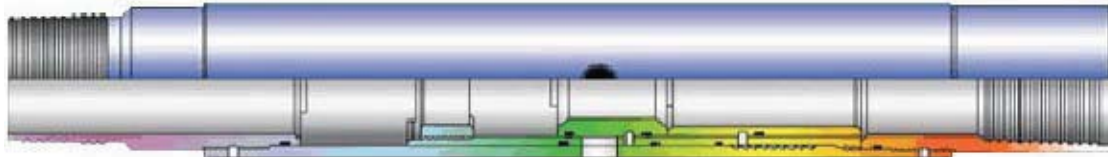


MULTI-STAGE CEMENTER

MSC-A Stage Cementer

The I.D. of MSC-A stage cementer upper and lower sub is equal to that of casing, but smaller than that of closing sleeve, such structure can eliminate the possible damage to the closing sleeve during tripping or drilling out accessories.

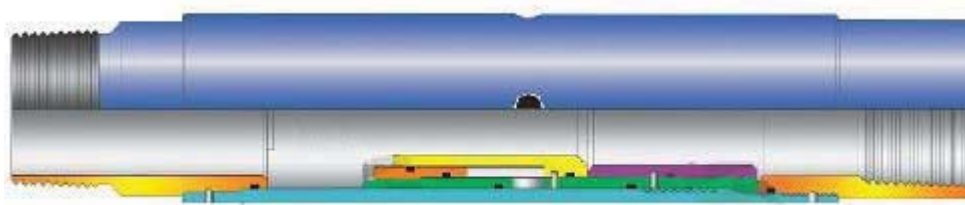


Technical Specifications of MSC-A Stage Cementer

MSC-A Stage Cementer Specification (in)	7-5/8	7	5-1/2
Max. O.D. (mm)	283	208	172
Min. I.D. (mm)	220	155	122
Overall Length (mm)	1,332	1,288	1,249
Rated Load (kN)	2,100	1,700	1,200
Sealing Capacity (MPa)	>25	>25	>25
Opening Pressure (MPa)	7	7	7
Closing Pressure (MPa)	5	5	5

SZ-A Hydraulic Stage Cementer

SZ-A hydraulic stage cementer can eliminate the need to use a freefall opening plug to open the circulation ports. SZ-A hydraulic stage cementer is applicable for various well deviations.



Technical Specifications of SZ-A Hydraulic Stage Cementer

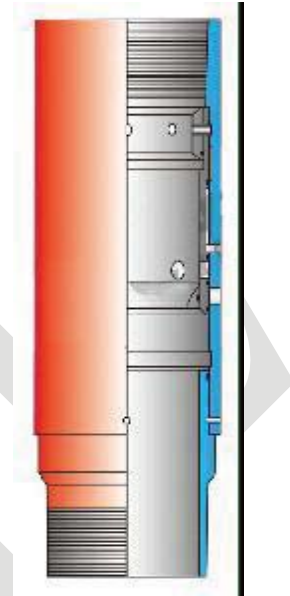
SZ-A Hydraulic Stage Cementer Specification (in)	13-3/8	10-3/4	9-5/8	7-5/8	7	5-1/2
Overall Length (mm)	1,250	1,250	1,222	1,290	1,288	1,249
Max. O.D. (mm)	384	310	282.5	230	208	172
Min I.D. (mm)	315	252	220.5	174.2	155	122
Opening Pressure (MPa)	15-17					
Closing Pressure (MPa)	5					

FZ-A Stage Cementer

The internal-closing structure and non-rotating closing sleeve design of FZ-A stage cementer can eliminate the possible damage to the closing sleeve when drilling out accessories.

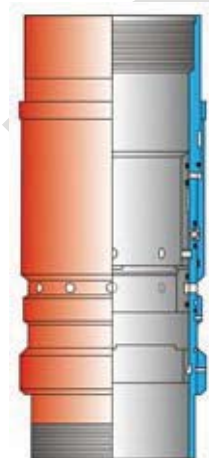
Technical Specifications of FZ-A Stage Cementer

PPGL-FZ-A Stage Cementer Dimension (in)	13-3/8	10-3/4	9-5/8	7-5/8	7
Overall Length (mm)	1,211	1,211	1,170	1,140	1,140
Max. O.D. (mm)	384	310	282.5	230	208
Min I.D. (mm)	315	252	220.5	174.2	157
Opening Pressure (MPa)	7				
Closing Pressure (MPa)	5				



FZ-B Stage Cementer

The external-closing structure of FZ-B Stage Cementer can eliminate the possible damage to the closing sleeve when drilling out accessories.

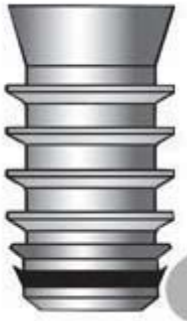


Technical specifications of FZ-B Stage Cementer

PPGL-FZ-B Stage Cementer Dimension (in)	13-3/8	10-3/4	9-5/8	7-5/8
Overall Length,(mm)				
Max. O.D., (mm)	384	310	282.5	230
Min I.D. (mm)	315	252	220.5	174.2
Opening Pres.(MPa)	7			
Closing Pres.(MPa)	5			

Stage Cementer Accessories

The accessories of stage cementer are shut-off baffle, first-stage plug, free-fall opening plug, closing plug, pump-down opening plug, all accessories are non-rotating.



Closing Plug



Free-ball opening plug



**Pump Down
Opening Plug**



First Stage Plug



Shut off Baffle