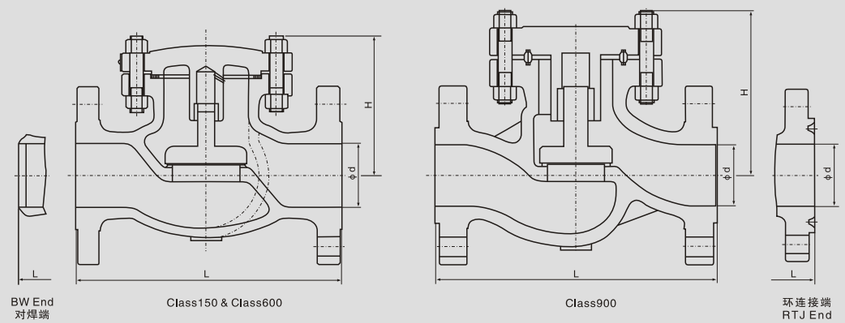
Class150~Class900 Cast Steel Lift Check Valve 铸钢升降式止回阀



Size 口径(Inch)		Class 150						Class 300					
NPS	DN (mm)	Dimensions尺寸 (mm)					Weight 重量 (Kg)	Dimensions尺寸 (mm)					Weight 重量 (Kg)
		L			d	H		L			d	H	
		RF	RTJ	BW				RF	RTJ	BW			
1/2"	15	108	119	108	13	76	3	152	162	152	13	78	5
3/4"	20	117	130	117	19	76	4	178	191	178	19	82	6
1"	25	127	140	127	25	98	5	203	216	203	25	102	8
1 1/4"	32	140	153	140	32	102	7	216	229	216	32	106	11
1 1/2"	40	165	178	165	38	115	8	229	242	229	38	118	13
2"	50	203	216	203	51	140	15	267	283	267	51	140	26
2 1/2"	65	216	229	216	64	162	22	292	308	292	64	164	33
3"	80	241	254	241	76	168	28	318	333	318	76	178	50
4"	100	292	305	292	102	194	42	356	371	356	102	195	86
5"	125	356	368	356	127	210	60	400	416	400	127	223	120
6"	150	406	419	406	152	226	75	445	460	445	152	245	180
8"	200	495	508	495	203	250	118	533	549	533	203	280	220
10"	250	622	635	622	254	275	194	622	638	622	254	336	310
12"	300	699	711	699	305	332	320	711	727	711	305	380	510

Size 口径(Inch)		Class 600						Class 900					
NPS	DN (mm)	Dimensions 尺寸(mm)					Weight 重量 (Kg)	Dimensions尺寸 (mm)					Weight 重量 (Kg)
		L			d	H		L			d	H	
		RF	RTJ	BW				RF	RTJ	BW			
2"	50	292	295	292	51	152	32	368	371	368	50	180	50
2 1/2"	65	330	333	330	64	167	45	419	422	419	64	200	65
3"	80	356	359	356	76	178	68	381	384	381	74	235	88
4"	100	432	435	432	102	215	98	457	460	457	100	270	140
5"	125	508	511	508	125	240	155	559	562	559	125	300	210
6"	150	559	562	559	152	279	230	610	613	610	150	350	300
8"	200	660	664	660	200	328	300	737	740	737	200	400	390

Application 用途

Floating ball valves are suitable for various kinds of pipelines of Class 150 to Class 1500, PN16 to PN100, and JIS 10K to JIS 20K to cot off or connect the medium of pipe line, of which the operation types include manual, worm gear and pneumatic or electric actuators.

浮动球阀适用于Classl50~Classl500、PN16~PNl00、JIS10K~JIS20K的各种管路上，用于截断或接通管路中的介质，选用不同的材质，可分别适用于水、蒸汽、油品、液化气、天然气、煤气、硝酸、醋酸、氧化性介质、尿素等多种介质。驱动方式为手动、蜗轮蜗杆传动、气动或电动。浮动球阀一般采用法兰连接，也可采用对焊连接。

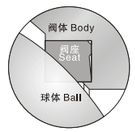
Construction and features of floating ball valve 浮动球阀的结构设计特点

Reliable seat seal 阀座的可靠密封

The structure design of elastic sealing ring has been adopted for floating ball valves. This seat design features a bigger sealing pressure ratio between the ring surface and the ball when medium pressure gets lower, where the contacting area is smaller. Thus, the reliable seal is ensured. When the medium pressure gets higher, the contacting area between seat ring and ball becomes bigger as the sealing ring transforms elastically to undertake the bigger force pushed by the medium without any damage.

