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|-----------------------------------|--------------|
| Model: ICDS/CCDS Serial #: N/A | Apr. 7, 2021 |
| Product Bulletin # CDS-003 v 1.0 | |

ICDS/CCDS Technical Specifications

Canrig has released an update to the following Internal Casing Drive System (ICDS)/Compact Casing Drive System (CCDS) Technical Specifications. Refer to Table 1 below for links to these documents on NaborsNet or refer to attached documents. **Note:** NaborsNet links only work within the Nabors network.

Table 1: ICDS/CCDS Technical Specifications

| Document ID | Description | NaborsNet Link |
|-------------|---|--------------------------------|
| 860243.04 | Technical Specifications, 9-5/8" ICDS | 860243.04.pdf |
| 5080556.02 | Technical Specifications, 9-7/8" ICDS | 5080556.02.pdf |
| 5080557.01 | Technical Specifications, 10-3/4" ICDS | 5080557.01.pdf |
| 860244.02 | Technical Specifications, 11-3/4" ICDS | 860244.02.pdf |
| 5100028.01 | Technical Specifications, 13-3/8" ICDS (9-5/8" Drive with 13-3/8" Grapples) | 5100028.01.pdf |
| 5001381.05 | Technical Specifications, 13-3/8" ICDS | 5001381.05.pdf |
| 5101047.00 | Technical Specifications, 13-5/8" ICDS | 5101047.00.pdf |
| 5043129.03 | Technical Specifications, 16" ICDS | 5043129.03.pdf |
| 1530192.04 | Technical Specifications, 18-5/8" ICDS | 1530192.04.pdf |
| 5043130.04 | Technical Specifications, 20" ICDS | 5043130.04.pdf |
| 5072498.03 | Technical Specifications, 24" ICDS | 5072498.03.pdf |
| 710240.03 | Technical Specifications, 5-1/2" CCDS | 710240.03.pdf |

Contact RIGLINE 24/7™ if additional information is required.

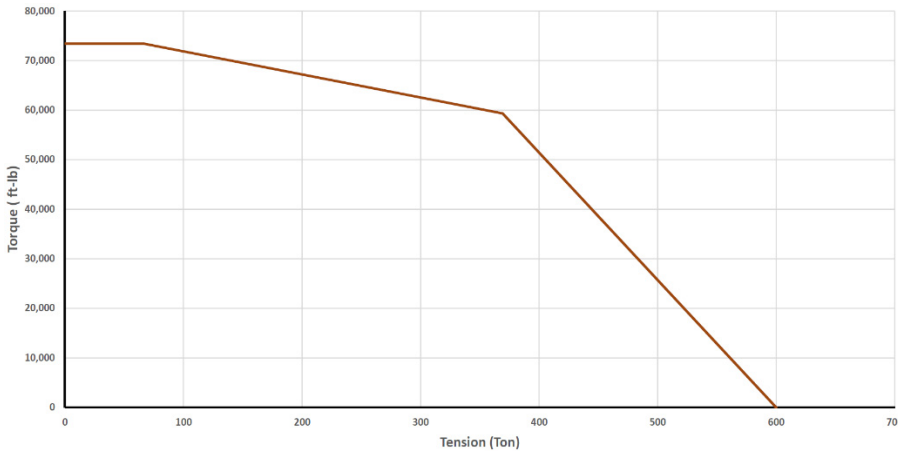
9-5/8" INTERNAL CASING DRIVE SYSTEM – TECHNICAL SPECIFICATIONS – 860243 Rev.4

| | |
|---|------------------------------------|
| Max. Hoisting Capacity | 600 Ton |
| Max. Push Down Capacity <i>See Note 6</i> | 25,000 lb |
| Upper Connection | API 6 5/8 REG Box with spline lock |
| Nom. Make-up torque to Actuator <i>See Note 5</i> | 46,000 ft-lb |
| Max. Circulating Pressure (Packer Cup Rating) | 4250 psi |
| Mandrel Bore | 2-1/16" |
| Max. Flow Rate <i>See Note 1</i> | 520 gpm |
| Max. Flow Rate with Mud Valve <i>See Note 1</i> | 192 gpm |
| Max Continuous / Intermittent Speed <i>See Note 7</i> | 120RPM / 200RPM |

WEIGHTS

| Item | Description | Weight (lb) |
|------|-------------------------|-------------|
| - | Complete Assembly | 830 |
| 1 | Split Connection Collar | 94 |
| 2 | Grapple | 17-24 ea |
| 3 | Spears Head Assembly | 83 |

TOOL COMBINED TORQUE & TENSION LOAD LIMITS *See Notes 2, 5 & 8*

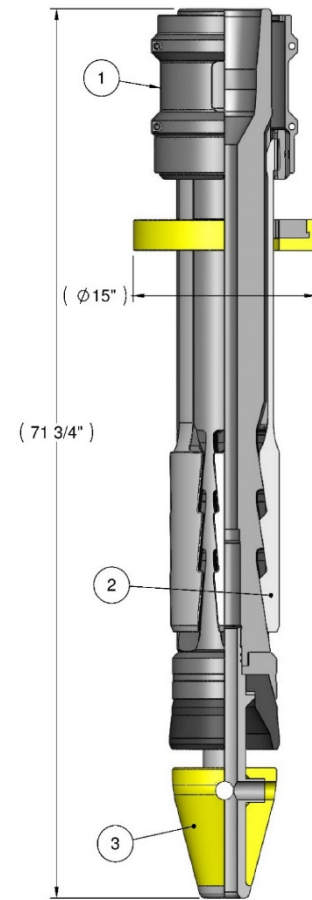


CASING TORQUE TRANSFER ABILITY *See Note 6*

| Size | Grade | Zero String Weight (2000 Psi Actuator Pressure) |
|--------|-------|---|
| 9-5/8" | L80 | 31,400 ft-lb |

CASING HOISTING LIMITS (tons) *See Note 3 & 4*

| Casing Weight | Grade | | | | | | |
|---------------|-------|---------|-----|---------|---------|------|------|
| | H40 | J55/K55 | M65 | L80/N80 | C95/T95 | P110 | Q125 |
| 32.3 | 83 | 123 | 149 | 188 | 227 | 266 | 305 |
| 36 | 97 | 141 | 170 | 214 | 258 | 302 | 346 |
| 40 | 111 | 161 | 194 | 243 | 292 | 342 | 391 |
| 43.5 | 120 | 172 | 207 | 260 | 312 | 365 | 417 |
| 47 | 131 | 188 | 226 | 283 | 341 | 398 | 455 |
| 53.5 | 155 | 221 | 265 | 331 | 396 | 462 | 528 |
| 57.4 | 163 | 232 | 277 | 346 | 415 | 484 | 552 |
| 58.4 | 165 | 235 | 281 | 351 | 420 | 490 | 560 |
| 59.4 | 169 | 241 | 288 | 360 | 431 | 502 | 573 |
| 64.9 | 189 | 268 | 320 | 399 | 478 | 556 | 600 |
| 70.3 | 202 | 285 | 341 | 424 | 507 | 591 | 600 |
| 75.6 | 221 | 311 | 372 | 462 | 553 | 600 | 600 |



Notes:

1. Max flow rate values are based on linear speed of 50 Feet/Second.
2. Casing operating limits for torque, tension and pressure are not shown in the graph. Contact Canrig Engineering for casing combined load operating limits.
3. Circulating pressure at 4250 psi or below will reduce the casing hoisting limits by an amount equal to the casing internal section area multiplied by the circulating pressure.
4. The table includes only the casing hoisting limits due to tension and does not include the operating limits due to torque or pressure.
5. Ensure that the Splined Collar and Die Lock Clamps are properly installed to prevent the 6-5/8 Reg connections from backing-off during operations.
6. With 2000 psi actuator apply pressure. Push down on the tool will de-rate the torque transfer ability.
7. With 1400 psi actuator apply pressure for casing drilling operations.
8. Graph data based on FEA evaluation.



