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WHO ARE WE?

Tubular Running & Rental Services, is a Company with more than 13 years of experience in the Oil & Gas industry.

The business vision, quality and technology innovation placed in our equipment, which are specialised in the rotational and conventional running services, make the company stand out internationally in these types of services.

Being present in countries such as The United States of America, Colombia, Ecuador, Peru, Bolivia, China and Hong Kong, with more than 30 customers in these countries, and more than 2.500 successful operations, probes the trust placed put in us to execute each one of our customers' projects.

Currently, we are getting into new markets such as Mexico and The United Arab Emirates, the last one with the purpose of providing our services in Middle East and North Africa.



- ESTABLISHED LOCATIONS
- LOCATIONS IN DEVELOPMENT



ROTATIONAL EQUIPMENT



Internal Rotational Equipment
(400 - 500 - 750 Ton)



CEMENT SWIVEL



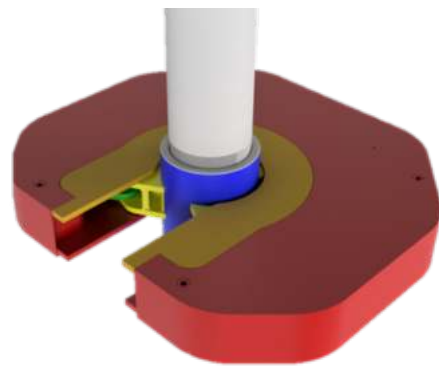
TORQUE SUB



External Rotational Equipment
(350 Ton)



BREAK OUT MACHINE



C-PLATE BACKUP



ROTATIONAL EQUIPMENT



The rotational equipment, are tools used to run casing strings, likewise, to carry out CASING DRILLING. With this tools the pipes can be made-up joint per joint, it allows to reciprocate and rotate at the same time that the string is being circulated. These tools also allow the cementing process.

CONVENTIONAL EQUIPMENT

The conventional equipment are tools used to run casing and tubing strings, these tools are used to make-up or break-out pipes joint per joint.



HYDRAULIC POWER
UNIT DIESEL



HYDRAULIC POWER TONG & INTEGRAL
BACK UP 20" a 3 1/2"



FLUSH MOUNTED SPIDER
500 TON



TORQUE / TURN RECORDER
CAT SYSTEM

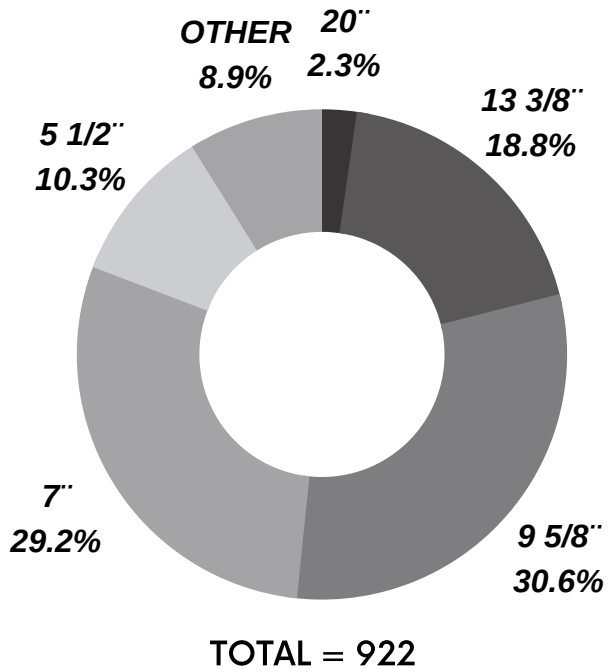


PNEUMATIC SPIDER BJ/VARCO
(350 -500 TON)

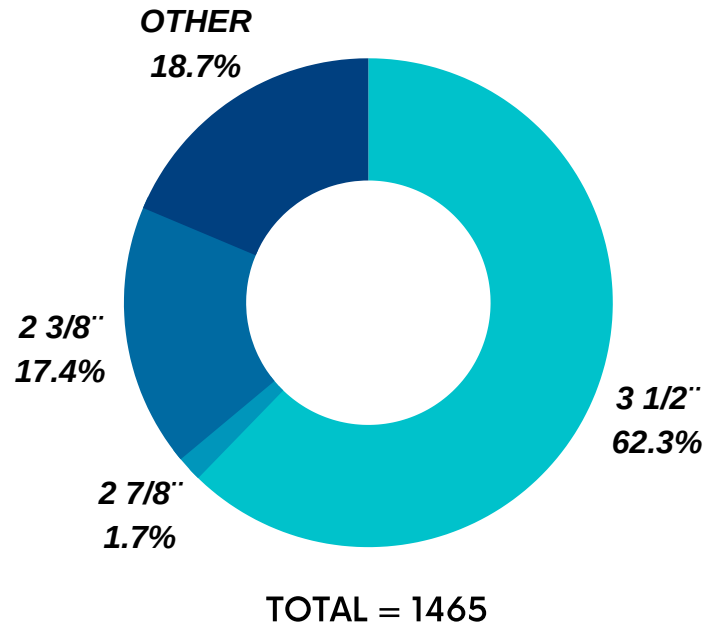


THE FACTS SPEAK FOR THEMSELVES

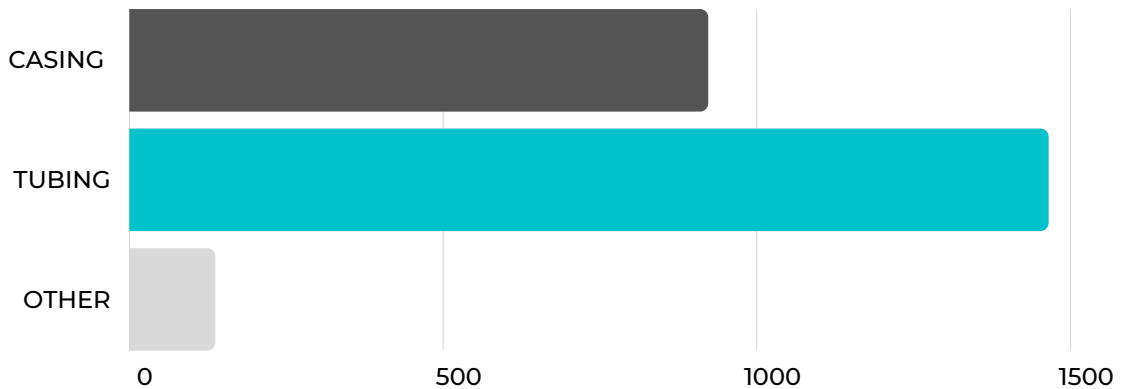
CASING OPERATIONS



TUBING OPERATIONS



SUMMARY



OTHER OPERATIONS

1. Cold Cutter
2. Wellhead Welding
3. Cement Swivel

TOTAL = 2.523 OPERATIONS



OPERATIONAL RECORDS



CASING OPERATION 32" - 30"



| | BOLIVIA CASING 32" | BOLIVIA CASING 32" | BOLIVIA CASING 30" | BOLIVIA CASING 30" |
|-----------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|
| Customer | TOTAL E&P BOLIVIE | TOTAL E&P BOLIVIE | ARCHER | YPFB |
| Well | ICS-5 | ÑCZ-X1 | CAR-1005 | SIP X1 |
| Rig | DLS 134 | ARCHER 127 | ARCHER 153 | SINOPEC 263 |
| Pipe | XLC-S - X56 - 250.55# | XLC-S - X56 - 250.55# | XLF- X65 - 234.51# | TSH BLUE - X65 - 234.51# |
| Target | 274 Ft | 274 Ft | 668 Ft | 164 Ft |

CASING OPERATION 20" - 18 5/8"



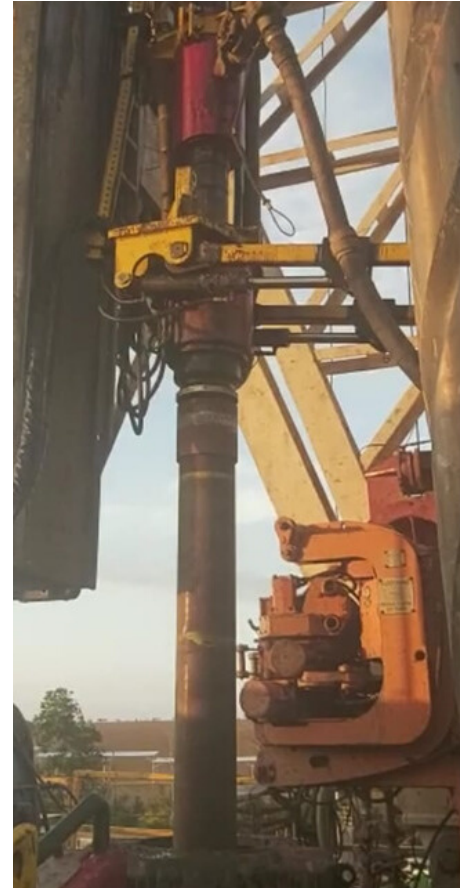
| | COLOMBIA CSG 20" | COLOMBIA CSG 20" | BOLIVIA CSG 20" | BOLIVIA CSG 20" | BOLIVIA CSG 18 5/8" |
|-----------------|----------------------------|--|----------------------|-----------------------|------------------------|
| Customer | HOCOL | GTEC | YPFB CHACO S.A | YPFB | YPFB CHACO S.A |
| Well | OBIWAN 1 | PROSPERIDAD 1 | CAR X1005 | SIP - X1 | AGC - X1 |
| Rig | PW 160 | PETREX 5857 | DLS ARCHER 153 | SINOPEC 263 | SINOPEC 164 |
| Pipe | TSH -ER-K55- P110-133 # | BTC -Bluedock -K55- N80- 133# -94 # | XLCF - X80 - 167# | TSH - P110 - 133 # | BTC - K55 - 87.5 # |
| Target | 1.305 Ft | 1.097 Ft | 3.767 Ft | 2.296 Ft | 588 Ft |

