Schlumberger

Side Pocket Mandrels

Reliable gas lift with flexibility for the future

APPLICATIONS

- Wells using gas lift for production
- Chemical injection, waterflood, or circulation operations
- Wells with single or dual completions
- Sweet or sour wells

BENEFITS

- Improves production flexibility and gas lift optimization by enabling valve retrieval and replacement through well intervention
- Maximizes completion and workover options for the life of the well by maintaining tubing through-bore size without restriction

FEATURES

- Field-proven design and reliability
- Wide range of options to suit well types, sizes, and operational requirements
- Standard and premium material options, including 4130 alloy steel, 410SS, 13Cr, S13Cr, and INCONEL® 925 and 718
- Compatibility for a full range of environmental conditions: sweet, sour (H_2S, NACE), and CO_2
- Full traceability through the manufacturing process and 100% dimensional inspection to ensure lifetime reliability
- In-house machining of premium mandrels to ensure quality
- Welding qualified to ASME Section IX standards with quality control including phased-array ultrasonic testing and radiographic testing
- In-house critical heat treatment to optimize microstructure, strength, and corrosion resistance
- QA inspection, including visual inspection, hardness testing, full-length internal and external drift verification, and nondestructive testing (liquid penetrant or magnetic particle inspection)
- 100% internal pressure test to full mandrel pressure rating
- Manufacturing facility certification to ISO 9001 and API Specification Q1 and license for the API Monogram Program for Specification 19G1 and 19G2 in all grades

Side pocket mandrels are completion components that house gas lift valves and other devices that communicate with the annulus. These mandrels enable rapid retrieval and replacement of the gas lift valves without having to pull the tubing, making them essential in wells with highly variable production or where tubing retrieval would compromise well economics.

For a single well or an entire field, Schlumberger side pocket mandrels provide a cost-effective edge to help operators maximize production and revenue in a competitive and demanding market.

Confidence and value

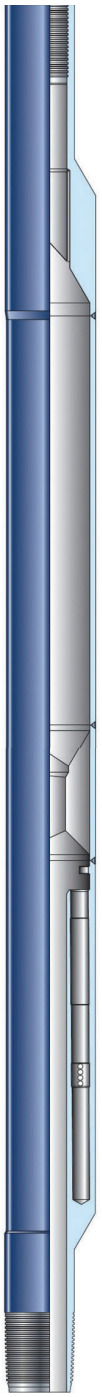
Schlumberger has continuously improved both engineering design and equipment manufacturing processes to produce the most advanced premium side pocket mandrel range on the market. Operators can install with confidence because each side pocket mandrel will deliver maximum added value to an oil or gas well.

Manufacturing quality for maximum reliability

To ensure side pocket mandrel quality, all critical manufacturing processes are carried out in-house for complete process control. This includes material specifications, machining, welding, heat treatment, inspection, and testing. Full traceability is maintained throughout the process.

Commitment to excellence and innovation

For more than 70 years, Schlumberger has used its experience, knowledge, and commitment to innovation, research, and quality performance to offer high-quality, technologically advanced products. Today, Schlumberger continues that commitment with side pocket mandrels that bring the quality and flexibility to choose dependable, innovative, and efficient equipment for a wide range of production and well control requirements.



Side pocket mandrel.

Side Pocket Mandrels

Side Pocket Mandrel Series and Design Options	
Product Nomenclature	**Design Feature**
KB	1-in pocket
M (first letter)	1½-in pocket
M (second letter)	Oval body pipe
G	Integral forged or solid pocket (for high-pressure testing) with tool discriminator and orienting sleeve
M (third letter)	Machined pocket with tool discriminator and orienting sleeve
R	Round body, generally used for high-pressure or premium metallurgy applications
A	A-pocket profile for RA or RM latches
U	Reduced OD and ID
E	Standard pocket porting with bottom exhaust, used primarily in chamber lift applications
EC	Pocket ported to tubing with bottom exhaust, used primarily in annular lift applications
W	Waterflood design
2	Slightly reduced major OD, usually with reduced test pressure as well
3	Special threading considerations
4	Extended ends for thread recuts
5	External guard devices added to protect cables or injection conduits being run with the mandrel
6	Extended thread ends for tubing tongs
9	Bottom latch only design for KBUG-series mandrels
10	Pluggable or no ports, used primarily to allow installation of a pressure-temperature memory gauge
LT	Sidepipe pocket porting
LTS	Side lug for injection tube, used when two or more fluids are injected into the well and must be separated until they are commingled in the flow stream
V	Multiple pockets

Side Pocket Mandrel Materials Options

Material	NACE†	Non-NACE‡	CO_2 service	Oval Body	Round Body	Comments
4130 LHT	×			×	×	80,000 psi, standard mandrel option
4130 HHT		×		×	×	95,000 psi, standard mandrel option
410SS	×		×	×		80,000 psi, Cr content 11.5% to 13.5%
410SS/13Cr	×		×		×	80,000 psi
Super 13Cr	×		×		×	95,000 psi NACE, 110,000 psi non-NACE
INCONEL 925	×		×		×	110,000 psi, extreme service
INCONEL 718	×		×		×	120,000 psi, extreme service

†Meets NACE MR0175 standard for sour service (H_2S)
‡Should be used for sweet service only

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