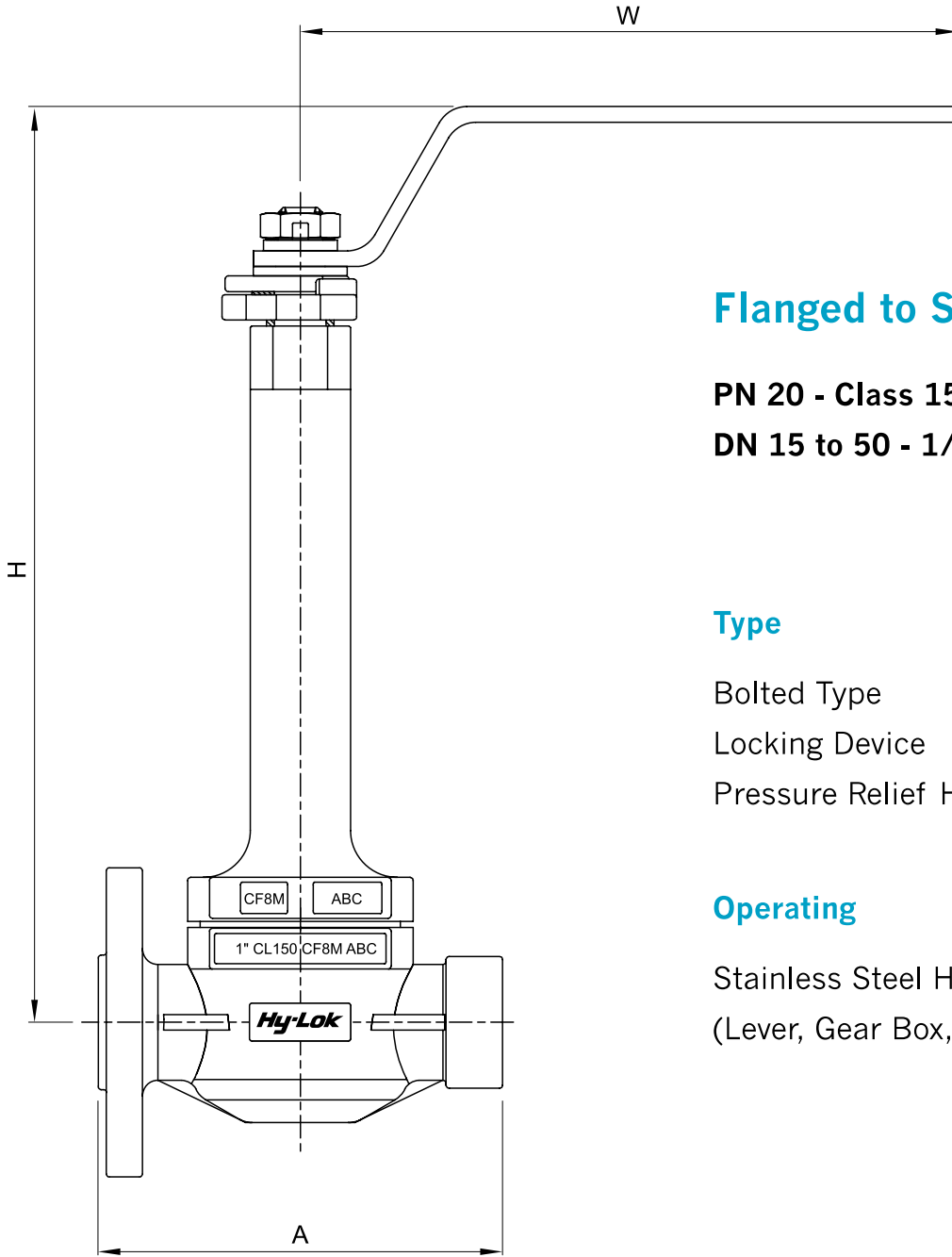
### Operating

Stainless Steel Handle  
 (Lever, Gear Box, Actuator)

Dimensions in mm

DN	1/2"	3/4"	1"
A	108	117	127
H	275	290	290
W	210	230	230
Weight RF (kg)	6.2	8.6	17.2

# Cryogenic Ball Valve



## Flanged to Screwed Ends

**PN 20 - Class 150 lbs**  
**DN 15 to 50 - 1/2" to 2"**

### Type

- Bolted Type
- Locking Device
- Pressure Relief Hole

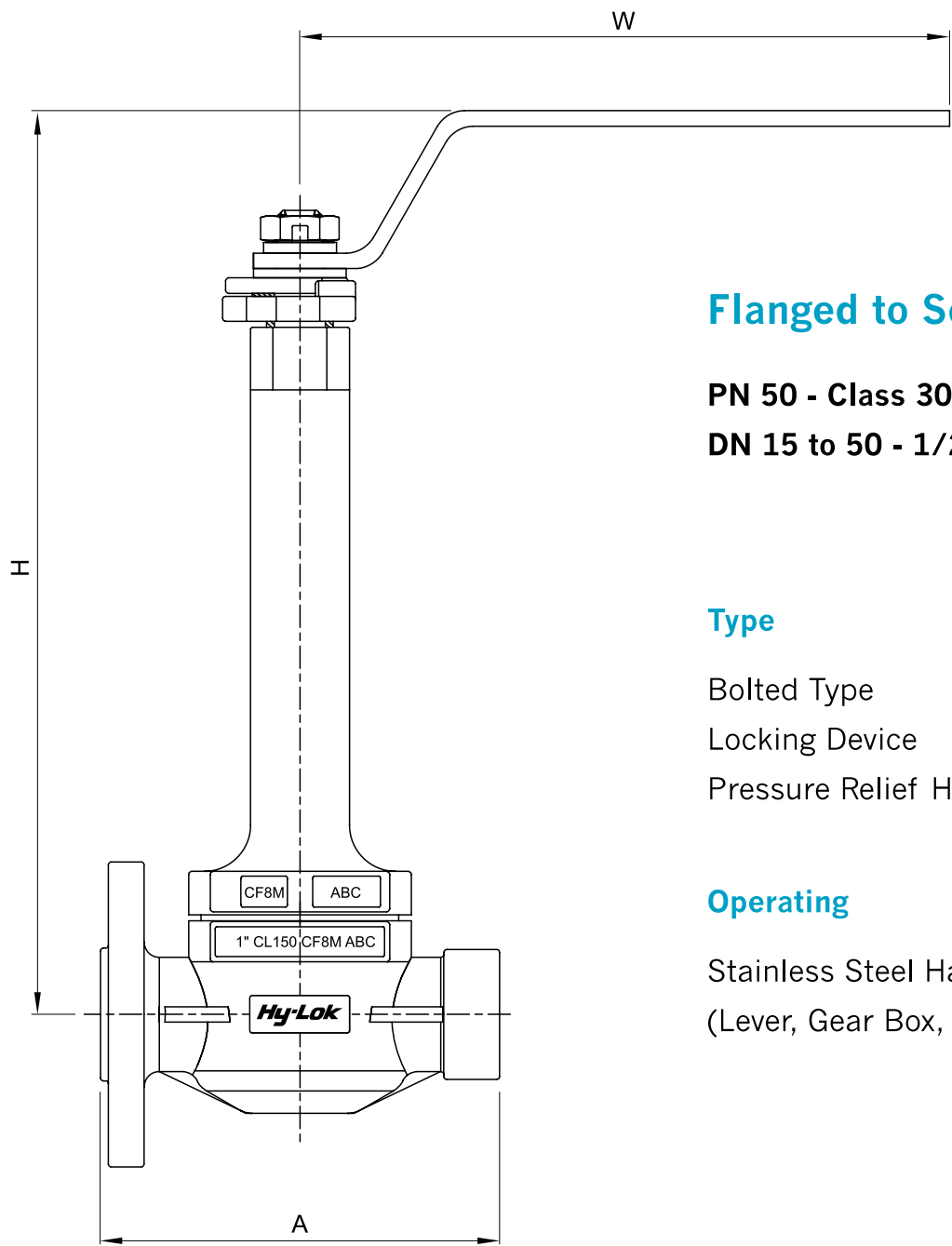
### Operating

- Stainless Steel Handle  
(Lever, Gear Box, Actuator)

Dimensions in mm

DN	1/2"	3/4"	1"	1-1/2"	2"
A	108	117	127	165	210
H	275	290	290	330	330
W	210	230	230	260	260
Weight RF (kg)	3.4	3.8	6.2	9.1	17.8