CASING OPERATION 13 3/8"



| | COLOMBIA CSG 13 3/8" | COLOMBIA CSG 13 3/8" | BOLIVIA CSG 13 3/8" | BOLIVIA CSG 13 3/8" |
|-----------------|-------------------------|-------------------------|---|------------------------|
| Customer | ONGC | GTEC | YPFB CORPORACIÓN | ARCHER |
| Well | CALAO 1X | ACD 44 | SIP - X1 | CAR - X1005 |
| Rig | PIONEER 51 | PIONEER 301 | SIP - X1 | ARCHER 153 |
| Pipe | BTC-K55-54.5 # | TXP-N80-54.5 # | TSHBLUE - P110 68# WEDGE 523- P110-72# | VAM - VM 125HC-68 # |
| Target | 2.398 Ft | 1.449 Ft | 7.407 Ft | 10.640 Ft |

CASING OPERATION 9 5/8"



| | COLOMBIA CSG 9 5/8" | PERÚ CSG 9 5/8" | BOLIVIA CSG 9 5/8" | BOLIVIA CSG 9 5/8" |
|-----------------|------------------------|--------------------|--|--|
| Customer | GTEC | PETROLAL PERÚ SRL | YPFB CHACO | YPFB CHACO |
| Well | PROSPERIDAD 11 | BN-95-2-2-4H | FLA - X2D | COL- X10D |
| Rig | PETREX 5857 | PETREX 12 | SINOPEC 164 | YPFB -02 |
| Pipe | TXP - P110 - 47# | TXP - L80 -47# | (ANJO/TSH BLUE) - Q125 - 53.5# (UPJ / VAN SLIJJ) - P110 - 53.5# (VAN 21 - P110 - 43.5# | (BTC / SEAL LOCK / UPJ) - P110 - 53.5# (VAN SLIJJ) - P110 - 43.5# |
| Target | 15.009 Ft | 10.505 Ft | 13.510 Ft | 13.616 Ft |

CASING OPERATION 7"



| | COLOMBIA CSG 7" | COLOMBIA CSG 7" | COLOMBIA CSG 7" |
|-----------------|--------------------|--------------------|----------------------|
| Customer | GTEC | GTEC | GEOPARK |
| Well | ACD 23 | ACD 33 | JACANA 33 |
| Rig | PIONEER 301 | PIONEERR 301 | TOP DRILLING 1503 |
| Pipe | TXP - P110 - 29# | TXP - P110 - 29# | TXP-P110-29 # |
| Target | 12.048 Ft | 12.213 Ft | 11.074Ft |

CONVENTIONAL 7" CASING OPERATION

CHROME MASTER HIGHT TORQUE



| | BOLIVIA CSG 7" | BOLIVIA CSG 7" | COLOMBIA CSG 7" |
|-----------------|---|---------------------------|----------------------------|
| Customer | TOTAL E&P | TOTAL E&P | GTEC |
| Well | ICS - 5 | ICS - 5 | PROSPERIDAD 1 |
| Rig | DLS-134 | DLS-134 | PETREX 5857 |
| Pipe | JFE BEAR - 13CR - P110 VAM TOP - 13% CR - P110 | VAM TOP - 13% CR - P110 | JFE BEAR- 13% CR - P110 |
| Target | 14.052 FT | 3.986 FT | 2.191 FT |

ROTATIONAL 5 1/2" CASING OPERATION



| | COLOMBIA CSG 5 1/2" | COLOMBIA CSG 5 1/2" | COLOMBIA CSG 5 1/2" |
|-----------------|------------------------|------------------------|------------------------|
| Customer | OXY LLC | OXY LLC | OXY LLC |
| Well | LA YUCA 294, | LA CIRA 3466, | LA CIRA 3098, |
| Rig | ESTRELLA 12L5 | INDEPENDENCE 50 | TUSCANY 118 |
| Pipe | BTC-K55- 15 # | LTC - N80 - 15# | LTC - N80 - 15# |
| Target | 8.232 Ft | 5.100Ft | 5.253 Ft |

CONVENTIONAL DUAL STRING OPERATION



| | BOLIVIA TUBING | BOLIVIA TUBING | BOLIVIA TUBING |
|-----------------|---------------------------|---|---------------------------------|
| Customer | YPFB CHACO SA | YPFB CHACO SA | YPFB CHACO SA |
| Well | LMS X12 ST | CAI-X100 1D WO | JNN- 8ST |
| Rig | AI -379 | ASAI 379 | YPFB 03 |
| Pipe | 3/2" JFE BEAR - 13CR - 80 | 3/2" JFE BEAR - 13CR - 80 3/2" HSM-2 - 13CR - 85 | 2 3/8" JFE BEAR - 13CR - 85 BXP |
| Target | 10.854 Ft | 11.011 Ft | 3.658 Ft |

OPERATIONS MOMENTS

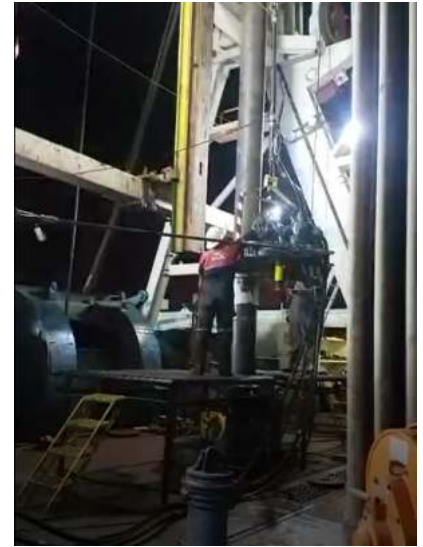
Casing 18 5/8" Conventional



Casing 13 3/8" Conventional



Casing 11 3/4" Conventional



Casing 10 3/4" Conventional



Liner 7"



Cement Swivel



TUBING 3 1/2" CHROME



COLD CUTTER

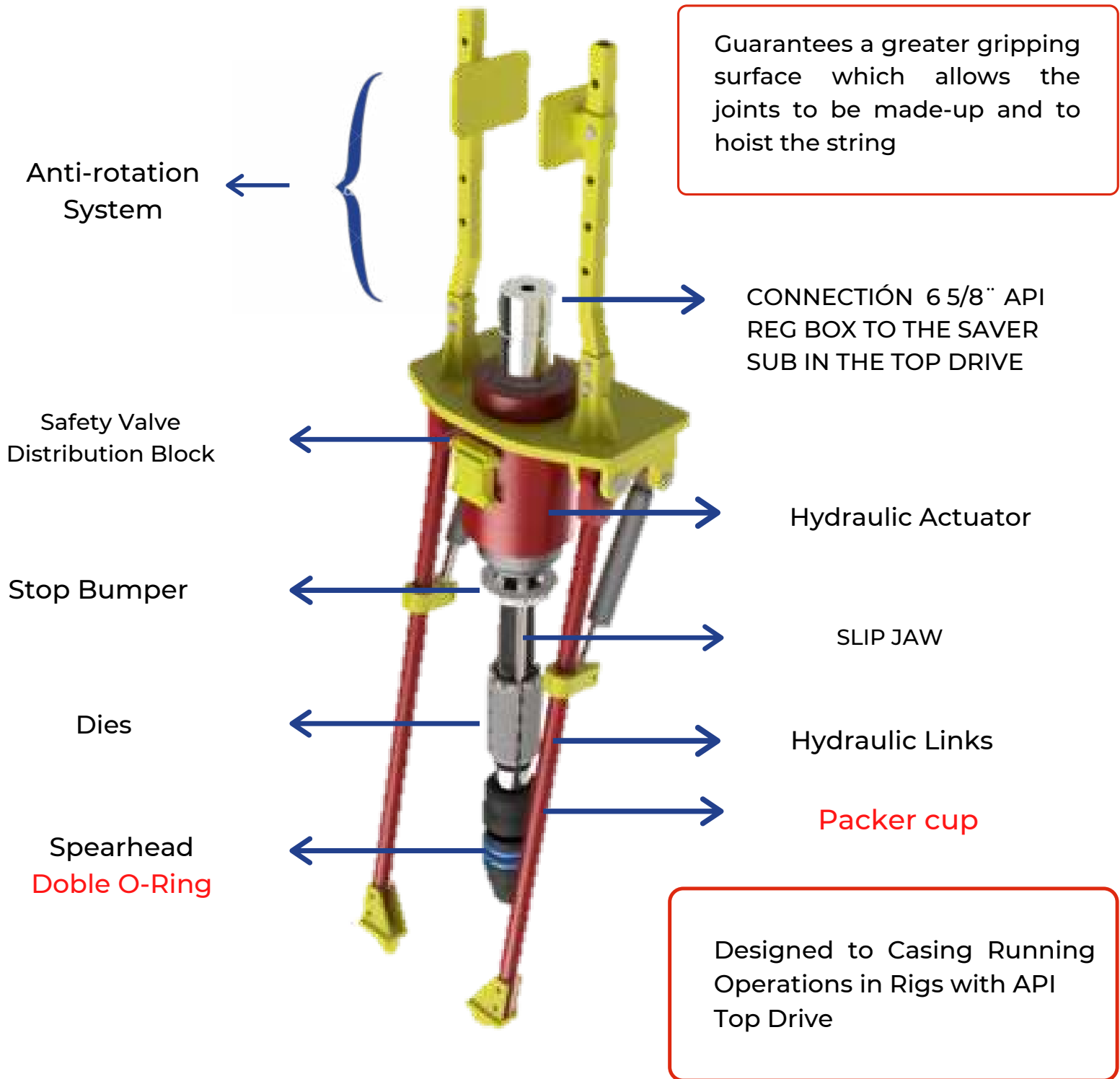


SUCKER ROD





HYDRAULIC CASING RUNNING TOOL (HCRT)



