



CAST AND FORGED STEEL

Karatu Standard Valves

KARATU

KARATU VALVE

WEDGE GATE VALVES GLOBE VALVES SWING CHECK VALVES
LIFT CHECK VALVES SPECIALLY USED VALVES

KARATU は、プラントを支えるためにバルブを創り続けます!

KARATU VALVE continues designing and manufacturing customer-oriented valves to be applied in various plants!

はじめに

当社の製品は火力・原子力・水力・地熱発電、製鉄、船舶、石油化学等広範囲のプラントに納入され、高温から低温、中圧から真空に至るプロセスでの蒸気、油、薬液、熱媒、純水、特殊ガス、LNG等各種の流体に使用されています。

また一般的な仕様以外の特殊な条件での電動、空気圧、油圧等の動力操作弁や自動調節弁の製作にも豊富な経験を持ち、耐エロージョン、低振動、低騒音等の困難な要素にも適切な対応が行われます。

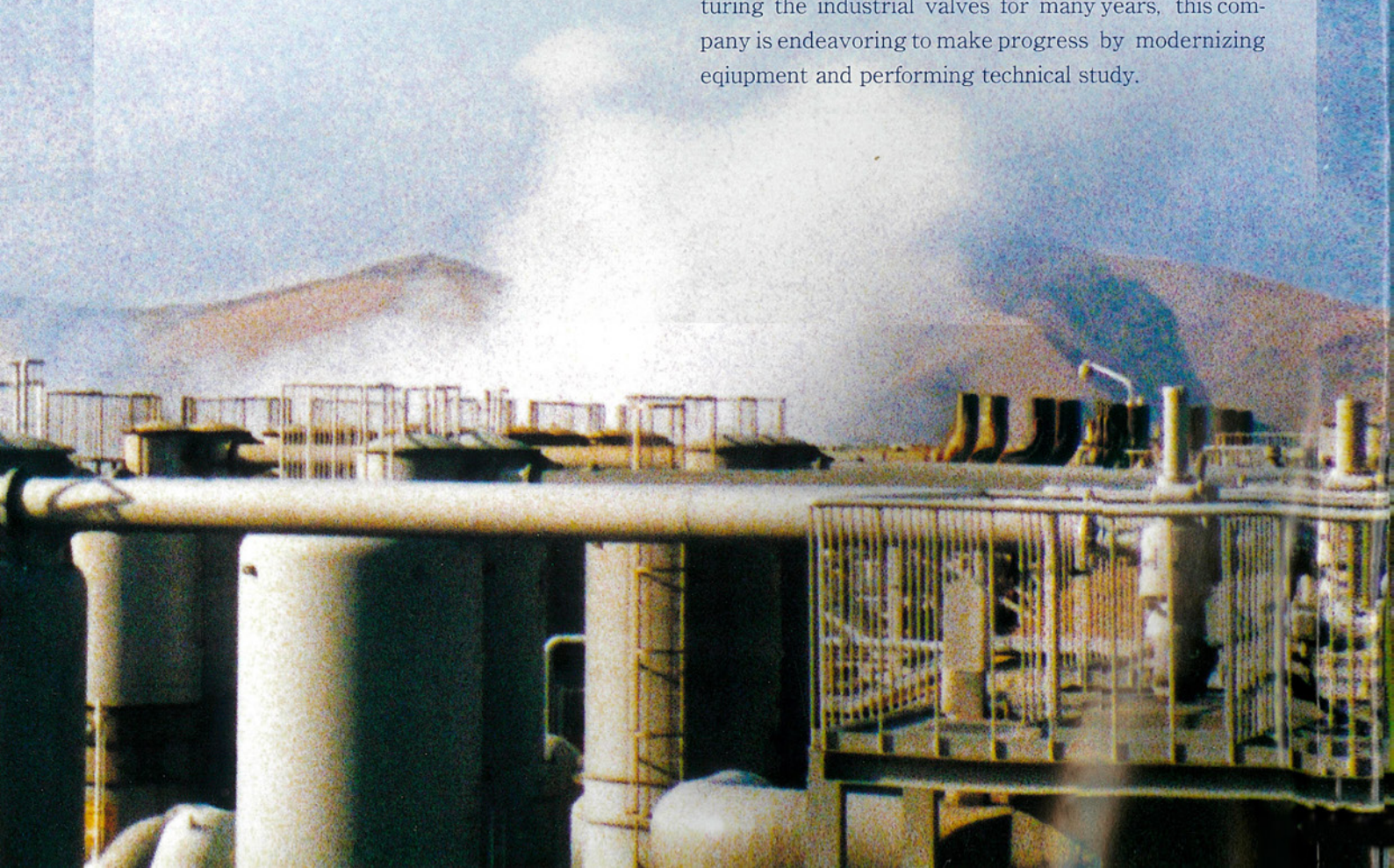
当社は多年にわたる工業用弁の製作実績と経験に加え設備の近代化と技術研鑽をすすめ更に飛躍するための努力を継続しています。

Foreword

The products of this company have been delivered to the various kinds of plants such as thermal power station, nuclear power station, hydraulic power station, geothermal power station, steel works, ship, petrochemistry, etc. and also used for the various kinds of fluids such as the steam, oil, chemical liquid, heating medium, pure water, special gas, LNG, etc. in the processes from high temperature to low temperature and Middle pressure to vacuum.

Furthermore this company has also abundant experiences in manufacturing the power-driven valves and automatic control valves such as the valves driven electrically, pneumatically, hydraulically, etc. in the special conditions other than general specifications, and has coped property with the difficult factors such as erosion resistance, low vibration, low noise, etc.

In addition to the result and experience in manufacturing the industrial valves for many years, this company is endeavoring to make progress by modernizing equipment and performing technical study.



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弁型番 (PAT-No) 選定表

〈鋳鋼弁〉

	CLASS150		CLASS300		CLASS600	CLASS900
グローブ弁	670		672		674	676
ウェッジゲート弁	~300A	*Z750	~300A	Z752	754	756
	350A~	750	350A~	752		
スイングチェック弁	520		522		524	526

※50A~150Aの接続BWはZ752使用

〈鍛造弁〉

	CLASS600	CLASS900
グローブ弁	Z664	666
ウェッジゲート弁	744	746
リフトチェック弁	Z344	346

(型番一覧表)

ゲージ弁	1
リフトチェック弁	3
スイングチェック弁	5
グローブ弁	6
ウェッジゲート弁	7
メインストップ弁	9
鍛造・内ネジ・ノンボンネット (ゲージ弁)	1
鋳鋼・ボルテッドボンネット (スイングチェック弁)	2
鍛造・外ネジ・ボルテッドボンネット (ウェッジゲート弁)	4
鍛造・外ネジ・ノンボンネット (グローブ弁)	5
鋳鋼・外ネジ・ボルテッドボンネット (ウェッジゲート弁)	5
鍛造・外ネジ・ボルテッドボンネット (グローブ弁)	6
鋳鋼・外ネジ・ボルテッドボンネット (グローブ弁)	7
150LB クラス	0
300LB クラス	2
600LB クラス	4
900LB クラス	6
ソケット溶接型ボデー	S
突合せ溶接型ボデー	W
ねじ込み型ボデー	T
ジャケット型ボデー	J
L型ボデー	L
Y型ボデー	Y
バイパス弁付	B
チェーンホイール操作型	C
ロングボンネット型	D
ダッシュボット付 (スイングチェック弁)	E
封水弁付	F
ギア操作型	G
ハンマーブロー式ハンドル付	K
電動操作式	M
ニードル弁	N
ピストン弁	P
開度指示計付	R
ステンレス弁	U
エクステンション付	X
その他異型仕様	Z

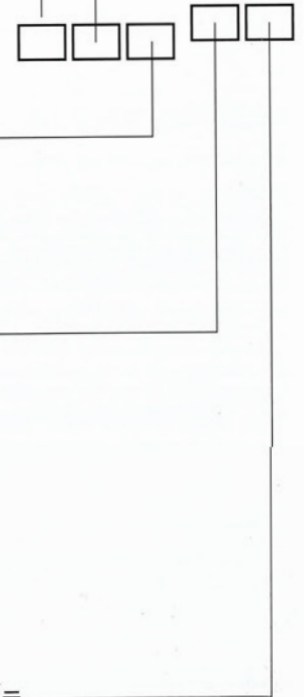
弁の種類

構造及び材質

圧カクラス

型式の表示

特殊仕様の表示



PATTERN-No.(PAT-No) SELECTION TABLE

<CAST STEEL VALVES>

	CLASS150		CLASS300		CLASS600	CLASS900
GLOBE VALVE	670		672		674	676
WEDGE GATE VALVE	~300A	*Z750	~300A	Z752	754	756
	350A~	750	350A~	752		
SWING CHECK VALVE	520		522		524	526

※Z752-use for 50A ~ 150A with butt weld

<FORGED STEEL VALVES >

	CLASS600	CLASS900
GLOBE VALVE	Z664	666
WEDGE GATE VALVE	744	746
LIFT CHECK VALVE	Z344	346

(PATTERN TURN LIST)

GAUGE VALVE	1	} The kind of valve
LIFT CHECK VALVE	3	
SWING CHECK VALVE	5	
GLOBE VALVE	6	
WEDGE GATE VALVE	7	
MAIN STOP VALVE	9	
Forged steel · inside screw no bonnet (GAUGE VALVE)	1	} Structure and quality of the material
Cast steel · bolted bonnet (SWING CHECK VALVE)	2	
Forged steel · outside screw · bolted bonnet (WEDGE GATE VALVE).....	4	
Forged steel · outside screw · no bonnet (GLOBE VALVE)	5	
Cast steel · outside screw · bolted bonnet (WEDGE GATE VALVE)	5	
Forged steel · outside screw · bolted bonnet (GLOBE VALVE)	6	
Cast steel · outside screw · bolted bonnet (GLOBE VALVE)	7	
150LB CLASS	0	} Pressure class
300LB CLASS	2	
600LB CLASS	4	
900LB CLASS	6	
Socket weld ends body	S	} Pattern-type indication
Butt weld ends body	W	
Screwed ends body	T	
Jacket body	J	
Angle body	L	
Y type body	Y	
With by-pass valve	B	} The indication of the special specification
Chain wheel operated	C	
Long bonnet	D	
With dashpot (SWING CHECK VALVE)	E	
With sealing water valve	F	
Gear operated type	G	
With hammerblow handweel	K	
Motor operated	M	
Needle valve	N	
Piston valve	P	
With opening indicator	R	
Stainless steel valve	U	
With extension	X	
Atypical appearance	Z	



弁選定仕様書

受付日 / /

客先名 _____ 最終客先名 _____
 適用規格 [ASME (ANSI) , JEAC] , その他 _____
 納期 / / 客先仕様 有 (仕様書番号: _____) , 無 _____

(1) 弁一般仕様

弁種 仕切弁 玉型弁 逆止弁 口径 _____ B (inch) 数量 _____ 圧力級 (クラス) _____ (LB)
 設計圧力 _____ (Mpa) 設計温度 _____ (°C) 流体の種類 _____
 弁箱材質 _____
 接続形状 入口 _____ 出口 _____
 操作方法 電動 手動 ギア その他 (_____)
 非破壊検査 無 ・ [要 RT. UT. MT. PT] , その他 _____
 銘板 要 ・ 否 _____ 立会 有 ・ 無 _____ 塗装 メーカー標準 ・ 特殊 _____
 特殊要求事項 封水式 バイパス弁付 ベローシール その他 _____

(2) ニードル弁仕様

1次(入口)側圧力 _____ (Mpa) 1次(入口)側温度 _____ (°C)
 2次(出口)側圧力または差圧 _____ (Mpa) 流量 _____ (kg/h)
 流体の比重 _____ (※水、蒸気以外の場合のみ記入下さい。)

(3) 電動弁仕様

1 指定メーカー 有 日本ギア工業 西部電機 その他 (_____)
 無
 2 型式 保護型式 (IP55) 全閉自冷型 定格時間 15 分
 3 外被構造 標準屋外型 耐圧防爆型
 4 手動切替方法 自動復帰型 手動復帰型
 5 電源 電動機 AC・DC _____ V _____ Hz
 制御 AC・DC _____ V
 スペースヒータ AC・DC _____ V
 開度計 AC・DC _____ V
 6 絶縁種別 E種 B種 F種 H種
 7 リミットスイッチ 2列型 4列型 中間開度有
 8 シーケンス指定 (※) 有 (_____ によること)
 無
 9 電線ケーブル 電線管ねじ式 (標準)
 取合方法 (※) コネクター方式 (コネクター型番 _____)

用途	ケーブルサイズ	電線管接続仕様
動力用		
制御用		
計算機用		

耐圧パッキン方式 (仕上り外径 φ _____ 保護管サイズ PF _____)
 10 オプション (※) 現場開度計 (標準装置)
 押しボタン・ランプユニット
 開度発信器 セルシン ポテンションメーター (抵抗値 _____ Ω)
 開度受信器 110 角 その他 (_____ 角)
 11 潤滑油脂銘柄 指定 (※) 有 (_____ によること)
 無
 12 塗装色 指定 (※) 有 (_____ によること)
 無