### Flanged to Screwed Ends

**PN 50 - Class 300 lbs**  
**DN 15 to 50 - 1/2" to 2"**

#### Type

- Bolted Type
- Locking Device
- Pressure Relief Hole

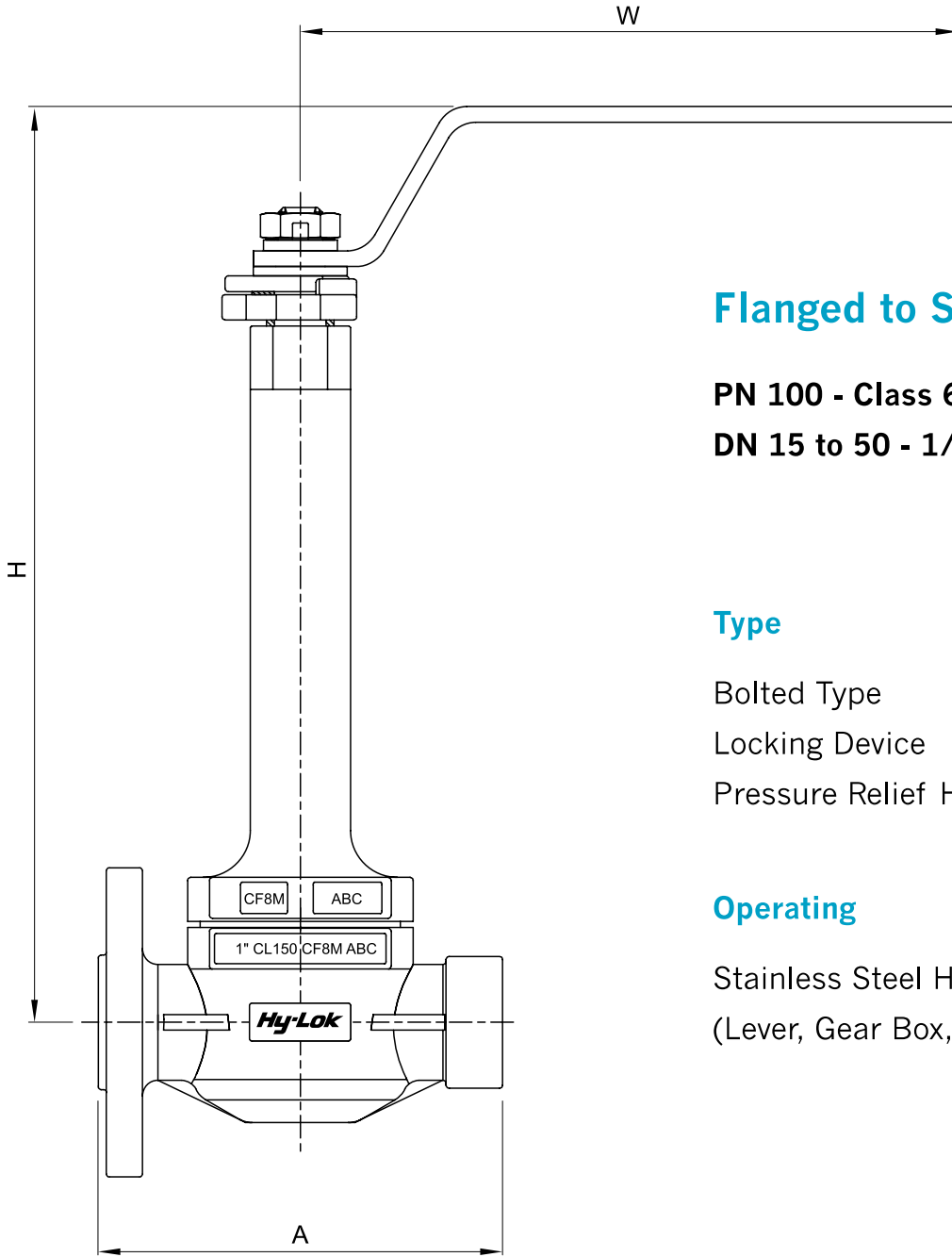
#### Operating

- Stainless Steel Handle  
 (Lever, Gear Box, Actuator)

Dimensions in mm

DN	1/2"	3/4"	1"	1-1/2"	2"
A	140	152	165	190	216
H	290	295	300	320	335
W	210	230	230	260	269
Weight RF (kg)	4.3	5.9	8.6	15.4	22.6

# Cryogenic Ball Valve



## Flanged to Screwed Ends

**PN 100 - Class 600 lbs**  
**DN 15 to 50 - 1/2" to 2"**

### Type

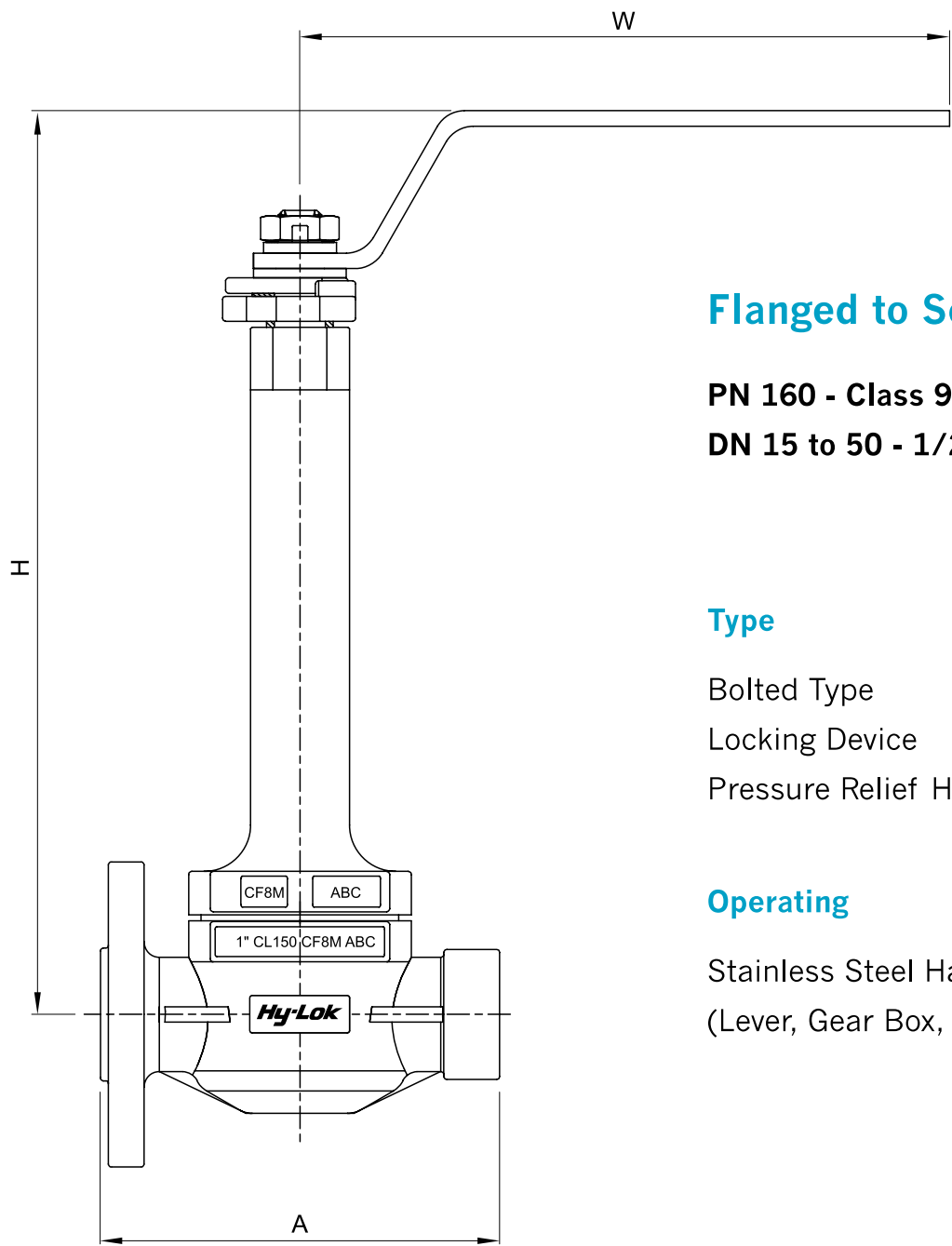
- Bolted Type
- Locking Device
- Pressure Relief Hole

### Operating

Stainless Steel Handle  
 (Lever, Gear Box, Actuator)

Dimensions in mm

DN	1/2"	3/4"	1"	1-1/2"	2"
A	165	190	216	241	292
H	295	295	300	320	350
W	210	230	230	260	269
Weight RF (kg)	6.2	8.6	17.4	20.0	32.3