HYDRAULIC CASING RUNNING TOOL INTERNAL (HCRTinternal)

HCRT 400 TON



HCRT 500 TON
&
HCRT 750 TON



TECHNICAL SPECIFICATIONS

| | | | |
|-------------------------------------|--|--------------------------|--------------------------|
| Max. Hoisting Capacity | 400T API 8C | 500T API 8C | 750T API 8C |
| Max. Push Down Capacity | 30.000 lb | 30.000 lb | 40.000 lb |
| Upper Connection | API 6 5/8" Reg Box | API 6 5/8" Reg Box | API 6 5/8" Reg Box |
| Max. Circulating Pressure | 5.000 psi | 5.000 psi | 5.000 psi |
| Fluid Bore | 2" | 2" | 2" |
| Max. Flow Rate | 800 gpm | 800 gpm | 800 gpm |
| Max. Continous / Intermittent Speed | 120 RPM / 200 RPM | 120 RPM / 200 RPM | 120 RPM / 200 RPM |
| Casing size (mm / in) | 178 - 340 / 7" - 13 3/8" | 245 - 508 / 9 5/8" - 20" | 245 - 508 / 9 5/8" - 20" |
| Anti-Rotation System | Adaptable for any grabber in a Top Drive. Length of 1 and 1,5 Feet | | |
| Working Temperature | Between -20°C ~ 60°C | | |
| Hydraulic Source | HCRT needs 2000 PSI hydraulic pressure provided by the HPUE | | |
| Elevator Links | 60 inches elevator links | | |



HYDRAULIC CASING RUNNING TOOL EXTERNAL (HCRTexternal)



| TECHNICAL SPECIFICATIONS | |
|--------------------------------------|------------------------|
| Max. Hoisting Capacity | 350T API 8C |
| Max. Push Down Capacity | 30.000 lb |
| Upper Connection | API 6 5/8" Reg STD Box |
| Nom. Make-up Torque to Actuator | 46.000 lb-ft |
| Max. Circulating Pressure | 5000 psi |
| Fluid Bore | 2" |
| Max. Flow Rate | 800 gpm |
| Max. Continuous / Intermittent Speed | 120 RPM / 200 RPM |



HYDRAULIC CASING RUNNING TOOL INTERNAL (HCRT internal 400 TON)

| Size | Grade | Zero String Weight (2000 psi Actuator Pressure) | Max. Tested Torque Limit with String Weight |
|------|-------|---|---|
| 7" | L80 | 36.400 ft-lb | 58.500 ft-lb |

This tool can be set using slips jaw with interchangeable dies to run casing from 7" up to 13 3/8"

Our equipment is certified at high tension capacities, however, in operation the restriction is given depending on the characteristics of the Casing such as its weight and grade.



| CASING HOISTING LIMITS (Tons) | | | | | | | |
|-------------------------------|-------|---------|-----|---------|---------|------|------|
| CASING WEIGHT | GRADE | | | | | | |
| | H40 | J55/K55 | M65 | L80/N80 | C95/T95 | P110 | Q125 |
| 17 | 63 | 94 | 114 | 145 | 177 | 208 | 239 |
| 20 | 74 | 110 | 133 | 169 | 204 | 240 | 275 |
| 23 | 90 | 131 | 159 | 200 | 242 | 283 | 324 |
| 26 | 102 | 148 | 178 | 224 | 270 | 316 | 362 |
| 29 | 118 | 169 | 204 | 255 | 307 | 359 | 400 |
| 32 | 128 | 184 | 221 | 277 | 332 | 388 | 400 |
| 35 | 143 | 204 | 245 | 306 | 367 | 400 | 400 |
| 38 | 151 | 216 | 259 | 323 | 387 | 400 | 400 |
| 41 | 167 | 237 | 284 | 355 | 400 | 400 | 400 |
| 42.7 | 175 | 248 | 297 | 370 | 400 | 400 | 400 |
| 44 | 179 | 254 | 304 | 379 | 400 | 400 | 400 |

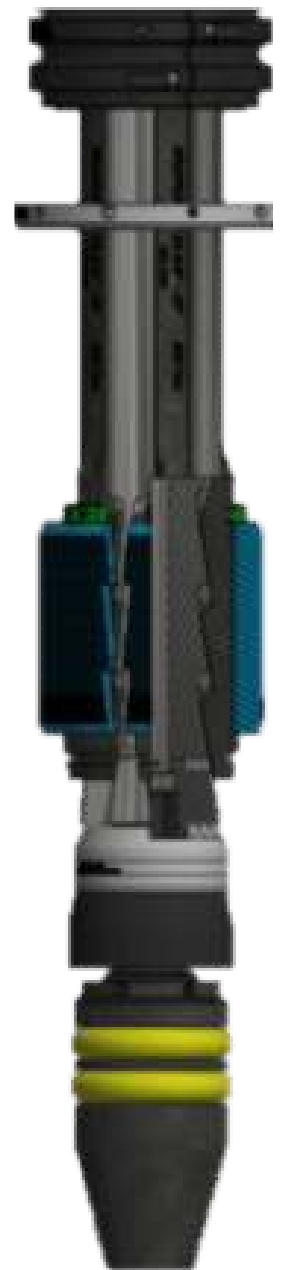


HYDRAULIC CASING RUNNING TOOL INTERNAL (HCRT internal 500 TON)

| Size | Grade | Zero String Weight (2000 psi Actuator Pressure) | Max. Tested Torque Limit with String Weight |
|--------|-------|---|---|
| 9 5/8" | L80 | 40.100 ft-lb | 90.000 ft-lb |

This tool can be set using slips jaw with interchangeable dies to run casing from 9 5/8" up to 20"

Our equipment is certified at high tension capacities, however, in operation the restriction is given depending on the characteristics of the Casing such as its weight and grade.



| CASING HOISTING LIMITS (Tons) | | | | | | | |
|-------------------------------|-------|---------|-----|---------|---------|------|------|
| CASING WEIGHT | GRADE | | | | | | |
| | H40 | J55/K55 | C75 | L80/N80 | C95/T95 | P110 | Q125 |
| 32.3 | 100 | 138 | 188 | 200 | 238 | 276 | 313 |
| 36 | 113 | 155 | 211 | 225 | 268 | 310 | 352 |
| 40 | 126 | 174 | 237 | 253 | 300 | 348 | 395 |
| 43.5 | 139 | 191 | 260 | 277 | 329 | 381 | 433 |
| 47 | 151 | 208 | 283 | 302 | 359 | 416 | 472 |
| 53.5 | 175 | 241 | 328 | 350 | 416 | 481 | 500 |
| 57.4 | 190 | 261 | 356 | 379 | 450 | 500 | 500 |
| 59.4 | 197 | 271 | 370 | 395 | 468 | 500 | 500 |
| 64.9 | 219 | 301 | 410 | 438 | 500 | 500 | 500 |
| 70.3 | 241 | 331 | 451 | 481 | 500 | 500 | 500 |
| 75.6 | 263 | 361 | 493 | 500 | 500 | 500 | 500 |



HYDRAULIC CASING RUNNING TOOL INTERNAL (HCRT internal 500 TON)

| Size | Grade | Zero String Weight (2000 psi Actuator Pressure) | Max. Tested Torque Limit with String Weight |
|--------|-------|---|---|
| 13 3/8 | L80 | 45.000 ft-lb | 10 Tons: 95.000 ft-lb |

This tool can be set using slips jaw with interchangeable dies to run casing from 9 5/8" up to 20"

Our equipment is certified at high tension capacities, however, in operation the restriction is given depending on the characteristics of the Casing such as its weight and grade.