13 その他特記事項

弁締切時の最大差圧をご指示下さい。 _____ MPa
 開閉頻度 _____ 回/日 開閉時間の指定 有 無

※印の項目につきましては、詳細設計迄に決定が必要です。

VALVE SELECTION SPECIFICATION

ACCEPTANCE DAY / /

CUSTOMER NAME _____ OWNER NAME _____
 APPLICABLE STANDARD [ASME (ANSI) ,JEAC] . THE OTHERS _____
 THE DATE OF DELIVERY _____ CUSTOMER SPECIFICATION (SPECIFICATIONS No. : _____) , NO

(1) FOR THE VALVE GENERAL PURPOSE

A KIND OF VALVE GATE VALVE GLOBE VALVE LIFT CHECK VALVE CALIBER _____ B (inch) QUANTITY _____ PRESSURE GRADE(class) _____ (LB)
 DESING PRESSURE _____ (Mpa) DESIGH TEMPERATURE _____ (°C) THE KIND OF FLUID _____
 QUALITY OF BODY _____
 CONNECTION TYPE INLET _____ OUTLET _____
 HOW TO OPERATE MOTOR HAND GEAR THE OTHERS(_____)
 NON DESTRUCTURE INSPECTION NO · [POINT RT. UT. MT. PT] , THE OTHERS _____
 NAME PLATE POINT · NO _____ ATTEDING IN SPECTION YES · NO _____ PAINTING MAKER STANDARD · SPECIAL _____
 SPECIAL REQUEST WATER SEEL WITH BY-PASS VALVE BELLOW SEAL THE OTHERS _____

(2) FOR NEEDLE VALVE DIALECT

PRIMARY SIDE PRESSURE _____ (Mpa) PRIMARY SIDE TEMPERATURE _____ (°C)
 SECONDARY SIDE _____ (Mpa) THE FLOW _____ (kg/h)
 FLUID SPECIFIC GRAVITY _____ (※Please fill in only water, a case except the steam)

(3) FOR MOTOR VALVE DIALECT

- 1 DESIGNATED MAKER YES NIPPON GEAR SEIBU ELECTRIC & MACHINERY THE OTHERS (_____)
 NO
 2 TYPE PROTECTION FORM (IP55) TOTALLY ENCLOSED AUTO COOLING RATED TIME 15MINUTES
 3 STRUCTURE STANDARD OUTSIDE TYPE PRESSURE-RESISTANT EXPLOSION PROOF
 4 RESHUFFING METHOD AUTOMATIC RECOVERY TYPE HAND-RESET TYPE

5 POWER SOURCE
 ELECTRIC MOTOR AC · DC _____ V _____ Hz
 CONTROL AC · DC _____ V _____
 ELECTRIC SPACE HEATER AC · DC _____ V _____
 TRAVEL INDICATOR AC · DC _____ V _____

- 6 CLASS OF INSULATION class E insulation class B insulation class F insulation class H insulation
 7 LIMIT SWICH 2ROWS TYPE 4ROWS TYPE MIDDLE DIRERGENCE

8 SEQUENCE DESIGNATION(※) YES (ACCORDING TO _____)
 NO

9 WIRE AND CABLE CONDUIT TUBE THREAD TYPE (STANDARD)
 SCRAMBLE METHOD POWER(※) CONNECTOR TYPE (CONNECTOR MODEL NUMBER _____)

USE	CABLE SIZE	WIRE AND CABLE CONNECTION
POWER		
CONTROL		
CALCULATOR		

PRESSURE-RESISTANT PACKING (WORKMANSHIP OUTER DIAMETER Φ _____)
 PROTECTIVE TUBE SIZE PF _____)

- 10 OPTION (※)
 SPOT DIRERGENCE METER
 PUSH BUTTON AND LAMPUNIT
 DIRERGENCE TRANSMITTER SELSYN
 POTENTIOMETER (RESISTANCE VALUE _____ Ω)
 DIVERGENCE RECEIVER 110 ANGLE
 THE OTHERS (_____ ANGLE)

11 LUBRICANT BRAND (※) YES (BY _____)
 NO

12 PAINTING (※) YES (BY _____)
 NO

13 OTHER IMPORTANT NOTICE

PLEASE ORDER THE BIGGEST DIFFERENTIAL PRESSURE IN THE VALVE DEADLINE _____ Mpa

OPENING AND SHUTTING FREQUENCY NUMBER OF THE TIME DESIGNATION OF THE OPENING AND SHUTTING TIME YES · NO

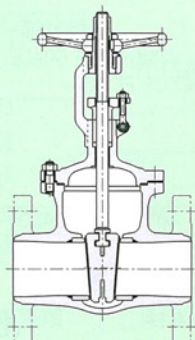
※About the item of the seal, decision is necessary by a detailed design

KARATU STANDARD WEDGE GATE VALVES

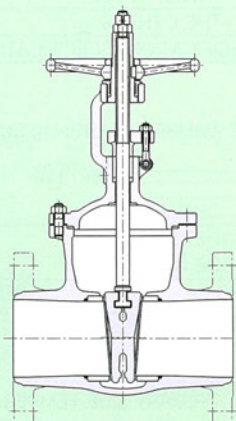
構造 PROFILE and FEATURE

CLASS 150, 300, 600, 900

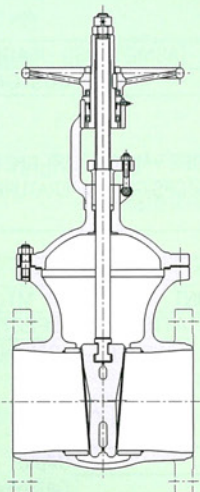
CAST STEEL VALVES



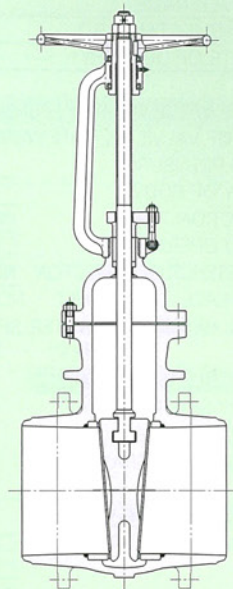
PAT-No Z752
Class 300
Size 50 to 100



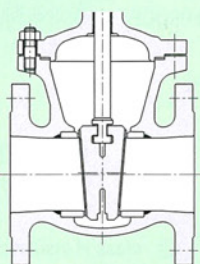
PAT-No Z752
Class 300
Size 125 and 150



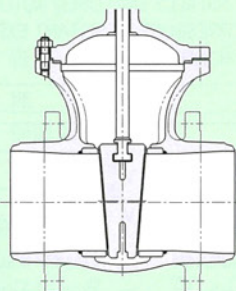
PAT-No Z752
Class 300
Size 200 to 300



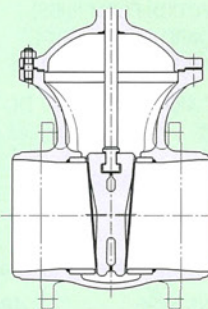
PAT-No 750
Class 150
Size 350 to 600



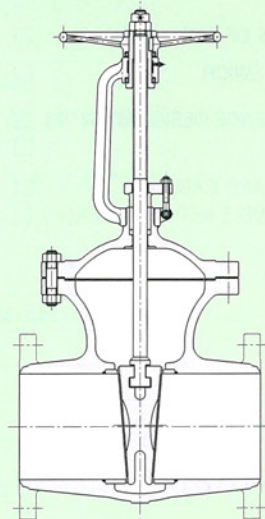
PAT-No Z750
Class 150
Size 50 to 150



PAT-No Z750
Class 150
Size 200 and 250



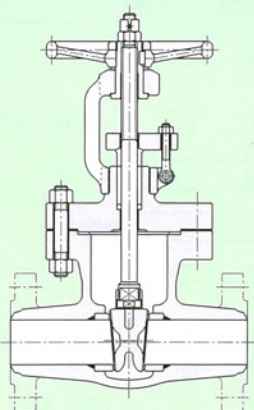
PAT-No Z750
Class 150
Size 300



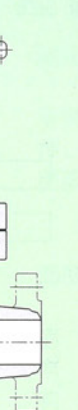
PAT-No 752
Class 300
Size 350 to 450

注. クラス 150 標準突合せ溶接型弁はサイズ 200 以上に製作が限定されています。従ってサイズ 150 以下はクラス 300 の突合せ溶接型弁を使用して下さい。

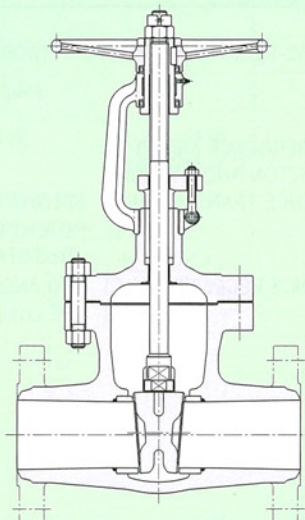
NOTE : For class 150 standard butt welding type valve, manufacturing is limited to size 200 or more. Thus, for the size 150 or less, use class 300 butt welding type valve.



PAT-No 754
Class 600
Size 50 to 100



756
Class 900
Size 50 to 80



PAT-No 754
Class 600
Size 125 to 300



756
Class 900
Size 100 to 200

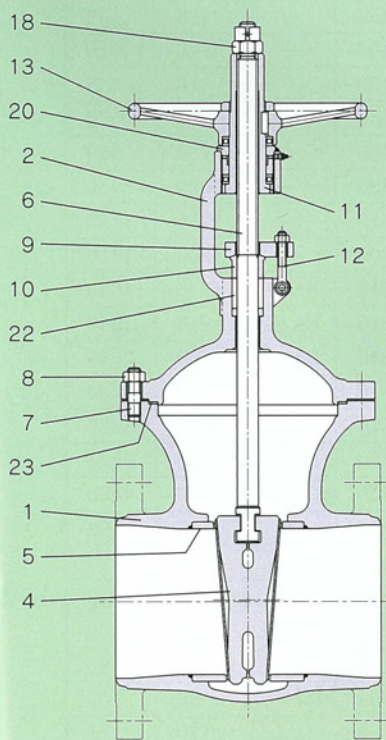
KARATU STANDARD WEDGE GATE VALVES

材料 MATERIALS

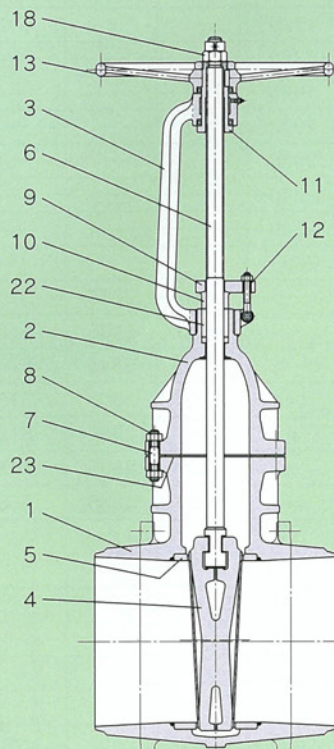
No.	NAME of PARTS	DESIGNATION	JIS and ASTM Spec.		
1	BODY	Carbon and Alloy Steel	JIS	JIS	JIS
2	BONNET		S25C	SFVA-F11A	SFVA-F22B
3	YOKE		SCPH2	SCPH21	SCPH32
4	VALVE DISC	Carbon and Alloy Steel "STELLITE" Faced	ASTM	ASTM	ASTM
5	VALVE SEATS		A105	A182-F11	A182-F22
			A216-WCB	A217-WC6	A217-WC9
6	STEM	Stainless Steel	JIS SUS 403		
7	JOINT BOLTS	Alloy Steel	JIS SNB7	ASTM A193-B16	
8	NUTS	Carbon, Alloy Steel	JIS S45C	ASTM A194-Gr4	
9	GLAND	Carbon Steel	JIS S25C		
10	GLAND BUSH	Bronze/Stainless Steel	JIS BC2	JIS SUS 416	
11	YOKE SLEEVE	High Strength Brass	JIS C6782B, HBsC2		
12	GLAND BOLTS	Stainless Steel	JIS SUS 403		
13	HAND WHEEL	Ductile Iron	JIS FCD 400		
18	DISC STOPPER	Carbon Steel	JIS S25C		
20	YOKE NUT	Carbon Steel	JIS S25C		
22	GLAND PACKING	Preformed and Braided Yarn Type	Commercial		
23	GASKET	Sheet and Spiral Wound Type	Commercial		