浮动球阀采用弹性密封圈结构设计。当介质压力较小时，密封圈与球体接触面积较小，在密封圈与球体接触形成较大的密封比压，确保可靠密封。当介质压力较大时，随着密封圈的弹性变形，密封圈与球体的接触面积增大，故密封圈能承受较大的介质推力而不会损坏。

At low medium pressure
介质压力较小时

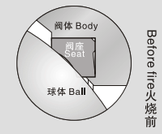


介质压力较大时
At low medium pressure

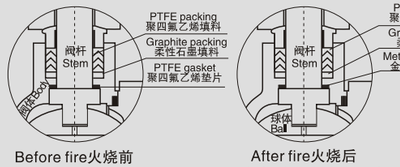
Fire safe structure design 防火结构设计

With the valve heated in a fire application, the non–metal material parts such as seat sealing ring of PTFE, stem back seat gasket, gland packing, and the sealing gasket between body and bonnet might disintegrate or be damaged due to high temperature. FAVOR specially designed structure of auxiliary metal to metal seal is provided to effectively prevent both internal and external leakage of the valve. As required by Customers, FAVOR floating ball valves with design can meet the requirement of API 607, API 6FA,BS 6755 and JB/T 6899.

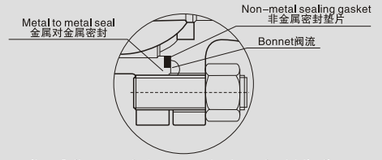
在阀门的使用现场发生火灾时，当聚四氟乙烯等非金属材料制作的阀座封圈、阀杆上密封垫、阀杆密封填料以及中法兰密封垫片在高温下分解或破坏后，飞环球阀能够借助于特别设计的金属对金属辅助密封结构，有效地控制阀门的内漏和外漏。对于用户有防火要求的浮动球阀，飞环公司的防火设计均符合API 607，API 6FA，BS 6755及JB／T6899等标准规范的要求。



Fire safe design of seat
阀座的防火结构设计



Before fire火烧前 After fire火烧后
Fire safe structure design of stem 阀杆的防火结构设计

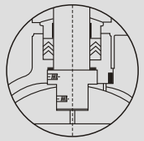


sealing & fire proof structure design of middle flange
中法兰密封的防火结构设计

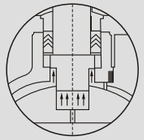
Reliable stem seal 阀杆的可靠密封

The blow–out proof design has been adopted for the stem to ensure that even if the pressure in the body cavity is risen accidently and the packing flange becomes invalid,the stem may not be blown out by medium. The stem features the design with a backseat, being assembled fromunderneath. The sealing force against the backseat gets higher as the medium pressure becomes higher. So the reliable seal of the stem can be assured under variable medium pressure.

阀杆采用防吹出结构设计，即使在阀腔异常升压以及填料压板失效等极端情况下，也能保证阀杆不会被介质吹出。阀杆采用有倒密封的下装式结构设计，倒密封的密封力随着介质压力的增高而增大，故能在各种压力下均能确保阀杆的可靠密封。



Sterm assembled from undermeath may not be blown out by medium
下装式阀杆不会被介质压力吹出

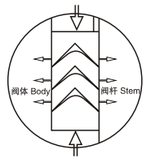


Stem assembled downward may be blown out
下装式阀杆有被介质压力吹出的可能

V type packing structure has been employed to effectively trans form the pushing force of the gland flange and the medium pressure into the sealing force against the stem.

阀杆采用V型填料密封结构，V形填料能将填料压盖的压紧力及介质力有效地转化成阀杆的密封力。

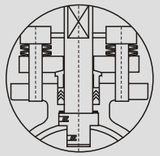
Packing before pressed
填料压紧前



Packing after pressed
填料压紧后

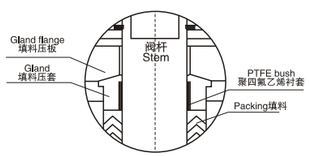
Based on customers'requirement,a packing tightening design may be employed to obtain more reliable stem packing seal,which is loaded by bevellingspring.

根据用户的需要，可以采用碟形弹簧加载的填料压紧机构，使阀杆填料的密封更加可靠。



The traditional gland packing design has been improved to be of two piece structure, i.e., being as a gland flange and gland, the latter contacts the gland flange with spherical surface. Thus, the gland remains vertical always, and is lined internally with a PTFE bush to prevent the galling and friction between the stem, which can also reduce the operation torque of the valve.