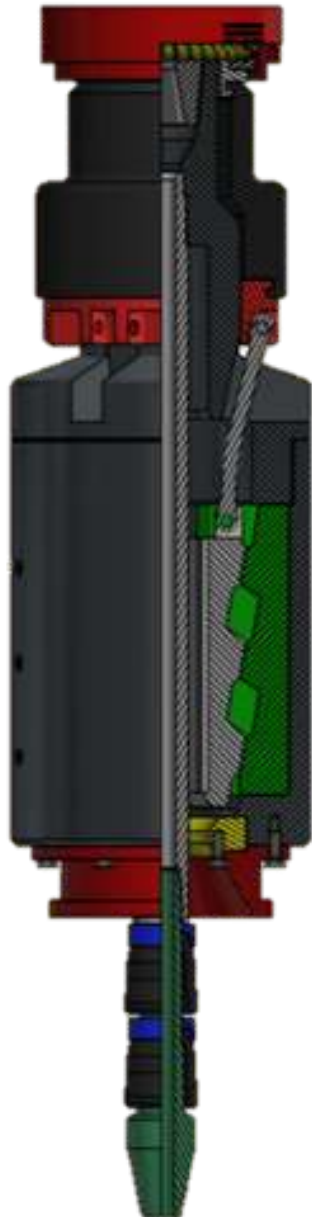
| CASING HOISTING LIMITS (Tons) | | | | | | | |
|-------------------------------|-------|---------|-----|---------|---------|------|------|
| CASING WEIGHT | GRADE | | | | | | |
| | H40 | J55/K55 | C75 | L80/N80 | C95/T95 | P110 | Q125 |
| 32.3 | 100 | 138 | 188 | 200 | 238 | 276 | 313 |
| 36 | 113 | 155 | 211 | 225 | 268 | 310 | 352 |
| 40 | 126 | 174 | 237 | 253 | 300 | 348 | 395 |
| 43.5 | 139 | 191 | 260 | 277 | 329 | 381 | 433 |
| 47 | 151 | 208 | 283 | 302 | 359 | 416 | 472 |
| 53.5 | 175 | 241 | 328 | 350 | 416 | 481 | 500 |
| 57.4 | 190 | 261 | 356 | 379 | 450 | 500 | 500 |
| 59.4 | 197 | 271 | 370 | 395 | 468 | 500 | 500 |
| 64.9 | 219 | 301 | 410 | 438 | 500 | 500 | 500 |
| 70.3 | 241 | 331 | 451 | 481 | 500 | 500 | 500 |
| 75.6 | 263 | 361 | 493 | 500 | 500 | 500 | 500 |



HYDRAULIC CASING RUNNING TOOL INTERNAL (HCRTexternal 350 TON)

| Size | Grade | Zero String Weight (2000 psi Actuator Pressure) | Max. Tested Torque Limit with String Weight |
|--------|-------|---|---|
| 5 1/2" | P110 | 23,000 ft-lb | - |

Our equipment is certified at high tension capacities, however, in operation the restriction is given depending on the characteristics of the Casing such as its weight and grade.

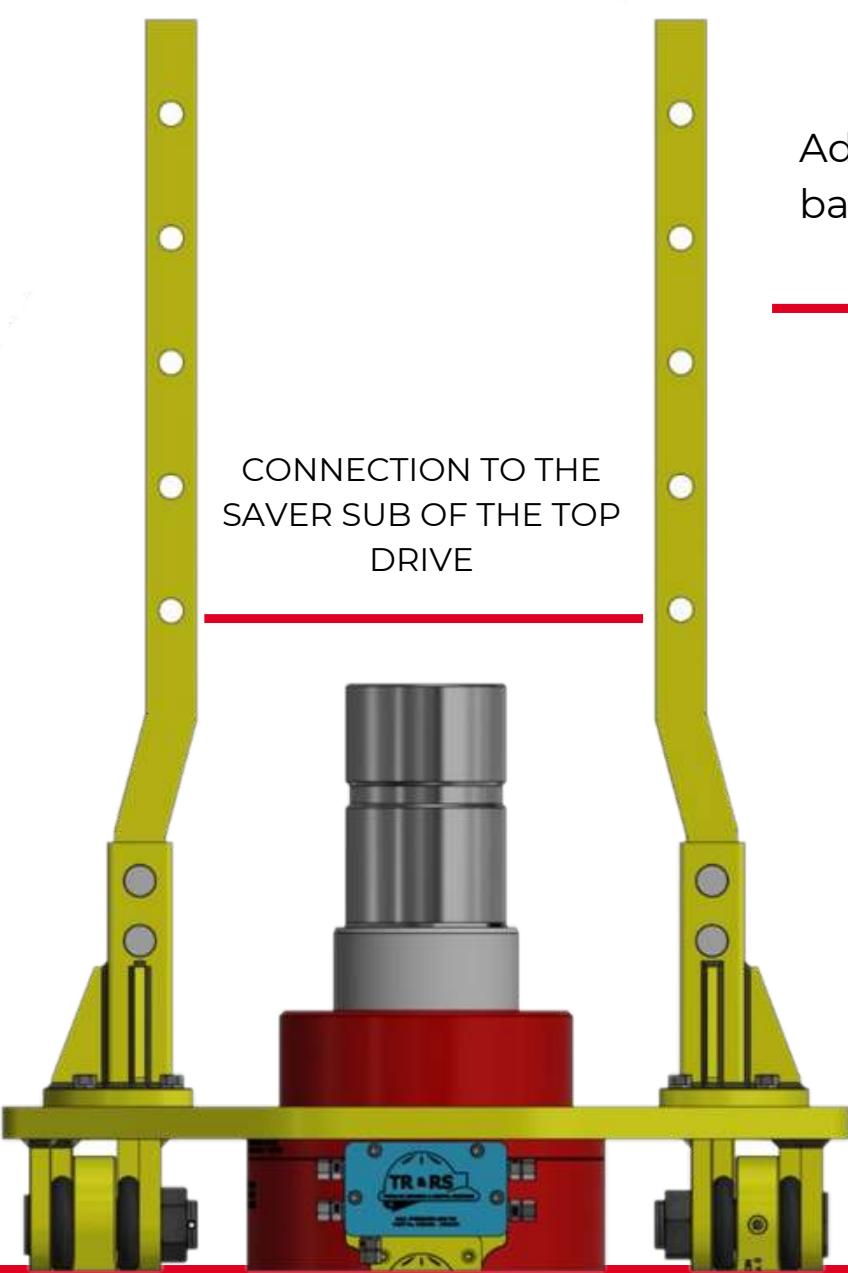


| CASING HOISTING LIMITS (Tons) | | | | | | | |
|-------------------------------|-------|---------|-----|---------|----------|------|------|
| CASING WEIGHT | GRADE | | | | | | |
| | H40 | J55/K55 | M65 | L80/N80 | C95/T 95 | P110 | Q125 |
| 15.5 | 68 | 94 | 128 | 137 | 162 | 188 | 214 |
| 17 | 75 | 103 | 141 | 150 | 178 | 206 | 234 |
| 20 | 88 | 121 | 165 | 176 | 210 | 243 | 276 |
| 23 | 101 | 140 | 190 | 203 | 241 | 279 | 317 |
| 26.8 | 118 | 163 | 222 | 236 | 281 | 325 | 350 |
| 29.7 | 131 | 180 | 246 | 262 | 311 | 350 | 350 |
| 35.3 | 156 | 214 | 292 | 311 | 350 | 350 | 350 |



ANTI-ROTATION SYSTEM OF THE HCRT EQUIPMENT

- ▶ This system is attached to the grabber of the Top Drive. It keeps the HCRT body steady while the mandrel is rotating.
- ▶ This system is adjustable to any dimension of an API Top Drive.
- ▶ It is easy to installed and removed.



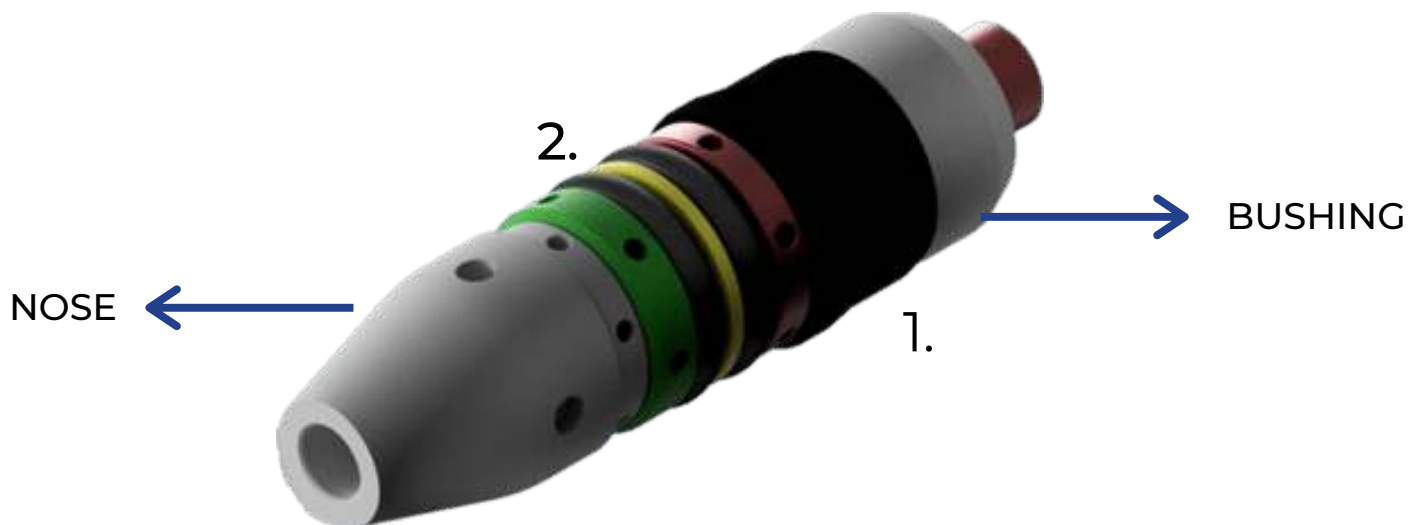
CONNECTION TO THE
SAVER SUB OF THE TOP
DRIVE

Adjustable through a couple of lateral bars which use a plate in the upper end.