### Flanged to Screwed Ends

**PN 160 - Class 900 lbs**  
**DN 15 to 50 - 1/2" to 2"**

#### Type

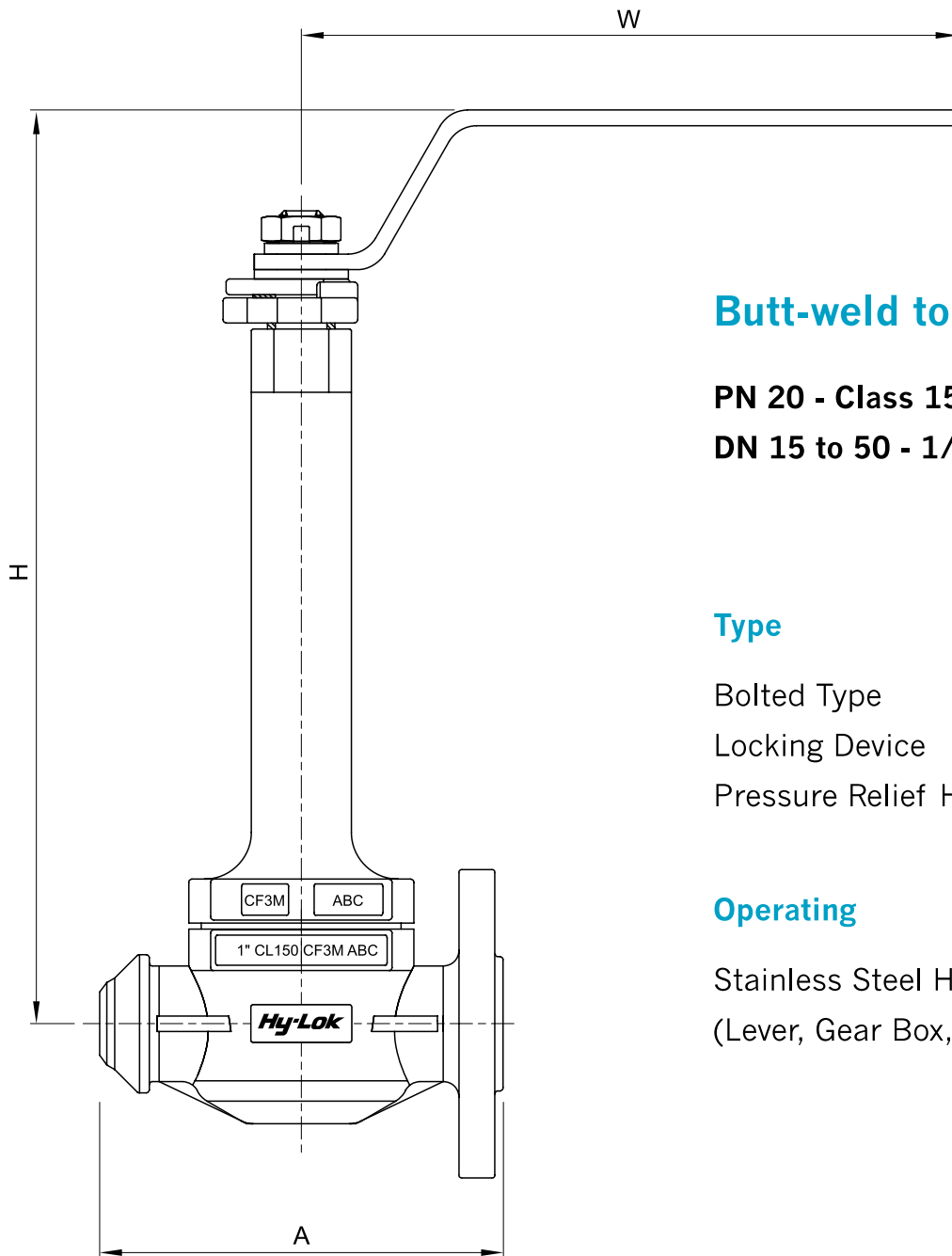
- Bolted Type
- Locking Device
- Pressure Relief Hole

#### Operating

Stainless Steel Handle  
 (Lever, Gear Box, Actuator)

Dimensions in mm					
DN	1/2"	3/4"	1"	1-1/2"	2"
A	216	229	254	305	368
H	300	300	305	355	370
W	230	260	260	350	450
Weight RF (kg)	12.3	14.7	18.6	44.6	57.2

# Cryogenic Ball Valve



## Butt-weld to Flanged Ends

**PN 20 - Class 150 lbs**  
**DN 15 to 50 - 1/2" to 2"**

### Type

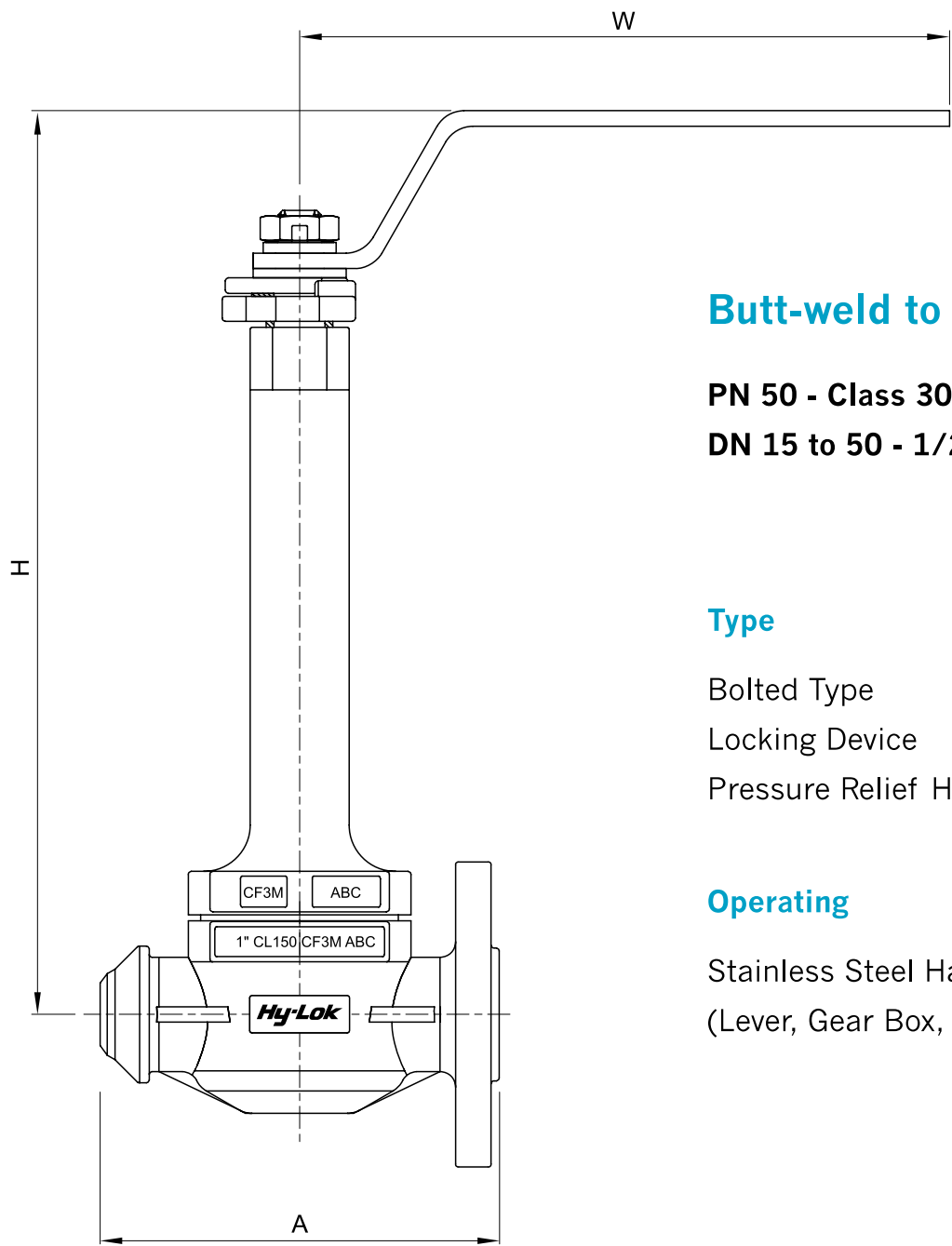
- Bolted Type
- Locking Device
- Pressure Relief Hole

### Operating

Stainless Steel Handle  
 (Lever, Gear Box, Actuator)

Dimensions in mm

DN	1/2"	3/4"	1"	1-1/2"	2"
A	108	117	127	165	210
H	275	290	290	330	330
W	210	230	230	260	260
Weight RF (kg)	3.4	3.8	6.2	9.1	17.8