将传统的填料压盖改进为填料压板与填料压套的两体式结构设计，填料压套与填料压板采用球形接触，确保填料压套始终垂直，并在填料压套内部设置了聚四氟乙烯衬套，避免了阀杆与填料压套的擦伤与磨损，并减小了阀门的操作力矩。

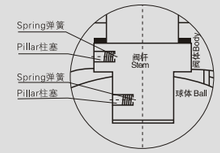


Stem galling prevented in application
防止阀杆使用中的磨损

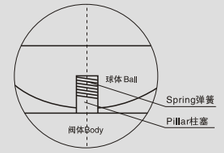
Anti-static structure 防静电结构

According to the requirements of customers, valve can be installed with static structure, using spring–piston electrostatic extraction device Ball valve and so directly between the formation of electrostatic channel (≤25 for the valve DN) or through the valve and the valve ball so static form of direct access (for the ball valve DN ≥32), thus switching process can be generated by the friction between ball and the valve seat electrostatic valve causing the earth to prevent static sparks may cause a fire or explosion risk.

根据用户要求，球阀可以设有防静电结构。采用弹簧一柱塞式静电引出装置，使球体与阀体之间直接形成静电通道(对于DN≤25的球阀)或通过阀杆使球体与阀体之间形成静电通道(对于DN≥32的球阀)。从而可将球体与阀座开关过程中摩擦产生的静电通过阀体引到大地，防止静电火花可能引起的火灾或爆炸等危险。



Anti–Static design for ball valve ≥32mm
DN≥32的球阀防静电结构设计

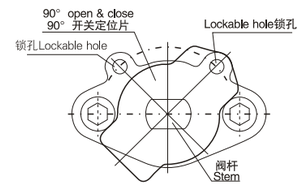


Anti–Static design for ball valve ≥25mm
DN≥32的球阀防静电结构设计

Wrong operation prevention 防止误操作

To prevent the ball valve from wrong operation, the key lock with 90° of open and close positioning pad has been provided,which can be lock able as required. At the stem head, where the lever fixes, a flat is so designed that the valve opens with the lever in parallel to piping, and with the lever right–angled to the piping,the valve is closed. So,it is ensured that the valve indicator of open and close can never make mistake.

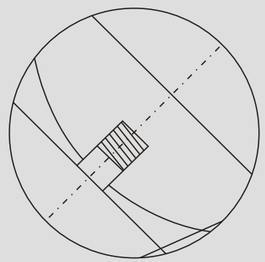
设置了带锁孔的90° 开关定位片，根据需要可以加锁，防止误操作。阀杆头部安装手柄的部位采用扁形设计，当阀门开启时，手柄与管道平行，当阀门关闭时，手柄与管道垂直，能够确保阀门的开关指示不会发生错误。



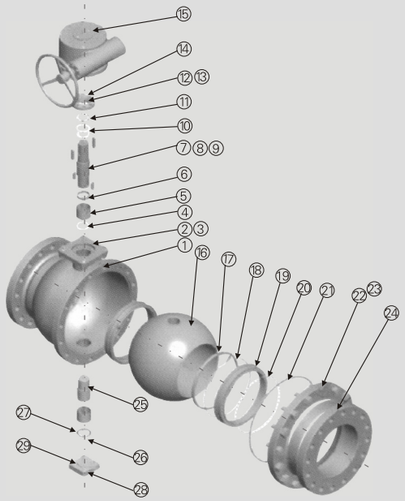
Mounting pad provided 驱动装置安装平台的设置

FAVOR company has provided for floating ball valve with a mounting pad, through which it is easy to fix the actuators, such as worm gear, pneumatic and electric actuators.

飞环公司的浮动球阀均设置了安装驱动装置的支架平台，通过驱动装置支架，可以方便的安装蜗轮蜗杆传动装置，气动装置或电动装置。



Typical drawing of trunnion ball valve and parts composition
固定球阀典型结构及零部件组成



Application 用途

Trunnion ball valves are suitable for various kinds of pipelines of Class150~Class2500, PN16 ~ PN160,JIS 1OK ~ JIS 20K to cut off or turn on the pipeline medium, of which the operation types include worm gear, manual, pneumatic or electric actuators, being in general of flange connection, and butt welding ends as well.

