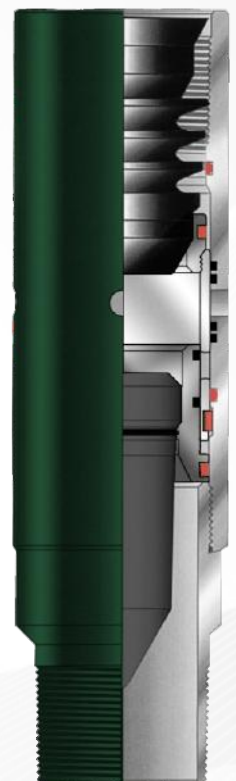
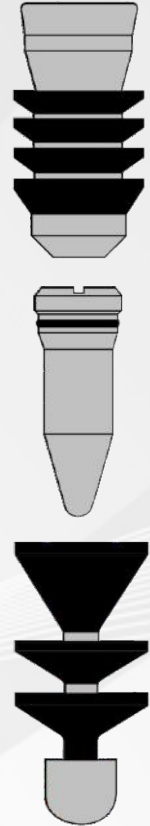


MDV Stage Cementing Collar Mechanical Type (two stage)

Applications & Features

- MDV Stage Cementing Collar can be made from material grades up to 135,000 psi minimum yield, including material suitable for sour gas service.
- Common steel grades i.e. J-55, K-55, L-80, P-110 form standard manufacturing steel grades, how ever other grades are available upon request.
- API & Premium connections are available upon request.
- No welds are used on any portion of the tool.
- The reduced length of the tool minimizes the effect of bending stresses.
- The seals providing internal and external pressure integrity are housed in the stage collar body and remain stationary throughout operation, minimizing chances of their being damaged.
- The pressure-relief design prevents fluid trapping and compression between the opening device and the closing plug during the closing phase of the tool's operation.
- The closing sleeve is held in the closed position by an internal lock ring.
- Both the opening and closing sleeves lock against rotation for easy drill-out.
- A minimum amount of aluminum and rubber are the only materials encountered during drill-out.

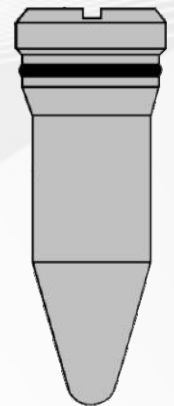
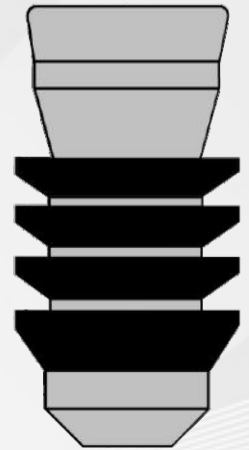


MDV Stage Cementing Collar Mechanical Type (two stage)

Two-Stage Cementing with MDV Stage Cementing Collar using:

- I. First-Stage Sealing Plug
- II. Free-Fall Opening Device, and
- III. Closing Plug

- Float shoe and Float collar along with the MDV Stage Cementing Collar, are installed in the casing string and the casing is run to bottom.
- Circulation is established and first-stage cement is mixed and pumped.
- The first-stage sealing plug is launched and cement is displaced. At the conclusion of displacement, the first-stage sealing plug lands and effects a seal against the Float collar. **No baffle is required!**
- The free-fall opening device is dropped and allowed to gravitate to position. Pressure is applied to the casing and the stage collar is opened.
- Circulation is established and second-stage cement is mixed and pumped.
- The closing plug is dropped and cement is displaced.
- At the conclusion of displacement, the closing plug lands and effects a seal in the stage collar. Pressure is applied to the casing and the stage collar is closed.



MDV Stage Cementing Collar Mechanical Type (two stage)

Specification Tables

| Nominal Casing Size (in.) | Maximum Diameter | Wt. Range (Lbs.) | Drill-Out I.D. (in.) | Overall Length (in.) | Opening | | Closing | | Opening Seat I.D. (in.) | Closing Seat I.D. (in.) |
|---------------------------|------------------|------------------|----------------------|----------------------|----------------|--------------|----------------|--------------|-------------------------|-------------------------|
| | | | | | Pressure (PSI) | Force (Lbs.) | Pressure (PSI) | Force (Lbs.) | | |
| 5 1/2 | 6.625 | 14.0–17.0 | 4.892 | 27.38 | 1200 | 32,000 | 1500 | 39,000 | 3.750 | 4.062 |
| | | 20.0–23.0 | 4.810 | | | | | | | |
| 6 5/8 | 7.875 | 20.0–28.0 | 6.030 | 28.50 | 1200 | 45,000 | 1500 | 57,000 | 4.625 | 5.000 |
| 7 | 8.275 | 17.0–23.0 | 6.276 | 28.50 | 1200 | 49,000 | 1500 | 62,000 | 4.625 | 5.125 |
| | | 26.0–29.0 | 6.200 | | | | | | | |
| | | 32.0–38.0 | 6.004 | | | | | | | |
| 9 5/8 | 11.125 | 32.3–40.0 | 8.921 | 29.50 | 1000 | 78,000 | 1200 | 94,000 | 7.000 | 7.750 |
| | | 43.5–53.5 | 8.600 | | | | | | | |
| 10 3/4 | 12.375 | 40.5–45.5 | 9.950 | 30.88 | 1000 | 100,000 | 1200 | 120,000 | 8.000 | 8.750 |
| 13 3/8 | 15.000 | 54.5–61.0 | 12.515 | 30.88 | 900 | 133,000 | 1000 | 148,000 | 10.500 | 11.250 |
| | | 68.0–72.0 | 12.415 | | | | | | | |
| 16 | 18.000 | 65.0 | 15.125 | 32.38 | 500 | 90,000 | 700 | 126,000 | 13.125 | 14.000 |
| | | 75.0–84.0 | 14.880 | | | | | | | |