### Butt-weld to Flanged Ends

**PN 50 - Class 300 lbs**  
**DN 15 to 50 - 1/2" to 2"**

### Type

- Bolted Type
- Locking Device
- Pressure Relief Hole

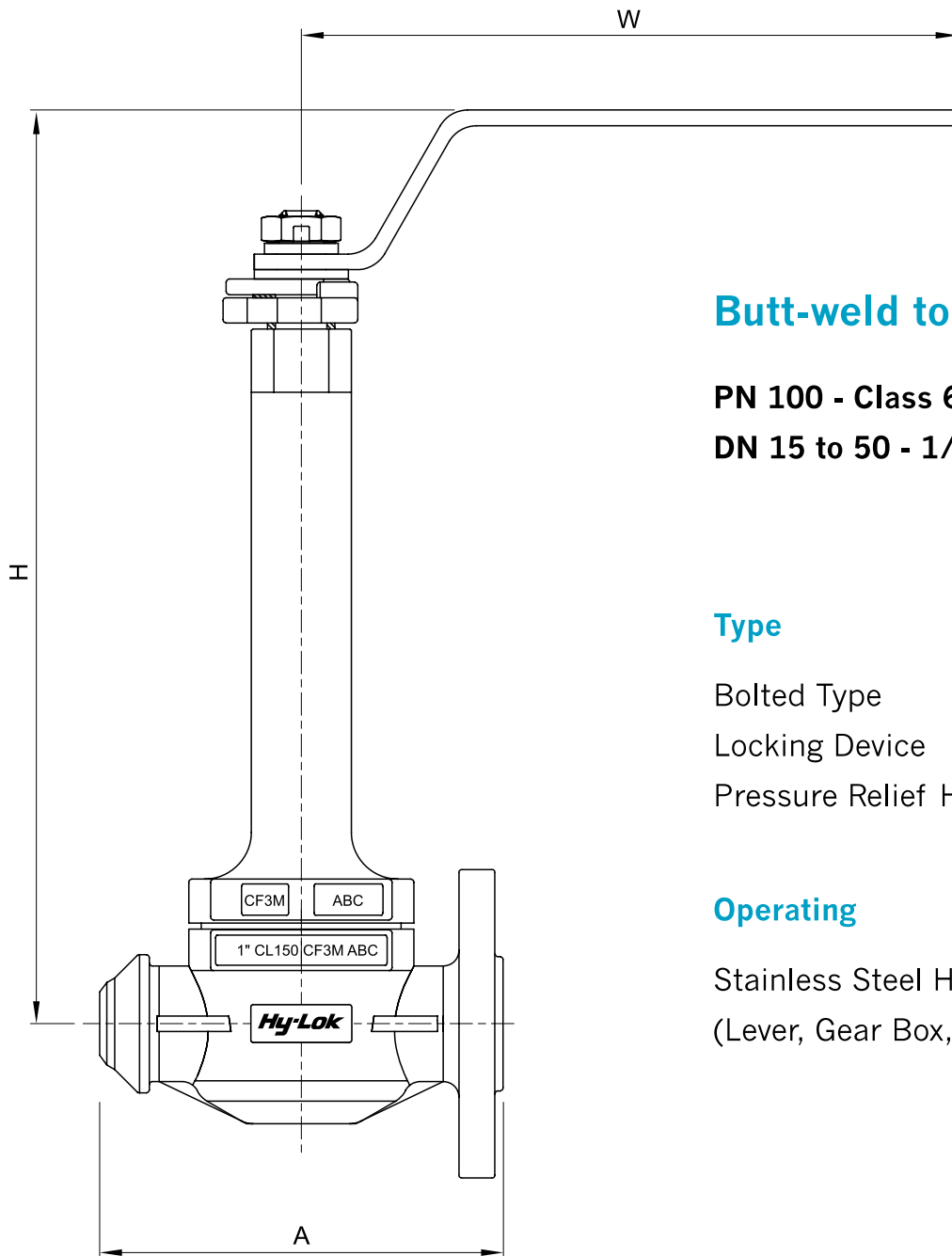
### Operating

Stainless Steel Handle  
 (Lever, Gear Box, Actuator)

Dimensions in mm

DN	1/2"	3/4"	1"	1-1/2"	2"
A	140	152	165	190	216
H	290	295	300	320	335
W	210	230	230	260	269
Weight RF (kg)	4.3	5.9	8.6	15.4	22.6

# Cryogenic Ball Valve



## Butt-weld to Flanged Ends

**PN 100 - Class 600 lbs**  
**DN 15 to 50 - 1/2" to 2"**

### Type

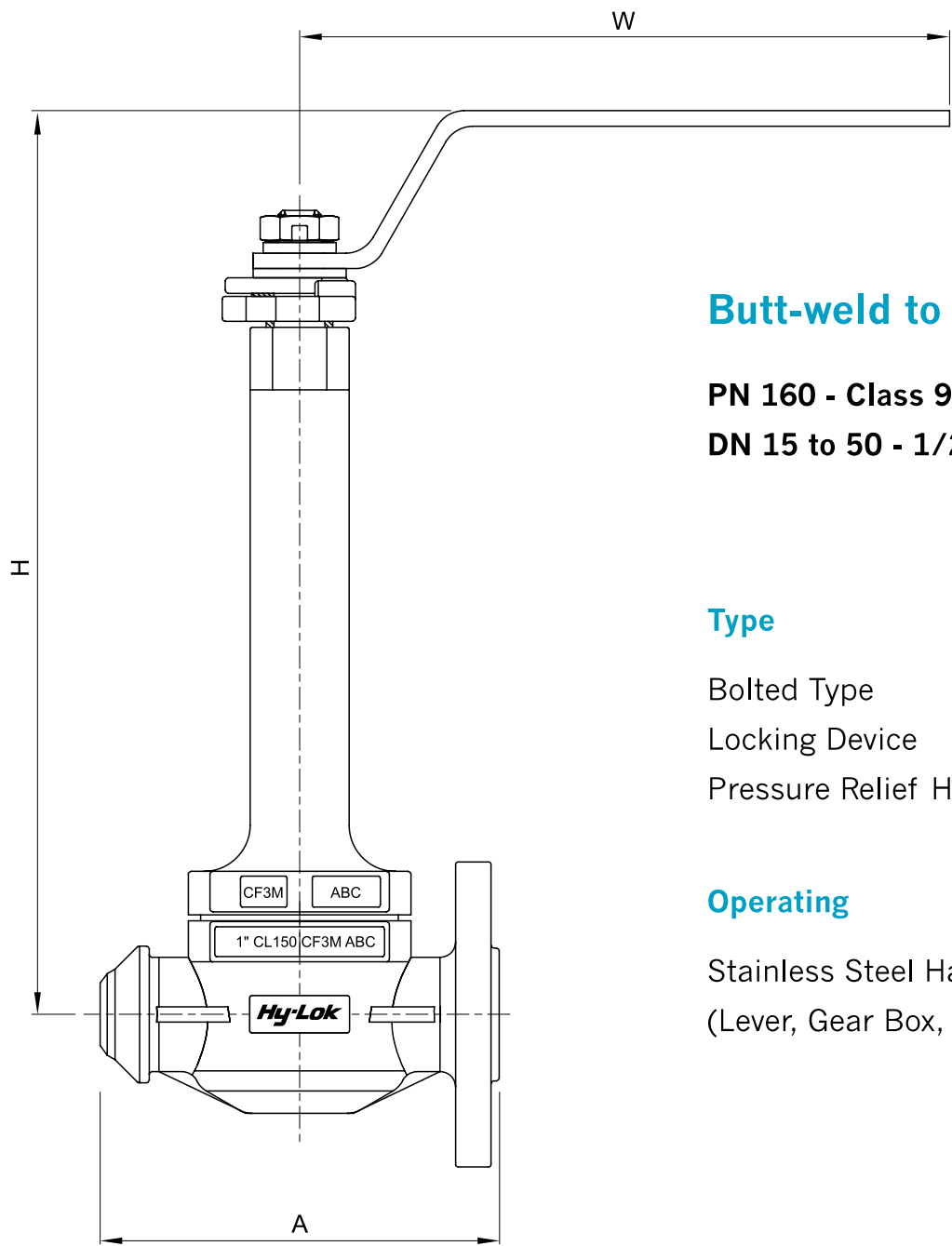
- Bolted Type
- Locking Device
- Pressure Relief Hole

### Operating

Stainless Steel Handle  
 (Lever, Gear Box, Actuator)

Dimensions in mm

DN	1/2"	3/4"	1"	1-1/2"	2"
A	165	190	216	241	292
H	295	295	300	320	350
W	210	230	230	260	269
Weight RF (kg)	6.2	8.6	17.4	20.0	32.3



### Butt-weld to Flanged Ends

PN 160 - Class 900 lbs  
 DN 15 to 50 - 1/2" to 2"