CLASS 150, 300, 600, 900

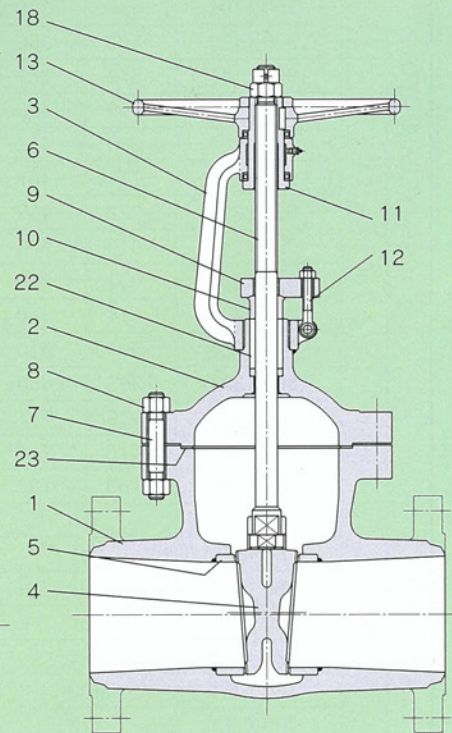
CAST STEEL VALVES



PAT-No Z752
Class 300



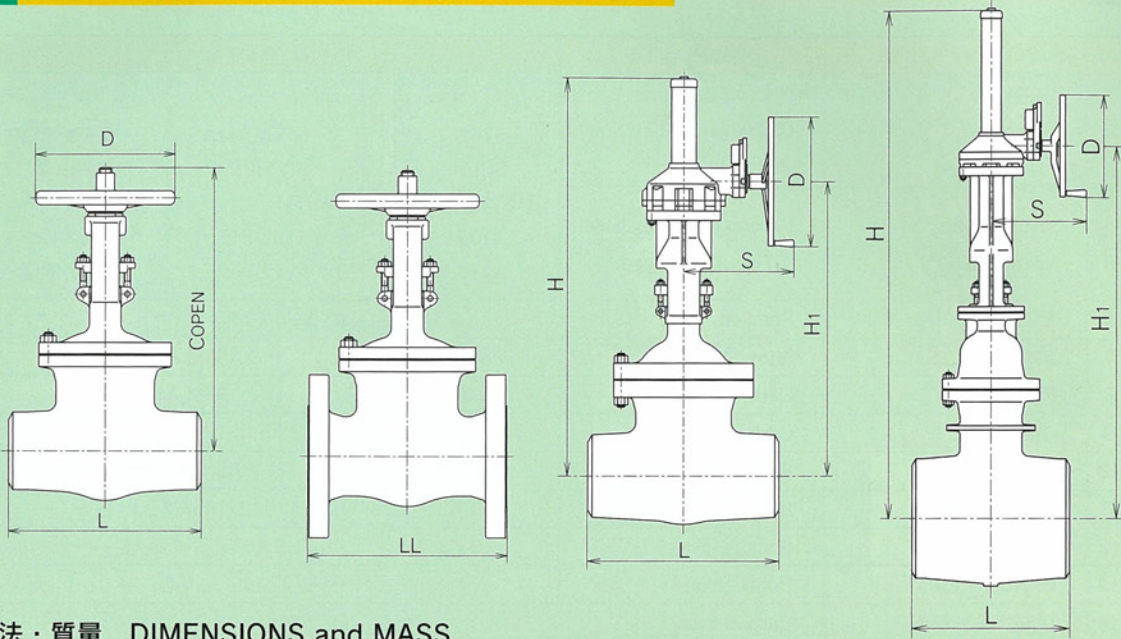
PAT-No 750
Class 150



PAT-No 754 756
Class 600 900

KARATU STANDARD WEDGE GATE VALVES

寸法・質量 DIMENSIONS and MASS



寸法・質量 DIMENSIONS and MASS

Class	Style	Nom. Size mm (in)	L	LL	C	H	H1	S	D	Gear Type	Mass kg		
											WL	WLL	
CLASS 150	Z750	50 (2)	クラス300, Z752を 使用下さい。 Use class 300, Type Z752	178	365	-	-	-	180	-	-	19	
		65 (2½)		190	400	-	-	-	180	-	-	25	
		80 (3)		203	475	-	-	-	220	-	-	33	
		100 (4)		229	555	-	-	-	220	-	-	48	
		125 (5)		254	685	-	-	-	280	-	-	66	
		150 (6)		267	765	-	-	-	280	-	-	85	
		200 (8)		419	292	925	-	-	-	280	-	115	125
		250 (10)		457	330	1120	-	-	-	350	-	185	195
		300 (12)		502	356	1320	-	-	-	400	-	290	310
	750	350 (14)	572	381	1625	-	-	-	450	-	415	455	
		400 (16)	610	406	1830	-	-	-	500	-	610	570	
		450 (18)	660	432	2005	-	-	-	560	-	760	860	
		500 (20)	711	457	2240	-	-	-	630	-	1040	950	
		550 (22)	762	483	2240	-	-	-	710	-	1250	1150	
		600 (24)	813	508	2635	-	-	-	800	-	1550	1310	
		650 (26)	864	559	-	2860	2075	515	610	BA-2P	1745	1655	
		700 (28)	914	610	-	3040	2205	515	610	BA-2P	1945	1950	
		750 (30)	914	610	-	3230	2345	515	610	BA-2P	2240	2340	
		800 (32)	965	660	-	3500	2565	515	610	BA-2P	2600	2400	
		850 (34)	1016	711	-	3645	2660	515	610	BA-2P	2800	2600	
900 (36)	1016	711	-	3930	2835	555	760	BA-3P	3520	3425			
1000 (40)	1168	762	-	4430	3235	555	760	BA-3P	5000	4800			
CLASS 300	Z752	50 (2)	216		360	-	-	-	180	-	17	22	
		65 (2½)	241		400	-	-	-	180	-	19	27	
		80 (3)	283		475	-	-	-	220	-	28	39	
		100 (4)	305		555	-	-	-	220	-	39	58	
		125 (5)	381		685	-	-	-	280	-	65	80	
		150 (6)	403		765	-	-	-	280	-	85	105	
		200 (8)	419		945	-	-	-	280	-	130	175	
		250 (10)	457		1185	-	-	-	350	-	235	300	
		300 (12)	502		1395	-	-	-	400	-	315	415	

Dimensions in mm
次頁に続く Continued

KARATU STANDARD WEDGE GATE VALVES

CLASS 150, 300, 600, 900

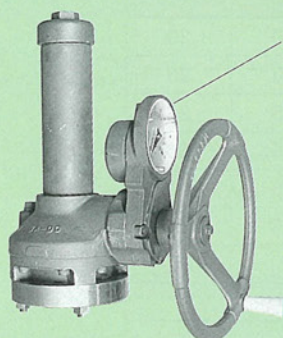
CAST STEEL VALVES

Class Style	Nom. Size mm (in)	L	LL	C	H	H1	S	D	Gear Type	Mass kg	
										WL	WLL
CLASS 300	752	350 (14)	762	1645	-	-	-	500	-	700	780
		400 (16)	838	1850	-	-	-	560	-	960	980
		450 (18)	914	2045	-	-	-	710	-	1210	1300
		500 (20)	991	-	2335	1700	515	610	BA-2P	1810	1700
		550 (22)	1092	-	2605	1880	555	760	BA-3P	2000	2100
		600 (24)	1143	-	2785	2010	555	760	BA-3P	2400	2600
		650 (26)	1245	-	2785	2010	555	760	BA-3P	2600	2800
		700 (28)	1346	-	3125	2290	555	760	BA-3P	3300	3700
		750 (30)	1397	-	3355	2420	555	760	BA-3P	3800	4200
800 (32)	1524	-	3515	2540	555	760	BA-3P	4300	4800		
CLASS 600	754	50 (2)	292	475	-	-	-	225	-	36	45
		65 (2½)	330	550	-	-	-	250	-	52	65
		80 (3)	356	585	-	-	-	250	-	70	85
		100 (4)	432	680	-	-	-	300	-	110	130
		125 (5)	508	840	-	-	-	355	-	180	215
		150 (6)	559	990	-	-	-	400	-	210	265
		200 (8)	660	1205	-	-	-	450	-	380	450
		250 (10)	787	1440	-	-	-	560	-	620	720
		300 (12)	838	1575	-	-	-	630	-	800	900
		350 (14)	889	-	1870	1385	515	610	BA-2P	1120	1300
		400 (16)	991	-	2060	1515	555	760	BA-3P	1580	1790
		450 (18)	1092	-	2275	1680	555	760	BA-3P	2200	2450
		500 (20)	1194	-	2440	1800	555	760	BA-3P	2695	2955
		550 (22)	1295	-	2690	1935	555	760	BA-3P	3300	3800
		600 (24)	1397	-	2825	2080	555	760	BA-3P	4500	5100
CLASS 900	756	50 (2)	216	368	540	-	-	250	-	48	70
		65 (2½)	419	580	-	-	-	250	-	70	95
		80 (3)	381	665	-	-	-	300	-	115	130
		100 (4)	457	820	-	-	-	355	-	190	210
		125 (5)	559	890	-	-	-	400	-	230	275
		150 (6)	610	985	-	-	-	450	-	305	370
		200 (8)	737	1315	-	-	-	560	-	510	650
		250 (10)	838	-	1615	1215	515	610	BA-2P	820	1020
		300 (12)	965	-	1820	1365	515	610	BA-2P	1210	1450
		350 (14)	1029	-	2105	1400	555	760	BA-3P	1695	1990
		400 (16)	1130	-	2065	1550	555	760	BA-3P	2400	2700

Dimensions in mm

注. NOTE : WL ... 溶接型弁質量 But welding end valves, Mass approx. kg
WLL... フランジ型弁質量 Flanged end valves, Mass approx. kg

◆ギヤー操作機 Gear Operators



開度指示計
Stem Position
Indicator

Type	Bevel gear ratio
BA-1P	4.11 : 1
BA-2P	6 : 1
BA-3P	9 : 1

注. P は開度指示計付きを示す。
NOTE : "P" shows Stem Position Indicator is fitted.

KARATU STANDARD WEDGE GATE VALVES

CLASS 150, 300, 600, 900

CAST STEEL VALVES

■ バイパス弁及び均圧弁

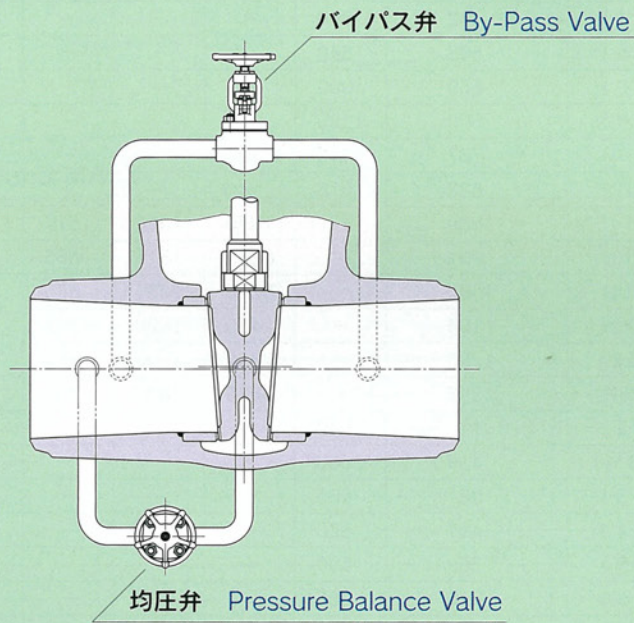
注) バイパス弁、均圧弁の有無は別途ご指示下さい。均圧弁のサイズは全て 10mm です。

均圧弁は、仕切弁の弁箱と弁体によって構成される密封空間の異常昇圧を開放させるバルブです。

By-Pass and Pressure Balance Valve

NOTE : Inform us of the presence of by-pass valve and pressure balance valve.

Pressure balance valves are of the nominal size 10mm in all sizes. The pressure balance valve is used to release the excessive build-up pressure in the center cavity composed of the body and disc of the gate valve.



By-Pass Size

Size \ Class	150	300	600	900
200	—	—	15	15
250	—	—	20	20
300	—	20	20	20
350	—	25	25	25
400	25	25	25	25
500	25	25	25	—
600	25	25	25	—
700	25	25	—	—
800	25	25	—	—
1000	25	—	—	—

Dimensions in mm

■ジスクストッパーについて

弁を全閉した時、ジスクは弁座に接触した位置より幾分引き上げ気味にセットしておかなければ、弁座に食い込んだり、異常高圧現象の原因になります。

これを簡易的に防止するためのジスク位置調整用部品として、ジスクストッパーがステム頂部に取り付けられています。取付範囲は、ウェッジゲート弁の構造図を参照下さい。

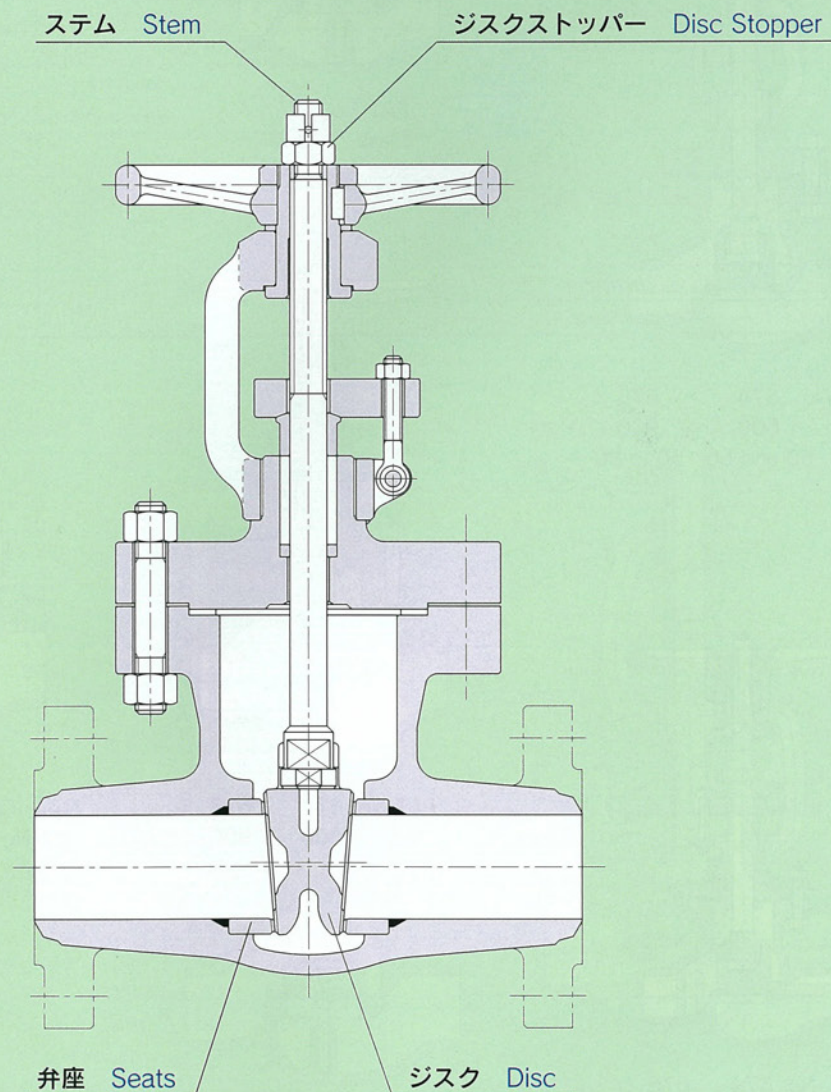
Disc Stopper

When the valve is fully closed, it is necessary to set the disc so that the disc is to be placed at the position where slightly lifted up from the position contacting to the seat.

