

S Type Ram BOP



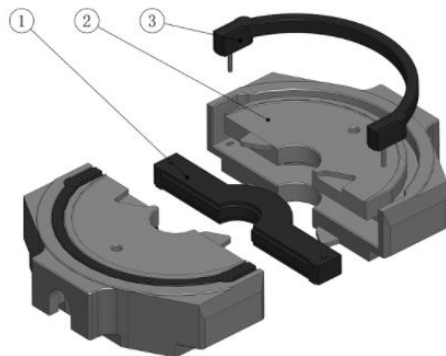
Introduction

Structual Feature

- Pressurized components adopts superior alloy steel with good strength and impact toughness.
- Door seal of the high pressure BOP uses combined seal, which has better seal from the well pressure.
- Use floating or integral gate, can seal safely and change conveniently.
- Use buriel-type oil passage, Bearing hinge is separated from the hydraulic hinge.
- Hinge structure is simple, easy to dismount and mount.
- Use big arc-type shell on both sides of the chamber, and transit by arc-type all around, to reduce the peak stress of the shell under pressure.
- With compact structure, smaller than similar foreign products.
- The internal shell of BOP resistant to low temperature can process pipeline, to make the steam flow inside the BOP, radiat heat.

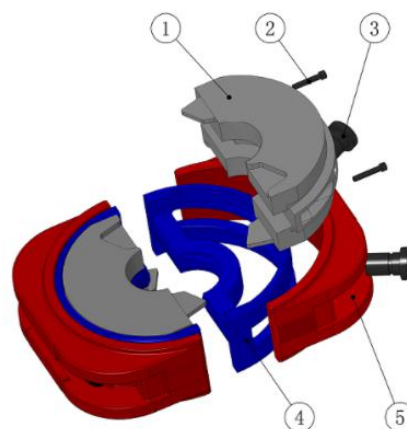
Ram Assembly

Pipe Ram



1. Top seal 2. Front seal 3. Ram body

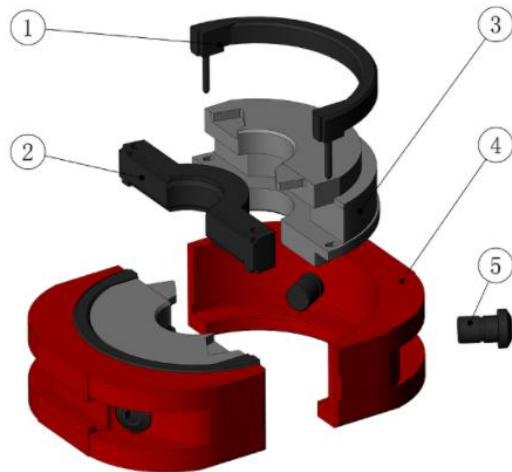
HF type Ram assembl



1. Ram body 2. Bolt 3. Ram bolt 4. Ram rubber

5. Clamp holder

S type Ram assembl



1. Top seal rubber 2. Front seal rubber 3. Ram body

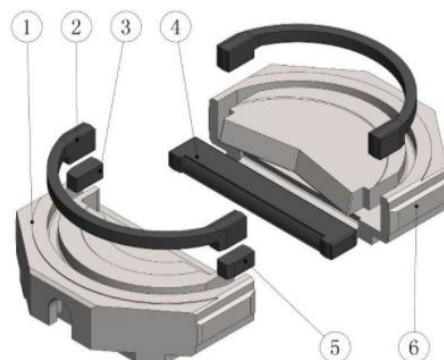
4. Clamp holder 5. Ram bolt

H type Ram assembly

Shear Ram

Shear ram can cut pipe the well, blindly close the wellhead, and also used as blind ram when there is no pipe in the well. The installation of shear ram is the same with the original ram.

- In the normal condition used as blind ram, in case of emergency, used as shear ram.
- Shear damper can be repeatedly cut pipe and not damage the blade, The weared the blade can be reused after the repair. Shenkai produces the shear ram with shear life in more than five times, Allowed to replace the sealing rubber.
- The ordinary ram blade is integrated with the ram body.
- The ram blade of BOP resistant to high sulfur is separated with the ram body, which is easy to change blade after blade damaged, and make the ram body be able to repeated use.
- The contact sealing surface between top seal of shear ram and blade is large, which effectively reduce the pressure on the rubber sealing surface, and prolong its life.