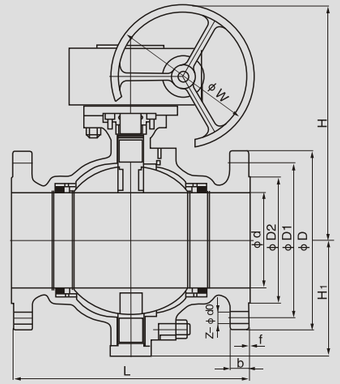
固定球阀适用Class l50~Class 2500、PN16~PN160、JIS10K~JIS20K各种管路上，用于截断或接通管路中的介质，选用不同的材质，可分别适用于水、蒸汽、油品、液化气、天然气、煤气、硝酸、醋酸、氧化性介质、尿素性介质、尿素等多种介质。固定球阀的驱动方式为蜗轮蜗杆传动、手动、气动或电动。固定球阀一般采用法兰连接，也可采用对焊连接。

Parts No. 序号	Parts name 零件名称	材料Materials				
		WCB/Trim 1	WCB/Trim 5	WCB/Tdm 8	CF8/304	CF8M/316
1	Body 阀体	ASTM A216 WCB	ASTM A216 WCB	ASTM A216 WCB	ASTM A351 CF8	ASTM A351 CF8M
2	Nut 螺母	ASTM A194 2H	ASTM A194 2H	ASTM A194 2H	ASTM A194 2H	ASTM A194 2H
3	Bolting 螺栓	ASTM A193 B7	ASTM A193 B7	ASTM A193 B7	ASTM A193 B7	ASTM A193 B7
4	O ring O形圈	Viton	Viton	Viton	Viton	Viton
5	Stem bearing 轴套	Metal backed PTFE	Metal backed PTFE	Metal backed PTFE	Metal backed PTFE	Metal backed PTFE
6	Gasket 垫片	ASTM A182 F6a	ASTM A182 F304	ASTM A182 F316	ASTM A182 F304	ASTM A182 F316
7	Stem 阀杆	ASTM A 182 F6a	ASTM A182 F304	ASTM A182 F316	ASTM A182 F304	ASTM A182 F316
8	Key 键	Carbon steel	Carbon steel	Carbon steel	Stainless steel	Stainless steel
9	Key 键	Carbon steel	Carbon steel	Carbon steel	Stainless steel	Stainless steel
10	O ring O 形圈	Viton	Viton	Viton	Viton	Viton
11	Gasket 垫片	PTFE	PTFE	PTFE	PTFE	PTFE
12	Cover 压盖	ASTM A105	ASTM A 105	ASTM A105	ASTM A182 F304	ASTM A182 F316
13	Capscrew 螺钉	ASTM A 193 B7	ASTM A193 B7	ASTM A193 B7	ASTM A193 B8	ASTM A193 B8M
14	Oring O形圈	Viton	Viton	Viton	Viton	Viton
15	Gear 蜗轮驱动	Carbon Steel	Carbon steel	Carbon Steel	Carbon steel	Carbon steel
16	Ball 球体	ASTM A 182 F6a	ASTM A182 F304	ASTM A182 F316	ASTM A182 F304	ASTM A182 F316
17	Seat 密封圈	Reinforced PTFE	Reinforced PTFE	Reinforced PTFE	Reinforced PTFE	Reinforced PTFE
18	Oring O形圈	Viton	Viton	Viton	Viton	Viton
19	Seat 阀座	ASTM A105	ASTM A105	ASTM A105	ASTM A182 F304	ASTM A182 F316
20	Spring 弹簧	SS304 or Inconel 750	SS304 or Inconel 750	SS316 or Inconel 750	SS304 or Inconel 750	SS316 or Inconel 750
21	Gasket 垫片	Viton or PTFE or Graphite	Viton or PTFE or Graphite	Viton or PTFE or Graphite	Viton or PTFE or Graphite	Viton or PTFE or Graphite
22	Body bolting 阀体螺栓	ASTM A193 B7	ASTM A193 B7	ASTM A193 B7	ASTM A193 B8	ASTM A193 B8M
23	Body nut 阀体螺母	ASTM A194 2H	ASTM A194 2H	ASTM A194 2H	ASTM A194 8	ASTM A194 8M
24	Bonnef 阀盖	ASTM A216 WCB	ASTM A216 WCB	ASTM A216 WCB	ASTM A351 CF8	ASTM A351 CF8M
25	Lower trunnion下轴	ASTM A182 F6a	ASTM A182 F304	ASTM A182 F316	ASTM A182 F304	ASTM A182 F316
26	Oring O形圈	Viton	Viton	Viton	Viton	Viton
27	Gasket 垫片	ASTM A182 F6a	ASTM A182 F304	ASTM A182 F316	ASTM A182 F304	ASTM A182 F316
28	Lower cover 下端盖	ASTM A 105	ASTM A 105	ASTM A105	ASTM A182 F304	ASTM A182 F316
29	Capscrew 螺钉	ASTM A193 B7	ASTM A193 B7	ASTM A193 B7	ASTM A193 B8	ASTM A193 B8M