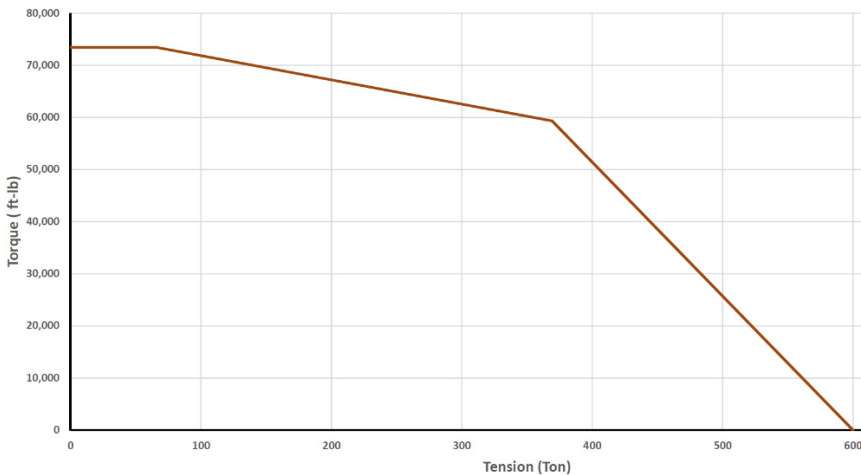
9-7/8" INTERNAL CASING DRIVE SYSTEM – TECHNICAL SPECIFICATIONS – 5080556 Rev 2

| | |
|---|------------------------------------|
| Max. Hoisting Capacity | 600 Ton |
| Max. Push Down Capacity <small>See Note 6</small> | 25,000 lb |
| Upper Connection | API 6 5/8 REG Box with spline lock |
| Nom. Make-up torque to Actuator <small>See Note 5</small> | 46000 ft-lb |
| Max. Circulating Pressure | 4250 psi |
| Mandrel Bore | 2 1/16" |
| Max. Flow Rate <small>See Note 1</small> | 520 gpm |
| Max. Flow Rate with Mud Valve <small>See Note 1</small> | 192 gpm |
| Max Continuous / Intermittent Speed <small>See Note 7</small> | 120RPM / 200RPM |

WEIGHTS

| Item | Description | Weight (lb) |
|------|-------------------------|-------------|
| - | Complete Assembly | 830 |
| 1 | Split Connection Collar | 94 |
| 2 | Grapple | 17-24 ea |
| 3 | Spear Head Assembly | 83 |

TOOL COMBINED TORQUE & TENSION LOAD LIMITS See Notes 2, 5 & 8

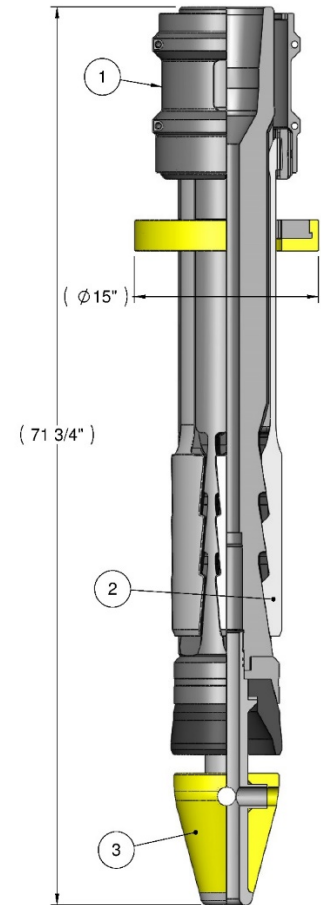


CASING TORQUE TRANSFER ABILITY See Note 6

| Size | Grade | Zero String Weight (2000 Psi Actuator Pressure) |
|--------|-------|---|
| 9-7/8" | L80 | 31,400 ft-lb |

CASING HOISTING LIMITS (tons) See Note 3 & 4

| Casing Weight | Grade | | | | | | |
|---------------|-------|---------|-----|---------|---------|------|------|
| | H40 | J55/K55 | M65 | L80/N80 | C95/T95 | P110 | Q125 |
| 62.8 | 170 | 241 | 289 | 360 | 431 | 502 | 574 |
| 65.1 | 177 | 252 | 301 | 375 | 449 | 523 | 597 |
| 66.4 | 181 | 256 | 306 | 382 | 457 | 532 | 600 |
| 67.3 | 183 | 259 | 310 | 386 | 462 | 538 | 600 |
| 68.8 | 193 | 272 | 326 | 406 | 485 | 565 | 600 |
| 72.1 | 200 | 283 | 338 | 421 | 503 | 586 | 600 |



Notes:

1. Max flow rate values are based on linear speed of 50 Feet/Second.
2. Casing operating limits for torque, tension and pressure are not shown in the graph. Contact Canrig Engineering for casing combined load operating limits.
3. Circulating pressure at 4250 psi or below will reduce the casing hoisting limits by an amount equal to the casing internal section area multiplied by the circulating pressure.
4. The table includes only the casing hoisting limits due to tension and does not include the operating limits due to torque or pressure.
5. Ensure that the Splined Collar and Die Lock Clamps are properly installed to prevent the 6-5/8 Reg connections from backing-off during operations.
6. With 2000 psi actuator apply pressure. Push down on the tool will de-rate the torque transfer ability.
7. With 1400 psi actuator apply pressure for casing drilling operations.
8. Graph data based on FEA evaluation.



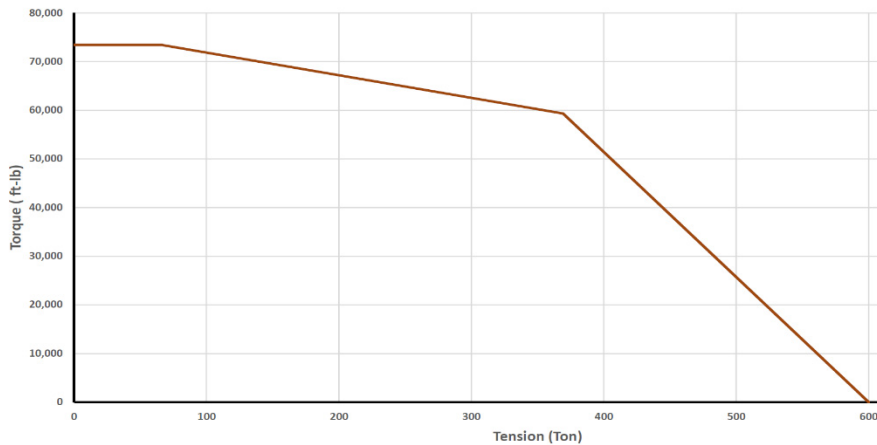
10-3/4" INTERNAL CASING DRIVE SYSTEM – TECHNICAL SPECIFICATIONS – 5080557 Rev 1

| | |
|---|------------------------------------|
| Max. Hoisting Capacity | 600 Ton |
| Max. Push Down Capacity <small>See Note 6</small> | 25,000 lb |
| Upper Connection | API 6 5/8 REG Box with spline lock |
| Nom. Make-up torque to Actuator <small>See Note 5</small> | 46000 ft-lb |
| Max. Circulating Pressure (Packer Cup Rating) | 3750 psi |
| Mandrel Bore | 2 1/16" |
| Max. Flow Rate <small>See Note 1</small> | 520 gpm |
| Max. Flow Rate with Mud Valve <small>See Note 1</small> | 192 gpm |
| Max Continuous / Intermittent Speed <small>See Note 7</small> | 120RPM / 200RPM |

WEIGHTS

| Item | Description | Weight (lb) |
|------|-------------------------|-------------|
| - | Complete Assembly | 862 |
| 1 | Split Connection Collar | 94 |
| 2 | Grapple | 28-36 ea |
| 3 | Spears Head Assembly | 113 |

TOOL COMBINED TORQUE & TENSION LOAD LIMITS See Notes 2, 5 & 8

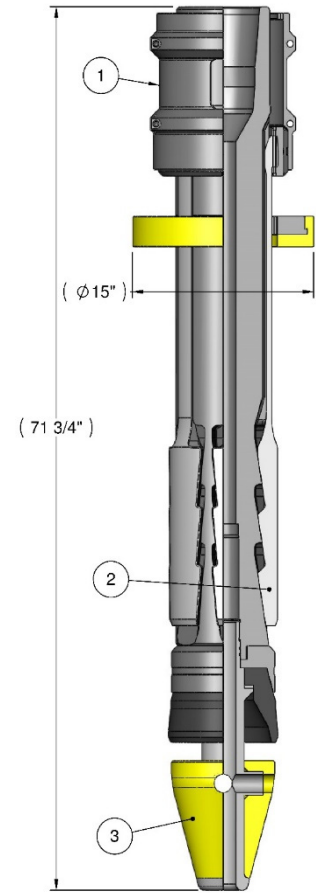


CASING TORQUE TRANSFER ABILITY See Note 6

| Size | Grade | Zero String Weight (2000 Psi Actuator Pressure) |
|---------|-------|---|
| 10-3/4" | L80 | 35,600 ft-lb |