1. Down shear ram body 2. Top seal rubber 3. Right seal rubber

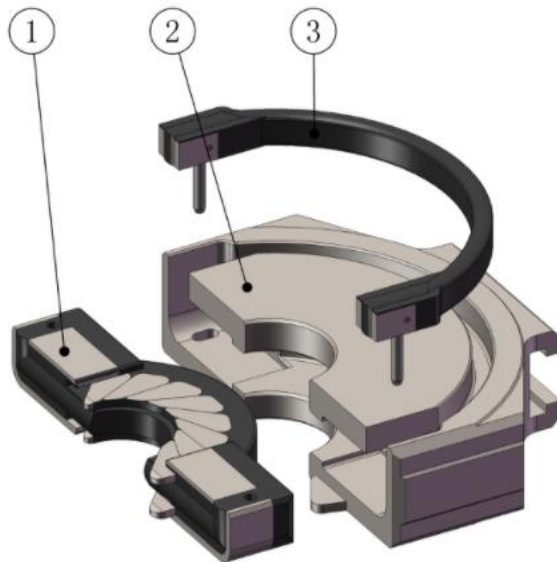
4. Blade sealLeft seal rubber 3. Up shear ram body

4. Top seal rubber 5. Left seal rubber 6. Up shear ram body

Shear Ram Assembly Structure of S type Ram BOP

Variable Ram

Variable ram can be used to seal different diameter of pipe string. Variable ram is composed of variable ram, top seal, variable front seal. The installation of variable ram in the BOP is in the same as the common ram, don't need to change any part of the BOP.



1. Variable Ram Rubber 2. Ram Body 3. Top Seal Rubber

Variable Ram Assembly Structure of S type Ram BOP

Parameters

S Ram BOP Specification&Model

Operating pressure (psi)	Bore (in)								
	180-7 1/16	230-9	280-11	350-13 5/8	430-16 3/4	480-18 3/4	530-20 3/4	540-21 1/4	680-26 3/4
140-20000	\	\	\	\	\	\	\	\	\
105-15000	S	S	S	S	\	\	\	\	\
70-10000	S	S	S	S	\	S	\	\	\
35-5000	S	S	S	S	S	S	\	S	\
21-3000	S	S	S	S	S	\	S	\	S
14-2000	\	\	\	\	\	\	\	S	\