If not, troubles such as biting of disc into seat abnormal high-pressure phenomenon, etc. may be caused.

For preventing such troubles easily, the valve is provided with the disc stopper, as the disc position adjusting part, at the top of stem.

As to the mounting range, see the Construction Drawing of the wedge Gate Valve.

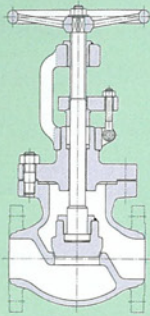


KARATU STANDARD GLOBE VALVES

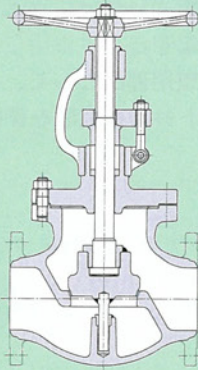
構造 PROFILE and FEATURE

CLASS 150, 300, 600, 900

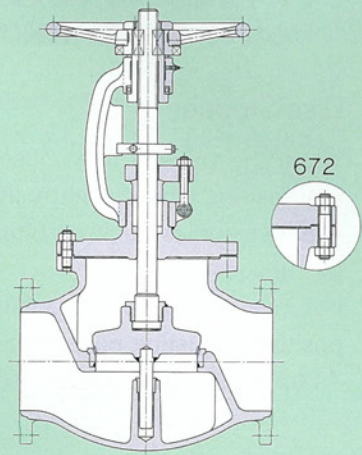
CAST STEEL VALVES



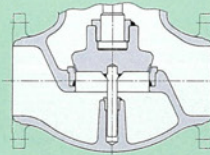
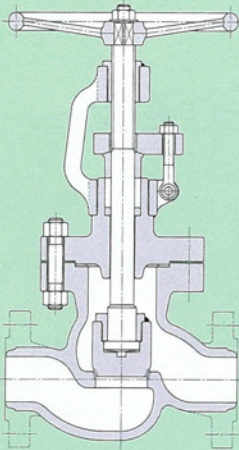
PAT-No 670 672
Class 150 300
Size 65 to 100



PAT-No 670 672
Class 150 300
Size 125

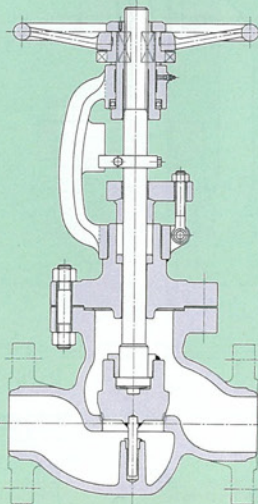


PAT-No 670 672
Class 150 300
Size 200 to 400 150 to 300

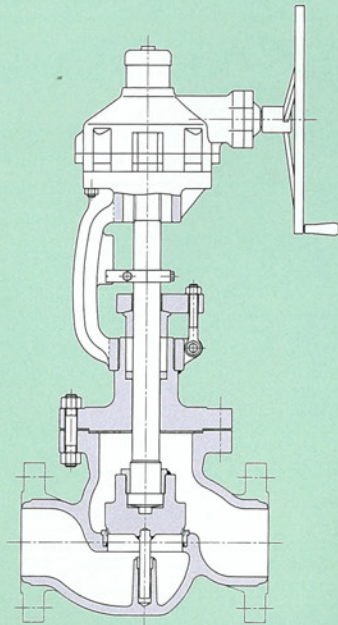


PAT-No 670
Class 150
Size 150

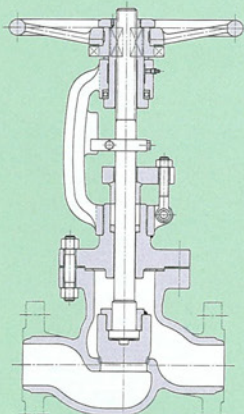
PAT-No 674 676
Class 600 900
Size 65 and 80 50 to 80



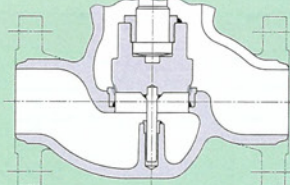
PAT-No 674 676
Class 600 900
Size 125



Gear Operated Valves
PAT-No 674 676
Class 600 900
Size 200 and larger 150 and larger



PAT-No 674 676
Class 600 900
Size 100

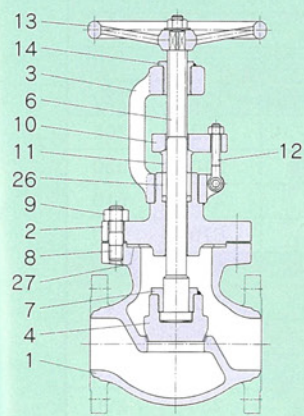


PAT-No 674
Class 600
Size 150

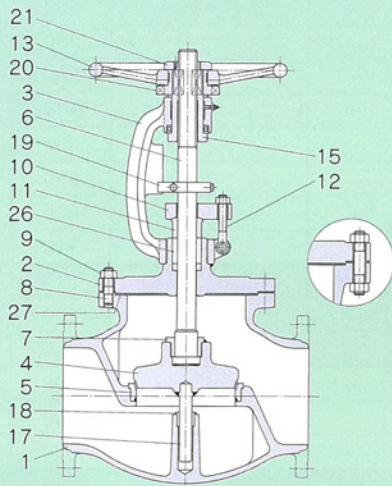
KARATU STANDARD GLOBE VALVES

材料 MATERIALS

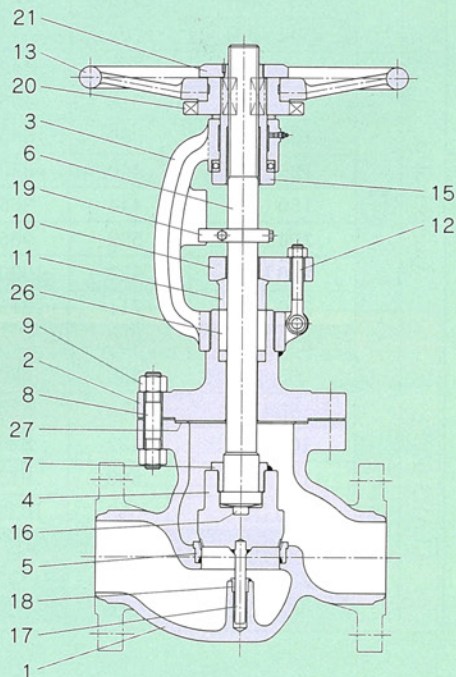
No.	NAME of PARTS	DESIGNATION	JIS and ASTM Spec.		
1	BODY	Carbon and Alloy Steel Small Size Integral "STELLITE" Seat	JIS S25C SCPH2	JIS SFVA-F11A SCPH21	JIS SFVA-F22B SCPH32
2	BONNET	Carbon and Alloy Steel	ASTM A105	ASTM A182-F11	ASTM A182-F22
3	YOKE				
4	VALVE DISC	Carbon and Alloy Steel "STELLITE" Faced	ASTM A216-WCB	ASTM A217-WC6	ASTM A217-WC9
5	VALVE SEAT				
6	STEM	Stainless Steel	JIS SUS 403		
7	DISC NUT	Stainless Steel	JIS SUS 416		
8	JOINT BOLTS	Alloy Steel	JIS SNB7	ASTM A193-B16	
9	NUTS	Carbon, Alloy Steel	JIS S45C	ASTM A194-Gr4	
10	GLAND	Carbon Steel	JIS S25C		
11	GLAND BUSH	Bronze/Stainless Steel	JIS BC2	JIS SUS 416	
12	GLAND BOLTS	Stainless Steel	JIS SUS 403		
13	HAND WHEEL	Ductile Iron	JIS FCD 400		
14-15	YOKE BUSH.SLEEVE	High Strength Brass	JIS C6782B.HBsC2		
16	DISC CENTER	Alloy Tool Steel	JIS SKD 11 (Used for Class 600.900)		
17	GUIDE BAR	Stainless Steel	JIS SUS 403		
18	GUIDE BUSH	Carbon Steel	JIS S25C		
19	GUIDE PLATE				
20	INPACT BOSS				
21	HEAD NUT				
26	GLAND PACKING	Preformed and Braided Yern Type	Commercial		
27	GASKET	Sheet and Spiral Wound Type	Commercial		



PAT-No 670 672
Class 150 300



PAT-No 670 672
Class 150 300



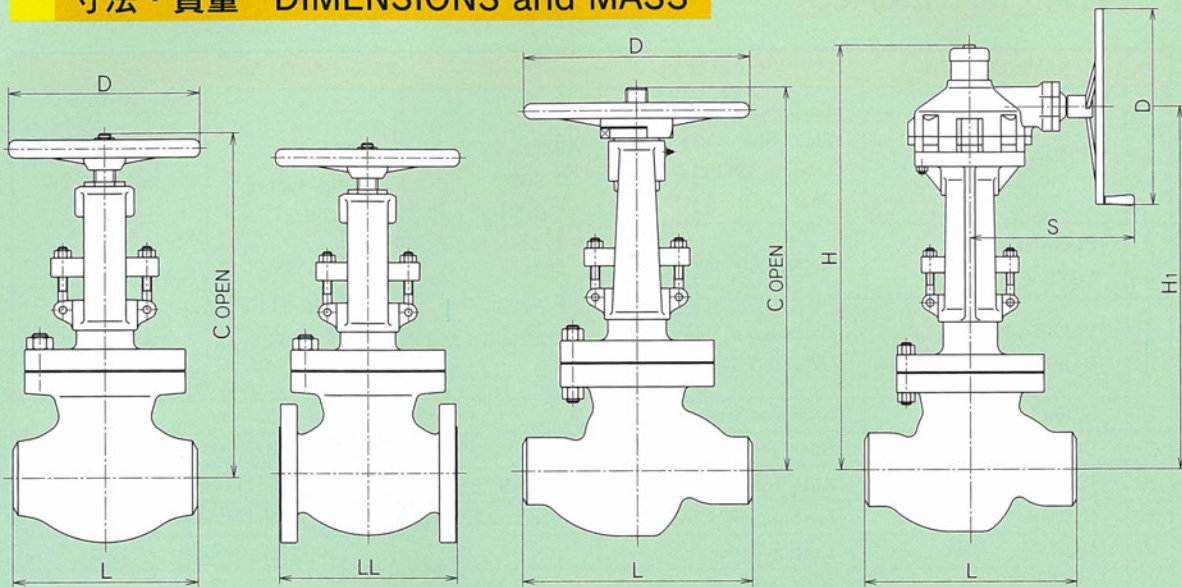
PAT-No 674 676
Class 600 900

CLASS 150, 300, 600, 900

CAST STEEL VALVES

KARATU STANDARD GLOBE VALVES

寸法・質量 DIMENSIONS and MASS



Class Style	Nom. Size mm (in)	L · LL	C	H	H1	S	D	Gear Type	Mass kg		
									WL	WLL	
CLASS 150 670	65 (2 1/2)	216	440	—	—	—	200	—	28	35	
	80 (3)	241	495	—	—	—	250	—	38	46	
	100 (4)	292	565	—	—	—	300	—	60	69	
	125 (5)	356	615	—	—	—	355	—	92	105	
	150 (6)	406	690	—	—	—	400	—	125	138	
	200 (8)	495	875	—	—	—	500	—	210	228	
	250 (10)	622	960	—	—	—	500	—	315	340	
	300 (12)	698	1070	—	—	—	560	—	430	480	
	350 (14)	787	1200	—	—	—	630	—	610	660	
	400 (16)	914	1305	—	—	—	630	—	850	930	
	450 (18)	978	—	—	1530	1350	515	610	BA-2	1100	1250
500 (20)	1092	—	—	1685	1450	555	760	BA-3	1400	1650	
CLASS 300 672	65 (2 1/2)	292	440	—	—	—	200	—	31	40	
	80 (3)	318	495	—	—	—	250	—	44	54	
	100 (4)	356	565	—	—	—	300	—	66	76	
	125 (5)	400	650	—	—	—	400	—	107	120	
	150 (6)	444	865	—	—	—	500	—	192	205	
	200 (8)	559	965	—	—	—	560	—	310	330	
	250 (10)	622	1090	—	—	—	630	—	470	510	
	300 (12)	711	1215	—	—	—	710	—	670	730	
	350 (14)	800	—	—	1475	1240	515	610	BA-2	900	1000
CLASS 600 674	65 (2 1/2)	330	560	—	—	—	300	—	53	65	
	80 (3)	356	620	—	—	—	355	—	82	95	
	100 (4)	432	820	—	—	—	500	—	145	170	
	125 (5)	508	915	—	—	—	500	—	230	290	
	150 (6)	559	1035	—	—	—	630	—	340	400	
	200 (8)	660	—	—	1305	1130	515	610	BA-2	590	680
	250 (10)	787	—	—	1410	1225	515	610	BA-2	885	1055
	300 (12)	838	—	—	1640	1395	555	760	BA-3	1320	1500