SPEARHEAD HCRT

1. PAKER CUP: The seal provided by the PAKER CUP is important when the system has pressure, and it has to be 100% guarantee when the circulation starts and the seal has to be kept, avoiding drilling mud or cement leaks throughout the operation. The use of a system with double packer cup reduces time and avoid the disassembly of the stabbing guide to change a broken Packer Cup.
2. DOBLE O-RING: The installed doble O-Ring align the rotational tool when stabbing the joint, protecting the packer cup. (8 5/8" – 20")



HCRT ADVANTAGES

- ▶ It does not need the use of the aligning arm (StabMaster system)
- ▶ It does not need mechanic or pneumatic elevator
- ▶ It does not need a stabber on the derrick



- ▶ No need of Hydraulic Power tongs (HPT)



It allows to hoist the aligned joints to hold the torque with the C Plate Backup.

It allows to make-up joints, circulate, reciprocate, and cementing, reducing time and associated costs.

Efficient performance in
Rig Up & Rig down Time



Slips interchangeable, able to
run different casing sizes with
the same tool.

CASING RUNNING TOOL (CRT)

It is an internal and external grip mechanical equipment, it works through the application of weight and rotation, through this tool the casing string can be made-up and break-out being able to reciprocate and circulate.

The control of the tool depends on the communication between the specialist operator and the driller who's the one with the control to operate the equipment.

▶ CRTi (320 TON)

CRTi INTEGRAL SLIPS

Base Tool Characteristics¹

| | | | CRTi3-7.0 |
|---|--------|---------------------------|---------------------------|
| CRTi Rated Load Capacity | Hoist | ton (tonne) | 320 (290) |
| | Torque | ft.lbs (N.m) | 50,000 (67,700) |
| Set-Down Load Capacity ² | | ton (tonne) | 100 (90) |
| Typical Circulation Pressure Limit ³ | | psi (MPa) | 5,000 (34.4) |
| Maximum Pressure End Load | | ton (tonne) | 250 (226) |
| Base Tool Length | | in. (mm) | 53.2 (1,355) ⁴ |
| Base Tool Weight ⁵ | | lbs (kg) | 649 (295) |
| Diametrical Stroke | | in. (mm) | 0.61 (15.5) |
| Through Hole | | in. (mm) | 1.5 (38.1) |
| Maximum Flow Rate ⁷ | | gpm (m ³ /min) | 660 (2.50) |
| Maximum Rotational Speed ⁸ | | RPM | Unlimited |
| Tool Joint | | | NC50 or 6-5/8 REG |
| Turns to Stroke Out ⁹ | | | 1.48 / 0.72 |



CASING RUNNING TOOL (CRT)

CRTi EXTENDED REACH DIES

▶ CRTi (420 TON)

Base Tool Characteristics¹

| | | | CRTi4-7.0 |
|---|--------|---------------------------|---------------------------|
| CRTi Rated Load Capacity | Hoist | ton (tonne) | 420 (381) |
| | Torque | ft.lbs (N.m) | 50,000 (67,700) |
| Combined Load Large Hoist | Hoist | ton (tonne) | 300 (272) |
| | Torque | ft.lbs (N.m) | 30,000 (40,600) |
| Combined Load High Torque | Hoist | ton (tonne) | 200 (181) |
| | Torque | ft.lbs (N.m) | 50,000 (67,700) |
| Set-Down Load Capacity ² | | ton (tonne) | 110 (99) |
| Typical Circulation Pressure Limit ³ | | psi (MPa) | 5,000 (34.4) |
| Maximum Pressure End Load | | ton (tonne) | 250 (226) |
| Base Tool Length | | in (mm) | 59.0 (1,500) ⁴ |
| Base Tool Weight ⁵ | | lbs (kg) | 892 (405) |
| Diametrical Stroke | | in (mm) | 0.61 (15.5) |
| Through Hole | | in (mm) | 1.5 (38) |
| Maximum Flow Rate ⁷ | | gpm (m ³ /min) | 660 (2.50) |
| Tool Joint | | | 6.63 REG |
| Turns to Stroke Out ⁸ | | | 1.1 / 0.72 |



HYDRAULIC POWER UNIT ELECTRIC (HPUE)



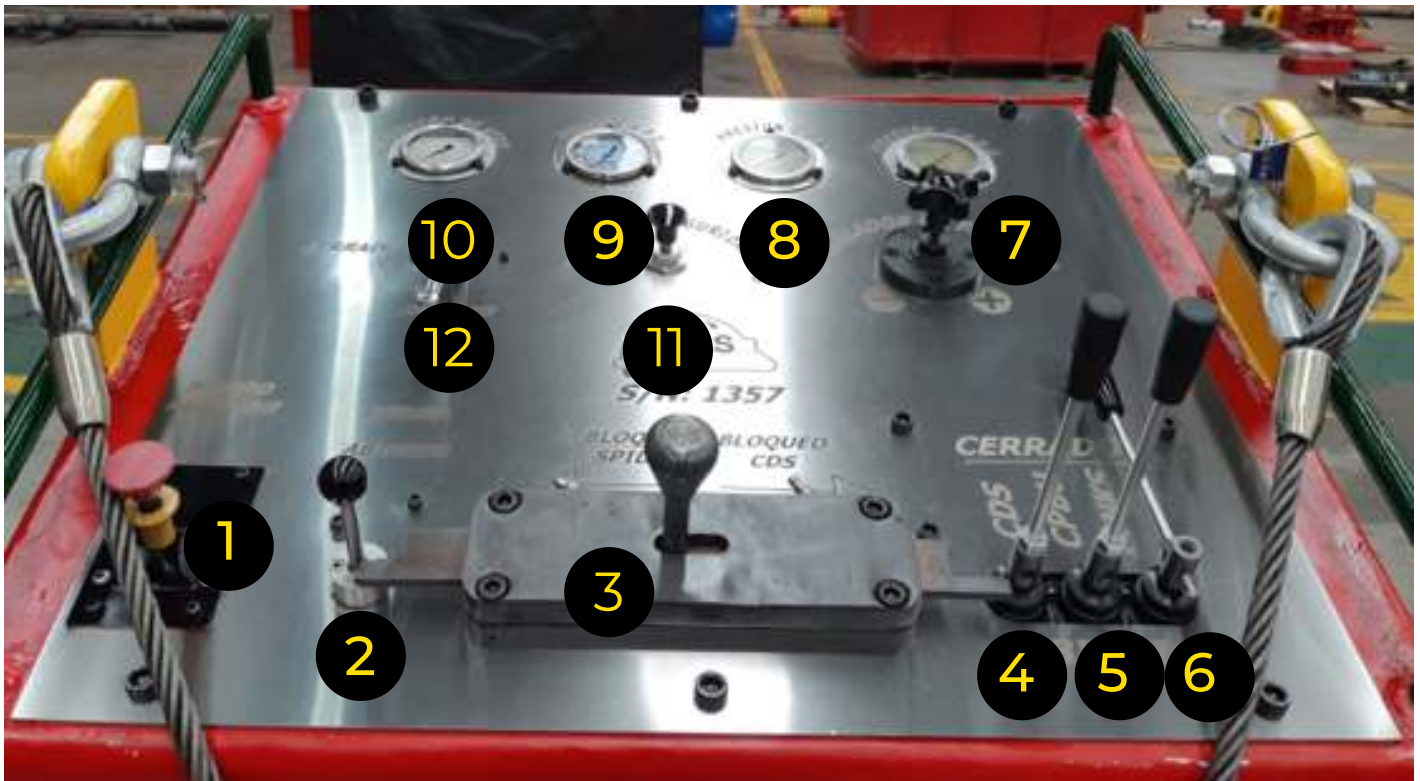
DATA SHEET

| ITEM | SPECIFICATION |
|---------------------------------|--|
| Dimensions (m) (L,W,H) | 0,787 / 1,143 / 1,2954 |
| Weight (Kg) | 650 |
| MAX. Hydraulic Pressure (PSI) | 3.000 |
| Max. Pneumatic Pressure (PSI) | 150 |
| Type of pump | Gear Pump |
| Pump Flow Rate (L/min) | 40.92 |
| Engine Type | Electric Three-Phase |
| Voltage (V) | 440 |
| RPM | 1.800 |
| Current consumption at 440V (A) | 19,7 |
| Hydraulic Tank Capacity (L) | 170,34 |
| Electric Plug | Apleton ADR 6034BC |
| Electric Starter | Direct A 440V in explosion-proof box NEMA 7 |
| Connection engine - pump | Flexible Torsion Coupling |



COMPONENTS (HPUE)