Note : S Ram BOP Specification&Model

S represents S type ram BOP

Specification&Model		Main Bore mm(in)	Working Pressure MPa(psi)	Oil	Oil	Ram Type	Ram Size (in)	Dimension mm				weight kg		Recommended BOP code
				quantity for opening (Single Cylinder)	quantity for closing (Single Cylinder)			length	width	height		single	double	
										single	double			
180(71/16 in)series	(2)FZ18-21	179.4(71/16)	21-3000	1.6	2	H	maximum5 9/16	1420	645	568	854	855	1540	(2)S04.00
	(2)FZ18-35	179.4(71/16)	35-5000	1.6	2	H	maximum5 9/16	1420	645	624	910	895	1580	(2)S48.00
	(2)FZ18-70	179.4(71/16)	70-10000	2.2	2.5	H	maximum5 9/16	1720	640	897	1262	1660	3020	(2)S62.00
	(2)FZ18-105	179.4(71/16)	105-15000	7.4	8	H	maximum5 1/2	1988	820	922	1372	3175	5885	(2)S29.00A
230(9in)series	(2)FZ23-21	228.6-9	21-3000	1.3	1.5	HF	maximum 7	1526	565	580	866	705	1250	(2)S79.00
	(2)FZ23-35	228.6-9	35-5000	4.7	5.3	HF	maximum 7	2036	720	805	1190	1830	3415	(2)S23.00
	(2)FZ23-70	228.6-9	70-10000	7	8	H	maximum 7	2324	850	1038	1518	3635	6835	(2)S01.00
	(2)FZ23-105	228.6-9	105-15000	10.2	10.9	HF	maximum 7	2170	920	1140	1640	4150	7500	(2)S93.00
280(11in)series	(2)FZ28-21	279.4-11	21-3000	2.7	3.2	S	maximum 8 5/8	1846	675	740	1100	1400	2550	(2)S77.00
	(2)FZ28-35	279.4-11	35-5000	5.4	6.2	S	maximum 8 5/8	2265	785	895	1325	2475	4550	(2)S45.00
	(2)FZ28-70	279.4-11	70-10000	7	8	H	maximum 8 5/8	2324	850	1102	1582	3770	6850	(2)S16.00
	(2)FZ28-105	279.4-11	105-15000	14.6	16.7	H	maximum 8 5/8	2650	1050	1244	1784	6303	11028	(2)S67.00
346(135/8 in)series	(2)FZ35-21	346.1(135/8)	21-3000	7.8	8.9	S	maximum 10 3/4	2414	760	774	1164	2705	5115	(2)S78.00
	(2)FZ35-35	346.1(135/8)	35-5000	7.9	9.3	S	maximum 10 3/4	2415	847	930	1370	3010	5480	(2)S103.00
	(2)FZ35-70	346.1(135/8)	70-10000	18	20.7	HF	maximum 10 3/4	2786	1085	1276	1782	6120	11135	(2)S104.00
	(2)FZ35-105	346.1(135/8)	105-15000	17.4	20	H	maximum 10 3/4	3074	1140	1420	1985	8945	16070	(2)S115.00
425(163/4 in)	(2)FZ43-35	425.5(163/4)	35-5000	10.3	11.6	HF	maximum 10 3/4	2923	1190	1090	1570	5300	9860	(2)S95.00
476(183/4 in)series	(2)FZ48-35	476.3(183/4)	35-5000	24.5	27.9	HF	maximum 16	3430	1440	1504	2072	9758	12286	(2)S116.00
	(2)FZ48-70	476.3(183/4)	70-10000	24.5	27.9	HF	maximum 16	3430	1440	1618	2186	10312	20624	(2)S102.00
527(203/4in)	(2)FZ53-21	527.1(203/4)	21-3000	12.2	13.6	HF	maximum	3424	1165	1065	1650	6130	13355	(2)S83.00

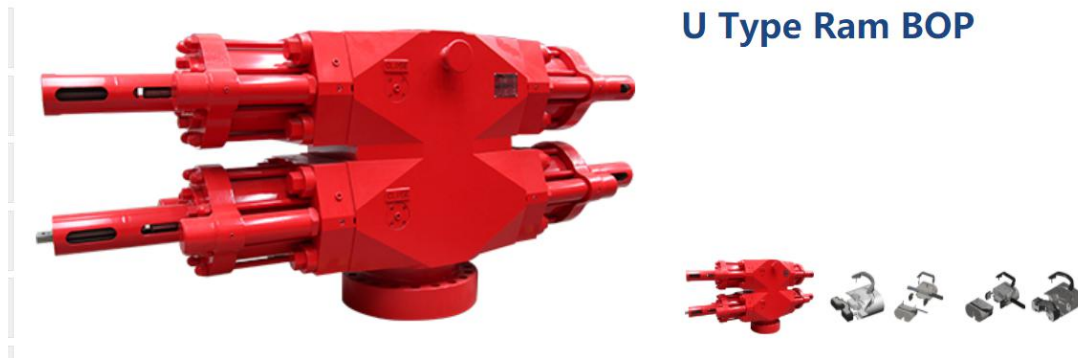
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540(211/4 in)series	(2)FZ54-14	539.8(211/4)	14-2000	12.1	13.8	HF	maximum 16	3300 1130	940	1480	5560	10200	(2)S33.00
	(2)FZ54-35	539.8(211/4)	35-5000	26	29.6	HF	maximum 16	3590 1445	1320	1950	9270	17670	(2)S105.00
680(263/4in)	(2)FZ68-21	679.5(263/4)	21-3000	32.6	37	HF	maximum 18 5/8	4350 1450	1250	1870	12360	20290	(2)S87.00
Note : 1. BOP Testing pressure is 1.5 times of standard pressure													
2. Operating pressure is from 8.4Mpa to 10.5Mpa													