CASING HOISTING LIMITS (tons) See Note 3 & 4

| Casing Weight | Grade | | | | | | |
|---------------|-------|---------|-----|---------|---------|------|------|
| | H40 | J55/K55 | M65 | L80/N80 | C95/T95 | P110 | Q125 |
| 32.8 | 70 | 104 | 126 | 160 | 194 | 228 | 262 |
| 40.5 | 93 | 135 | 164 | 206 | 248 | 291 | 333 |
| 45.5 | 109 | 158 | 190 | 238 | 287 | 335 | 384 |
| 51.0 | 121 | 174 | 209 | 262 | 315 | 368 | 420 |
| 55.5 | 135 | 193 | 232 | 290 | 348 | 406 | 465 |
| 60.7 | 151 | 215 | 257 | 321 | 385 | 449 | 514 |
| 65.7 | 161 | 229 | 275 | 343 | 411 | 479 | 547 |
| 71.1 | 178 | 252 | 302 | 376 | 451 | 525 | 600 |
| 73.2 | 185 | 262 | 313 | 390 | 467 | 544 | 600 |



Notes:

1. Max flow rate values are based on linear speed of 50 Feet/Second.
2. Casing operating limits for torque, tension and pressure are not shown in the graph. Contact Canrig Engineering for casing combined load operating limits.
3. Circulating pressure at 3750 psi or below will reduce the casing hoisting limits by an amount equal to the casing internal section area multiplied by the circulating pressure.
4. The table includes only the casing hoisting limits due to tension and does not include the operating limits due to torque or pressure.
5. Ensure that the Splined Collar and Die Lock Clamps are properly installed to prevent the 6-5/8 Reg connections from backing-off during operations.
6. With 2000 psi actuator apply pressure. Push down on the tool will de-rate the torque transfer ability.
7. With 1400 psi actuator apply pressure for casing drilling operations.
8. Graph data based on FEA evaluation.



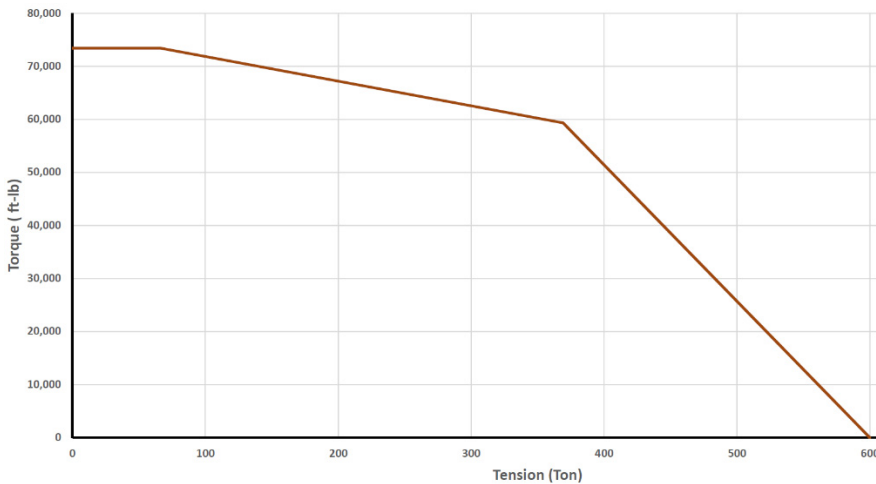
11-3/4" INTERNAL CASING DRIVE SYSTEM – TECHNICAL SPECIFICATIONS – 860244 Rev 2

| | |
|---|------------------------------------|
| Max. Hoisting Capacity | 600 Ton |
| Max. Push Down Capacity <small>See Note 6</small> | 25,000 lb |
| Upper Connection | API 6 5/8 REG Box with spline lock |
| Nom. Make-up torque to Actuator <small>See Note 5</small> | 46000 ft-lb |
| Max. Circulating Pressure (Packer Cup Rating) | 2000 psi |
| Mandrel Bore | 2 1/16" |
| Max. Flow Rate <small>See Note 1</small> | 520 gpm |
| Max. Flow Rate with Mud Valve <small>See Note 1</small> | 192 gpm |
| Max Continuous / Intermittent Speed <small>See Note 7</small> | 120RPM / 200RPM |

WEIGHTS

| Item | Description | Weight (lb) |
|------|-------------------------|-------------|
| - | Complete Assembly | 1025 |
| 1 | Split Connection Collar | 94 |
| 2 | Grapple | 44 ea |
| 3 | Spear Head Assembly | 180 |

TOOL COMBINED TORQUE & TENSION LOAD LIMITS See Notes 2, 5 & 8

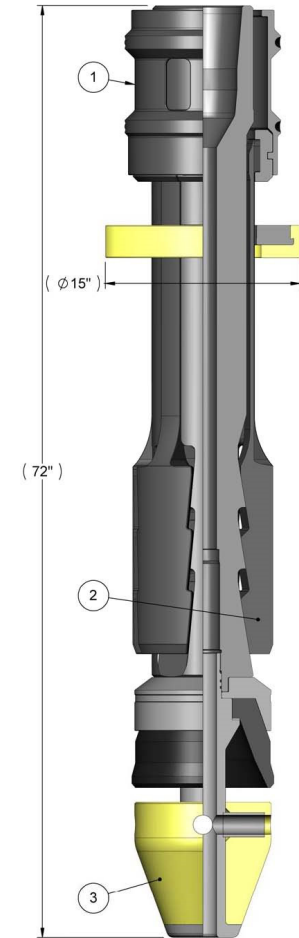


CASING TORQUE TRANSFER ABILITY See Note 6

| Size | Grade | Zero String Weight (2000 Psi Actuator Pressure) |
|---------|-------|---|
| 11-3/4" | L80 | 33,000 ft-lb |

CASING HOISTING LIMITS (tons) See Note 3 & 4

| Casing Weight | Grade | | | | | | |
|---------------|-------|---------|-----|---------|---------|------|------|
| | H40 | J55/K55 | C75 | L80/N80 | C95/T95 | P110 | Q125 |
| 47 | 102 | 148 | 210 | 225 | 271 | 317 | 363 |
| 54 | 118 | 170 | 239 | 256 | 308 | 360 | 411 |
| 60 | 135 | 193 | 271 | 290 | 349 | 407 | 465 |
| 61 | 135 | 194 | 271 | 291 | 349 | 408 | 466 |
| 65 | 149 | 213 | 298 | 319 | 382 | 446 | 510 |



Notes:

1. Max flow rate values are based on linear speed of 50 Feet/Second.
2. Casing operating limits for torque, tension and pressure are not shown in the graph. Contact Canrig Engineering for casing combined load operating limits.
3. Circulating pressure at 2000 psi or below will reduce the casing hoisting limits by an amount equal to the casing internal section area multiplied by the circulating pressure.
4. The table includes only the casing hoisting limits due to tension and does not include the operating limits due to torque or pressure.
5. Ensure that the Splined Collar and Die Lock Clamps are properly installed to prevent the 6-5/8 Reg connections from backing-off during operations.
6. With 2000 psi actuator apply pressure. Push down on the tool will de-rate the torque transfer ability.
7. With 1400 psi actuator apply pressure for casing drilling operations.
8. Graph data based on FEA evaluation.