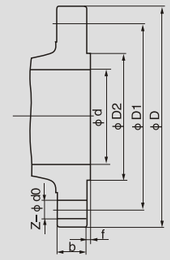
Note: The chart above only lists some common composition of steel ball valve parts. We may provide other different parts material composition according to the customer’s request or the actual valve working condition.
注:本表为常规法兰连接蜗轮蜗杆传动固定球阀的型号编制、主要零件材料及适用工况，其他要求及基型号纺编制见球阀型号编制方法。

Main size and weight 主要尺寸与重量

Butt–welding ends
对焊连接



Gear box
蜗轮蜗杆传动



Class600~Class1500
flange 法兰

Pressure stage 压力级	Size 口径(Inch)		Dimensions 尺寸 (mm)						Weight 重量 (kg)
	DN (mm)	NPS	L		d	H	H_1	W	
			RF	BW					
Class 150 PN20	100	4"	229	305	102	330	135	300	60
	125	5"	356	381	127	360	165	300	80
	150	6"	394	457	152	392	193	300	101
	200	8"	457	521	203	492	240	300	166
	250	10"	533	559	254	548	293	300	283
	300	12"	610	635	305	688	340	400	463
	350	14"	686	762	337	722	372	400	622
	400	16"	762	838	387	722	415	400	900
	450	18"	864	914	438	804	462	500	1150
	500	20"	914	991	489	952	511	600	1360
	600	24"	1067	1143	591	1154	601	750	2514
	650	26"	1143	1245	633	1300	700	750	3200
	700	28"	1245	1346	684	1550	780	750	4000
	750	30"	1295	1397	735	1650	830	750	4800
	800	32"	1372	1524	779	1740	870	750	5800
	900	36"	1524	1727	874	1950	970	750	8000
Class 300 PN50	100	4"	305	305	102	340	140	300	70
	125	5"	381	381	127	370	170	300	95
	150	6"	403	457	152	402	192	300	128
	200	8"	502	521	203	498	246	300	234
	250	10"	568	559	254	655	303	400	403
	300	12"	648	635	305	658	348	400	602
	350	14"	762	762	337	686	378	400	803
	400	16"	838	838	387	880	429	600	1273
	450	18"	914	914	438	1050	518	750	1450
	500	20"	991	991	489	1110	540	750	1700
	600	24"	1143	1143	591	1400	650	750	3100
	650	26"	1245	1245	633	1500	750	750	4500
	700	28"	1346	1346	684	1600	800	750	6000
	750	30"	1397	1397	735	1720	860	750	7500
	800	32"	1524	1524	779	1800	900	750	9000
	900	36"	1727	1727	874	2200	1020	600	12000

