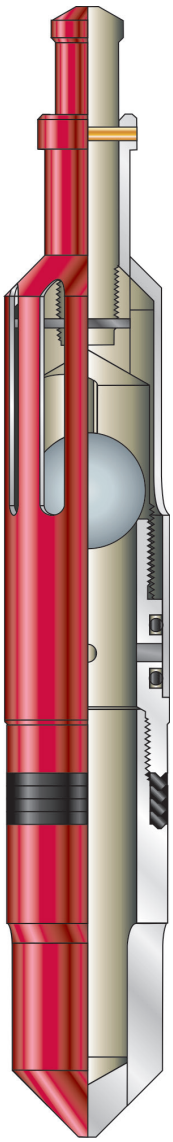


SV Series Wireline-Retrievable Standing Valves

Weatherford's McMurry-Macco® SV series standing valves act as check valves to prevent the migration of fluid in tubing back into the formation during intermittent gas-lift or plunger-lift operations. SV series valves serve as a pressure interface between production or load fluids and the formation.

SV-WE valves allow the operator to equalize the production and formation pressure before pulling. The operator latches the valve fishing neck with an SBO-JDC pulling tool and pulls upward. The resulting tension shears a pin and exposes ports, allowing the pressure to equalize. After the pressure has equalized, the standing valve can be easily removed with standard wireline techniques. The valve is installed using a C-1 running tool.

SV-WF valves are non-equalizing standing valves designed to hold pressure from above while allowing fluids to flow from beneath the valve. These valves are equipped with three packing cups, a fishing neck, and a full-flow port. SV-WF valves also feature a replaceable hardened and ground-lapped ball and seat.

Applications

- SV series standing valves are used to maintain fluid in the tubing string during testing of the tubing string, setting of packers, or performance of other operations.
- These valves are also used in intermittent gas-lift and plunger-lift applications to prevent formation backflow during the lift cycle.

Features, Advantages and Benefits

- SV-WE valves are equipped with built-in production- and formation-pressure equalization capability for easy removal using standard wireline techniques.
- The large flow bypass of all SV series standing valves minimizes the restriction of fluid flow.

Specifications

SV-WE Standing Valve

Assembly Number	Size (in./*mm*)	Flow Area (in.²/*mm²*)	Bypass Area (in.²/*mm²*)	Pressure (psi/*bar*)	Maximum OD (in./*mm*)
6624-XXX	2-3/8 *60.33*	0.885 *570.97*	0.196 *126.45*	3.500 *241*	1.800 *45.72*
6625-XXX	2-7/8 *73.03*	1.485 *958.06*			2.300 *58.42*

SV-WF Standing Valve

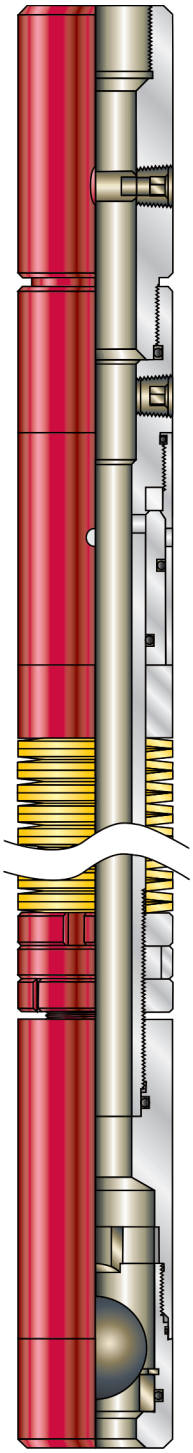
Assembly Number	Size (in./*mm*)	Fishing Neck Size (in./*mm*)
6611-XXX	1-1/4 *31.75*	7/8 *22.23*
6612-XXX	1-1/2 *38.10*	1-3/16 *30.16*
6614-XXX	2-3/8 *60.33*	1-3/8 *34.93*
6615-XXX	2-7/8 *73.03*	1-3/8 *34.93*

SV-WF Seating Nipple

Assembly Number	Size (in./*mm*)	ID (in./*mm*)
99120021	1-1/4 *31.75*	1.063 *27.00*
99120031	1-1/2 *38.10*	1.375 *34.93*
99120051	2-3/8 *60.33*	1.781 *45.24*
99120061	2-7/8 *73.03*	2.250 *57.15*

Options

- AISI 4130 alloy material is standard but can be specifically heat-treated for hydrogen sulfide (H_2S) service. Other materials are also available for corrosive environments. Contact Weatherford for more information.



MP-1 Series Standing Valve

Weatherford's McMurry-Macco® MP-1 pump-through standing valve combines the downhole check capabilities of a traditional standing valve with the ability to backflow through the valve when necessary. This capability is ideal for performing downhole treatments such as hot oiling without having to pull the standing valve.

To backflow through the MP-1 valve, the tubing pressure is raised to a predetermined set pressure that is higher than the static pressure. The standing-valve set pressure is adjustable up to 3,500 psi (241.3 bar). When the set pressure is reached, fluid passes around the ball and seat and flows out of the bottom of the valve.

With the use of a lock adapter, the MP-1 valve can be run with a variety of locks. Valve materials are compatible with downhole conditions.

Applications

- The MP-1 standing valve is used to prevent fluid backflow during intermittent gas-lift operations.
- The valve can also be used as a traditional check valve or to facilitate downhole treatment operations such as hot oiling.

Features, Advantages and Benefits

- Pump-through capability enables backflow operations such as hot oiling through the valve, eliminating the need to pull the standing valve before treating the well.
- The range of available lock adaptors allows running the valve on a variety of wireline locks.
- Availability in a variety of material specifications ensures reliable operation in most well conditions.

