

# Gas-Lift Mandrels



## *CM Series Tubing-Retrieveable Conventional Mandrels*

Weatherford's McMurry-Macco® CM series gas-lift mandrels are equipped with external lugs to receive tubing-retrievable gas-lift and orifice valves. CM series mandrels are available in standard and heavyweight tubing sizes. A full-bore drift inside diameter (ID) enables wellbore intervention through the production tubing. External guards are attached to the outside diameter (OD) of the mandrels, surrounding the valves and providing protection during tubing running and pulling operations.

### **Applications**

- CM series mandrels are installed as part of the tubing string to carry tubing-retrievable gas-lift equipment, in single- or dual-string completions.
- The CM-1 and CM-2 mandrels are used for 1- and 1 1/2-in. OD gas-lift valves, respectively.
- The CM-1F mandrels are configured for production-operated gas-lift valves for tubing flow or annular with the appropriate check-valve configurations.
- The CM-3 mandrel is available for slimhole and concentric packoff installations for 5/8-in. OD gas-lift valves.

### **Features, Advantages and Benefits**

- Full-bore drift ID enables wellbore intervention through the production tubing, reducing maintenance costs.
- Guard plates on the sides of the mandrels protect gas-lift valves from damage as they are run in the hole, reducing the need for costly replacements.
- Various ported-lug configurations allow use of the mandrels in tubing or annular-flow applications, providing system-design flexibility for individual applications.
- Concentric ID makes these mandrels suitable for use in combination gas-lift/plunger-lift applications, enhancing operational flexibility.



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### Specifications

Mandrel Model	Model Number	Tubing Size (in.)	Mandrel Lug ID		Dimension OD	Mandrel OD		Drift ID		Mandrel Length		Test Pressure Rating (psi/bar)					
			(in.)	(mm)		(in.)	(mm)	(in.)	(mm)	(in.)	(mm)						
CM-1	471X-XXX	2-3/8	1.0	25.4	A	3.783	96.09	1.901	48.29	51.00	1295.40	5,000 344.7					
CM-1F	472X-XXX				B	3.706	94.13										
CM-2	481X-XXX		1.5	38.1	A	4.096	104.04										
					B	4.019	102.08										
CM-1	471X-XXX	2-7/8	1.0	25.4	A	4.283	108.79	2.347	59.61	51.00	1295.40						
					B	4.206	106.83										
CM-1F	472X-XXX				A	4.335	110.11						B	4.231	107.47		
													A	4.648	118.06		
CM-2	481X-XXX		1.5	38.1	A	4.835	122.81						B	4.544	115.42		
																B	4.731
CM-1	471X-XXX		3-1/2	1.0	25.4	A	5.063						128.60	2.867	72.82	51.00	1295.40
						B	4.903						124.54				
CM-2	481X-XXX	1.5		38.1	A	5.562	141.27	B	5.427	137.85							
											B	5.427	137.85				

A = Mandrel maximum running OD, standard collar

B = Mandrel maximum running OD, special-clearance collar

### Options

- CM series mandrels are available in various materials for standard, corrosive hydrogen sulfide (H<sub>2</sub>S), high-temperature, and high-pressure well environments.
- The mandrels are available in standard and heavyweight tubing sizes and connections to suit specific completion designs.
- The mandrels are available in pup-joint grades J-55, N/L-80, and P-110.