Pressure rate 压力级	Size 口径(Inch)		Dimensions 尺寸 (mm)							Weight 重量 (kg)
	DN (mm)	NPS	L			d	H	H1	W	
			RF	RTJ	BW					
Class600 PN110	50	2"	292	295	292	51	240	94	300	32
	65	2 1/2"	330	333	330	64	290	115	300	47
	80	3"	356	359	356	76	340	136	300	68
	100	4"	432	435	432	102	358	152	300	106
	125	5"	508	511	508	127	400	180	300	170
	150	6"	559	562	559	152	445	209	400	241
	200	8"	660	664	660	203	498	263	400	444
	250	10"	787	791	787	254	653	312	400	668
	300	12"	838	841	838	305	665	354	500	1050
	350	14"	889	892	889	334	738	389	600	1317
	400	16"	991	994	991	385	920	440	750	1800
	450	18"	1092	1095	1092	436	1100	530	750	2400
	500	20"	1194	1200	1194	487	1200	560	750	3000
	600	24"	1397	1407	1397	538	1480	670	750	5400
Class900 PN150	50	2"	368	371	368	51	250	98	300	45
	65	21 /2"	419	422	419	64	300	120	300	55
	80	3"	381	384	381	76	345	140	300	94
	100	4"	457	460	457	102	415	162	300	141
	125	5"	559	562	559	127	446	188	300	230
	150	6"	610	613	610	152	477	213	400	325
	200	8"	737	740	737	203	520	270	400	580
	250	10"	838	841	838	254	628	322	400	850
	300	12"	965	968	965	305	680	360	500	1330
	350	14"	1029	1038	1029	322	750	400	600	1660
	400	16"	1130	1140	1130	373	940	460	750	2280
Class 1500 PN260	40	11 /2"	305	305	305	38	280	100	300	44
	50	2"	368	371	368	51	320	113	300	67
	65	21 /2"	419	422	419	64	340	125	300	80
	80	3"	470	473	470	76	385	138	300	130
	100	4"	546	549	546	102	415	171	300	192
	125	5"	673	676	673	125	480	200	400	335
	150	6"	705	711	705	144	580	222	400	475
	200	8"	832	841	832	192	584	280	400	820
	250	10"	991	1000	991	239	650	340	500	1320
	300	12"	1130	1146	1130	287	700	370	600	2050
Class2500 PN420	40	11 /2"	384	387	384	38	290	105	300	72
	50	2"	451	454	451	42	320	120	300	104
	65	21 /2"	508	514	508	52	350	130	300	140
	80	3"	578	584	578	62	400	150	300	202
	100	4"	673	683	673	87	425	180	400	305
	125	5"	794	807	794	100	500	210	400	530
	150	6"	914	927	914	131	590	230	500	760
	200	8"	1022	1038	1022	179	610	290	500	1200
	250	10"	1270	1292	1270	223	660	350	600	2080

Note: 1.RF indicates raised flange, RFJ means ring joint flange, and BW is butt welding ends connection. 2.Flange dimensions of the above table for valves of NPS≤24 conforms to ASME B 16.5. 3.For valves of NPS ≥26, the flange dimensions of above table conforms to B series of ASME B16.47 and API 605. As required by customers, flange dimensions may also conform to A series of ASME B16.47 and MSS–SP–44.
注：1、RF表示突面法兰，RJ表示环连接面法兰。2、对于NPS≤24的阀门，本表法兰尺寸接ASME B16.5标准。根据用户要求，法兰尺寸也可按GB/T9112~9124、HG 20615~20626、SH 3406设计制造。3、对于NPS≥26的阀门，本表法兰尺寸按ASME B16.47标准的B系列、API 605标准及GB/T 13402标准，根据用户要求，法兰尺寸也可按ASME B16.47标准的A系列及MSS SP–44标准。

Flow coefficient 球阀的流量系数

NPS	DN (mm)	Class150 ~ Class600 Pn20 ~ PN110		Class900 PN150		Class1500 PN260		Class2500 PN420	
		Full bore 全通径	Reduced bore 缩径	Full bore 全通径	Reduced bore 缩径	Full bore 全通径	Reduced bore 缩径	Full bore 全通径	Reduced bore 缩径
		Flow coeffecient Cv 流量系数							
1/2"	15	24	14	24	14	24	14	24	14
3/4"	20	55	31	55	31	55	31	55	31
1"	25	100	55	100	55	100	55	100	55
11/4"	32	160	85	160	85	160	85	160	85
11/2"	40	260	123	260	123	260	123	260	123
2"	50	450	218	450	218	450	218	330	160
21/2"	65	720	340	720	340	720	340	510	240
3"	80	1100	490	1100	490	1100	490	770	350
4"	100	2200	880	2200	880	2200	880	1700	680
5"	125	3000	1380	3000	1380	3000	1380	2300	1060
6"	150	5500	1980	5500	1980	5100	1840	4200	1500
8"	200	10000	3500	10000	3500	9100	3200	7900	2800
10"	250	17000	5460	17000	5460	15300	4900	13300	4300
12"	300	24000	7900	24000	7900	21500	7100	18400	6100
14"	350	28000	10700	26000	9940	24900	9500	–	–
16"	400	36000	14000	33800	13100	31500	12300	–	–
18"	450	46000	18000	43300	17000	–	–	–	–
20"	500	57000	22000	53300	20600	–	–	–	–
24"	600	75000	31500	70200	29500	–	–	–	–
26"	650	84000	37000	–	–	–	–	–	–
28"	700	93000	43000	–	–	–	–	–	–
30"	750	102000	49000	–	–	–	–	–	–
32"	800	110500	56000	–	–	–	–	–	–
36"	900	133000	71000	–	–	–	–	–	–