Specifications

Assembly Number	Size (in./*mm*)	Flow Area (in.²/*mm*²)	Bypass Area (in.²/*mm*²)	Pressure Range (psi/*bar*)	Maximum OD (in./*mm*)
6634-XXX	2-3/8 *60.33*	0.306 *197.42*	0.196 *126.45*	0 to 3,500 *0 to 241*	1.740 *44.20*
6635-XXX	2-7/8 *73.03*	0.785 *506.45*			2.120 *53.85*
6636-XXX	3-1/2 *88.90*	0.767 *494.84*			2.730 *69.34*

Options

- The MP-1 standing valve is available in a variety of materials. Contact Weatherford for more information.

BDK® Series Pulling Tool

Weatherford's *BDK* pulling tool is designed for running and retrieving downhole flow-control devices with external fishing necks.

With the pulling tool in the latched position, the dogs are supported within the skirt of the tool. This feature allows sustained jarring without the risk of shearing the dogs. For surface-release operation, the dog assembly has a finger-grip to enable manual release of the tool from the retrieved fishing neck without the need to shear the tool.

The tool can be converted from a shear-up tool to a shear tool simply by changing the top sub. In addition, a range of cores is available to alter the reach of the tool.

Applications

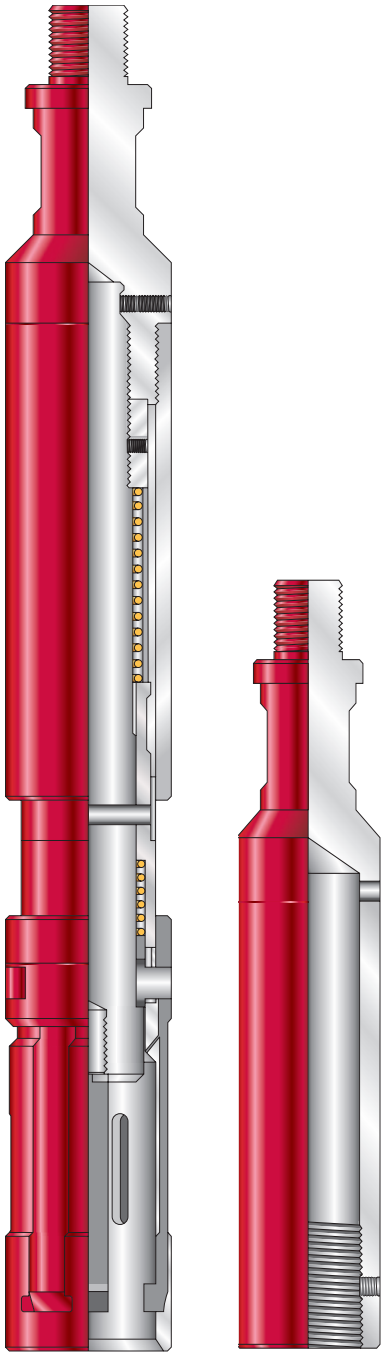
- All wireline operations

Features

- Interchangeable top sub to convert from jar up to jar down
- Range of core lengths
- Supported dog design
- Simple manual release mechanism
- Re-pinning tool available

Benefits

- Cost-effective design minimizes inventory requirement



Shear-Up Assembly

Shear-Down Sub

Accessories

BDK® Series Pulling Tool

Specifications

Dimensions

Nominal Size (in.)	Maximum OD (in./*mm*)	To Engage Fishing Neck OD (in./*mm*)	Weight (lb/*kg*)	Makeup Length		Bearing Load	
				Shear Up (in./*mm*)	Shear Down (in./*mm*)	Standard (lb/*kg*)	H_2S (lb/*kg*)
1.187	1.290 *32.77*	0.875 *22.22*	4.2 *1.9*	11.97 *304.04*	12.87 *326.90*	7,606 *3450*	7,260 *3293*
1.250	1.450 *36.83*	1.000 *25.40*	5.7 *2.6*	14.46 *367.28*	14.91 *378.71*	8,963 *4066*	8,963 *4066*
1.500	1.687 *42.85*	1.187 *30.15*	7.9 *3.6*	16.40 *416.56*	16.87 *428.50*	21,673 *9831*	20,688 *9384*
2.000	1.875 *47.63*	1.375 *34.92*	12.1 *5.5*	16.41 *416.81*	16.87 *428.50*	23,230 *10 537*	22,171 *10 057*
2.500	2.235 *56.77*	1.750 *44.45*	18.1 *8.2*	16.80 *426.72*	17.37 *441.20*	31,632 *14 348*	30,194 *13 696*
3.000	2.800 *71.12*	2.312 *58.72*	26.5 *12.0*	17.14 *435.36*	17.88 *454.15*	29,930 *13 576*	28,570 *12 959*
4.000	3.612 *91.74*	3.125 *79.38*	33.1 *15.0*	18.60 *472.44*	19.33 *490.98*	60,830 *27 592*	58,065 *26 338*

Sucker Rod Assembly Part Numbers

Nominal Size (in.)	Assembly Number				Top Connection Detail
	Short Reach	Medium Reach	Long Reach	Extra-Long Reach	
1.187	10302-A2				15/16 10
1.250	8784-S-A2	8784-M-A2			
1.500	8784-S-A2	4794-M-A2	4794-L-A2		
2.000	5951-S-A3	5950-M-A3	5950-L-A3	5950-E-A3	1-1/16 10
2.500	5985-S-A4	5985-M-A4	5985-L-A4	5985-E-A4	
3.000	5964-S-A6	5964-M-A6	5964-L-A6	5964-E-A6	1-9/16 10
4.000	4747-S-A6	4747-M-A6	4747-L-A6	4747-E-A6	