Dimensions in mm
次頁に続く Continued

CLASS 150, 300, 600, 900

CAST STEEL VALVES

Class Style	Nom. Size mm (in)	L · LL	C	H	H1	S	D	Gear Type	Mass kg	
									WL	WLL
CLASS 900 676	50 (2)	368	515	—	—	—	250	—	42	60
	65 (2½)	419	605	—	—	—	300	—	72	98
	80 (3)	381	650	—	—	—	355	—	105	135
	100 (4)	457	855	—	—	—	500	—	190	240
	125 (5)	559	985	—	—	—	560	—	270	360
	150 (6)	610	—	1240	1055	515	610	BA-2	560	650
	200 (8)	737	—	1415	1245	515	610	BA-2	790	900
	250 (10)	838	—	1540	1350	555	760	BA-3	1000	1250
	300 (12)	965	—	1650	1450	555	760	BA-3	1550	1850

注. NOTE : WL … 溶接型弁質量 Butt welding end valves, Mass approx. kg
 WLL… フランジ型弁質量 Flanged end valves, Mass approx. kg
 □ …ハンマーブローハンドル型 denotes Hammerblow Handwheel Type
 ■ …ギヤー操作型 denotes Gear Operated Type

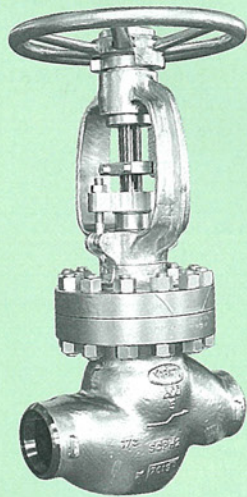
Dimensions in mm

◆ハンマーブローハンドル

ハンドル取付部にあそびを設け回転衝撃力を利用し大きなハンドル操作力を得て締切力を保証します。衝突の原理により打撃回数に比例してエネルギーが蓄積されますので、通常の締切操作は数回の打撃に止めてください。またこの場合にはエネルギー効率を向上させるため弁棒非回転式を標準設計とします。

Hammerblow Handwheel

There is a play space in the handwheel attachment. This assures the tightness by obtaining a large operation force with the use of rotation impact force. With the principle of collision, energy is accumulated in proportion to the times of hammering. Thus, normal closing operation should be done only by several hammerings. In this case, non-rotation stem system becomes the standard design to improve the energy efficiency.



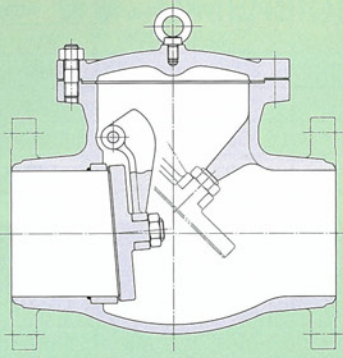
適用範囲 Application Table

Size	Class	150	300	600	900
100		—	—	○	○
125		—	—	○	○
150		—	○	○	G
200		○	○	G	G
250		○	○	G	G
300		○	○	G	G
350		○	G	—	—
400		○	—	—	—
450		G	—	—	—
500		G	—	—	—

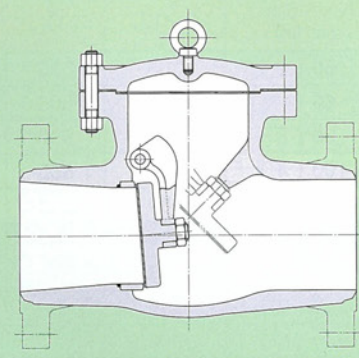
注. NOTE :
 ○…ハンマーブローハンドル Hammerblow Handwheel
 G…ギヤー操作 Gear Operated

KARATU STANDARD SWING CHECK VALVES

構造 PROFILE and FEATURE



PAT-No 520 522
Class 150 300

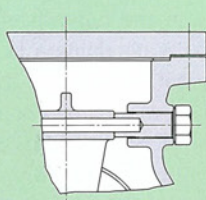


PAT-No 524 526
Class 600 900

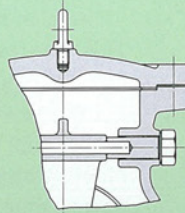
〈ロッド端部詳細〉 Detail of Rod Ends (Plug and Flange Section)

プラグタイプ Plug Type

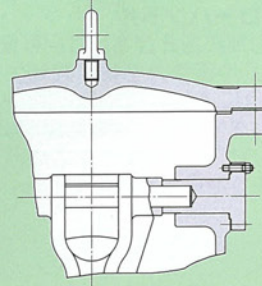
フランジタイプ Flanged Type



PAT-No 520 522
Class 150 300
Size 80 and smaller
Style 524 526
Class 600 900
Size 65 and smaller 50 only



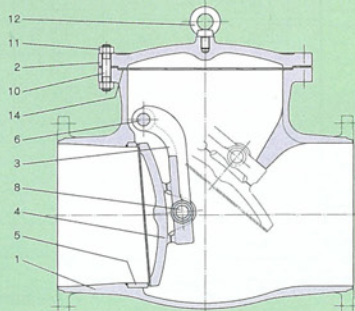
PAT-No 520 522
Class 150 300
Size 100 to 450
Style 524 526
Class 600 900
Size 80 to 350 65 to 350



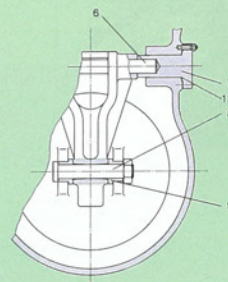
PAT-No 520 522
Class 150 300
Size 500 and larger
Style 524 526
Class 600 900
Size 400 and larger

材料 MATERIALS

No.	NAME of PARTS	DESIGNATION	JIS and ASTM Spec.		
1	BODY	Carbon and Alloy Steel	JIS S25C	JIS SFVA-F11A	JIS SFVA-F22B
2	COVER		SCPH2	SCPH21	SCPH32
3	SWING ARM				
4	VALVE DISC	Carbon and Alloy Steel "STELLITE" Faced	ASTM A105	ASTM A182-F11	ASTM A182-F22
5	VALVE SEAT		A216-WCB	A217-WC6	A217-WC9
6	ROD	Stainless Steel	JIS SUS 403		
7	PLUG	Carbon, Alloy Steel	JIS S25C	ASTM A182-F11	ASTM A182-F22
8	PIN	Stainless Steel	JIS SUS 403		
9	BUSH	Stainless Steel	JIS SUS 416		
10	JOINT BOLTS	Alloy Steel	JIS SNB7	ASTM A193-B16	
11	NUTS	Carbon, Alloy Steel	JIS S45C	ASTM A193-Gr4	
12	HOOK BOLT	Carbon Steel	JIS SS 400		
13	GASKET	Copper Plate	JIS C1221P-O		
14	GASKET	Sheet and Spiral Wound Type	Commercial		



PAT-No 520 522
Class 150 300

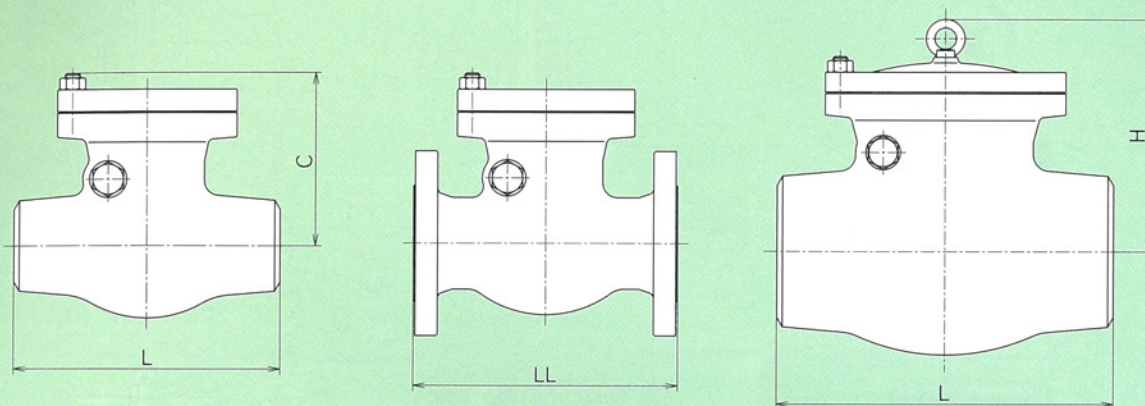


CLASS 150, 300, 600, 900

CAST STEEL VALVES

KARATU STANDARD SWING CHECK VALVES

寸法・質量 DIMENSIONS and MASS



Class Style	Nom. Size mm (in)	L · LL	C	H	Mass kg	
					WL	WLL
CLASS 150 520	50 (2)	203	145		13	18
	65 (2 ½)	216	160		17	22
	80 (3)	241	175		24	30
	100 (4)	292		240	38	45
	125 (5)	330		245	47	57
	150 (6)	356		265	68	80
	200 (8)	495		320	105	120
	250 (10)	622		390	185	205
	300 (12)	698		435	240	270
	350 (14)	787		485	365	400
	400 (16)	864		590	510	540
	450 (18)	978		605	640	680
	500 (20)	978		670	800	850
	550 (22)	1067		720	1000	1100
	600 (24)	1295		830	1400	1540
	650 (26)	1295		920	1720	1900
	700 (28)	1448		975	2200	2400
	750 (30)	1524		1000	2500	2750
	800 (32)	1600		1050	3000	3300
	CLASS 300 522	50 (2)	267	165		19
65 (2 ½)		292	175		25	30
80 (3)		318	190		30	40
100 (4)		356		250	50	62
125 (5)		400		270	72	85
150 (6)		444		300	100	120
200 (8)		533		375	155	185
250 (10)		622		435	240	285
300 (12)		711		515	360	500
350 (14)		838		550	430	600
400 (16)		864		620	650	820
450 (18)		978		650	840	1100
500 (20)	1016		710	1000	1300	
550 (22)	1118		760	1250	1600	
600 (24)	1346		800	1650	2100	

Class Style	Nom. Size mm (in)	L · LL	C	H	Mass kg	
					WL	WLL
CLASS 600 524	50 (2)	292	190		25	30
	65 (2 ½)	330	225		42	48
	80 (3)	356		245	48	55
	100 (4)	432		290	82	112
	125 (5)	508		320	120	155
	150 (6)	559		385	165	210
	200 (8)	660		420	255	315
	250 (10)	787		475	350	430
	300 (12)	838		540	540	680
	350 (14)	889		620	730	950
	400 (16)	991		710	1100	1400
	450 (18)	1092		780	1800	2200
500 (20)	1194		850	2800	3200	
CLASS 900 526	50 (2)	216 368	210		27	45
	65 (2 ½)	419		245	45	75
	80 (3)	381		280	75	110
	100 (4)	457		315	110	160
	125 (5)	559		355	150	230
	150 (6)	610		395	205	345
	200 (8)	737		485	320	500
	250 (10)	838		520	480	710
300 (12)	965		605	680	960	
350 (14)	1029		680	1050	1350	
400 (16)	1130		750	1700	2100	

Dimensions in mm

注. WL …溶接型弁質量
Butt welding end valves, Mass approx. kg
NOTE : WLL …フランジ型弁質量
Flanged end valves, Mass approx. kg

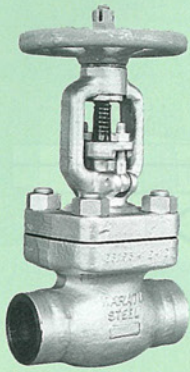
CLASS 150, 300, 600, 900
CAST STEEL VALVES