#### Type

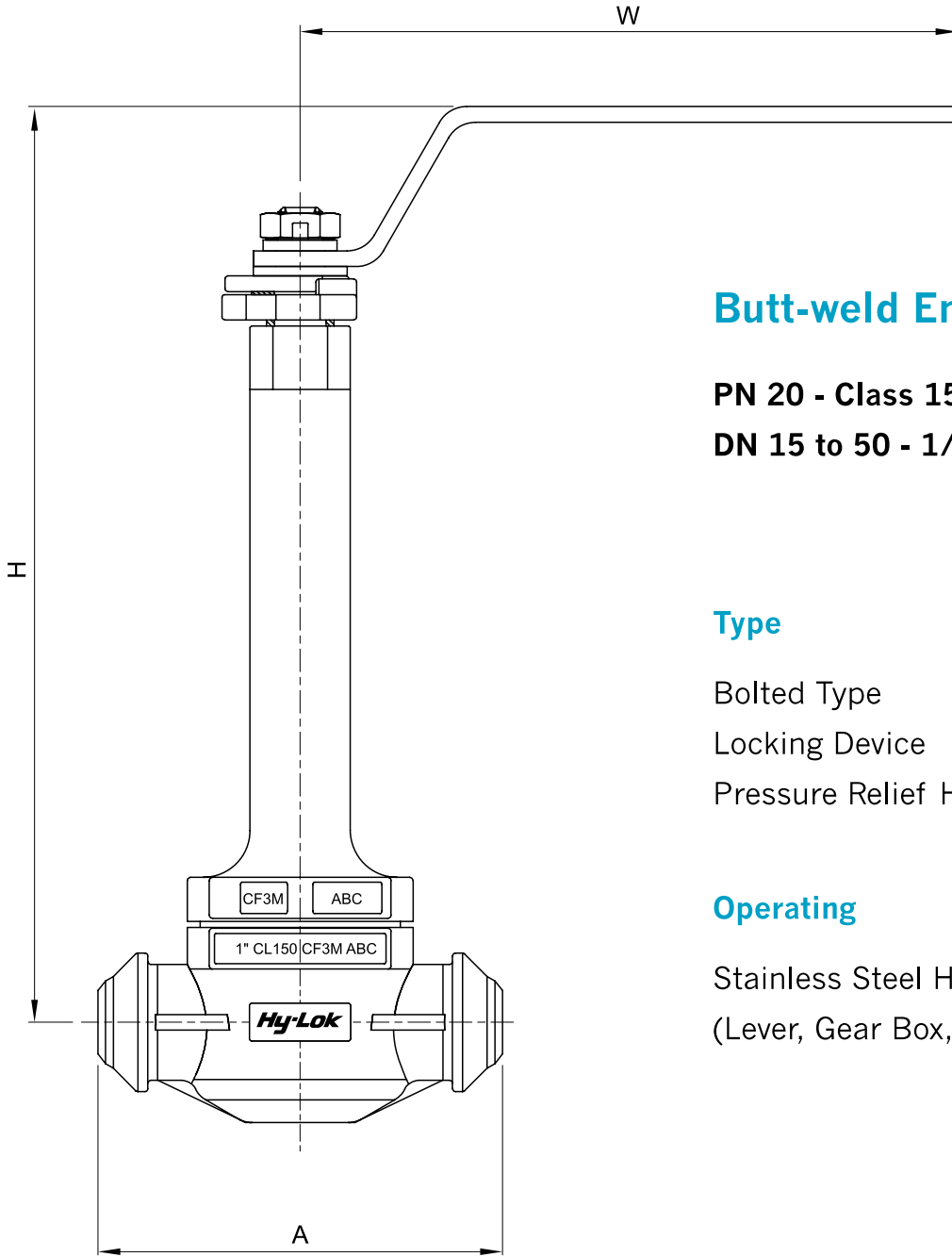
- Bolted Type
- Locking Device
- Pressure Relief Hole

#### Operating

Stainless Steel Handle  
 (Lever, Gear Box, Actuator)

Dimensions in mm					
DN	1/2"	3/4"	1"	1-1/2"	2"
A	216	229	254	305	368
H	300	300	305	355	370
W	230	260	260	350	450
Weight RF (kg)	12.3	14.7	18.6	44.6	57.2

# Cryogenic Ball Valve



## Butt-weld Ends

**PN 20 - Class 150 lbs**  
**DN 15 to 50 - 1/2" to 2"**

## Type

- Bolted Type
- Locking Device
- Pressure Relief Hole

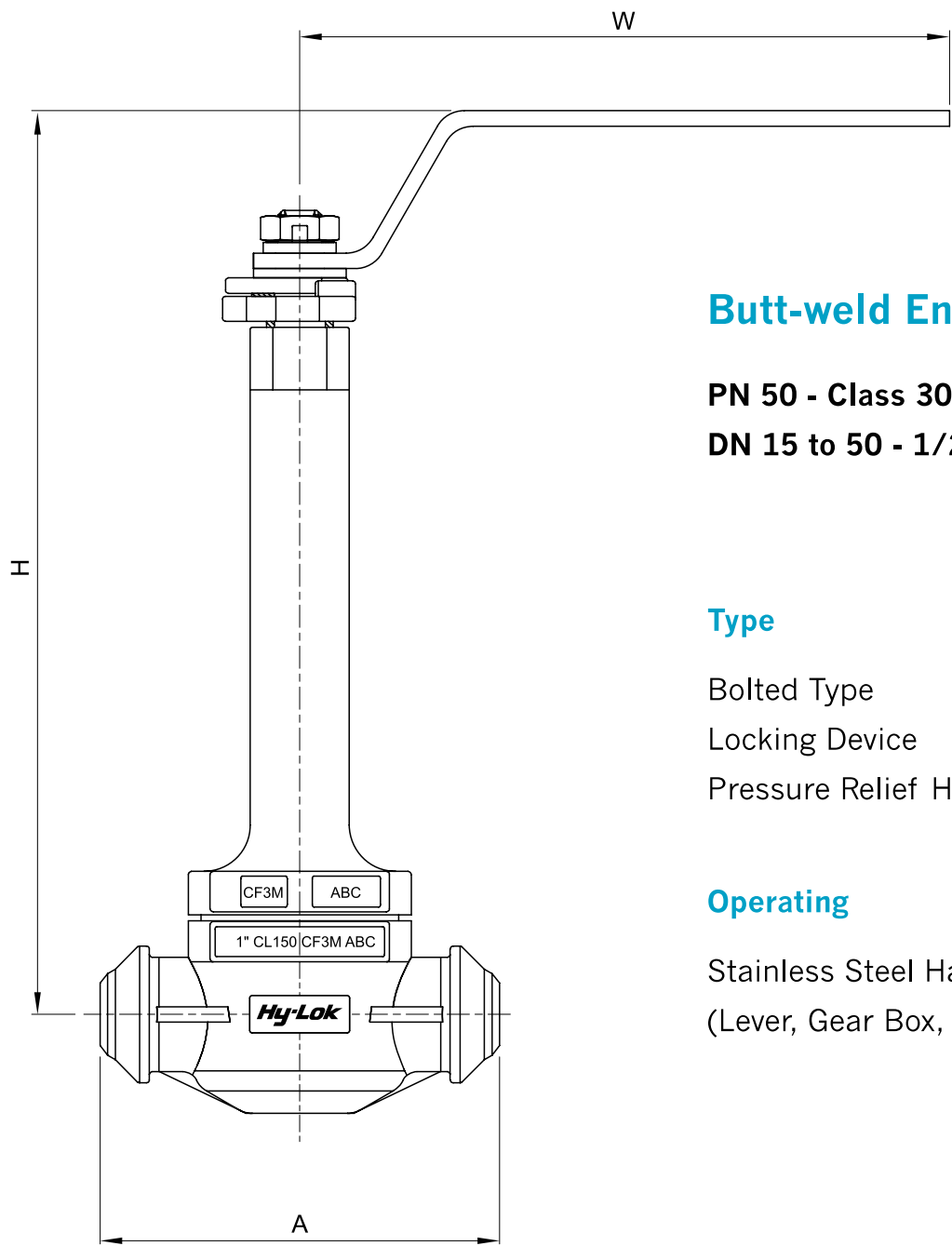
## Operating

Stainless Steel Handle  
 (Lever, Gear Box, Actuator)

Dimensions in mm

DN	1/2"	3/4"	1"	1-1/2"	2"
A	108	117	127	165	210
H	275	290	290	330	330
W	210	230	230	260	260
Weight RF (kg)	6.2	8.6	7.2	7.5	15.4