13-3/8" INTERNAL CASING DRIVE SYSTEM * – TECHNICAL SPECIFICATIONS – 5100028 Rev.1

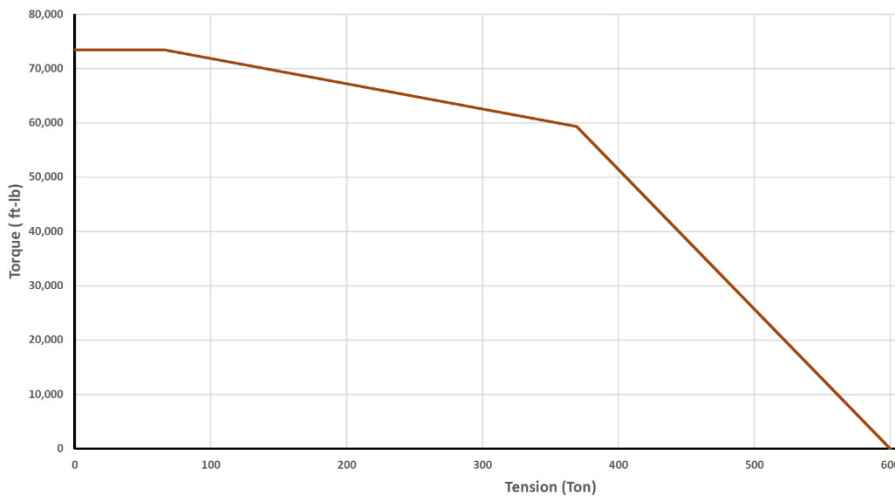
* 9-5/8" DRIVE WITH 13-3/8" GRAPPLES

| | |
|---|------------------------------------|
| Max. Hoisting Capacity | 600 Ton |
| Max. Push Down Capacity <small>See Note 6</small> | 25000 lb |
| Upper Connection | API 6 5/8 REG Box with spline lock |
| Nom. Make-up torque to Actuator <small>See Note 5</small> | 46,000 ft-lb |
| Max. Circulating Pressure (Packer Cup Rating) | 2000 psi |
| Mandrel Bore | 2-1/16" |
| Max. Flow Rate <small>See Note 1</small> | 520 gpm |
| Max. Flow Rate with Mud Valve <small>See Note 1</small> | 192 gpm |
| Max Continuous / Intermittent Speed <small>See Note 7</small> | 120RPM / 200 RPM |

WEIGHTS

| Item | Description | Weight (lb) |
|------|-------------------------|-------------|
| - | Complete Assembly | 1135 |
| 1 | Split Connection Collar | 94 |
| 2 | Grapple | 66 ea |
| 3 | Spear Head Assembly | 180 |

TOOL COMBINED TORQUE & TENSION LOAD LIMITS See Notes 2, 5 & 8

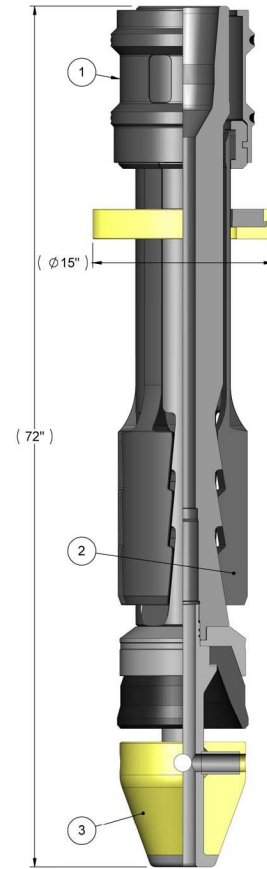


CASING TORQUE TRANSFER ABILITY See Note 6

| Size | Grade | Zero String Weight (2000 Psi Actuator Pressure) |
|---------|-------|---|
| 13-3/8" | L80 | 49,300 ft-lb |

CASING HOISTING LIMITS (tons) See Notes 3 & 4

| Casing Weight | Grade | | | | | | |
|---------------|-------|---------|-----|---------|---------|------|------|
| | H40 | J55/K55 | M65 | L80/N80 | C95/T95 | P110 | Q125 |
| 54.5 | 108 | 156 | 188 | 236 | 285 | 333 | 381 |
| 61 | 125 | 179 | 216 | 270 | 325 | 379 | 434 |
| 68 | 142 | 203 | 243 | 304 | 365 | 426 | 487 |
| 72 | 153 | 218 | 262 | 327 | 392 | 458 | 523 |



Notes:

1. Max flow rate values are based on linear speed of 50 Feet/Second.
2. Casing operating limits for torque, tension and pressure are not shown in the graph. Contact Canrig Engineering for casing combined load operating limits.
3. Circulating pressure at 2000 psi or below will reduce the casing hoisting limits by an amount equal to the casing internal section area multiplied by the circulating pressure.
4. The table includes only the casing hoisting limits due to tension and does not include the operating limits due to torque or pressure.
5. Ensure that the Splined Collar and Die Lock Clamps are properly installed to prevent the 6-5/8 Reg connections from backing-off during operations.
6. With 2000 psi actuator apply pressure. Push down on the tool will de-rate the torque transfer ability.
7. With 1400 psi actuator apply pressure for casing drilling operations.
8. Graph data based on FEA evaluation.

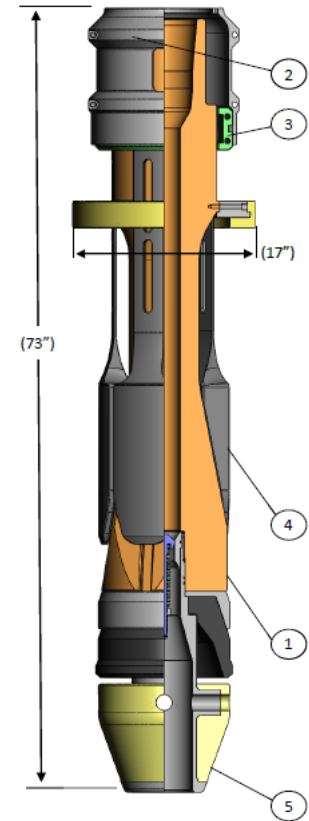


13-3/8" INTERNAL CASING DRIVE SYSTEM – TECHNICAL SPECIFICATIONS – 5001381 Rev.5

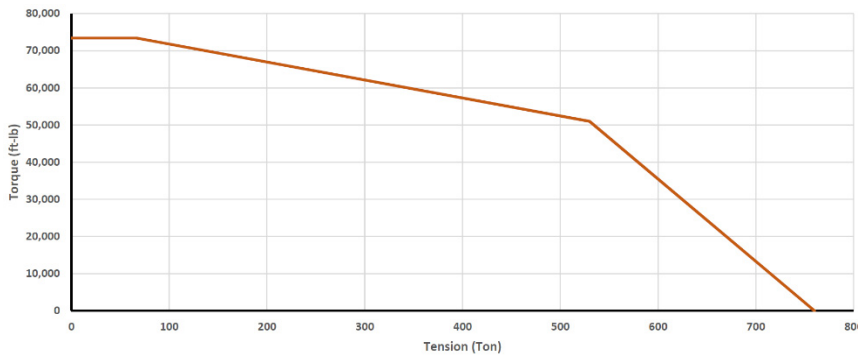
| | |
|---|------------------------------------|
| Max. Hoisting Capacity | 760 Ton |
| Max. Push Down Capacity ^{See Note 6} | 25,000 lb |
| Upper Connection | API 6 5/8 REG Box with spline lock |
| Nom. Make-up torque to Actuator ^{See Note 5} | 46,000 ft-lb |
| Max. Circulating Pressure (Packer Cup Rating) | 2000 psi |
| Mandrel Bore / Actuator ID | 3.00" / 2.50" |
| Max. Flow Rate through Actuator ^{See Note 1} | 765 gpm |
| Max. Flow Rate with Mud Valve ^{See Note 1} | 490 gpm |
| Max Continuous / Intermittent Speed ^{See Note 7} | 120RPM / 200RPM |

WEIGHTS

| Item | Description | Weight (lb) |
|------|----------------------|-------------|
| - | Complete Assembly | 1284 |
| 1 | 13-3/8" Mandrel | 665 |
| 2 | Connection Collar | 72 |
| 3 | Split Collar | 46 |
| 4 | Grapple | 54-58 ea. |
| 5 | Spearg Head Assembly | 148 |



TOOL COMBINED TORQUE & TENSION LOAD LIMITS ^{See Notes 2, 5 & 8}



CASING TORQUE TRANSFER ABILITY ^{See Note 6}

| Size | Grade | Zero String Weight 2000 Psi Actuator Apply Pressure | Zero String Weight 2500 Psi Actuator Apply Pressure |
|---------|-------|---|---|
| 13-3/8" | K55 | 48,030 ft-lb | 55,475 ft-lb |
| 13-3/8" | L80 | 49,798 ft-lb | 57,800 ft-lb |
| 13-3/8" | P110 | 39,339 ft-lb | 46,746 ft-lb |

CASING HOISTING LIMITS (tons) ^{See Notes 3 & 4}

| Casing Weight | Grade | | | | | | |
|---------------|-------|---------|-----|---------|---------|------|------|
| | H40 | J55/K55 | M65 | L80/N80 | C95/T95 | P110 | Q125 |
| 48 | 93 | 135 | 163 | 206 | 248 | 291 | 333 |
| 54.5 | 110 | 159 | 191 | 240 | 289 | 338 | 387 |
| 61 | 127 | 182 | 219 | 275 | 330 | 385 | 441 |
| 68 | 144 | 206 | 247 | 309 | 371 | 432 | 494 |
| 72 | 156 | 222 | 266 | 332 | 398 | 465 | 531 |
| 77 | 161 | 230 | 275 | 343 | 411 | 480 | 548 |
| 80.7 | 171 | 243 | 291 | 363 | 435 | 507 | 579 |
| 85 | 181 | 256 | 306 | 382 | 457 | 532 | 608 |
| 86 | 186 | 264 | 315 | 393 | 470 | 548 | 625 |
| 92 | 202 | 285 | 341 | 424 | 507 | 591 | 674 |
| 100.3 | 222 | 313 | 374 | 465 | 556 | 647 | 738 |