S Type Shear Ram Operating specification

BOP Type	BOP model	Recommended BOP code	Cylinder Type	Specification of drill pipe
S	(2) FZ 18-70	(2) S62.00	Normal cylinder	\
		(2) S92.00	Cylinder with tandem booster	4 1/2" 16.6lb/ft G-105 PSL-3
	(2) FZ28-35	(2) S45.00	Large cylinder	\
		(2) S100.00	Large cylinder	5" 19.5lb/ft G-105 PSL-3
	(2) FZ 28-70	(2) S16.00	Normal cylinder	\
		(2) S02.00	Large cylinder	5" 19.5lb/ft G-105 PSL-3
	(2) FZ 35-35	(2) S103.00	Normal cylinder	\
		(2) S99.00	Large cylinder	5" 19.5lb/ft G-105 PSL-3
	(2) FZ 35-70	(2) S104.00	Normal cylinder	5" 19.5lb/ft G-105 PSL-3
		(2) S112.00	Large cylinder	5 1/2" 24.7lb/ft G-105 PSL-3
		(2) S117.00	Cylinder with tandem booster	5 1/2" 24.7lb/ft S-135 PSL-3
	(2) FZ 35-105	(2) S115.00	Normal cylinder	5" 19.5lb/ft G-105 PSL-3
		(2) S113.00	Cylinder with tandem booster	5 1/2" 24.7lb/ft S-135 PSL-3
	(2) FZ 54-35	(2) S105.00	Normal cylinder	5" 19.5lb/ft G-105 PSL-3

S Type Variable Ram Range

BOP Type	BOP Model	Range of Variable Ram (in)			
S	(2) FZ 18-70	2 3/8"-3 1/2"			
	(2) FZ28-35	2 3/8"-3 1/2"		3 1/2"-5"	
	(2) FZ 28-70	2 3/8"-3 1/2"		3 1/2"-5"	
	(2) FZ 35-35	2 3/8-3 1/2	2 7/8"-5"	4 1/2-5 1/2	5-7"
	(2) FZ 35-70	2 3/8-3 1/2	3 1/2-5"	4 1/2-5 1/2	5-7"
	(2) FZ 35-105	2 3/8-3 1/2	3 1/2-5"	4 1/2-5 1/2	5-7"
	(2) FZ 53-21	4 1/2"-5 1/2"			
	(2) FZ 54-14	4 1/2"-5 1/2"			
	(2) FZ 54-35	4 1/2"-5 1/2"			



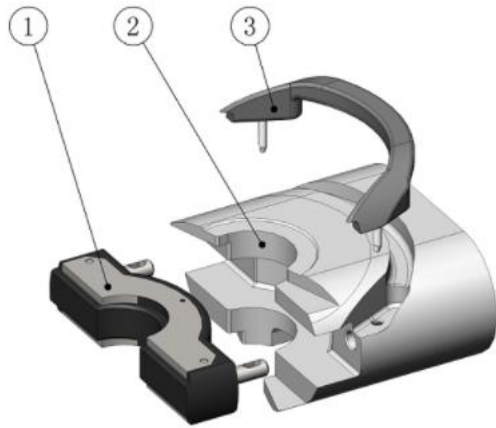
Introduction

Structual Feature

- Pressurized components are forging materials, having good strength and impact toughness, avoid the forging default.
- Middle flange uses combined seal, its switch is operated by hydraulic pressure, easy to change the ram.
- Equipped with auxiliary oil cylinder, compared with the traditional shear ram BOP, it has the function, smaller volume.
- Ram rubber is abundant, and use self-contained seal.
- Manual locking device belongs to the standard configuration, In the event of hydraulic loss, it can ensure that ram remains closed.
- Manual and hydraulic locking device and auxiliary oil cylinder can be equipped according to customer's requirements flexibly, and easy to interchange.
- The internal shell of BOP resistant to low temperature can process pipeline, to make the steam flow inside the BOP, radiat heat. (for costumer's option).
- The internal part of BOP resistant to high sulfur which contact the well liquid has Surfaced high nickel base alloy, which can achieve the highest levels of resistance to H₂S and CO₂.

Ram Assembly

Pipe Ram



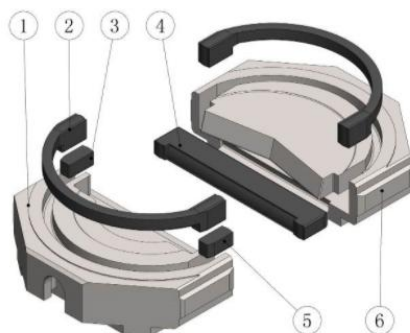
1. Top seal rubber 2. Ram body 3. Front seal rubber

U type Ram structure sketch

Shear Ram

Shear ram can cut pipe the well, blindly close the wellhead, and also used as blind ram when there is no pipe in the well. The installation of shear ram is the same with the original ram.