1. BACKUP PNEUMATIC CONTROL
2. SPIDER PNEUMATIC CONTROL
3. SAFETY INTERLOCK
4. HCRT LEVER
5. C-PLATE BACKUP LEVER
6. LINKS TILT LEVER
7. HYDRAULIC PRESSURE GAUGE (HPUE)
8. HYDRAULIC PRESSURE GAUGE (CDS)
9. HYDRAULIC PRESSURE GAUGE (CPBU)
10. AIR PRESSURE GAUGE
11. SAFETY PUSH BUTTON
12. PNEUMATIC BY PASS



SAFETY DIAGRAM

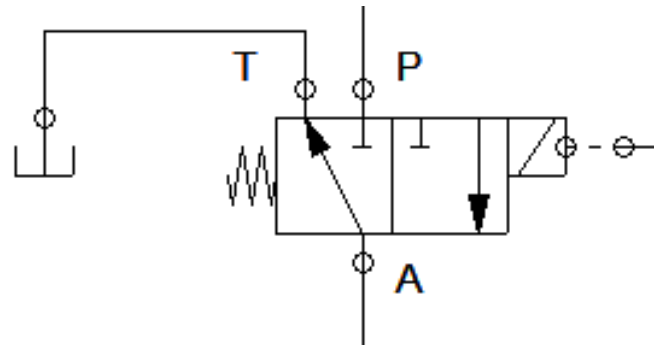
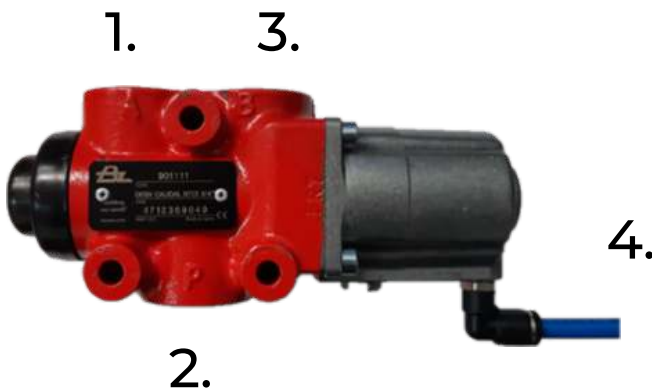
SAFETY INTERLOCK

Manual device that locks either the pneumatic spider or the rotational tool, avoiding the risk of working both tools at the same time.



HYDROPNEUMATIC VALVE LOCK

This is a valve located inside the HPUE, it allows the flow of air towards the safety push button only when the spider valve is closed. the automatic lock is given by the safety push button which retains the air while not being pushed.

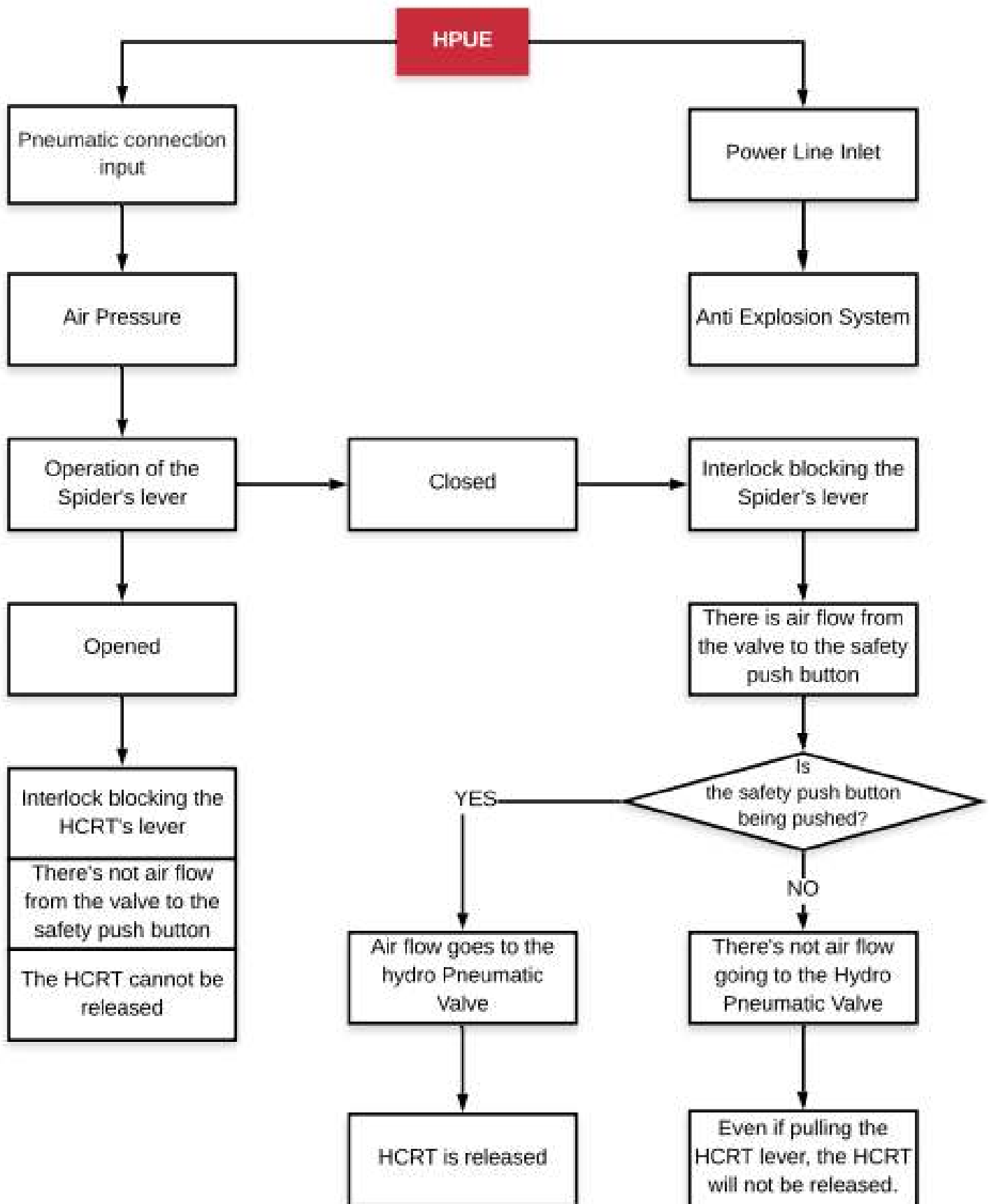


1. Tank Line
2. Hydraulic Pressure Line
3. HCRT Line
4. Air Line



Anti explosion. ✓

SAFETY DIAGRAM



HYDRAULIC POWER UNIT ELECTRIC (HPUE)

The 3 Built-in security systems allows the operator to use all accesories simultaneously without risking the casing falling into the hole.

Opening and Close of the Spider (Supports the Casing string weight)



Grab the Casing (HOLD THE TORQUE)



FLOATING EQUIPMENT AND X-OVER MAKE-UP (ON FIELD)



Requires only one Operator



GRAB THE CASING



C-PLATE BACKUP

This is a hydraulic tool that uses three jaws (one Central and two auxiliars) which fit to the outside diameter of the joint or the floating equipment. This allows the make-up and break-out of joints without additional maneuvers.

| TECHNICAL SPECIFICATIONS | | | | |
|---------------------------------|----------------------------|----------------------------|----------------------------|----------------------|
| | C PLATE BACK UP 2.0 | C PLATE BACK UP 3.0 | C PLATE BACK UP 4.0 | C PLATE BACK UP 5.0 |
| LOAD CAPACITY (TON) | 350 | 350 | 500 | 350 |
| HYDRAULIC PRESSURE (PSI) | 2000 | 2000 | 2.000 | 2000 |
| Max. TORQUE AT 2000 PSI (lb-ft) | 35000 | 35000 | 50.000 | 50.000 |
| DIMENSIONS (INCHES) (L,W,H) | 49,61" - 42,32" - 11,42 | 41,73" - 35,82" - 10,4" | 41,73" - 35,82" - 10,4" | 62,6" - 49,4" 13,78" |
| WEIGHT (KG) | 500 | 600 | 900 | 900 |
| OPERATION RANGE (INCHES) | 5" - 10 3/4" | 7" - 14 1/2" | 5 1/2" - 14 1/2" | 7" - 20" |



JAWS



GUIDE



ADVANTAGES C-PLATE BACKUP



Easy installation and set up in any rotary table



- ▶ Decrease the amount of personnel over the danger line
- ▶ It frees space on the rotary table bringing safer work conditions
- ▶ Decrease the make-up and break-out times between joints

- ▶ Avoids pipe collapse and damages in the floating equipment.