KARATU STANDARD WEDGE GATE VALVES

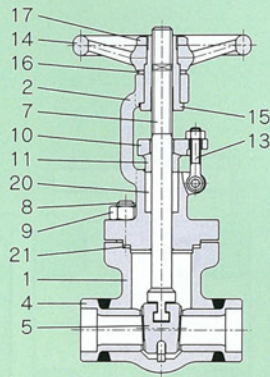
FORGED STEEL VALVES

CLASS 600, 900

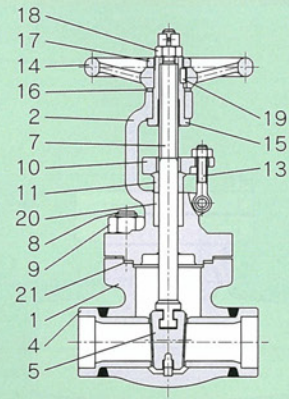
構造 PROFILE and FEATURE



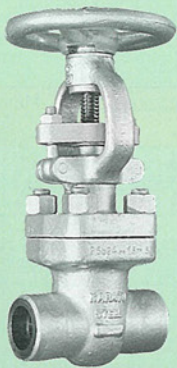
PAT-No 744 Class 600



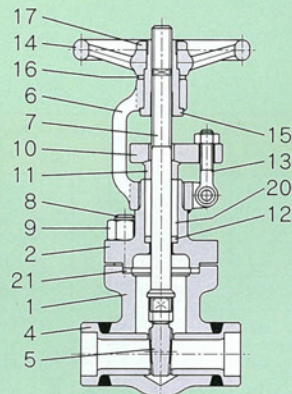
Size 15 to 25



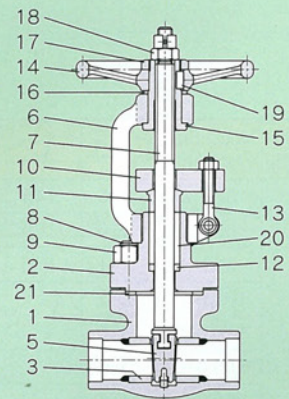
Size 32 and 40



PAT-No 746 Class 900



Size 15 to 25



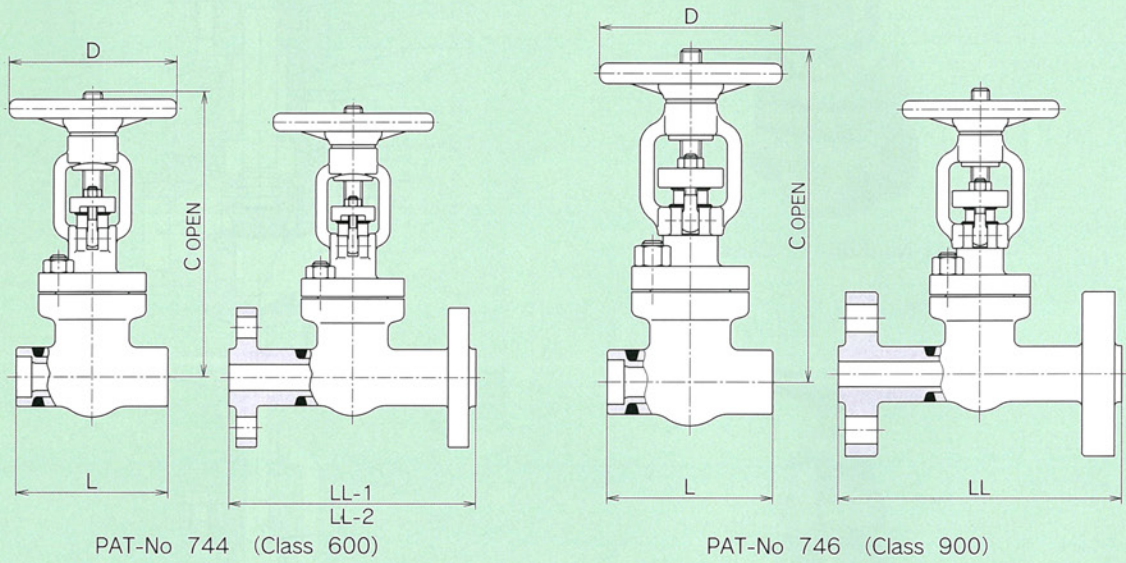
Size 32 and 40

材料 MATERIALS

No.	NAME of PARTS	DESIGNATION	JIS and ASTM Spec.		
1	BODY	Carbon and Alloy Steel	JIS S25C	ASTM	ASTM
2	BONNET				
3	VALVE SEATS	Carbon, Alloy Steel "STELLITE" Faced	ASTM A105	A182-F11	A182-F22
4	NOZZLE SEATS				
5	VALVE DISC	Carbon and Stainless Steel "STELLITE" Faced	JIS S25C	JIS SUS 304	
6	YOKE	Carbon, Alloy Steel	JIS S25C(A182 F11...Used over 501°C)		
7	STEM	Stainless Steel	JIS SUS 403	JIS SUS 403(Nitriding)	
8	JOINT BOLTS	Alloy Steel	JIS SNB7	ASTM A193-B16	
9	NUTS	Carbon, Alloy Steel	JIS S45C	ASTM A194-Gr4	
10	GLAND	Carbon Steel	JIS S25C		
11	GLAND BUSH	Stainless Steel	JIS SUS 416		
12	PACKING WASHER				
13	GLAND BOLTS	Stainless Steel	JIS SUS 403		
14	HAND WHEEL	Ductile Iron	JIS FCD 400		
15	'YOKE SLEEVE	High Stregth Brass	JIS C6782B		
16	THRUST WASHER	Brass	JIS C3604B		
17	HEAD NUT	Carbon Steel	JIS S25C		
18	DISC STOPPER	Carbon steel	JIS S25C		
19	FEATHER KEY	Carbon steel	JIS S45C		
20	GLAND PACKING	Preformed and Braided Yarn Type	Commercial		
21	GASKET	Spiral Wound Type	Commercial		

KARATU STANDARD WEDGE GATE VALVES

寸法・質量 DIMENSIONS and MASS



SOCKET WELD ENDS

Style (Class)	Nom. Size mm (in)	L	C	D	Mass kg
744 (600)	15 (1/2)	92	215	125	3.5
	20 (3/4)	111	245	125	5
	25 (1)	127	270	140	6.4
	32 (1 1/4)	171	345	160	14
	40 (1 1/2)	171	345	160	14

FLANGED ENDS

LL-1	LL-2	Note	
152	165	LL-1 JIS 10K 16K 20K 30K ANSI 150 300	LL-2 JIS 40K ANSI 600
178	190		
203	216		
229	241		
229	241		

746 (900)	15 (1/2)	82	230	125	4.5
	20 (3/4)	111	255	125	5.5
	25 (1)	127	280	140	7.5
	32 (1 1/4)	171	415	200	17.5
	40 (1 1/2)	171	415	200	17.5

LL	Note
203	JIS 63K ANSI 900
228	
254	
278	
305	

Dimensions in mm

CLASS 600, 900

FORGED STEEL VALVES

KARATU STANDARD GLOBE VALVES

CLASS 600, 900

FORGED STEEL VALVES

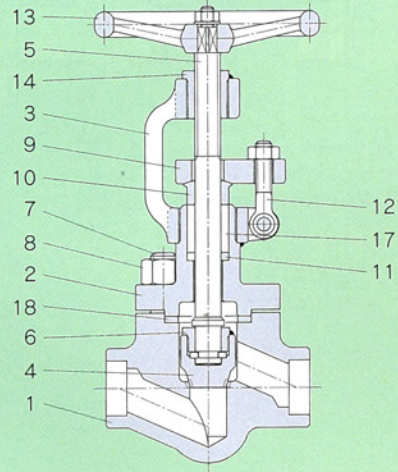
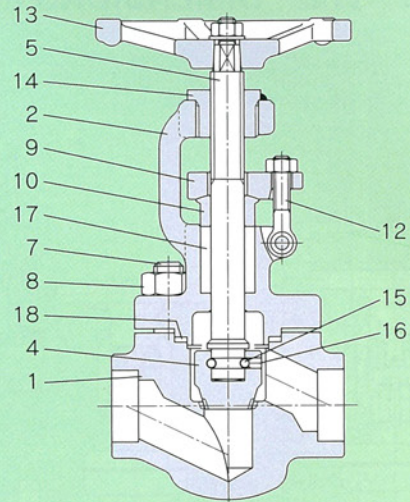
構造 PROFILE and FEATURE



PAT-No Z664 Class 600



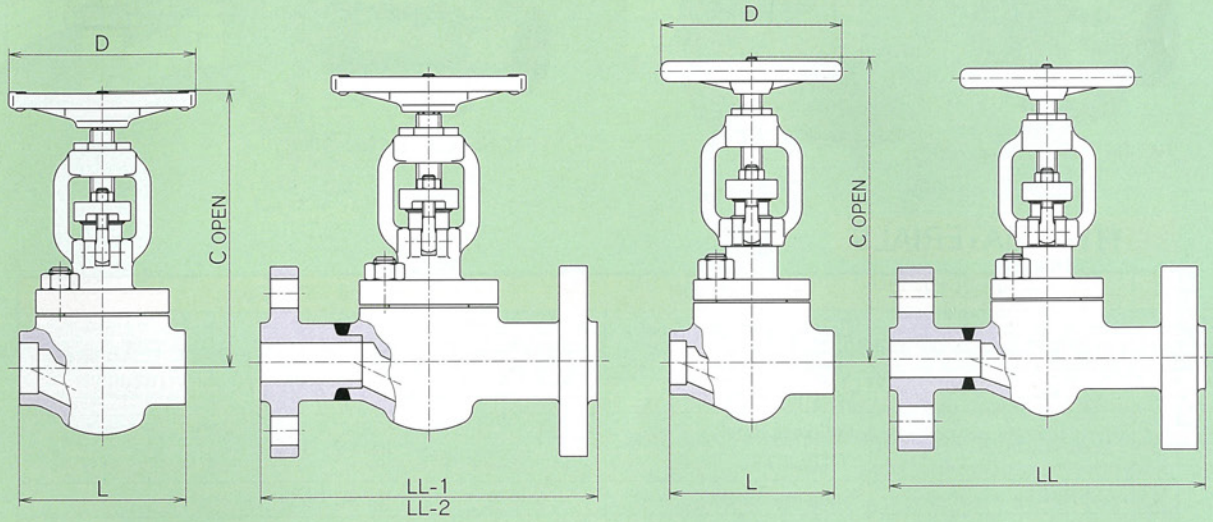
PAT-No 666 Class 900



材料 MATERIALS

No.	NAME of PARTS	DESIGNATION	JIS and ASTM Spec.		
1	BODY	Carbon and Alloy Steel Integral "STELLITE" Seat	JIS S25C ASTM A105	ASTM A182-F11	ASTM A182-F22
2	BONNET	Carbon, Alloy Steel			
3	YOKE	Carbon, Alloy Steel	JIS S25C(F11...Used over 501℃)		
4	VALVE DISC	Carbon and Stainless Steel "STELLITE" Faced	JIS S25C	JIS SUS 304	
5	STEM	Stainless Steel	JIS SUS 403	JIS SUS 403(Nitriding)	
6	DISC NUT	Stainless Steel	JIS SUS 416		
7	JOINT BOLTS	Alloy Steel	JIS SNB7	ASTM A193-B16	
8	NUTS	Carbon, Alloy Steel	JIS S45C	ASTM A194-Gr4	
9	GLAND	Carbon Steel	JIS S25C		
10	GLAND BUSH	Stainless Steel	JIS SUS 416		
11	PACKING WASHER				
12	GLAND BOLTS	Stainless Steel	JIS SUS 403		
13	HAND WHEEL	Ductile Iron	JIS FCD 400		
14	YOKE BUSH	High Strength Brass	JIS C6782B		
15	BALL	Stainless Steel	JIS SUS 316		
16	PIN				
17	GLAND PACKING	Preformed and Braided Yarn Type	Commercial		
18	GASKET	Spiral Wound Type	Commercial		

寸法・質量 DIMENSIONS and MASS



PAT-No Z664 (Class 600)

PAT-No 666 (Class 900)

SOCKET WELD ENDS

Style (Class)	Nom. Size mm (in)	L	C	D	Mass kg
Z664 (600)	15 (1/2)	84	155	90	2.4
	20 (3/4)	91	175	100	3.4
	25 (1)	111	200	125	5.2
	32 (1 1/4)	165	250	140	9.5
	40 (1 1/2)	165	250	140	9.5
	50 (2)	203	290	160	15

FLANGED ENDS

LL-1	LL-2	Note	
152	165	LL-1 JIS 10K	LL-2 JIS 40K
178	190		
203	216	20K	ANSI 600
229	241		
229	241	ANSI 150	
267	292		

666 (900)	15 (1/2)	92	215	100	3.8
	20 (3/4)	111	230	125	5.2
	25 (1)	127	255	140	6.8
	32 (1 1/4)	171	355	225	19
	40 (1 1/2)	171	355	225	19

