

SAFETY SHEAR SWIVEL

SWIVEL FOR TAPERED STRING OPERATIONS

Patent pending

APPLICATIONS

- Safety shear swivel x-over for tapered string operations

FEATURES

- Prevents excess torque to be transmitted to the smaller pipe
- Sealed bearings
- All internal connections are mechanically locked
- Simple on site redress
- No third party service personnel required on site
- Standard tool joint dimension
- Serve as thread XO

BENEFITS

- Prevents overtorque and twist off
- Permits internal pressure
- Preserve equipment and avoid fishing jobs
- Permits re-use
- Simple operation
- Eliminates additional rental tools
- Saves cost and rig time

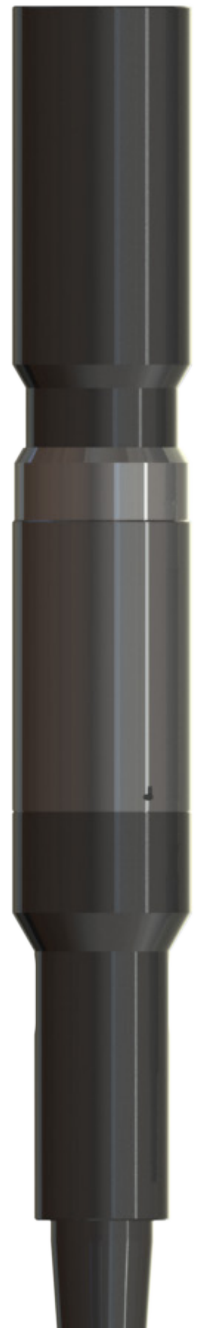
Tapered string operations are characterized by a higher torque capacity in the upper and larger pipe than the lower and smaller pipe. If the string is rotated the torque should always be adapted to the weakest link.

When completing a well, a normal operation is to displace the mud with brines. As brines typically contain less friction-reducing agents, the rotating friction may increase. The brine is often displaced through the bottom of the string, potentially exposing the lower section to higher torque than the upper string.

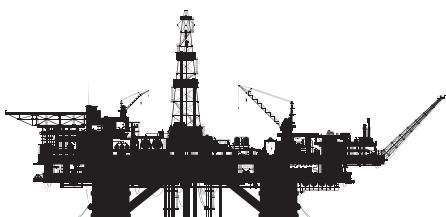
Innovar has developed the Safety Shear Swivel to minimize the risk of undesired torque being applied to the lower part of the string, and to reduce the risk of damaging the string.

The Safety Swivel serves several important functions:

- It serves as a controlled weak-link. The Safety Swivel can be set to shear at the desired torque.
- It serves as the cross over sub from the upper and larger pipe to the lower and smaller pipe. Saving the cost of a rental thread cross over sub.

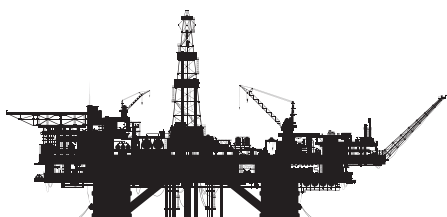


Built with high-quality radial and thrust roller bearings, the Safety Shear Swivel is designed to accept continued rotation of the upper string, while the lower string is held stationary and attached in both tension and compression. The bearings run in an oil bath and are protected by high pressure seals also after shearing when the tool is functioning as a swivel. The Safety Shear Swivel is designed to be redressed on-site and all threaded connections are mechanically locked from coming loose while in downhole service.



SAFETY SHEAR SWIVEL

Dimensional data		
Model	SSW 50 38	SSW 38 38
Upper connection	NC 50 box	NC 38 box
Lower connection	NC 38 pin	NC 38 pin
Max OD, inch	6,63	5,00
Min. ID, inch	2,00	1,50
Length, mm	1128	1002
Material properties		
Body material	AISI 4145	AISI 4145
Seal material max. temp.	200 °C	200 °C
Pre shear operational data		
Tensional yield strength	200 metric ton	109 metric ton
Max operational bearing load (tension and compression)	65 metric ton	11 metric ton
Max RPM	350	350
Max differential pressure inside/ outside tool	345 bar	345 bar
Shear force table		
Max torque: 1 shear pin	1 950 lbs/ft	1440 lbs/ft
Max torque: 2 shear pin	3 900 lbs/ft	2890 lbs/ft
Max torque: 3 shear pin	5 850 lbs/ft	4330 lbs/ft
Max torque: 4 shear pin	7 800 lbs/ft	5780 lbs/ft
Max torque: 5 shear pin	9 750 lbs/ft	7220 lbs/ft
Max torque: 6 shear pin	11 700 lbs/ft	8660 lbs/ft
Post shear operational data		
Max tension while rotating	20 metric ton	7,6 metric ton
Max compression while rotating	20 metric ton	7,6 metric ton
Max RPM (recommended)	200	200
Max torque	N/A	N/A
Make-up torque		
Box connection	27 000 ft/lbs	11 000 ft/lbs
Pin connection	11 000 ft/ lbs	11 000 ft/lbs



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