**Butt-weld Ends**

**PN 50 - Class 300 lbs**  
**DN 15 to 50 - 1/2" to 2"**

**Type**

- Bolted Type
- Locking Device
- Pressure Relief Hole

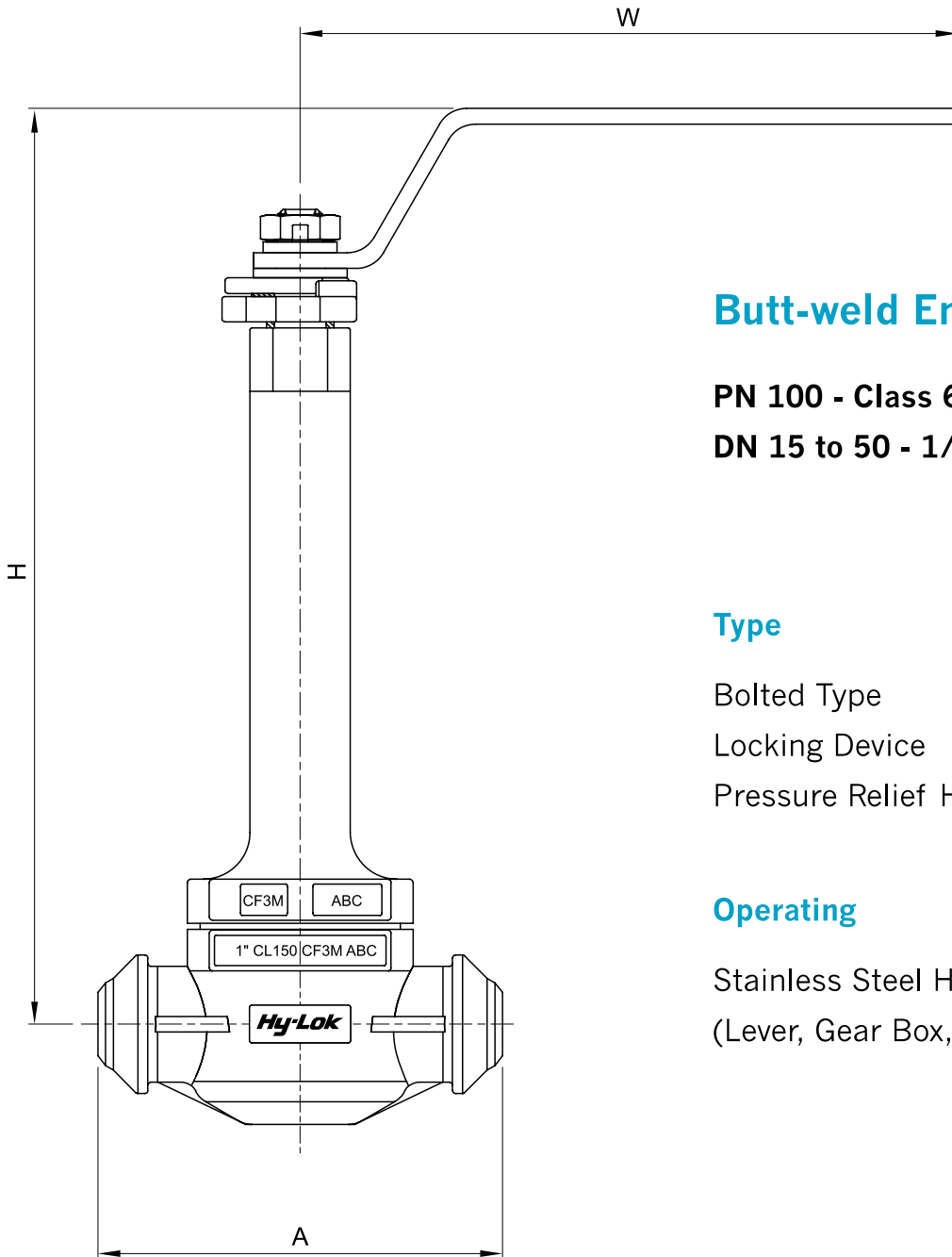
**Operating**

Stainless Steel Handle  
 (Lever, Gear Box, Actuator)

Dimensions in mm

DN	1/2"	3/4"	1"	1-1/2"	2"
A	140	152	165	190	216
H	290	295	300	320	335
W	210	230	230	260	269
Weight RF (kg)	4.3	5.9	8.6	15.4	22.6

# Cryogenic Ball Valve



## Butt-weld Ends

**PN 100 - Class 600 lbs**  
**DN 15 to 50 - 1/2" to 2"**

## Type

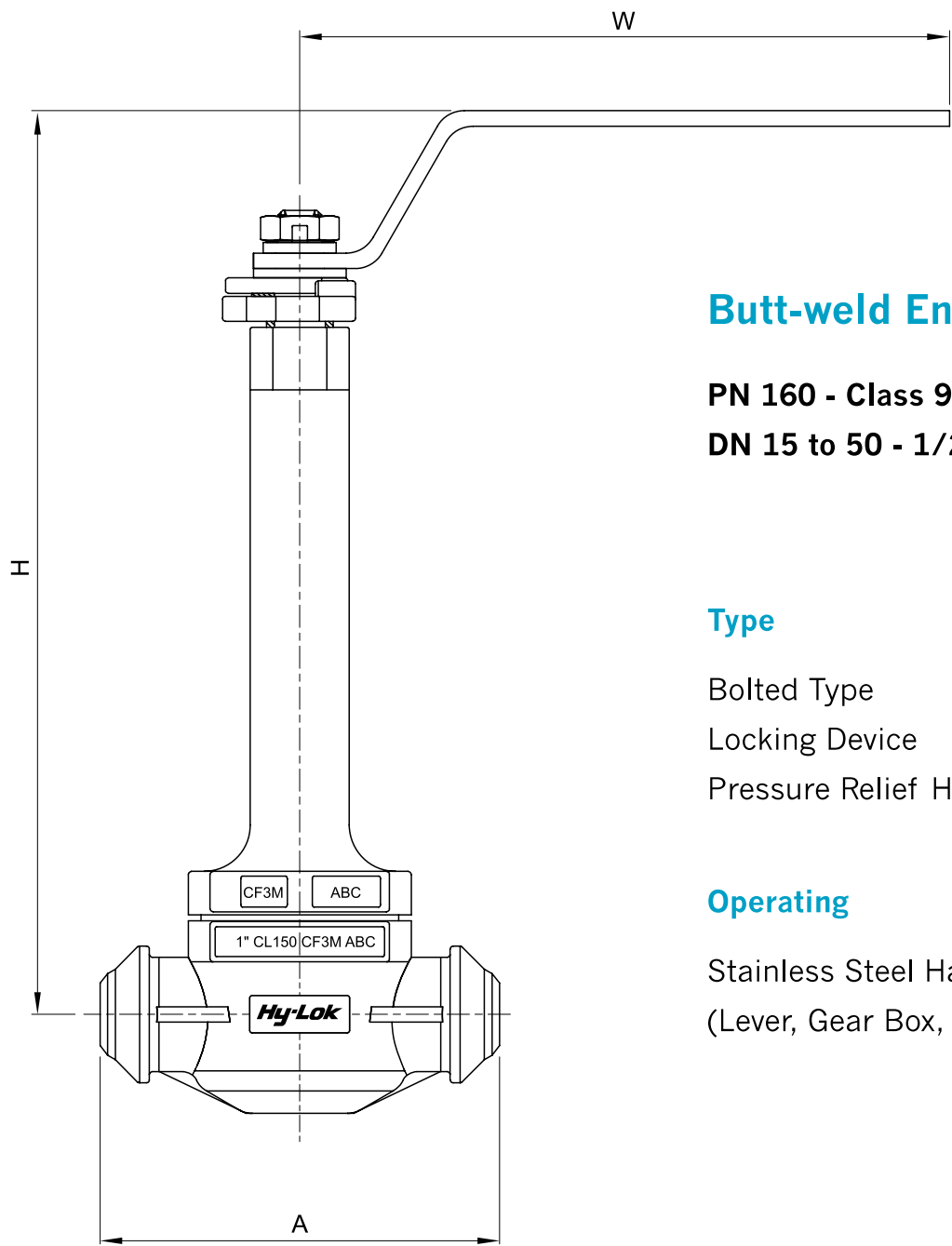
- Bolted Type
- Locking Device
- Pressure Relief Hole

## Operating

Stainless Steel Handle  
 (Lever, Gear Box, Actuator)

Dimensions in mm

DN	1/2"	3/4"	1"	1-1/2"	2"
A	165	190	216	241	292
H	295	295	300	320	350
W	210	230	230	260	269
Weight RF (kg)	5.4	7.6	15.8	16.8	28.6