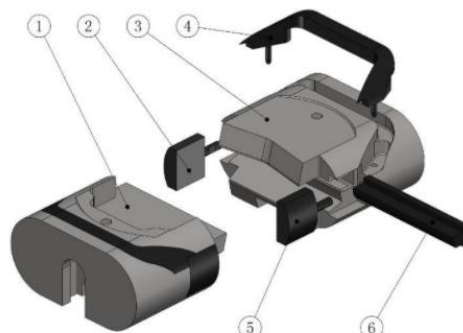
- In the normal condition used as blind ram, in case of emergency, used as shear ram.
- Shear damper can be repeatedly cut pipe and not damage the blade, The weared the blade can be reused after the repair. Shenkai produces the shear ram with shear life in more than five times, Allowed to replace the sealing rubber.
- The ordinary ram blade is integrated with the ram body.
- The ram blade of BOP resistant to high sulfur is separated with the ram body, which is easy to change blade after blade damaged, and make the ram body be able to repeated use.
- The contact sealing surface between top seal of shear ram and blade is large, which effectively reduce the pressure on the rubber sealing surface, and prolong its life.



1. Down shear ram 2. Set screw 3. Left seal 4. Up blade
5. Top seal rubber 6. Up shear ram body

7. Blade seal 8. Set screw 9. Right seal 10. Down blade

Shear Ram Assembly Structure of U type Ram BOP
resistant to high sulfur



1. Down shear ram body 2. Left seal rubber

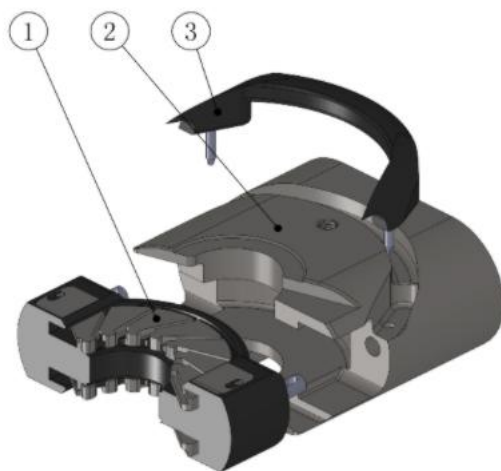
3. Up shear ram body 4. Top seal rubber

5. Right seal rubber 6. Blade seal

Shear Ram Assembly Structure of U type Ram BOP

Variable Ram

Variable ram can be used to seal different diameter of pipe string. Variable ram is composed of variable ram, top seal, variable front seal. The installation of variable ram in the BOP is in the same as the common ram, don't need to change any part of the BOP.



1. Variable Ram rubber 2. Ram body 3. Top seal rubber

Variable Ram Assembly Structure of U type Ram BOP

Parameters

U Ram BOP Specification&Model

Operating pressure (psi)	Bore (in)								
	180-7 1/16	230-9	280-11	350-13 5/8	430-16 3/4	480-18 3/4	530-20 3/4	540-21 1/4	680-26 3/4
140-20000	\	\	U	\	\	\	\	\	\
105-15000	U	U	U	U	\	\	\	\	\
70-10000	U	U	U	U	\	U	\	U	\
35-5000	U	U	U	U	U	U	\	U	\
21-3000	U	U	U	U	U	\	U	\	U
14-2000	\	\	\	\	\	\	\	U	\