Heavy-Duty QRJ Assembly Part Numbers

Nominal Size (in.)	Assembly Number				Top Connection Detail
	Short Reach	Medium Reach	Long Reach	Extra-Long Reach	
2.000	5951-S-C3	5950-M-C3	5950-L-C3	5950-E-C3	1-1/2 HDQRJ
2.500	5985-S-C4	5985-M-C4	5985-L-C4	5985-E-C4	1-7/8 HDQRJ
3.000	5964-S-C6	5964-M-C6	5964-L-C6	5964-E-C6	2-1/2 HDQRJ
4.000	4747-S-C6	4747-M-C6	4747-L-C6	4747-E-C6	

Specifications

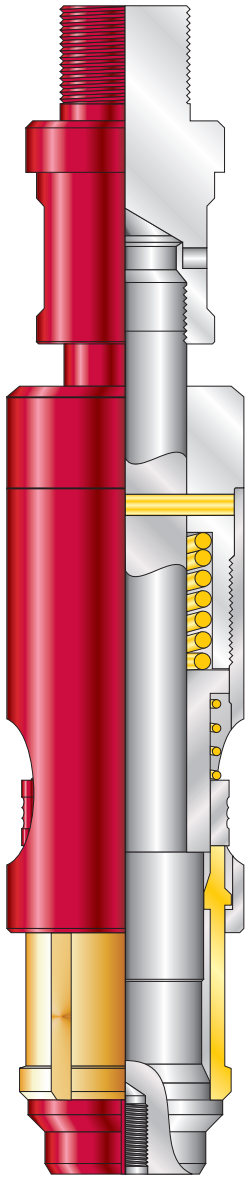
QLS Assembly Part Numbers

Nominal Size (in.)	Assembly Number				Top Connection Detail
	Short Reach	Medium Reach	Long Reach	Extra-Long Reach	
1.187	10302-Q2*				1-1/4 QLS
1.250	8784-S-Q2*	8784-M-Q2*			
1.500	4794-S-Q2*	4794-M-Q2*	4794-L-Q2*		
2.000	5951-S-Q3*	5950-M-Q3*	5950-L-Q3*	5950-E-A3*	1-1/2 QLS
2.500	5985-S-Q4*	5985-M-Q4*	5985-L-Q4*	5985-E-Q4*	1-7/8 QLS
3.000	5964-S-Q6*	5964-M-Q6*	5964-L-Q6*	5964-E-Q6*	2-1/2 QLS
4.000	4747-S-Q6*	4747-M-Q6*	4747-L-Q6*	4747-E-Q6*	

Core Details

Nominal Size (in.)	Assembly Number	Part Number			
		Short Reach** (in./*mm*)	Medium Reach** (in./*mm*)	Long Reach** (in./*mm*)	Extra-Long Reach** (in./*mm*)
1.187	10302	12256 0.90/*22.86*	N/A	10304	N/A
1.250	8784	8795-S 0.70/*17.78*	8795-M 1.50/*38.10*	N/A	N/A
1.500	4794	4786-S 0.90/*22.86*	4786-M 1.51/*38.35*	4786-L 2.51/*63.75*	N/A
2.000	5951	5943-S 1.34/*34.04*	5943-M 1.77/*44.96*	5943-L 2.77/*70.36*	5943-E 2.84/*72.14*
2.500	5985	5977-S 1.27/*32.26*	5977-M 1.52/*38.61*	5977-L 2.52/*64.01*	5977-E 2.87/*72.90*
3.000	5964	5956-S 1.52/*38.61*	5956-M 1.47/*37.34*	5956-L 2.78/*70.61*	5956-E 3.00/*76.20*
4.000	4747	4735-S 1.65/*41.91*	4735-M 1.83/*46.48*	N/A	N/A

* Item not released for manufacture. Contact Weatherford for information.
** Actual reach
Trinity and QRJ connections available on request.
Hydrogen sulfide (H_2S) service tools available on request.



GS-Type Running/Pulling Tool

Weatherford's GS type running/pulling tool is designed to locate in Standard, internal fishing necks. A set-down weight is required for automatic engagement. To release the tool, downward jarring activates the release mechanism by shearing a pin. If required, the GS type running/pulling tool can be converted to a jar-up release by fitting the Weatherford GR adaptor. For surface operation, the dog assembly has a finger-grip to enable the tool to be manually released from the fishing neck while in the *pinned* position.

Specifications

Nominal Size (in.)	Part Number		Tool OD (in./*mm*)	Fishing Neck Size (in./*mm*)	Upper Connection	Probe Thread
	JDE	Legacy				
1.250	177981	P46.125.00	1.160 *29.46*	1.000 *25.40*	0.94-in. -10 UNS-2A	0.38-in. -16 UNC-2B
1.500	272422	P46.150.00	1.480 *37.59*	1.187 *30.15*	0.94-in. -10 UNS-2A	0.50-in. -13 UNC-2B
2.000	272656	P46.200.00	1.850 *46.99*	1.375 *34.92*	0.94-in. -10 UNS-2A	0.50-in. -13 UNC-2B
2.160	273045	P46.216.00	2.161 *54.89*	1.750 *44.45*	0.94-in. -10 UNS-2A	0.63-in. -11 UNC-2B
2.500	176288	P46.250.00	2.250 *57.15*	1.750 *44.45*	0.94-in. -10 UNS-2A	0.63-in. -11 UNC-2B
3.000	126461	P46.300.00	2.720 *69.09*	2.313 *58.75*	1.06-in. -10 UNS-2A	0.63-in. -11 UNC-2B
3.310	276612	P46.313.00	3.110 *78.99*	2.313 *58.75*	1.06-in. -10 UNS-2A	1.38-in. -12 UNC-2B
4.000	275282	P46.400.00	3.615 *91.82*	2.313 *58.75*	1.06-in. -10 UNS-2A	2.13-in. -12 UN-2B
5.000	131099	P46.500.00	4.590 *116.59*	3.125 *79.38*	1.06-in. -10 UNS-2A	2.13-in. -12 UN-2B
6.000	TBA	P46.600.00	5.550 *140.97*	3.125 *79.38*	1.06-in. -10 UNS-2A	2.13-in. -12 UN-2B