**Butt-weld Ends**

**PN 160 - Class 900 lbs**  
**DN 15 to 50 - 1/2" to 2"**

**Type**

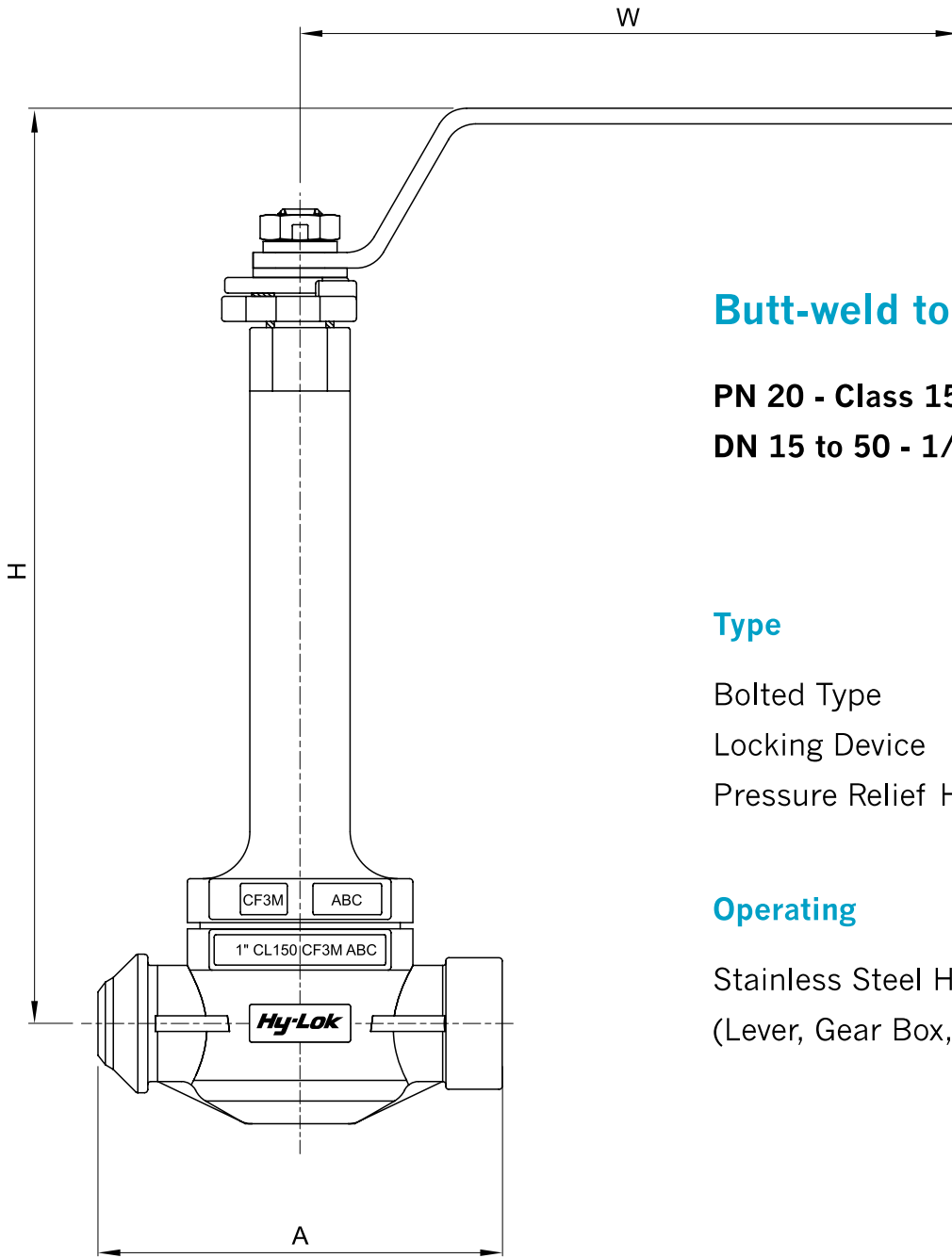
- Bolted Type
- Locking Device
- Pressure Relief Hole

**Operating**

Stainless Steel Handle  
 (Lever, Gear Box, Actuator)

Dimensions in mm					
DN	1/2"	3/4"	1"	1-1/2"	2"
A	216	229	254	305	368
H	300	300	305	355	370
W	230	260	260	350	450
Weight RF (kg)	12.3	14.7	17.4	39.2	47.4

# Cryogenic Ball Valve



## Butt-weld to Screwed Ends

**PN 20 - Class 150 lbs**  
**DN 15 to 50 - 1/2" to 2"**

### Type

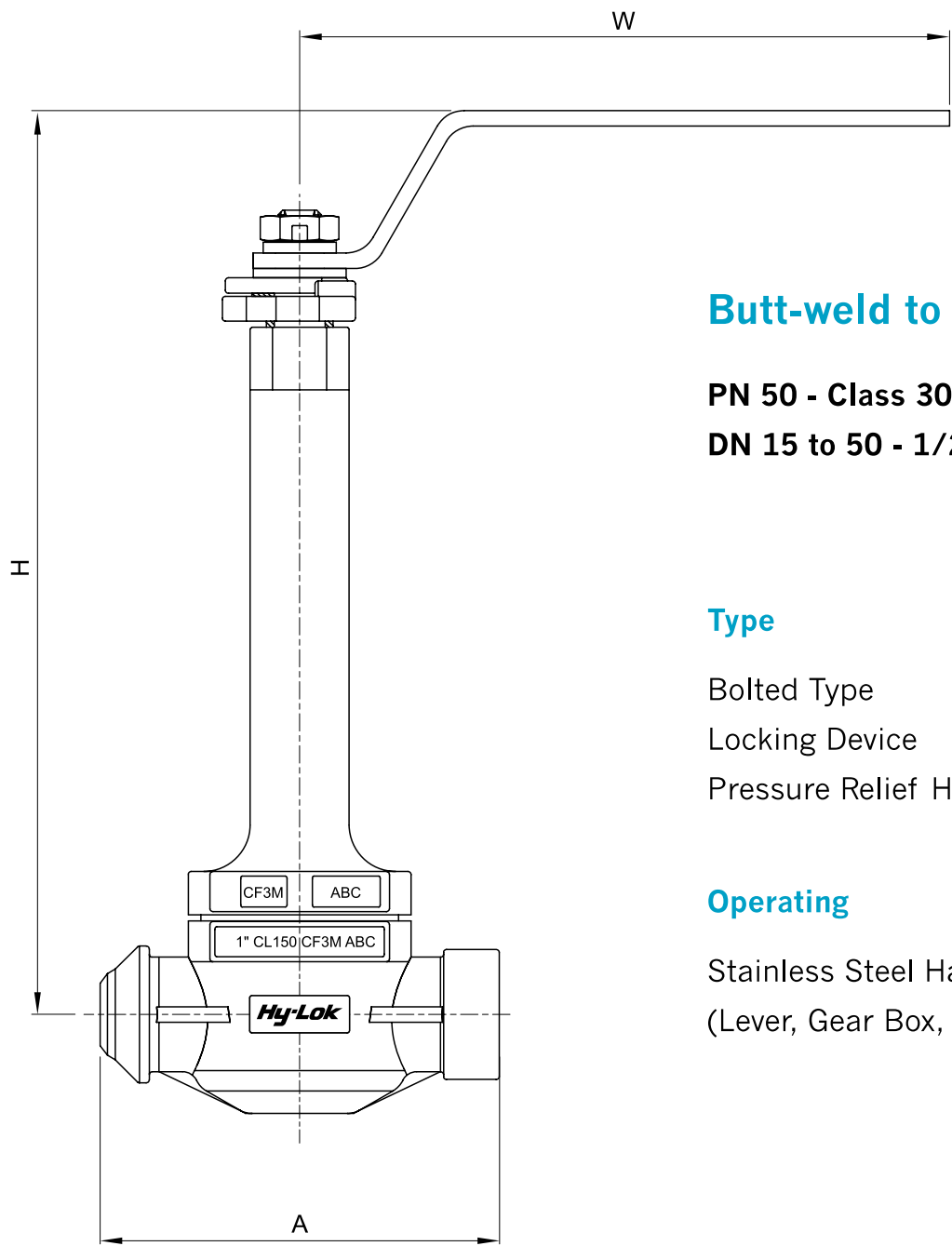
- Bolted Type
- Locking Device
- Pressure Relief Hole

### Operating

Stainless Steel Handle  
 (Lever, Gear Box, Actuator)

Dimensions in mm

DN	1/2"	3/4"	1"	1-1/2"	2"
A	108	117	127	165	210
H	275	290	290	330	330
W	210	230	230	260	260
Weight RF (kg)	6.2	8.6	7.2	7.5	15.4