Notes:

1. Max flow rate values are based on linear speed of 50 Feet/Second.
2. Casing operating limits for torque, tension and pressure are not shown in the graph. Contact Canrig Engineering for casing combined load operating limits.
3. Circulating pressure at 2000 psi or below will reduce the casing hoisting limits by an amount equal to the casing internal section area multiplied by the circulating pressure.
4. The table includes only the casing hoisting limits due to tension and does not include the operating limits due to torque or pressure.
5. Ensure that the Splined Collar and Die Lock Clamps are properly installed to prevent the 6-5/8 Reg connections from backing-off during operations.
6. With 2000 psi actuator apply pressure. Push down on the tool will de-rate the torque transfer ability.
7. With 1400 psi actuator apply pressure for casing drilling operations.
8. Graph data based on FEA evaluation.

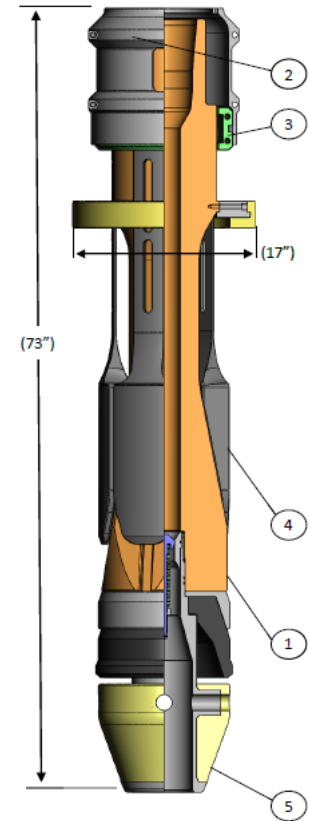


13-5/8" INTERNAL CASING DRIVE SYSTEM – TECHNICAL SPECIFICATIONS – 5101047 Rev.0

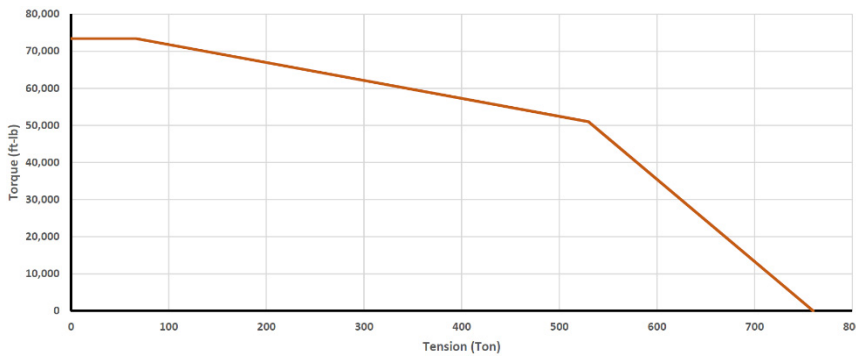
| | |
|---|------------------------------------|
| Max. Hoisting Capacity | 760 Ton |
| Max. Push Down Capacity ^{See Note 6} | 25,000 lb |
| Upper Connection | API 6 5/8 REG Box with spline lock |
| Nom. Make-up torque to Actuator ^{See Note 5} | 46,000 ft-lb |
| Max. Circulating Pressure (Packer Cup Rating) | 2000 psi |
| Mandrel Bore / Actuator ID | 3.00" / 2.50" |
| Max. Flow Rate through Actuator ^{See Note 1} | 765 gpm |
| Max. Flow Rate with Mud Valve ^{See Note 1} | 490 gpm |
| Max Continuous / Intermittent Speed ^{See Note 7} | 120RPM / 200RPM |

WEIGHTS

| Item | Description | Weight (lb) |
|------|----------------------|-------------|
| - | Complete Assembly | 1284 |
| 1 | 13-3/8" Mandrel | 665 |
| 2 | Connection Collar | 72 |
| 3 | Split Collar | 46 |
| 4 | Grapple | 54-58 ea. |
| 5 | Spears Head Assembly | 148 |



TOOL COMBINED TORQUE & TENSION LOAD LIMITS ^{See Notes 2, 5 & 8}



CASING TORQUE TRANSFER ABILITY ^{See Note 6}

| Size | Grade | Zero String Weight 2000 Psi Actuator Apply Pressure | Zero String Weight 2500 Psi Actuator Apply Pressure |
|---------|-------|---|---|
| 13-5/8" | K55 | 48,030 ft-lb | 55,475 ft-lb |
| 13-5/8" | L80 | 49,798 ft-lb | 57,800 ft-lb |
| 13-5/8" | P110 | 39,339 ft-lb | 46,746 ft-lb |

CASING HOISTING LIMITS (tons) ^{See Notes 3 & 4}

| Casing Weight | Grade | | | | | | |
|------------------|-------|---------|-----|---------|---------|------|------|
| | H40 | J55/K55 | M65 | L80/N80 | C95/T95 | P110 | Q125 |
| 88.2 | 190 | 269 | 322 | 401 | 480 | 558 | 637 |

Notes:

1. Max flow rate values are based on linear speed of 50 Feet/Second.
2. Casing operating limits for torque, tension and pressure are not shown in the graph. Contact Canrig Engineering for casing combined load operating limits.
3. Circulating pressure at 2000 psi or below will reduce the casing hoisting limits by an amount equal to the casing internal section area multiplied by the circulating pressure.
4. The table includes only the casing hoisting limits due to tension and does not include the operating limits due to torque or pressure.
5. Ensure that the Splined Collar and Die Lock Clamps are properly installed to prevent the 6-5/8 Reg connections from backing-off during operations.
6. With 2000 psi actuator apply pressure. Push down on the tool will de-rate the torque transfer ability.
7. With 1400 psi actuator apply pressure for casing drilling operations.
8. Graph data based on FEA evaluation.



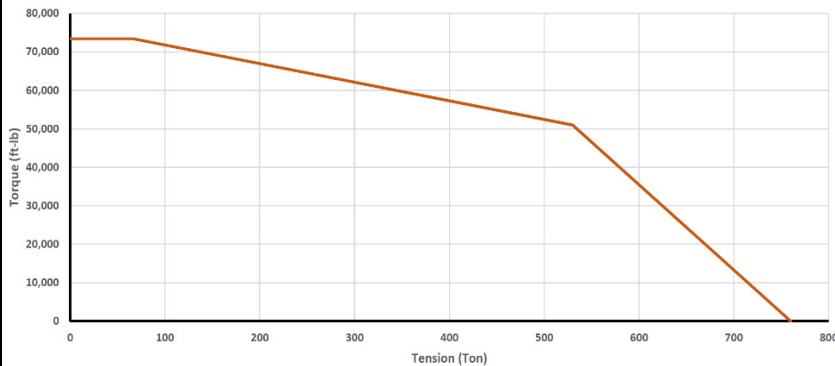
16" INTERNAL CASING DRIVE SYSTEM – TECHNICAL SPECIFICATIONS – 5043129 Rev.3

| | |
|---|------------------------------------|
| Max. Hoisting Capacity | 760 Ton |
| Max. Push Down Capacity <small>See Note 6</small> | 25,000 lb |
| Upper Connection | API 6 5/8 REG Box with spline lock |
| Nom. Make-up torque to Actuator <small>See Note 5</small> | 46,000 ft-lb |
| Max. Circulating Pressure (Packer Cup Rating) | 2000 psi |
| Mandrel Bore / Actuator ID | 3.00" / 2.50" |
| Max. Flow Rate through Actuator <small>See Note 1</small> | 765 gpm |
| Max. Flow Rate with Mud Valve <small>See Note 1</small> | 490 gpm |
| Max Continuous / Intermittent Speed <small>See Note 7</small> | 120RPM / 200RPM |