JD Series Pulling Tools

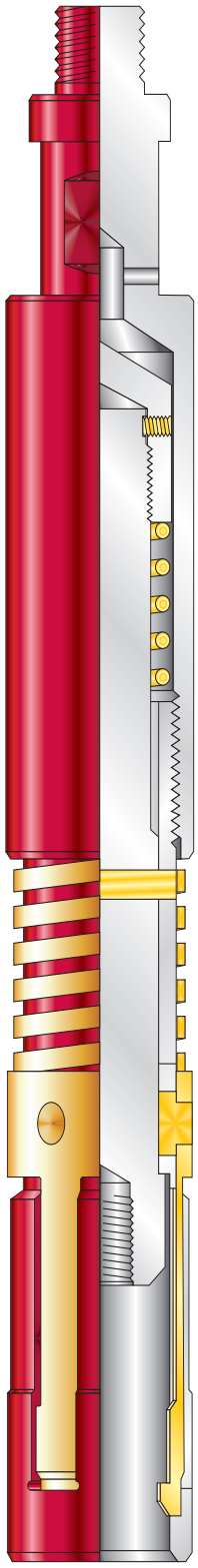
Weatherford's JD series pulling tools are wireline-service tools designed to remove from a well retrievable subsurface devices with outside fishing necks. These tools are available with three different core lengths, which enable the tools to retrieve subsurface devices with fishing necks of different lengths of reach.

The JD series pulling tools use the D sub, which is made up to the core of the tool. The dogs, which are mounted on the skirt, are inserted into the vertical openings in the skirt. The dogs are spring-loaded and have pawls located in the windows on the skirt. The pulling tool can be released in the event that the subsurface device cannot be freed by continuous downward jarring.

Three types of JD series tools are used and differ only by their core length, which is selected according to the reach required:

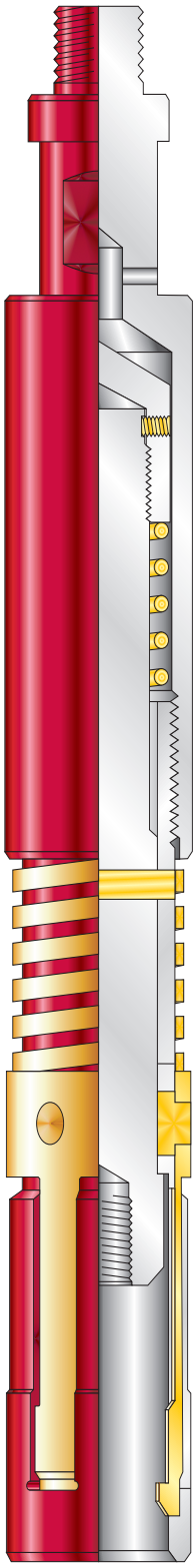
- JDC Long core/short reach
- JDS Intermediate core/intermediate reach
- JDL Short core/long reach

All other parts of each type of tool are identical and entirely interchangeable.



Specifications

Nominal Size (in.)	Assembly Numbers			Upper Connection (in.)	Maximum OD	To Pull Fishing Neck OD	Prong Connection
	JDC	JDS	JDL				
1-1/4	P54.125.00	P54.125.01	P54.125.02	15/16–10	1.291	0.875	1/4–20
1-3/8	P54.137.00	P54.137.01	P54.137.02	15/16–10	1.375	1.000	N/A
1-1/2	P54.150.00	P54.150.01	P54.150.02	15/16–10	1.422	1.187	1/2–13
1-5/8	P54.162.00	P54.162.01	P54.162.02	15/16–10	1.625	1.187	1/2–13
2	P54.200.00	P54.200.01	P54.200.02	15/16–10	1.859	1.375	1/2–13
2-1/2	P54.250.00	P54.250.01	P54.250.02	15/16–10	2.250	1.750	1/2–13
3	P54.300.00	P54.300.01	P54.300.02	15/16–10	2.812	2.312	5/8–11
4	P54.400.00	P54.400.01	P54.400.02	1-1/16–10	3.750	3.125	1-1/4–12



JU Series Pulling Tools

Weatherford's JU series pulling tools are wireline-service tools designed to remove from a well retrievable subsurface devices with outside fishing necks. These tools are available with three different core lengths, which enable the tools to retrieve subsurface devices with fishing necks of different lengths of reach.

The JU series pulling tools use the U sub, which is made up to the core of the tool. The dogs, which are mounted on the skirt, are inserted into the vertical openings in the skirt. The dogs are spring-loaded and have pawls located in the windows on the skirt. The tool can be released in the event that the subsurface device cannot be freed by continuous upward jarring.