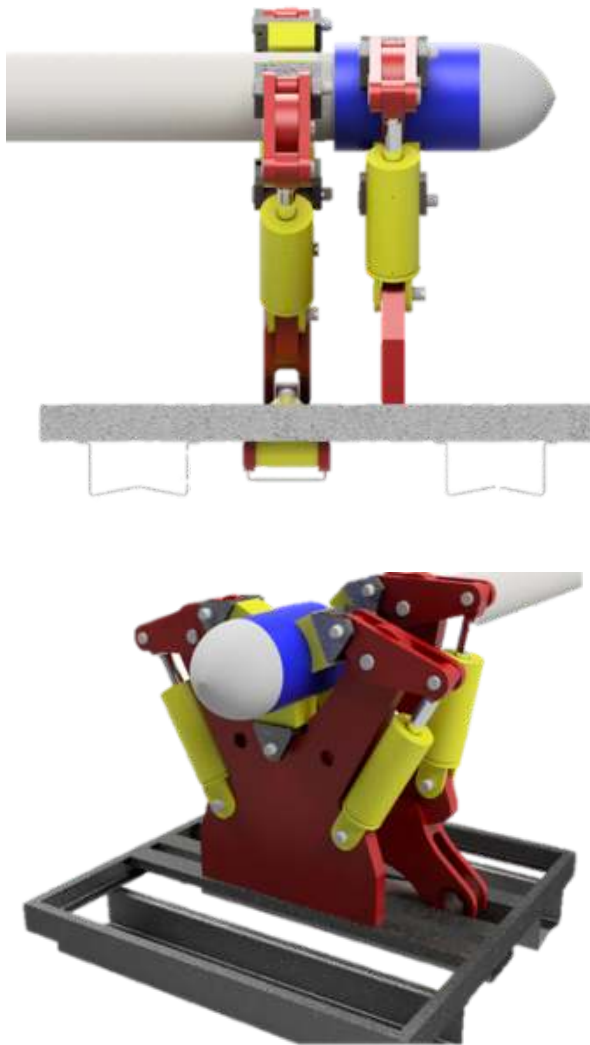
This tool replaces the heavy, and dangerous manual tongs, which are the cause of lots of accidents, back injuries, entrapments, and even deaths.



BREAK OUT

This tool is highly useful to joint parts on field before being lifted, and put in place on the platform. This is an easy, fast, and efficient way.

| TECHNICAL SPECIFICATIONS | |
|---------------------------------------|--|
| Range | 5 1/2" - 7" - 9 5/8" - 10 3/4" - 11 3/4" - 13 3/8" - 14 1/2" |
| Hydraulic Power Supply (psi) | 2.500 |
| Maximun Torque at 2 500 psi (lb - ft) | 65.000 |
| Dimensions (m) (L,W,H) | 1.5748 x 1.524 x 1.4732 |
| Weight (Kg) | 605 |



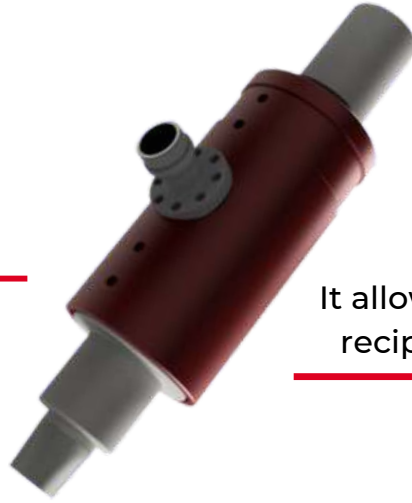
- ▶ BHA make-up and break-out
- ▶ Coupling Installation
- ▶ Make-up and break-out of Crossovers.
- ▶ Floating Equipment Installation



CEMENT SWIVEL

▶ This is a compact tool that can be used throughout the whole operation.

The cementing line is connected through the valve WECO 1502



It allows to circulate, rotate, and reciprocate while cementing.

Easy Installation



DATA SHEET

| | | |
|--|--------------------------|--------|
| Nominal Load Capacity | Load (Ton) | 660 |
| | Torque (lb * ft) | 85.000 |
| Combined Load Capacity at High Tension | Load (Ton) | 575 |
| | Torque (lb * ft) | 40.000 |
| Combined Load at High Torque | Load (Ton) | 475 |
| | Torque (lb * ft) | 70.000 |
| Maximum Pressure (psi) | 10.000 | |
| Length (m) | 1.33 | |
| Outside Diameter (m) | 0.4064 | |
| Through hole (m) | 0.0508 | |
| Connection Tool joint | 6 5/8" Regular Pin x Box | |
| Cementing Connection | WECO 1502 - 2" | |
| Max. Constant / intermittent | 40 RPM | |
| Circulation Capacity (GPM) | 800 | |



TORQUE SUB

This wireless system monitor and record the torque applied to every casing joint, which is shown through a graph made from a computerized analysis system.

It is recommended to keep a maximum of 4 RPM when applying the final torque to the joints.



Long life battery.



| WeCATT SPECIFICATIONS | | |
|-------------------------------|--|----------------|
| Size | 4 1/2" API NC 50 | 6 5/8" API REG |
| Thread Orientation | Pin up / Box Down or Box Up / Pin Down | |
| Torque | 35K ft-lb | 50K ft-lb |
| Hook Load | 350 T | 500 T |
| Torque/Tension Accuracy | ±1% Full Scale | |
| Turns Resolution | 1,000 Samples per Revolution | |
| Temperature Range | 20° to 70°C | |
| Battery Life | 30 Days Continuous | |
| Wireless Transmission | ZIGBEE Protocol 2.4 GHz Line of Sight up to 250 | |
| Enclosure Rating | 4X and IP66 | |
| Hazardous Area Classification | Class I Division 1, Class I Zone 1, Group IIB, T4 | |
| Certifications | CSA/UL/ATEX/IECEX | |
| Design | Designed to API 8C | |
| Weight | Approximately 350 lbs | |
| Length | Standard shoulder to shoulder 21.62" (18.63" is the minimum shoulder to shoulder length if there is zero re-cut allowance) | |



CAT SYSTEM

This system monitors and records the torque applied to every joint through specific sensors used together with the HPT; the data collected is shown in a graph made through a computerized analysis system.



| TECHNICAL SPECIFICATIONS | |
|---------------------------|------------------------------|
| TORQUE CAPACITY | 0 - 44,000 Ft-Lb |
| Working Temperature Range | From -14 °C to 60 °C |
| Atmosphere | CLASS I, II y III Division 1 |
| Cell Sensitivity | 2,0 +/- 0,2% mV/V |
| Response Time | 35 ms |
| Pressure Capacity E.V | 3,600 PSI |
| Dimensions Aprox. | 18"x14"x7" |



| TECHNICAL SPECIFICATIONS | |
|----------------------------------|---------------------------------|
| LANGUAGE | SPANISH / ENGLISH |
| Graph Available | Turns / Torque Time / Torque |
| Compatible Connection Types | API, Premium Lateral seal |
| Operating System | Windows XP, 7, 8 & 10 |
| Memory | 4 GB RAM |
| Recommended Disk Space Available | 2 GB |
| Microprocessor | 1,4 GHz or Faster |



CHROME MASTER

This accessory is positioned to the Hydraulic Power Tong to ensure the torque. It is based on a closed hydro pneumatic system which enclosed the pipe using even pressure through the jaws.

It is specially used in pipes with chrome surface coating, using the grit face or non-marking inserts.



| PARTS | |
|-------|------------------------|
| 1 | ROTARY INSERT |
| 2 | ROTARY GUIDE |
| 3 | LIFTING EYE |
| 4 | HANDLES |
| 5 | GATE |
| 6 | MANOMETER 0-15.000 PSI |
| 7 | VALVE ON/OFF |
| 8 | FLOW REGULATING VALVE |
| 9 | JAW |
| 10 | GRITFACE INSERT |
| 11 | HYDRAULIC CILINDERS |



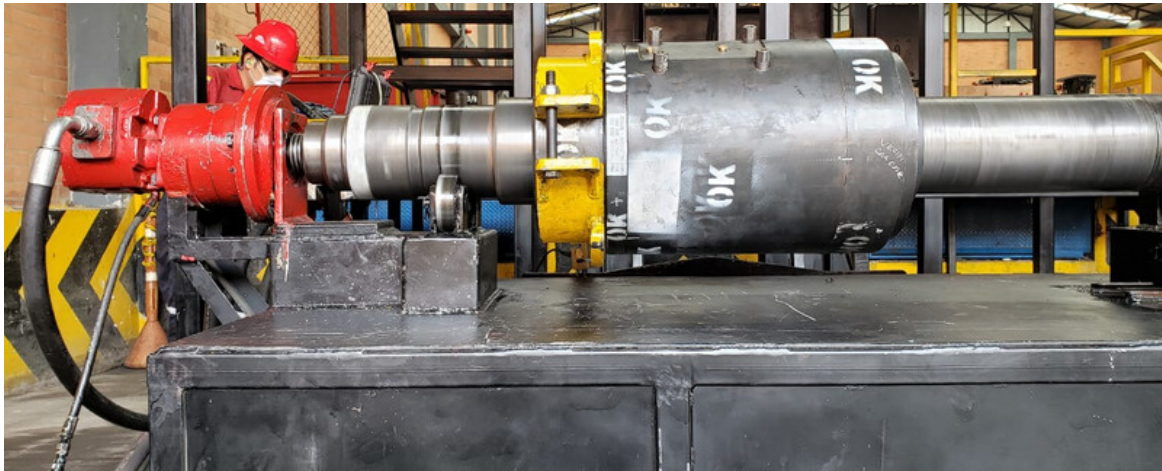
| TECHNICAL SPECIFICATIONS | |
|---|------------------------------------|
| MAX. MAKE UP TORK | 35.000 Lb Ft |
| MAX SPEED IN LOW | 5 RPM |
| MAX SYSTEM PRESSURE | 10.000 PSI |
| MAX PUSH DOWN CAPACITY | 2.500 PSI |
| POWER TONG 35K | TRRS 7 5/8" |
| SIZE TUBING AND CASING IN CHROME MATERIAL | 2 3/8" TO 7 5/8" |
| WEIGHTS | 250 KG |
| SYSTEM PRESSURE | 0 TO 10.000 PSI (CHROME MASTER) |
| ACTUATORS | 0 TO 2500 PSI (POWER TONG) |



DYNAMIC TEST ROTATIONAL EQUIPMENT (HCRT & CEMENT SWIVEL)

The HCRT undertakes a dynamic test (rotational) which is carried out at 120 RPM for a period of time of 60 minutes, in this way the success of the assembly done is checked. For the cement swivel the test must be done at a constant speed of 40 RPM.