WEIGHTS

| Item | Description | Weight (lb) |
|------|---------------------|-------------|
| - | Complete Assembly | 1524 |
| 1 | 13-3/8" Mandrel | 665 |
| 2 | Connection Collar | 72 |
| 3 | Split Collar | 46 |
| 4 | Grapple | 93-101 ea. |
| 5 | Spear Head Assembly | 134 |

TOOL COMBINED TORQUE & TENSION LOAD LIMITS See Notes 2, 5 & 8

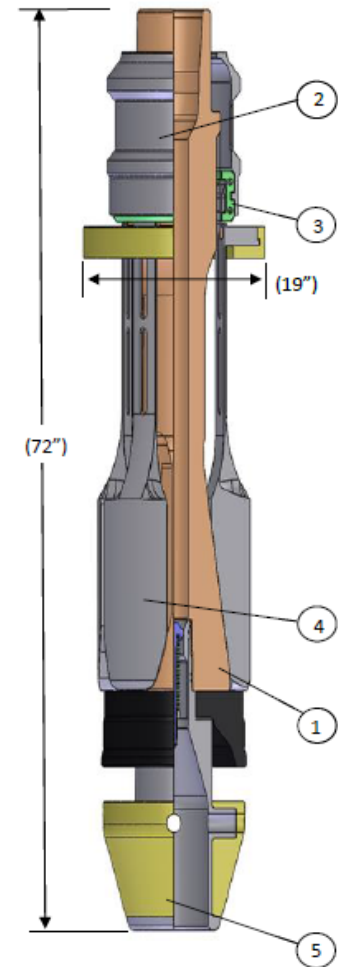


CASING TORQUE TRANSFER ABILITY See Note 6

| Size | Grade | Zero String Weight (2000 Psi Actuator Pressure) |
|------|-------|---|
| 16" | L80 | 46,000 ft-lb |

CASING HOISTING LIMITS (tons) See Notes 3 & 4

| Casing Weight | Grade | | | | | | |
|---------------|-------|---------|-----|---------|---------|------|------|
| | H40 | J55/K55 | M65 | L80/N80 | C95/T95 | P110 | Q125 |
| 65 | 111 | 160 | 192 | 242 | 291 | 340 | 389 |
| 70 | 120 | 172 | 207 | 260 | 312 | 365 | 418 |
| 75 | 133 | 190 | 228 | 286 | 343 | 401 | 458 |
| 84 | 152 | 217 | 261 | 326 | 390 | 455 | 520 |
| 96 | 175 | 248 | 297 | 370 | 443 | 517 | 590 |
| 104 | 192 | 271 | 324 | 404 | 484 | 563 | 643 |
| 109 | 202 | 286 | 342 | 425 | 509 | 592 | 676 |



Notes:

1. Max flow rate values are based on linear speed of 50 Feet/Second.
2. Casing operating limits for torque, tension and pressure are not shown in the graph. Contact Canrig Engineering for casing combined load operating limits.
3. Circulating pressure at 2000 psi or below will reduce the casing hoisting limits by an amount equal to the casing internal section area multiplied by the circulating pressure.
4. The table includes only the casing hoisting limits due to tension and does not include the operating limits due to torque or pressure.
5. Ensure that the Splined Collar and Die Lock Clamps are properly installed to prevent the 6-5/8 Reg connections from backing-off during operations.
6. With 2000 psi actuator apply pressure. Push down on the tool will de-rate the torque transfer ability.
7. With 1400 psi actuator apply pressure for casing drilling operations.
8. Graph data based on FEA evaluation.

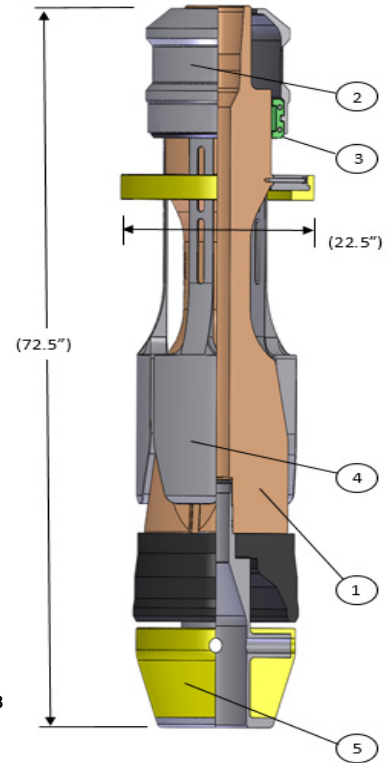


18-5/8" INTERNAL CASING DRIVE SYSTEM - TECHNICAL SPECIFICATIONS – 1530192 Rev. 4

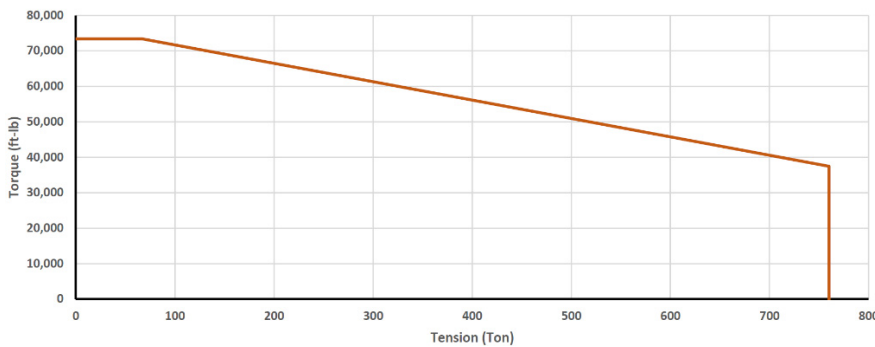
| | |
|---|------------------------------------|
| Max. Hoisting Capacity | 760 Ton |
| Max. Push Down Capacity <small>See Note 6</small> | 25,000 lb |
| Upper Connection | API 6 5/8 REG Box with spline lock |
| Nom. Make-up torque to Actuator <small>See Note 5</small> | 46000 ft-lb |
| Max. Circulating Pressure (Packer Cup Rating) | 1750 psi |
| Mandrel Bore / Actuator ID | 3.00" / 2.50" |
| Max. Flow Rate through Actuator <small>See Note 1</small> | 765 gpm |
| Max. Flow Rate with Mud Valve <small>See Note 1</small> | 490 gpm |
| Max Continuous / Intermittent Speed <small>See Note 7</small> | 120RPM / 200RPM |

WEIGHTS

| Item | Description | Weight (lb) |
|------|---------------------|-------------|
| - | Complete Assembly | 2330 |
| 1 | 17-7/8" Mandrel | 1430 |
| 2 | Connection Collar | 97 |
| 3 | Split Collar | 55 |
| 4 | Grapple | 84 ea. |
| 5 | Spear Head Assembly | 325 |



TOOL COMBINED TORQUE & TENSION LOAD LIMITS See Notes 2, 5 & 8



CASING TORQUE TRANSFER ABILITY See Note 6

| Size | Grade | - Zero String Weight - (2000 Psi Actuator Pressure) |
|---------|-------|---|
| 18-5/8" | L80 | 54,000 ft-lb |

CASING HOISTING LIMITS (tons) See Note 3 & 4

| Casing Weight | Grade | | | | | | |
|---------------|-------|---------|-----|---------|---------|------|------|
| | H40 | J55/K55 | M65 | L80/N80 | C95/T95 | P110 | Q125 |
| 87.5 | 137 | 196 | 236 | 295 | 354 | 414 | 473 |
| 94.5 | 142 | 203 | 244 | 305 | 366 | 427 | 488 |
| 96.5 | 151 | 215 | 258 | 323 | 378 | 451 | 516 |
| 97.7 | 151 | 216 | 259 | 323 | 388 | 452 | 517 |
| 100 | 156 | 223 | 267 | 333 | 400 | 466 | 532 |
| 109.4 | 179 | 253 | 303 | 378 | 453 | 527 | 602 |
| 114 | 184 | 261 | 312 | 389 | 466 | 543 | 620 |
| 115 | 190 | 268 | 321 | 400 | 479 | 558 | 636 |
| 136 | 222 | 313 | 374 | 465 | 556 | 648 | 739 |

Notes:

1. Max flow rate values are based on linear speed of 50 Feet/Second.
2. Casing operating limits for torque, tension and pressure are not shown in the graph. Contact Canrig Engineering for casing combined load operating limits.
3. Circulating pressure at 1750 psi or below will reduce the casing hoisting limits by an amount equal to the casing internal section area multiplied by the circulating pressure.
4. The table includes only the casing hoisting limits due to tension and does not include the operating limits due to torque or pressure.
5. Ensure that the Splined Collar and Die Lock Clamps are properly installed to prevent the 6-5/8 Reg connections from backing-off during operations.
6. With 2000 psi actuator apply pressure. Push down on the tool will de-rate the torque transfer ability.
7. With 1400 psi actuator apply pressure for casing drilling operations.
8. Graph data based on FEA evaluation.