Three types of JU series tools are used and differ only by their core length, which is selected according to the reach required:

- JUC Long core/short reach
- JUS Intermediate core/intermediate reach
- JUL Short core/long reach

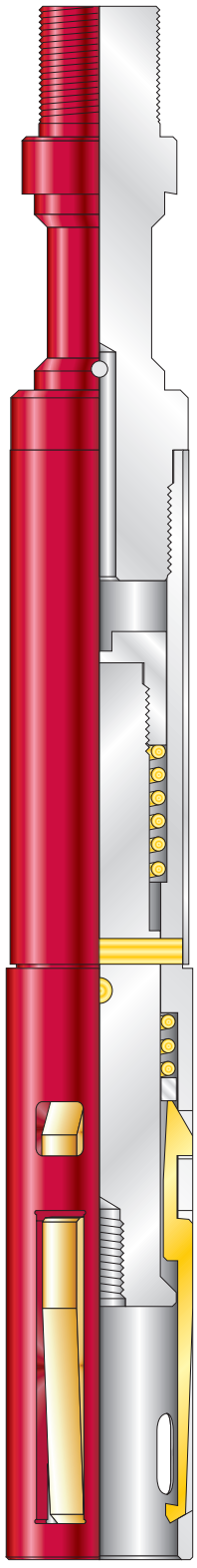
All other parts of each type of tool are identical and entirely interchangeable.

Specifications

Nominal Size (in.)	Assembly Numbers			Upper Connection (in.)	Maximum OD (in./*mm*)	To Pull Fishing Neck OD (in./*mm*)	Prong Connection (in.)
	JDC	JDS	JDL				
1-1/4	P55.125.00	P55.125.01	P55.125.02	15/16–10	1.250 *31.75*	0.875 *22.23*	1/4–20
1-3/8	P55.137.00	P55.137.01	P55.137.02	15/16–10	1.375 *34.93*	1.000 *25.40*	N/A
1-1/2	P55.150.00	P55.150.01	P55.150.02	15/16–10	1.422 *36.12*	1.187 *30.15*	1/2–13
1-5/8	P55.162.00	P55.162.01	P55.162.02	15/16–10	1.625 *41.28*	1.187 *30.15*	1/2–13
2	P55.200.00	P55.200.01	P55.200.02	15/16–10	1.859 *47.22*	1.375 *34.93*	1/2–13
2-1/2	P55.250.00	P55.250.01	P55.250.02	15/16–10	2.250 *57.15*	1.750 *44.45*	1/2–13
3	P55.300.00	P55.300.01	P55.300.02	15/16–10	2.812 *71.43*	2.312 *58.73*	5/8–11
4	P55.400.00	P55.400.01	P55.400.02	1-1/16–10	3.750 *95.25*	3.125 *79.38*	1-1/4–12

BDK® S-Type Pulling Tool

Weatherford's *BDK* S-type pulling tool is designed to locate onto external fishing necks. This tool releases with downward jarring action and can be pinned with aluminum, brass, or steel shear pins. The S-type tool is ideal for running downhole flow-control devices against a no-go shoulder in the landing nipples. The tool is available with a choice of cores to extend its range of capabilities.



Accessories

BDK® S-Type Pulling Tool

Specifications

Sucker Rod Connection

Nominal Size (in.)	Maximum OD (in./*mm*)	To Engage Fishing Neck (in./*mm*)	Connection	Reach			Part Numbers		
				Core - SB (in./*mm*)	Core - SM (in./*mm*)	Core - SS (in./*mm*)	SB Short Reach	SM Medium Reach	SS Long Reach
1.25	1.220 *30.99*	1.000 *25.40*	5/8 SR	1.32 *33.53*	N/A	N/A	0235A-SB-A1	N/A	N/A
1.50	1.430 *36.32*	1.187 *30.15*	15/16 SR	0.94 *23.88*	N/A	1.49 *37.85*	4399-SB-A2	N/A	4399-SS-A2
2.00	1.766 *44.86*	1.375 *34.93*	15/15 SR	1.20 *30.48*	2.01 *51.05*	1.59 *40.39*	4410-SB-A3	4410-SM-A3	4410-SS-A3
2.50	2.187 *55.55*	1.750 *44.45*	1-1/16 SR	1.20 *30.48*	N/A	2.11 *53.59*	4421-SB-A4	N/A	4421-SS-A4
3.00	2.844 *72.24*	2.313 *58.75*	1-9/16 SR	1.26 *32.00*	N/A	2.20 *55.88*	4432-SB-A6	N/A	4432-SS-A6
4.00	3.670 *93.22*	3.125 *79.83*	1-9/16 SR	1.42 *36.07*	N/A	N/A	4203-SB-A8	N/A	N/A

QLS Connection

Nominal Size (in.)	Maximum OD (in./*mm*)	To Engage Fishing Neck (in./*mm*)	Connection	Reach			Part Numbers		
				Core - SB (in./*mm*)	Core - SM (in./*mm*)	Core - SS (in./*mm*)	SB Short Reach	SM Medium Reach	SS Long Reach
1.50	1.430 *36.32*	1.187 *30.15*	1-1/4 QLS	0.94 *23.88*	N/A	1.49 *37.85*	4399-SB-Q2	N/A	4399-SS-Q2
2.00	1.766 *44.86*	1.375 *34.93*	1-1/2 QLS	1.20 *30.48*	2.010 *51.05*	1.59 *40.39*	4410-SB-Q3	4410-SM-Q3	4410-SS-Q3
2.50	2.187 *55.55*	1.750 *44.45*	1-7/8 QLS	1.20 *30.48*	N/A	2.11 *53.59*	4421-SB-Q4	N/A	4421-SS-Q4
3.00	2.844 *72.24*	2.313 *58.75*	2-1/2 QLS	1.26 *32.00*	N/A	2.20 *55.88*	4432-SB-Q6	N/A	4432-SS-Q6
4.00	3.670 *93.22*	3.125 *79.38*	2-1/2 QLS	1.42 *36.07*	N/A	N/A	4203-SB-Q7	N/A	N/A