LL	Note
203	JIS 63K ANSI 900
229	
254	
279	
305	

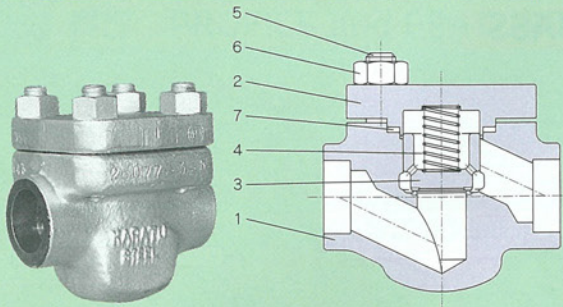
Dimensions in mm

KARATU SPECIAL LIFT CHECK VALVES

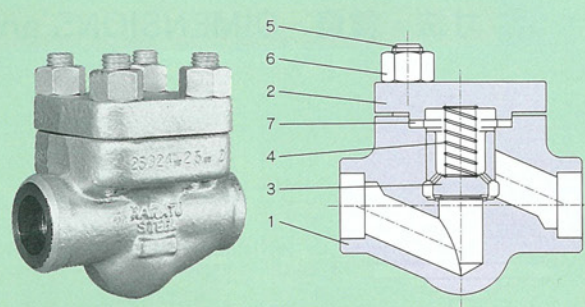
CLASS 600, 900

FORGED STEEL VALVES

構造 PROFILE and FEATURE



PAT-No Z344 Class 600



PAT-No 346 Class 900

材料 MATERIALS

No.	NAME of PARTS	DESIGNATION	JIS and ASTM Spec.		
			JIS S25C ASTM A105	ASTM A182-F11	ASTM A182-F22
1	BODY	Carbon and Alloy Steel Integral "STELLITE" Seat	JIS S25C ASTM A105	ASTM A182-F11	ASTM A182-F22
2	COVER	Carbon, Alloy Steel			
3	VALVE DISC	Stainless Steel "STELLITE" Faced	JIS SUS 304		
4	SPRING	Stainless Steel	JIS SUS 304		
5	JOINT BOLTS	Alloy Steel	JIS SNB7	ASTM A193-B16	
6	NUTS	Carbon, Alloy Steel	JIS S45C	ASTM A194-Gr4	
7	GASKET	Spiral Wound Type	Commercial		

◆スプリング効果

1. 輸送中の弁体の振動防止
2. 締切性の向上
3. 弁体作動時のセンター保持効果

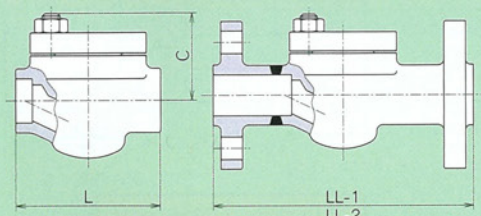
注. スプリング荷重は圧力損失にほとんど無関係な軽荷重ですので原則として垂直配管には使用できません。

Effect of Built-in Spring

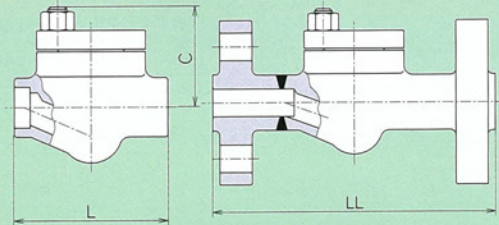
1. Prevention of valve disc vibration during transport
2. Improvement of shutting-off performance
3. Effect of holding center at the time of disc working

NOTE : Spring load is a light load which affects scarcely the pressure loss, thus, it cannot be used in vertical piping as a rule.

寸法・質量 DIMENSIONS and MASS



PAT-No Z344 (Class 600)



PAT-No 346 (Class 900)

SOCKET WELD ENDS

Style (Class)	Nom. Size mm (in)	L	C	Mass kg
Z344 (600)	15 (1/2)	84	50	1.5
	20 (3/4)	91	60	2.1
	25 (1)	111	70	3.5
	32 (1 1/4)	165	90	6.8
	40 (1 1/2)	165	90	6.8
	50 (2)	203	110	11.3

FLANGED ENDS

LL-1	LL-2	Note	
152	165	LL-1 JIS 10K 16K 20K 30K ANSI 150 300	LL-2 JIS 40K ANSI 600
178	190		
203	216		
229	241		
229	241		
267	292		

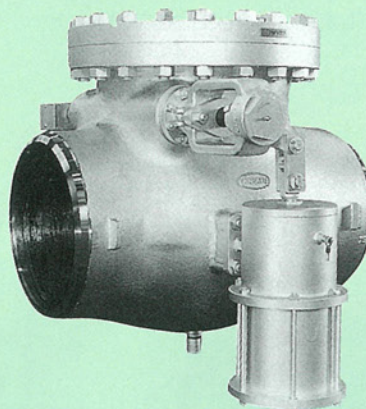
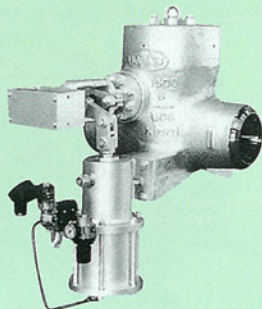
LL	Note
203	JIS 63K ANSI 900
229	
254	
279	
305	

Dimensions in mm

346 (900)	15 (1/2)	92	70	2
	20 (3/4)	111	80	3
	25 (1)	127	85	4.2
	32 (1 1/4)	171	115	10.5
	40 (1 1/2)	171	115	10.5

KARATU STANDARD EXTRACTION STEAM CHECK VALVES

サイドシリンダー型 (Side Cylinder Type)



◆抽気逆上昇

主として蒸気タービンの抽気ラインに用いられる強制閉鎖機構を有するスイング逆上昇弁です。通常の逆上昇機能のほか外部信号により強制的に閉弁を行うことができる構造（シリンダースプリングと空気圧又は油圧作用による）としたものでタービントリップなどの緊急時に即応させることができます。

Extraction Steam Check Valves

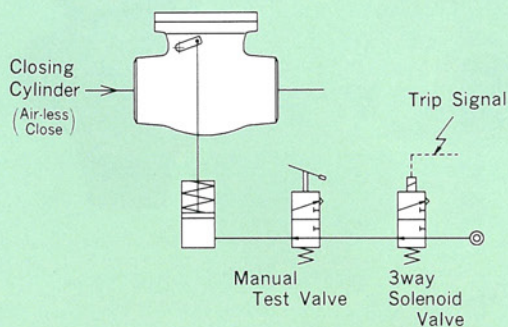
This is a swing check valve having the forced shut-off device used mainly for the steam turbing extraction line. This valve is constructed so that the valve can be shut off by the the external signal (by means of spring force and air or hydraulic pressure)together with having the nomal function of check valve, and is able to cope immediately with an emergency such as turbine trip.

サイドシリンダー型 Side Cylinder Type

空気圧、油圧系統図 Air and Oil Operated System Diagrams for Side Cylinder Type.

◆空気操作、空気シリンダー作動タイプ

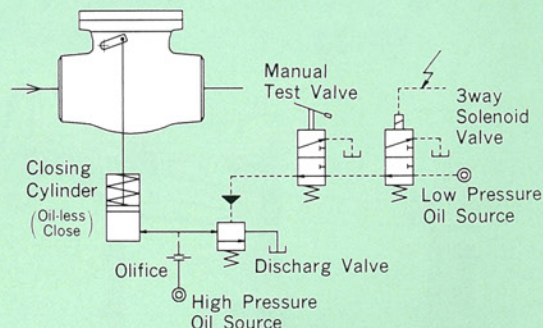
Air Operated Air Closing Cylinder Type



注： 図は一例を示したのみで表示外にも多様の操作系があります。
NOTE : Figure shows only example, In addition to this display, there are many system diagrams.

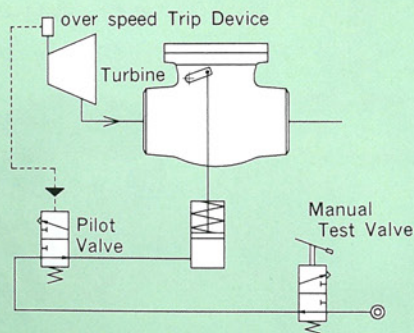
◆油圧操作、油圧シリンダー作動タイプ

Oil Operated Oil Closing Cylinder Type



◆油圧操作、空気シリンダー作動タイプ

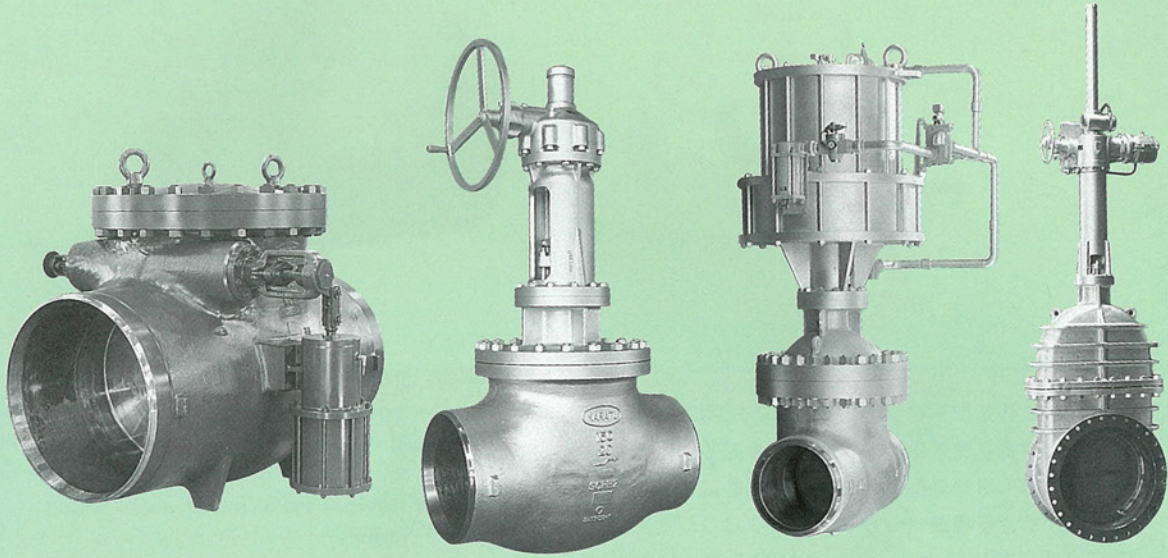
Oil Operated Air Closing Cylinder Type



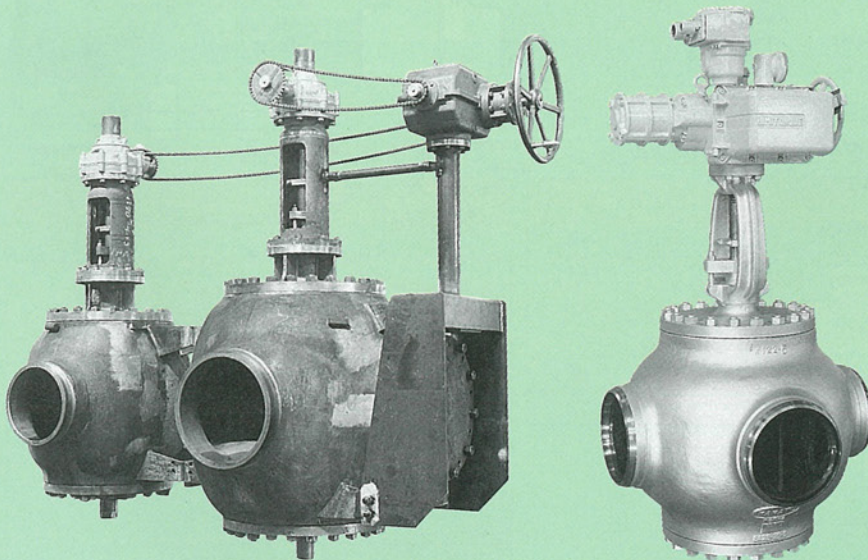
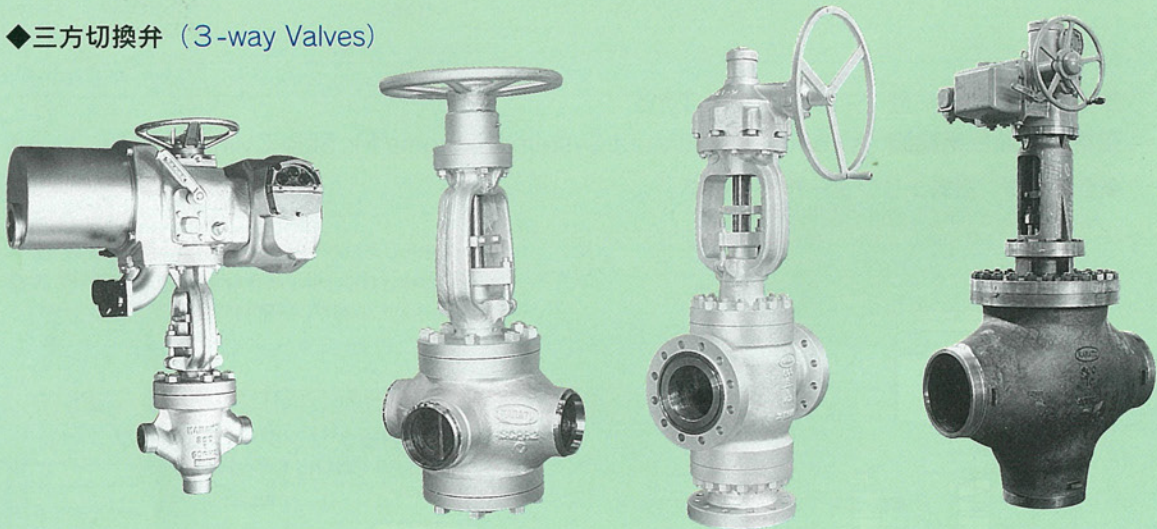
CAST STEEL VALVES CLASS 150, 300, 600, 900