Note : S Ram BOP Specification&Model

U represents U type ram BOP

Specification&Model		Main Bore mm(in)	Working Pressur e MPa(psi)	Oil quantity for opening (Single Cylinder)	Oil quantity for closing (Single Cylinder)	Ram Type (in)	Ram Size (in)	Dimension mm				weight kg		Recommend ed BOP code
								length	height		single	doubl e		
									width h	singl e			doubl e	
180(71/16 in)series	FZ18-352FZ18-35	180(71/16)	35	4.6	4.6	U	maximum5 1/2	2477 (3273)	550	736	1116	1870	3586	C11.002 C11.00
	FZ18-702FZ18-70	180(71/16)	70	4.6	4.6	U	maximum5 1/2	2487 (3363)	550	806	1216	2190	4095	C20.002 C20.00
	FZ18-1052FZ18-105	180(71/16)	105	4.6	4.6	U	maximum5 1/2	2477 (3273)	550	832	1242	2215	4066	C08.002 C08.00
280(11in)serie s	FZ28-352FZ28-35	280-11	35	10.6	10.8	U	maximum8 5/8	3105 (4165)	650	898	1380	3775	6915	C06.002 C06.00
	FZ28-702FZ28-70	280-11	70	10.6	10.8	U	maximum8 5/8	3035(4065)	660	950	1430	3900	7115	C09.002 C09.00
	FZ28-1052FZ28-105	280-11	105	10.9	11.1	U	maximum7 5/8	3035(4396)	820	1205	1840	6660	11750	C01.002 C01.00
	FZ28-1402FZ28-140	280-11	140	30.1	26.6	U	maximum6 5/8	3890(5104)	1050	1470	2200	9525	16933	C10.002 C10.00
346(135/8 in)series	FZ35-352FZ35-35	346(135/8)	35	21	22	U	maximum10 3/4	3647(4833)	720	928	1501	5150	9750	C21.002 C21.00
	FZ35-702FZ35-70	346(135/8)	70	21	22	U	maximum10 3/4	3707(4893)	745	1115	1720	6020	10940	C17.002 C17.00
	FZ35-1052FZ35-105	346(135/8)	105	22.8	23.7	U	maximum10 3/4	3957(5319)	850	1340	2076	9310	16210	C16.002 C16.00
540(211/4 in)series	FZ54-142FZ54-14	540(211/4)	14	16.3	17.4	U	maximum 1 6	4120(5800)	1000	944	1638	7450	14420	C25.002 C25.00
540(211/4	FZ54-352FZ54-35	540(211/4	35	51	56	U	maximum16	4884(6364	1080	1300	2100	1372	26500	C27.002

in)series))			0	C27.00	
	FZ54-702FZ54-70	540(211/4)	70	51	56	U	maximum16	4884(6364)	1200 1742	2542	1571 8	29773 C28.00 C28.00
680(263/4)	FZ68-212FZ68-21	680(263/4)	21	36	37	U	maximum20	5305(6646)	1280 1214	1924	1330 0	24800 C24.00 C24.00
Note 1. BOP Testing pressure is 1.5 times of standard pressure												
2. Operating pressure is from 8.4Mpa to 10.5Mpa												

U Type Shear Ram Operating specification

BOP Type	BOP model	Recommended BOP code	Cylinder Type	Specification of drill pipe
U	(2) FZ28-35	(2) C06.00	Normal cylinder	\
		(2) C06.00	Cylinder with tandem booster	5 1/2" 24.7lb/ft G-105 PSL-3
	(2) FZ28-105	(2) C01.00	Normal cylinder	\
		(2) C01.00	Cylinder with tandem booster	5 1/2" 24.7lb/ft G-105 PSL-3
	(2) FZ 35-35	(2) C21.00	Normal cylinder	5" 19.5lb/ft G-105 PSL-3
		(2) C26.00	Cylinder with tandem booster	5 1/2" 24.7lb/ft S-135 PSL-3
	(2) FZ 35-70	(2) C17.00	Normal cylinder	5" 19.5lb/ft G-105 PSL-3
		(2) C30.00	Cylinder with tandem booster	5 1/2" 24.7lb/ft S-135 PSL-3
	(2) FZ 35-105	(2) C16.00	Normal cylinder	5" 19.5lb/ft G-105 PSL-3
		(2) C23.00	Large cylinder	5 1/2" 24.7lb/ft G-105 PSL-3
	(2) FZ 54-35	(2) C27.00	Normal cylinder	6 5/8 " 27.7lb/ft S-135 PSL-3

U Type Variable Ram Range

BOP Type	BOP Model	Range of Variable Ram (in)	
U	(2) FZ 28-35	2 7/8"-5"	
	(2) FZ 28-70	2 7/8"-5"	
	(2) FZ 35-35	2 3/8"-3 1/2"	2 7/8"-5"
	(2) FZ 35-70	2 3/8"-3 1/2"	2 7/8"-5"
	(2) FZ 35-105	3 1/2"-5"	4 1/2"-5 1/2"
	(2) FZ 54-35	2 7/8"-5 7/8"	