The test is recorded and monitored through the CAT SYSTEM which makes a graph torque vs time in which the maximum torque between the actuator and the body are registered. This system provides a report (PDF file) which can be shown as evidence.



DYNAMIC TEST REPORT

REPORTE DE OPERACIONES

CAT SYSTEM V 1.0

PARÁMETROS DE LA OPERACIÓN

Operadora: PRUEBA CDS S/N 1239 Company man:

RIG: Técnico 1: ANDRES FELIPE POVEDA

Pozo: Técnico 2: ANDRES CAMILO BAEZ

Locación:

PARÁMETROS DE TORQUE

Torque 1

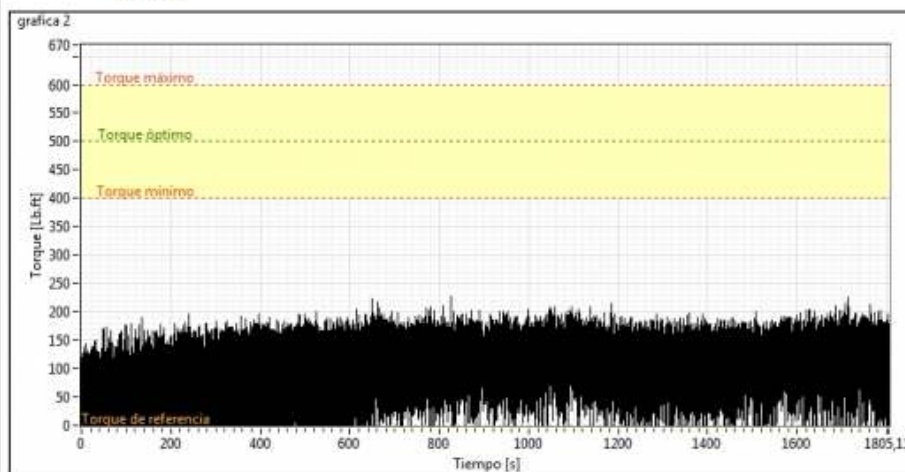
Torque máximo: 600 Lb.ft Torque mínimo: 400 Lb.ft

Torque óptimo: 500 Lb.ft Torque referencia: 0 Lb.ft



CONEXIÓN N°: 1
Comentario: PRUEBA 1 ROTACION CDS S/N 1239
30 RPM

2019/09/07 02:40:00

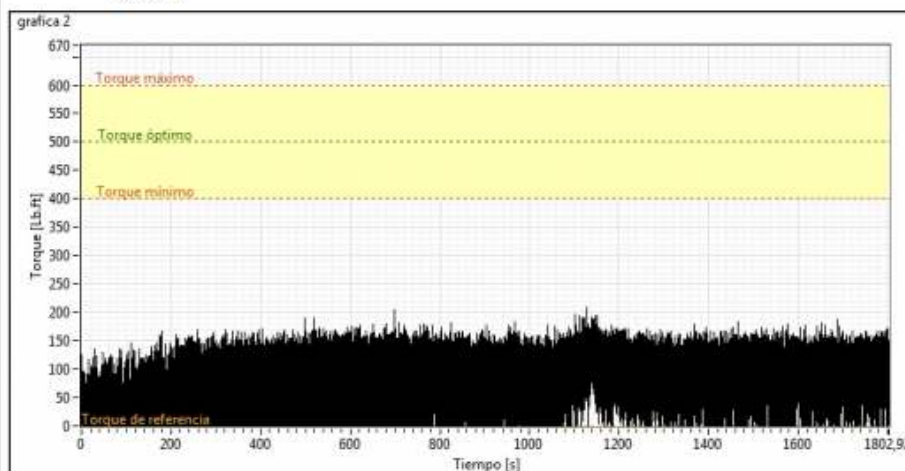


ACEPTADA
Tubería N°1

Torque aplicado: 228
Vueltas aplicadas:0,0
Torque de shoulder:0
Vueltas de shoulder:0,0
Delta Torque:0
Delta Vuelta:0,0

CONEXIÓN N°: 2
Comentario: PRUEBA 2 CDS S/N 1239
30 RPM

2019/09/07 03:10:24



ACEPTADA
Tubería N°1

Torque aplicado: 208
Vueltas aplicadas:0,0
Torque de shoulder:0
Vueltas de shoulder:0,0
Delta Torque:0
Delta Vuelta:0,0

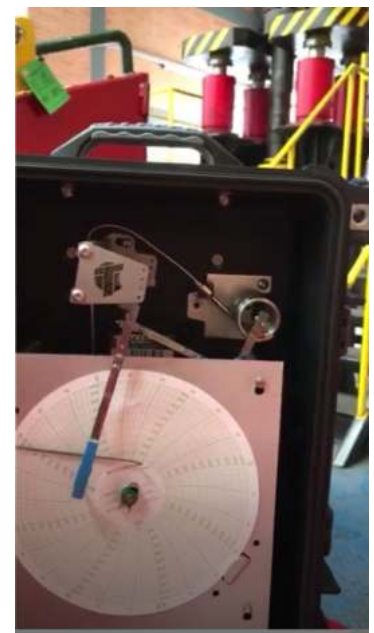
HOISTING TEST (HYDRAULIC PRESS 600 TON)

TR&RS has a testing bench where we can guarantee a maximum hoist capacity of 600 Tons.

The maximum tension force applied in the test is registered in a Barton Chart recorder, where the value of the tension load applied can be observed for about 15 minutes.

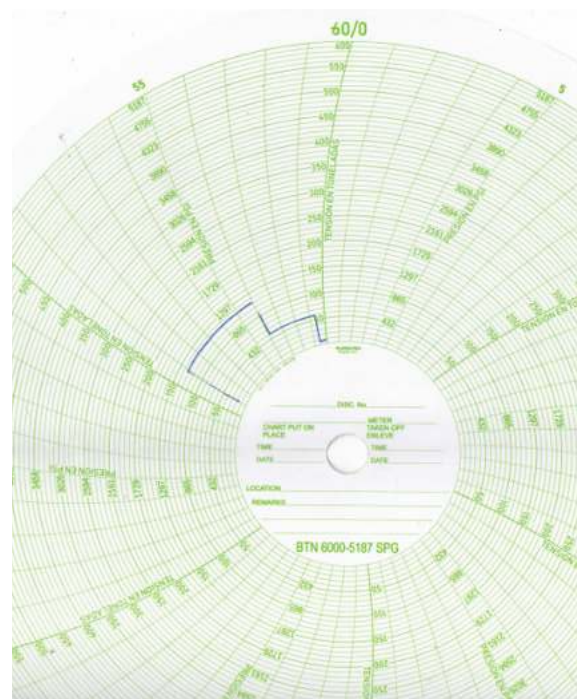
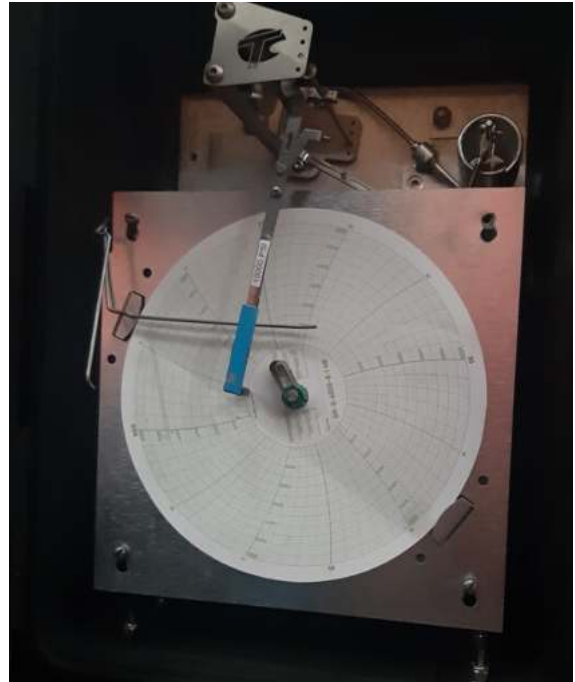


The hoisting test is carried out using the HPUE which provides the hydraulic power supply to both the hydraulic cylinders of the testing bench, and the HCRT.



HOISTING AND HYDROSTATIC PRESSURE TEST (HCRT & CEMENT SWIVEL)

The Barton chart is used to record the performance of both the Hoisting and the Hydrostatic Pressure test. This chart guarantees that the equipment is working properly and that it is reliable.





HALLIBURTON



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