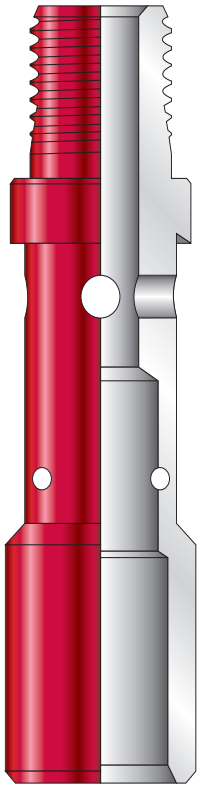
Heavy-Duty QRJ Connection

Nominal Size (in.)	Maximum OD (in./*mm*)	To Engage Fishing Neck (in./*mm*)	Connection	Reach			Part Numbers		
				Core - SB (in./*mm*)	Core - SM (in./*mm*)	Core - SS (in./*mm*)	SB Short Reach	SM Medium Reach	SS Long Reach
2.00	1.766 *44.86*	1.375 *30.15*	1-1/2 HDQRJ	1.20 *30.48*	2.010 *51.05*	1.59 *40.39*	4410-SB-C3	4410-SM-C3	4410-SS-C3
2.50	2.187 *55.55*	1.750 *44.45*	1-7/8 HDQRJ	1.20 *30.48*	N/A	2.11 *53.59*	4421-SB-C4	N/A	4421-SS-C4
3.00	2.844 *72.24*	2.313 *58.75*	2-1/2 HDQRJ	1.26 *32.00*	N/A	2.20 *55.88*	4432-SB-C6	N/A	4432-SS-C6
4.00	3.670 *93.22*	3.125 *79.38*	2-1/2 HDQRJ	1.42 *36.07*	N/A	N/A	4203-SB-C7	N/A	N/A

QRJ™ and Trinity™ connection available on request. Additional sizes available on request.

QRJ and Trinity are trademarks of their respective companies.

Side-Pocket Mandrel Accessory Running Tools



Weatherford's Camco side-pocket mandrel accessory running tools are wireline-service tools used to install 1-in. and 1 1/2-in. outside diameter (OD) side-pocket subsurface control devices inside pocket mandrels.

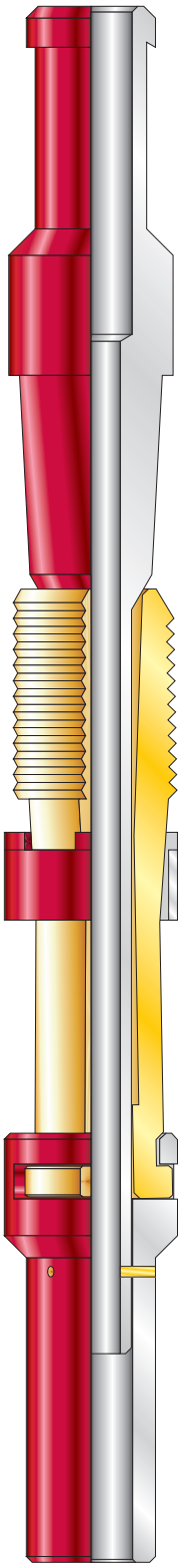
These running tools (except the JEK) consist of a fishing neck, a pin thread connection on the upper end, and a skirt on the lower end, which attaches to the side-pocket device with shear pins. All side-pocket mandrel accessory running tools must be attached to the appropriate kickover tools to install side-pocket subsurface control devices.

Applications

- GA-2, JK, JEK, and JEK-1 running tools install 1.0-in. OD devices in Camco K series mandrels
- RK-1, RK-WF, and JC-3 running tools install 1 1/2-in. OD devices in Camco M series mandrels
- JC-5 running tools install R and RA latches in Otis mandrels

Specifications

Model	Upper Connection	Fishing Neck Size (in./*mm*)	Maximum OD (in./*mm*)	Part Number	
				JDE	Legacy
JK	0.937-in. 10 UNS-2A	1.187 *30.15*	1.25 *31.75*	273191	R07.000.02
RK-1	0.937-in - 10 UN 2A	1.187 *30.15*	1.445 *36.70*	273151	R07.000.14



Type A Tubing Stop

Weatherford's Type A tubing stop offers a simple and reliable means for positioning a tubing anchor in tubing strings equipped with premium threads where no coupling recess is available. The Type A tubing stop is slowly run in-hole to the intended depth and then set by the wireline operator, overrunning the slips. If the position is incorrect, the stop can be picked up and repositioned. When the slips are set, the body of the stop containing the slip cone is driven down tightly behind the slips, holding it in the locked position. Continued downward jarring releases the running tool. The Type A tubing stop is retrieved by upward jarring on the stop body, pulling the slip cone out from behind the slips.