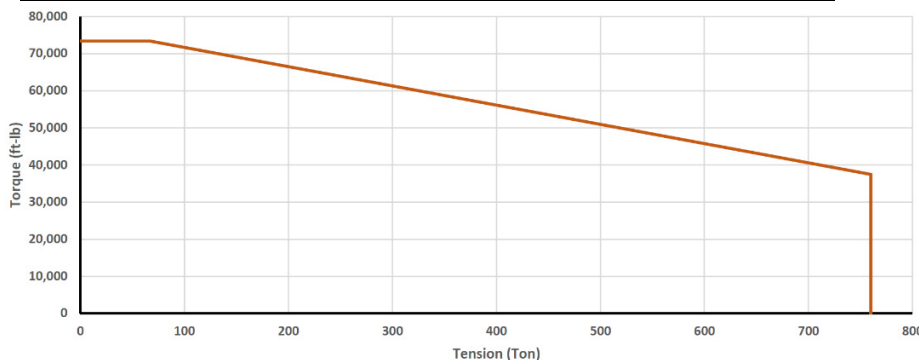
20" INTERNAL CASING DRIVE SYSTEM – TECHNICAL SPECIFICATIONS – 5043130 Rev.4

| | |
|---|------------------------------------|
| Max. Hoisting Capacity | 760 Ton |
| Max. Push Down Capacity <small>See Note 6</small> | 25,000 lb |
| Upper Connection | API 6 5/8 REG Box with spline lock |
| Nom. Make-up torque to Actuator <small>See Note 5</small> | 46000 ft-lb |
| Max. Circulating Pressure (Packer Cup Rating) | 1500 psi |
| Mandrel Bore / Actuator ID | 3.00" / 2.50" |
| Max. Flow Rate through Actuator <small>See Note 1</small> | 765 gpm |
| Max. Flow Rate with Mud Valve <small>See Note 1</small> | 490 gpm |
| Max Continuous / Intermittent Speed <small>See Note 7</small> | 120RPM / 200RPM |

WEIGHTS

| Item | Description | Weight (lb) |
|------|---------------------|-------------|
| - | Complete Assembly | 2444 |
| 1 | 13-3/8" Mandrel | 1430 |
| 2 | Connection Collar | 97 |
| 3 | Split Collar | 55 |
| 4 | Grapple | 104 ea. |
| 5 | Spear Head Assembly | 192 |

TOOL COMBINED TORQUE & TENSION LOAD LIMITS See Notes 2, 5 & 8

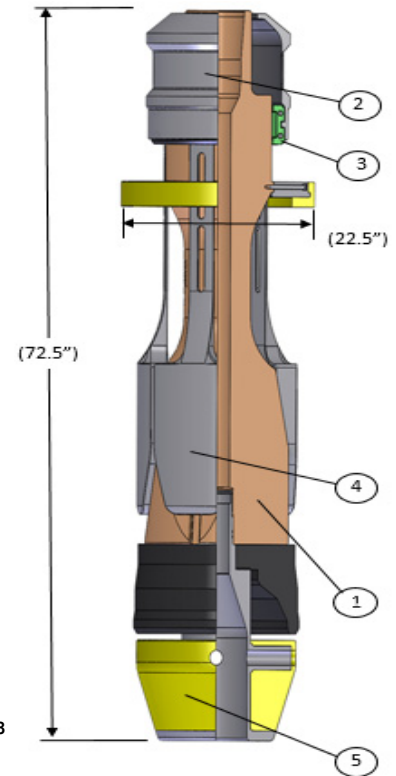


CASING TORQUE TRANSFER ABILITY See Note 6

| Size | Grade | - Zero String Weight - (2000 Psi Actuator Pressure) |
|------|-------|--|
| 20" | L80 | 59,000 ft-lb |

CASING HOISTING LIMITS (tons) See Note 3 & 4

| Casing Weight | Grade | | | | | | |
|---------------|-------|---------|-----|---------|---------|------|------|
| | H40 | J55/K55 | M65 | L80/N80 | C95/T95 | P110 | Q125 |
| 90 | 125 | 180 | 216 | 271 | 326 | 380 | 435 |
| 94 | 132 | 190 | 228 | 286 | 343 | 400 | 458 |
| 106.5 | 154 | 220 | 263 | 329 | 394 | 460 | 526 |
| 118.5 | 176 | 250 | 299 | 373 | 447 | 521 | 594 |
| 131.5 | 198 | 280 | 334 | 416 | 498 | 580 | 662 |
| 133 | 201 | 285 | 340 | 423 | 507 | 590 | 673 |
| 169 | 256 | 360 | 430 | 534 | 638 | 741 | 760 |



Notes:

1. Max flow rate values are based on linear speed of 50 Feet/Second.
2. Casing operating limits for torque, tension and pressure are not shown in the graph. Contact Canrig Engineering for casing combined load operating limits.
3. Circulating pressure at 1500 psi or below will reduce the casing hoisting limits by an amount equal to the casing internal section area multiplied by the circulating pressure.
4. The table includes only the casing hoisting limits due to tension and does not include the operating limits due to torque or pressure.
5. Ensure that the Splined Collar and Die Lock Clamps are properly installed to prevent the 6-5/8 Reg connections from backing-off during operations.
6. With 2000 psi actuator apply pressure. Push down on the tool will de-rate the torque transfer ability.
7. With 1400 psi actuator apply pressure for casing drilling operations.
8. Graph data based on FEA evaluation.

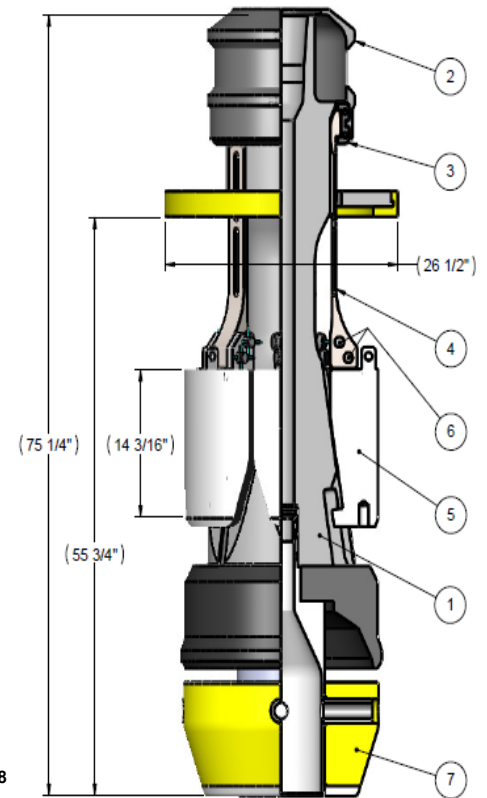


24" INTERNAL CASING DRIVE SYSTEM - TECHNICAL SPECIFICATIONS - 5072498 Rev 3

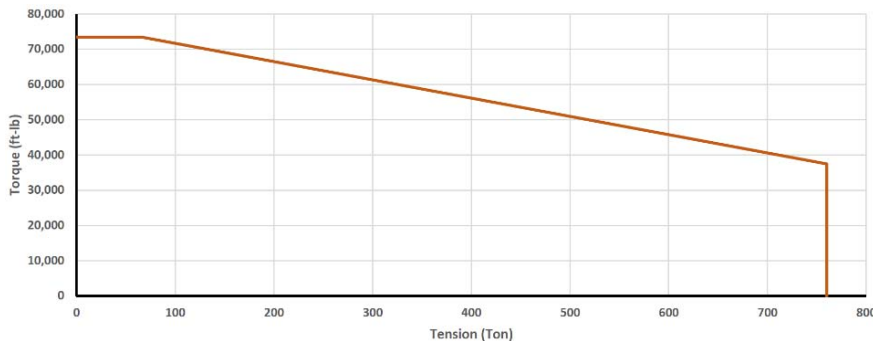
| | |
|---|------------------------------------|
| Max. Hoisting Capacity | 760 Ton |
| Max. Push Down Capacity <small>See Note 6</small> | 25,000 lb |
| Upper Connection | API 6 5/8 REG Box with spline lock |
| Nom. Make-up torque to Actuator <small>See Note 5</small> | 46,000 ft-lb |
| Max. Circulating Pressure (Packer Cup Rating) | 800 psi |
| Mandrel Bore / Actuator ID | 3.00" / 2.50" |
| Max. Flow Rate through Actuator <small>See Note 1</small> | 765 gpm |
| Max. Flow Rate with Mud Valve <small>See Note 1</small> | 490 gpm |
| Max Continuous / Intermittent Speed <small>See Note 7</small> | 120RPM / 200RPM |