### Butt-weld to Screwed Ends

**PN 50 - Class 300 lbs**  
**DN 15 to 50 - 1/2" to 2"**

### Type

- Bolted Type
- Locking Device
- Pressure Relief Hole

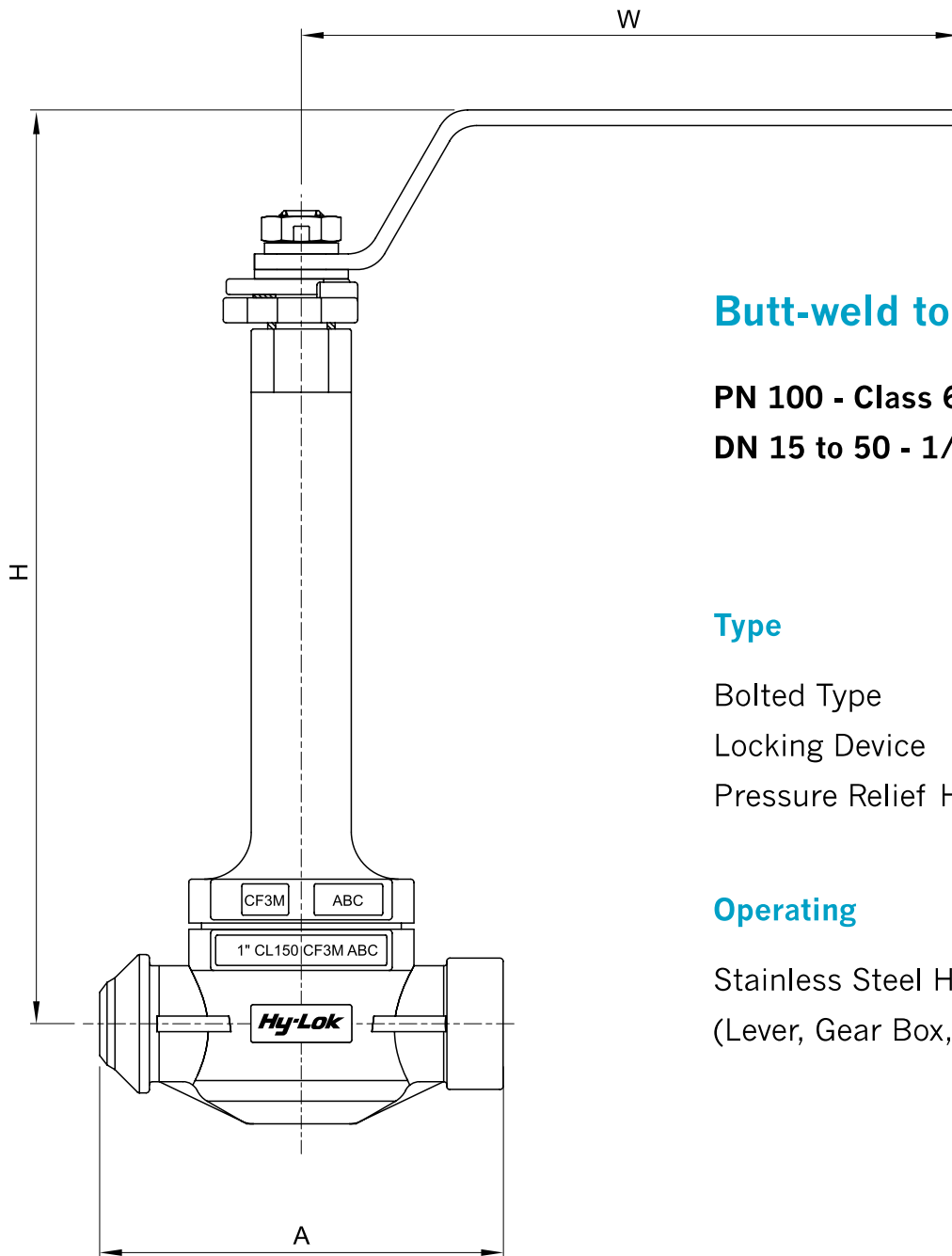
### Operating

Stainless Steel Handle  
 (Lever, Gear Box, Actuator)

Dimensions in mm

DN	1/2"	3/4"	1"	1-1/2"	2"
A	140	152	165	190	216
H	290	295	300	320	335
W	210	230	230	260	269
Weight RF (kg)	4.3	5.9	8.6	15.4	22.6

# Cryogenic Ball Valve



## Butt-weld to Screwed Ends

**PN 100 - Class 600 lbs**  
**DN 15 to 50 - 1/2" to 2"**

### Type

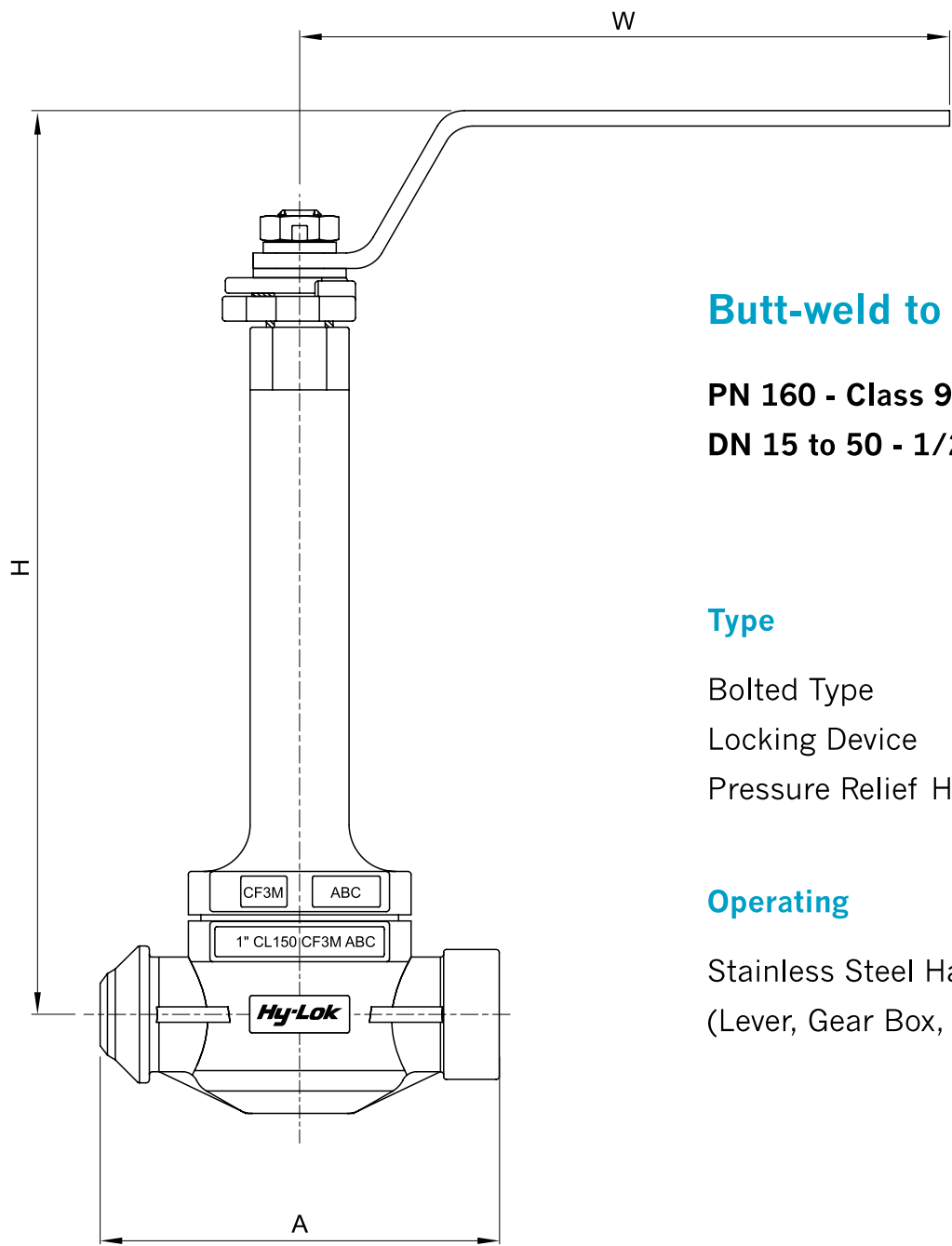
- Bolted Type
- Locking Device
- Pressure Relief Hole

### Operating

Stainless Steel Handle  
 (Lever, Gear Box, Actuator)

Dimensions in mm

DN	1/2"	3/4"	1"	1-1/2"	2"
A	165	190	216	241	292
H	295	295	300	320	350
W	210	230	230	260	269
Weight RF (kg)	5.4	7.6	15.8	16.8	28.6



### Butt-weld to Screwed Ends

**PN 160 - Class 900 lbs**  
**DN 15 to 50 - 1/2" to 2"**

#### Type

- Bolted Type
- Locking Device
- Pressure Relief Hole

#### Operating

Stainless Steel Handle  
 (Lever, Gear Box, Actuator)

Dimensions in mm

DN	1/2"	3/4"	1"	1-1/2"	2"
A	216	229	254	305	368
H	300	300	305	355	370
W	230	260	260	350	450
Weight RF (kg)	12.3	14.7	17.4	39.2	47.4

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