Applications

- Setting tubing anchorsanchors in premium tubing

Features

- External fishing neck, run on JDC pulling tool
- Option for internal fishing neck, run on GS pulling tool

Benefits

- Can be installed in premium tubing without coupling recesses
- Position can be moved before jarring to set tight

Specifications

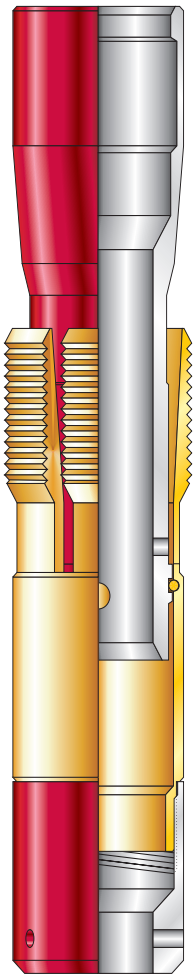
Maximum OD (in./*mm*)	Part Number		Minimum OD (in./*mm*)	Maximum Running OD (in./*mm*)	Pulling Tool
	JDE	Legacy			
1.500 *38.10*	273954	S28.150.00	0.553 *13.54*	1.437 *36.50*	1.50-in. JDC
1.750 *44.45*	275439	S28.175.00	0.553 *13.54*	1.437 *36.50*	1.50-in. JDC
2.000 *50.80*	271627	S28.200.00	0.615 *15.62*	1.853 *47.07*	2.00-in. JDC
2.250 *57.15*	TBA	S28.225.00	0.750 *19.05*	2.000 *50.80*	2.00-in. JDC
2.500 *63.50*	272185	S28.250.00	1.000 *25.40*	2.197 *55.80*	2.50-in. JDC
2.875 *73.03*	TBA	S28.287.00	0.750 *19.05*	2.000 *50.80*	2.00-in. JDC
3.000 *76.20*	271630	S28.300.00	1.490 *37.85*	2.710 *68.83*	3.00-in. JDC
4.000 *101.60*	720719	S28.400.00	2.302 *58.47*	3.750 *95.25*	4.00-in. JDC

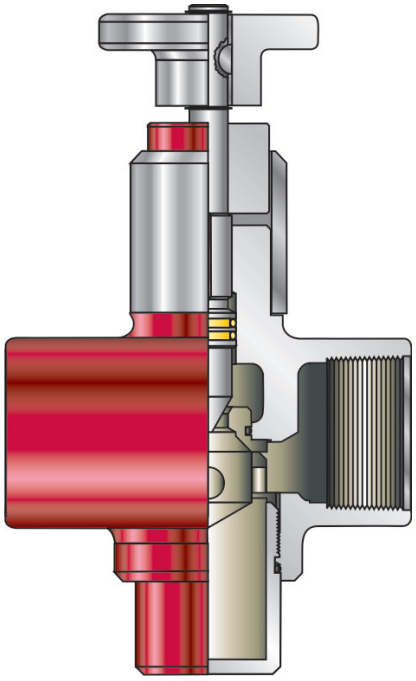
Type G Stop

Weatherford's Type-G stop is designed for setting in all tubing (except plastic coated) and holding the force from the top and is used with the G packoff.

Specifications

Size (in./*mm*)	Part Number		Maximum Running OD (in./*mm*)	Minimum ID (in./*mm*)	Pulling Tool		
	JDE	Legacy			Size	JDE	Legacy
2.000 *50.80*	271647	S31.200.00	1.975 *50.17*	1.062 *26.97*	2.00	272656	P46.200.00
2.500 *63.50*	271898	S31.250.00	2.410 *61.21*	1.500 *38.10*	2.50	176288	P46.250.00
3.000 *76.20*	271647	S31.300.00	2.995 *76.07*	1.750 *44.45*	3.00	126461	P46.300.00





ACV Series Adjustable Choke Valve

Weatherford's McMurry-Macco® adjustable choke valve (ACV) is an in-line variable orifice choke, located at the surface, for the control of gas-lift injection flow. The ACV has a calibration dial that enables flow-rate adjustments without time-consuming, fixed-choke changing procedures.

Applications

- The ACV is used to control surface gas-flow rates for gas-lift wells and other applications.

Features, Advantages and Benefits

- Calibration dial design eliminates time-consuming fixed-choke changing procedures.
- Calibration in 1/64-in. increments facilitates selection of an equivalent orifice to meet any conditions within the valve operating range.
- Tungsten-carbide trim offers the highest abrasion and impact resistance available, providing long trim life and precise process control.

Specifications

	Threaded Valve (NPT)	Flanged Valve
Configurations	1.0 in. *25.4 mm*	Up to 3 in. OD *Up to 76.2 mm OD*
	2.0 in. *50.8 mm*	
Body material	Ductile iron*	Steel
Service pressure	3,000 psi *207 bar*	5,000 psi *345 bar*
Calibration display increments	1/64 in. *0.40 mm*	
Maximum choke setting	40/64 in. *15.88 mm*	

*Steel is also available to meet specific application requirements.

Options

- The ACV is available with tungsten-carbide trim for severe service.
- The ACV is available in threaded or flanged configurations. The standard body material for threaded valve configurations is ductile iron, but steel is also available to meet specific application requirements. The steel body is standard for all flanged valve configurations.

CV Series Tubing Retrievable, Reverse-Flow Check Valve

Provides a simplistic operation for conventional gas lift systems and replaceable floating seat allows reduced maintenance cost and extends life

Applications

- Used to prevent back flow from production fluids from entering gas injection conduit
- CV-1, CV-2 and CV-3 valves are used with gas lift valves and orifice valves
- CV-1R valve (tubing-to-casing model) is used to prevent annuli from filling with liquids during shutdown periods and avoids annulus unloading which shortens the service life of gas lift valves

Features and Benefits

- Dual-seal design provides added protection against backflow and protects the casing from damage to avoid costly workover operations
- Check valves can be screwed together to create a double- or triple-check barrier for additional protection against backflow
- Inconel® spring withstands corrosive and high-temperature conditions to deliver reliable performance and extend the life of the valve
- Standard elastomer seal system enhances pressure-sealing performance
- Monel® and Inconel are registered trademarks of the Special Metals Corporation group of companies
- Prevents fluids from entering casing tubing annulus in tubing flow applications and prevents fluids from entering tubing in annular flow applications
- Prevents the need to repeatedly unload fluids from injection conduit
- Allows the application of pressure to the production conduit for circulation of fluids or acid treatments to formation

Tool Description

The Weatherford McMurry-Macco® CV series reverse-flow check valve is attached to the bottom of gas lift valves or other flow-control devices that do not have an integral check valve to prevent fluid backflow through the valves. Backflow of fluids into the annulus can damage casing, reduce the life of gas lift valves, and possibly create unsafe wellbore conditions.