KARATU SPECIAL SPECIALLY USED VALVES

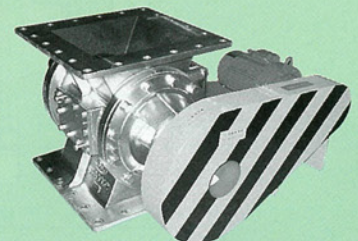
◆大口径弁 (Large Bore Size Valves)



◆三方切換弁 (3-way Valves)

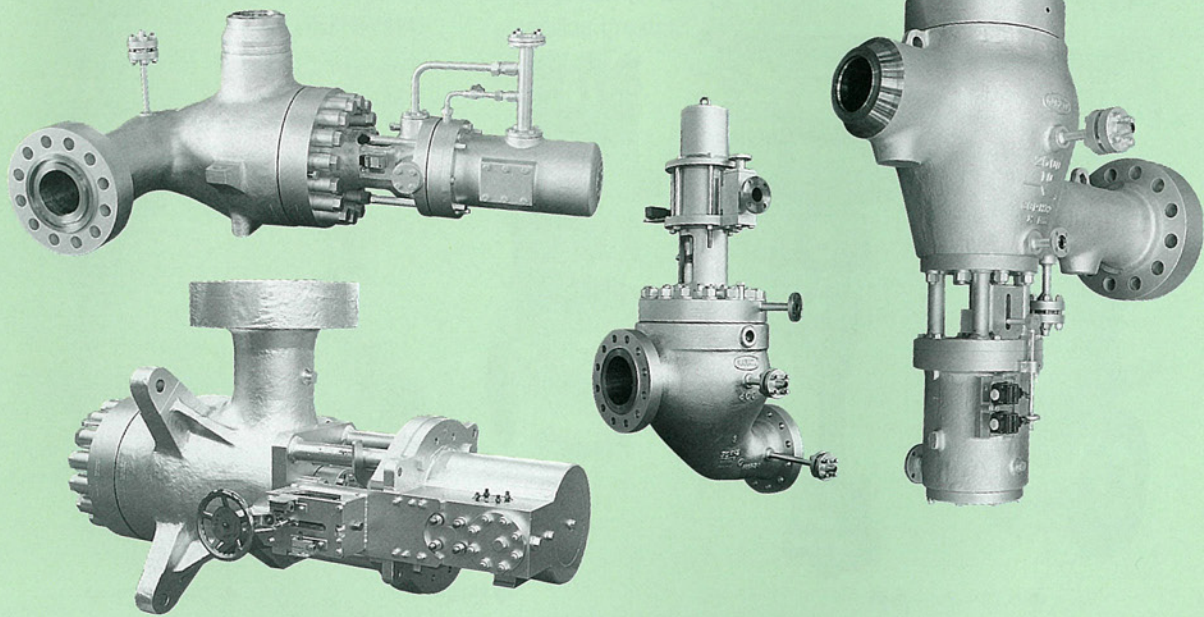


◆ロータリー弁
(Rotary Valve)

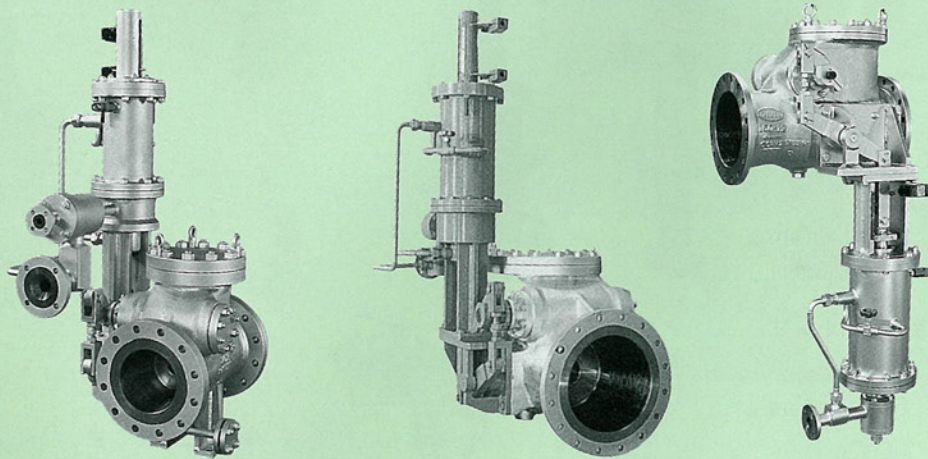


◆蒸気タービン付属弁 (Steam Turbine Accessories)

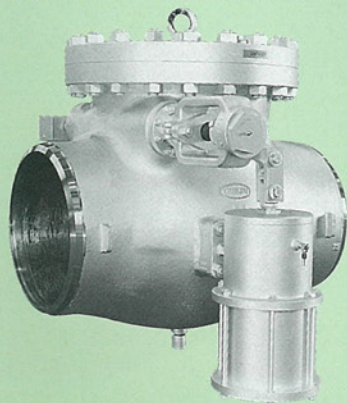
主蒸気止弁 (Main Stop Valves) M.S.V



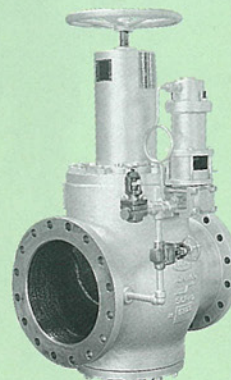
再熱蒸気遮断弁 (Reheated Steam Isolation Valves)



抽気逆止弁
(Extraction Steam Check Valve)



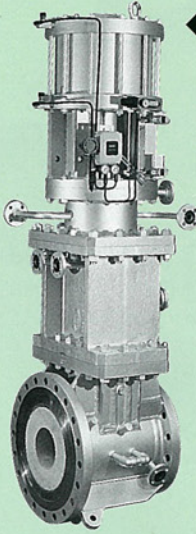
パイロット駆動タービン排気弁
(Pilot Operated Turbine Exhaust Valve)



KARATU SPECIAL SPECIALLY USED VALVES

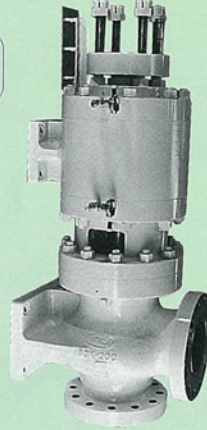
◆加圧流動床ボイラ用
炉底弁

Bottom Valve
for PFBC Boiler



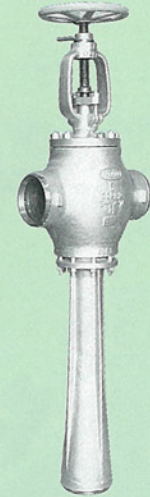
◆水力発電設備用
バイパス弁

By-Pass Valve
for Hydraulic Power
Station Facilities



◆ミキシング弁

Steam-Water
Mixing Valve



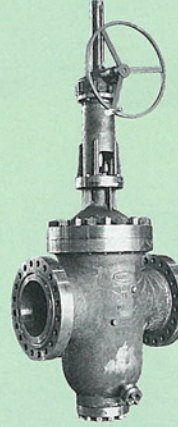
◆高温用弁

For High
Temperature Service



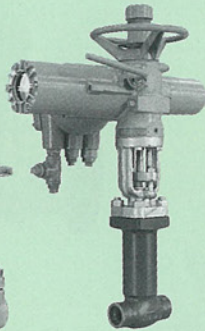
◆スルーコンジット弁
(地熱蒸気用)

Through Conduit
Valve



◆ベローシール弁

(Bellows Seal Valves)



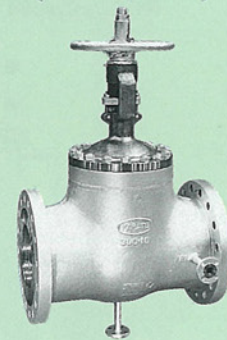
◆熱媒弁

Heating Medium
Valve



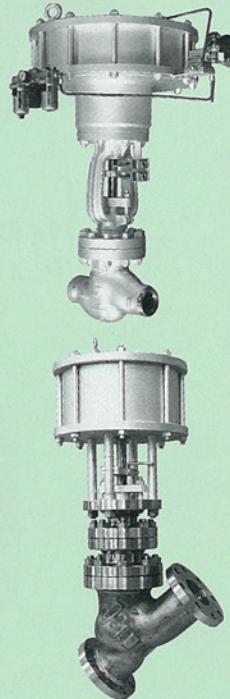
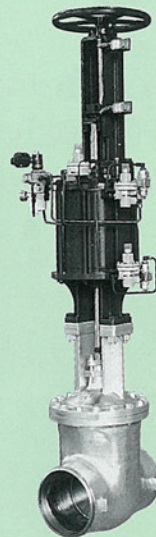
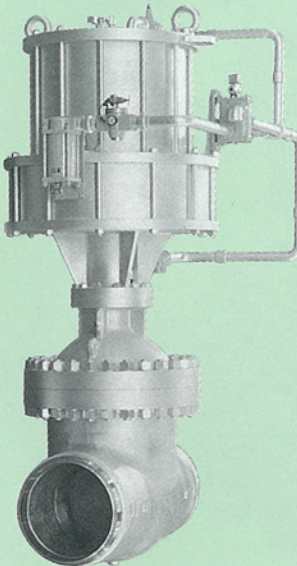
◆ジャケット弁

Steam Jacket
Valve



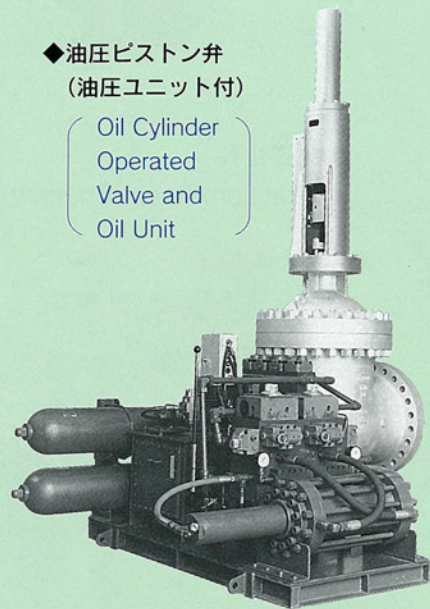
◆空気ピストン弁

Pneumatic Cylinder
Operated Valves

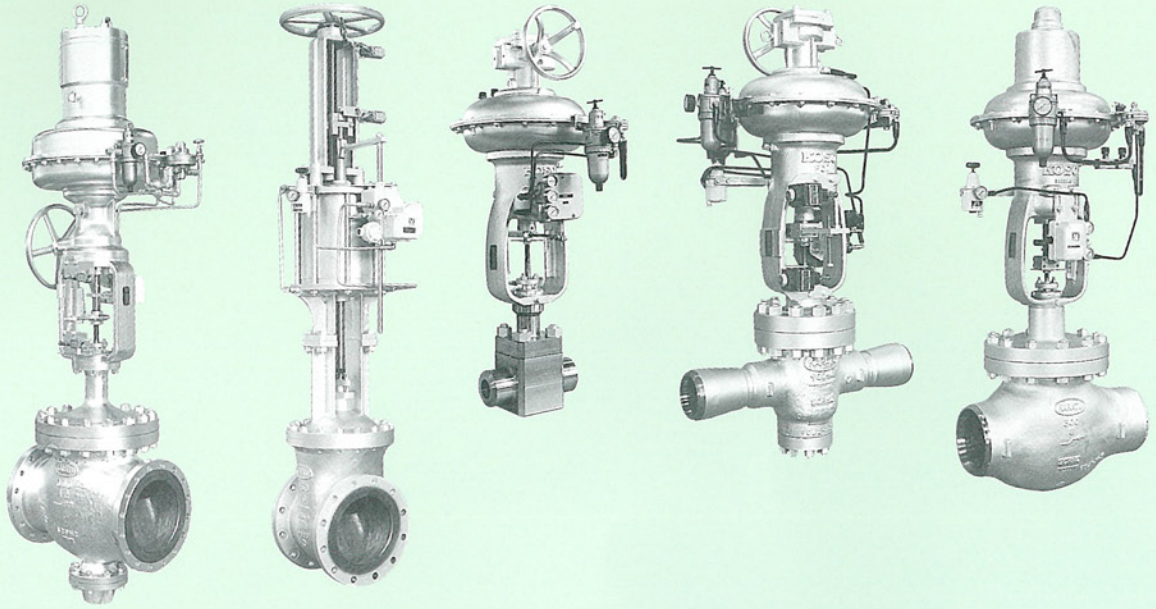


◆油圧ピストン弁
(油圧ユニット付)

Oil Cylinder
Operated
Valve and
Oil Unit



◆調整弁 (Control Valves)



◆エアーモータ駆動弁 (Pneumatic Motor Operated Valves)