WEIGHTS

| Item | Description | Weight (lb) |
|------|----------------------|-------------|
| - | Complete Assembly | 3160 |
| 1 | 24" Mandrel | 1400 |
| 2 | Connection Collar | 97 |
| 3 | Split Collar | 55 |
| 4 | Grapple Stem | 16 ea. |
| 5 | Grapple Wicker Body | 177 ea. |
| 6 | Grapple Pin | 1.6 ea. |
| 7 | Spears Head Assembly | 425 |



TOOL COMBINED TORQUE & TENSION LOAD LIMITS See Notes 2, 5 & 8



CASING TORQUE TRANSFER ABILITY See Note 6

| Size | Grade | - Zero String Weight - (2000 Psi Actuator Pressure) |
|------|---------------------------|--|
| 24" | X-42 / X-52 / X-56 / X-60 | 63,500 ft-lb |

CASING HOISTING LIMITS (tons) See Note 3 & 4

| Casing Weight (ppf) | Grade | | | |
|------------------------|-------|------|------|------|
| | X-42 | X-52 | X-56 | X-60 |
| 162 (ID 22.730") | 262 | 329 | 356 | 383 |
| 176 (ID 22.624") | 285 | 358 | 387 | 416 |
| (ID 22.496") | 314 | 393 | 425 | 457 |
| 201 (ID 22.375") | 341 | 427 | 461 | 495 |

Notes:

1. Max flow rate values are based on linear speed of 50 Feet/Second.
2. Casing operating limits for torque, tension and pressure are not shown in the graph. Contact Canrig Engineering for casing combined load operating limits.
3. Circulating pressure at 800 psi or below will reduce the casing hoisting limits by an amount equal to the casing internal section area multiplied by the circulating pressure.
4. The table includes only the casing hoisting limits due to tension and does not include the operating limits due to torque or pressure.
5. Ensure that the Splined Collar and Die Lock Clamps are properly installed to prevent the 6-5/8 Reg connections from backing-off during operations.
6. With 2000 psi actuator apply pressure. Push down on the tool will de-rate the torque transfer ability.
7. With 1400 psi actuator apply pressure for casing drilling operations.
8. Graph data based on FEA evaluation.



5-1/2" COMPACT CASING DRIVE SYSTEM - TECHNICAL SPECIFICATIONS - 710240 Rev 3

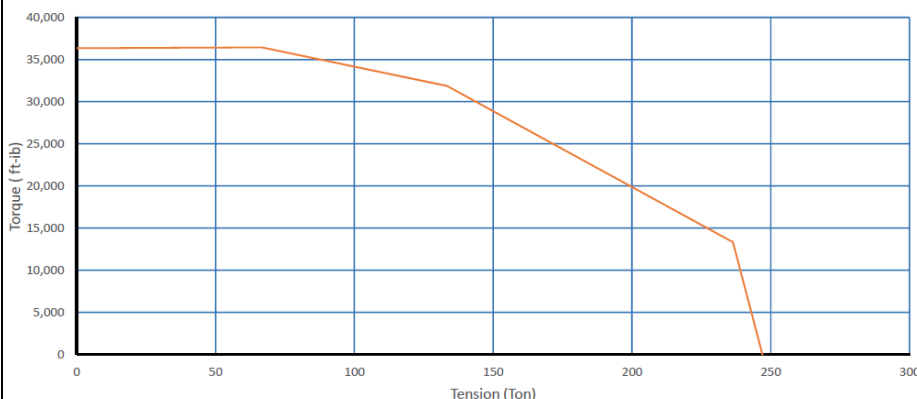
| | |
|---|----------------------------|
| Max. Hoisting Capacity (based on ADV Testing) | 350 Ton |
| Max. Push Down Capacity ^{SEE NOTE 6} | 40,000 lb |
| Upper Connection | API NC50 PIN with die lock |
| Nom. Make-up torque to cross over sub ^{SEE NOTE 4} | 25,000 ft-lb |
| Max. Circulating Pressure (Packer Cup Rating) | 5000 psi |
| Mandrel Bore | 1-1/4" |
| Max. Flow Rate ^{SEE NOTE 1} | 192 gpm |
| Max. Flow Rate with Mud Valve ^{SEE NOTE 1} | 192 gpm |
| Max Continuous / Intermittent Speed ^{SEE NOTE 7} | 40 RPM/100 RPM |

WEIGHTS

| Item | Description | Weight (lb) |
|------|-------------------------|-------------|
| - | Complete Assembly | 950 |
| 1 | Mandrel | 261 |
| 2 | Split Connection Collar | 18 |
| 3 | Grapple | 4-5 ea |
| 4 | Spear Head Assembly | 45 |

TOOL COMBINED TORQUE & TENSION LIMITS ^{2, 4 & 8}

Combined load graph, 5-1/2" CCDS at SF=1.5

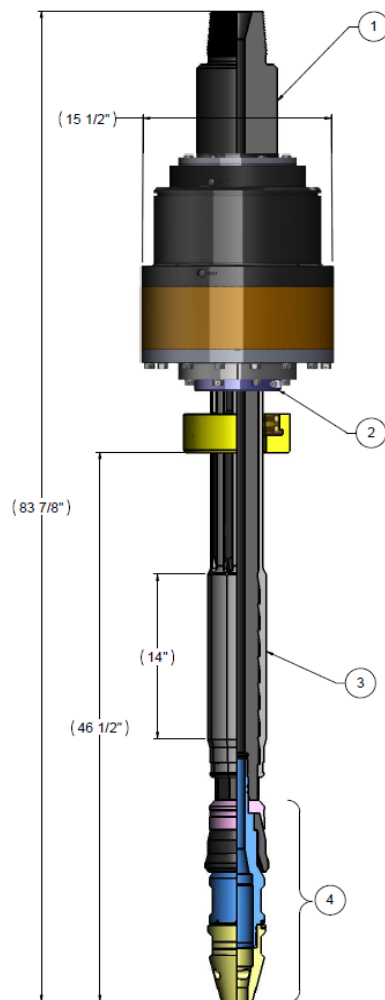


CASING TORQUE TRANSFER ABILITY

| Size | Grade | Zero String Weight (1500 Psi Actuator Pressure) |
|--------|-------|--|
| 5-1/2" | L80 | 25,000 ft-lb |
| 5-1/2" | P110 | 19,000 ft-lb |

CASING HOISTING LIMITS WITH 5-1/2" CCDS (tons) ^{3 & 5}

| Casing Weight | Grade | | | | | | |
|---------------|-------|---------|-----|---------|---------|------|------|
| | H40 | J55/K55 | M65 | L80/N80 | C95/T95 | P110 | Q125 |
| 14 | 72 | 111 | 131 | 161 | 191 | 222 | 252 |
| 15.5 | 86 | 124 | 147 | 181 | 214 | 248 | 282 |
| 17 | 96 | 136 | 161 | 169 | 236 | 273 | 310 |
| 20 | 117 | 160 | 189 | 233 | 277 | 321 | 350 |
| 23 | 133 | 182 | 215 | 265 | 315 | 350 | 350 |
| 26 | 150 | 207 | 244 | 301 | 350 | 350 | 350 |
| 26.8 | 157 | 216 | 255 | 314 | 350 | 350 | 350 |



Notes:

1. Max flow rate values are based on linear speed of 50 Feet/Second.
2. Casing operating limits for torque, tension and pressure are not shown in the graph. Contact Canrig Engineering for casing combined load operating limits.
3. Circulating pressure at 5000 psi or below will reduce the casing operating limits by an amount equal to the casing internal section area multiplied by the circulating pressure.
4. Ensure the Die Lock Clamps are properly installed at the NC50 connections for torque transfer values above 25,000 ft-lb.
5. The table includes only the casing operating limits due to tension and does not include the operating limits due to torque or pressure.
6. With 1500 psi actuator working pressure. Push down on the tool will de-rate the torque transfer ability.
7. With 1400 psi actuator working pressure for casing drilling operations
8. Graph data based on FEA evaluation