CV Series Tubing Retrievable, Reverse-Flow Check Valve provides a simplistic operation for conventional gas lift systems and protects against backflow.

CV Series Tubing Retrievable, Reverse-Flow Check Valve

Tool Description (continued)

When the gas lift valve is open, the upstream pressure (typically casing) on the check valve is higher than the downstream pressure (typically tubing). The higher upstream pressure depresses the spring-loaded dart to allow the injection gas to flow through the check valve and into the production tubing. If the downstream pressure is greater than the upstream pressure, flow across the check dart causes the dart to seat and prevents backflow.

CV series check valves utilize a dual-seating seal system for added protection against backflow. A soft-seal ring contacts first, then as differential pressure increases, a metal-to-metal seal is established. When the tubing pressure meets the bottom of the check, the elastomer seal is established. As the differential pressure increases, a metal-to-metal seal is formed for additional protection. This prevents annulus fill up during shutdown periods so re-unloading of annulus liquid is not necessary and allows the application of pressure to the tubing for acidizing or circulation.

Options

- CV-1IH and CV-1IHR models have connection size 3/8-in. (9.53-mm) female hex for mounting valve in PM-1 mandrel in concentric applications
- CV-1IHR model is suitable for concentric annular flow applications
- CV-1HP model is used with high pressure gas lift valves like the CH model
- Standard material is 316 stainless steel, but optional Monel and Inconel materials are available for highly corrosive environments

CV Series Tubing Retrievable, Reverse-Flow Check Valve

Specifications

Assembly Number	4301-xxx	*4302-xxx	4303-xxx	4304-xxx	*4305-xxx	*4305-1xx
Check Valve Model	CV-1	CV-1-IH	CV-2	CV-3	CV-1-IHR	CV-1-IHRFT
Valve OD	1-in. (25.40 mm)	1-in. (25.40 mm)	1-1/2-in. (38.10 mm)	5/8-in. (15.88 mm)	1-in. (25.40 mm)	1-in. (25.40 mm)
Equivalent Port Diameter	20/64-in. (7.94 mm)	20/64-in. (7.94 mm)	1/2-in. (12.70 mm)	1/4-in. (6.35 mm)	13/32-in. (10.32 mm)	13/32-in. (10.32 mm)
Connection to Mandrel	1/2-in. (12.70 mm) M-NPT	1/2-in. (12.70 mm) M-NPT	1/2-in. (12.70 mm) M-NPT	1/4-in. (6.35 mm) M-NPT	1/2-in. (12.70 mm) M-NPT	1/2-in. (12.70 mm) M-NPT
Connection to Valve	1/2-in. (12.70 mm) F-NPT	1/2-in. (12.70 mm) F-NPT	1/2-in. (12.70 mm) F-NPT	1/4-in. (6.35 mm) F-NPT	7/8-in. (22.23 mm) M-14 TPI	1/2-in. (12.70 mm) F-NPT
Injection Flow	Annulus to Tubing	Tubing to Annulus	Annulus to Tubing	Annulus to Tubing	Annulus to Tubing	Annulus to Tubing

*Connection has a 3/8-in. (9.53 mm) female hex for mounting in PM-1 mandrel

CV-SO Series Tubing Retrievable, Orifice Choke Valve

Provides communication between the tubing and annulus to control the volume and a more accurate flow rate

Applications

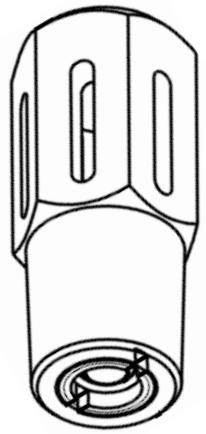
- Suitable for single-point injection for both concentric and/or tubing fixed applications

Features and Benefits

- Orifice valves are the first valved placed into the well
- Large variety of choke inserts allow for more precise gas injection rates from 2/16-in. to 5/16-in. on increments of 1/16-in.
- Standard material is 316 stainless steel
- Added protection against backflow by utilizing check valves to provide a dual-seating seal system
- Check valves can be easily assembled for added protection to ensure gas lift system integrity
- CV-1, CV-2 and CV-3 valves are used with orifice valves

Tool Description

The tubing retrievable CV-SO choke insert allows communication between the tubing and the tubing/casing annulus and controls the volume and flow rate of gas through the valve more precisely. Choke valves have a threaded connection with a slotted body to build a slotted orifice assembly.



CV-SO Series Tubing Retrievable, Orifice Choke Valves provide communication between the tubing and the tubing/casing annulus and controls the volume and flow rate of gas through the valve more precisely.

CV-SO Series Tubing Retrievable, Orifice Choke Valve

Options

- Optional Monel® material is available for highly corrosive environments
- CV-SO choke valve optional concentric annular flow applications come with an internal hex already machined of 3/8-in. diameter
- Wider slots are only required for 316SS choked with 0.313-in. ports or larger and 1/4-in. NPT connection

Specifications

Assembly Number	Check Valve Model	Valve OD in. (mm)	Equivalent Port Diameter in. (mm)	Connection
4307-xxx	CV-SO	1.00 (25.40)	1/8 (3.18)	1/2-in. M-NPT
			5/32 (3.96)	
			3/16 (4.78)	
			7/32 (5.56)	