

RHS

Rod Handling System

System information
& technical aspects



RHS

Rod Handling System

- Protects drillers by achieving true, hands-free operation, considerably reducing the probability of injuries from accidents
- Allows for efficient and faster feeding, retrieving and storing of rods and inner tube
- Reduces the total rig area by up to 40%
- Includes a video surveillance circuit with LED HD screens located at the command console, allowing the observation of all system movements from outside the risk zone.



RHS

Rod Handling System

 SAFEDRILL

Floating press

RHS

Rod Handling System

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Magnetic loading bridge

RHS

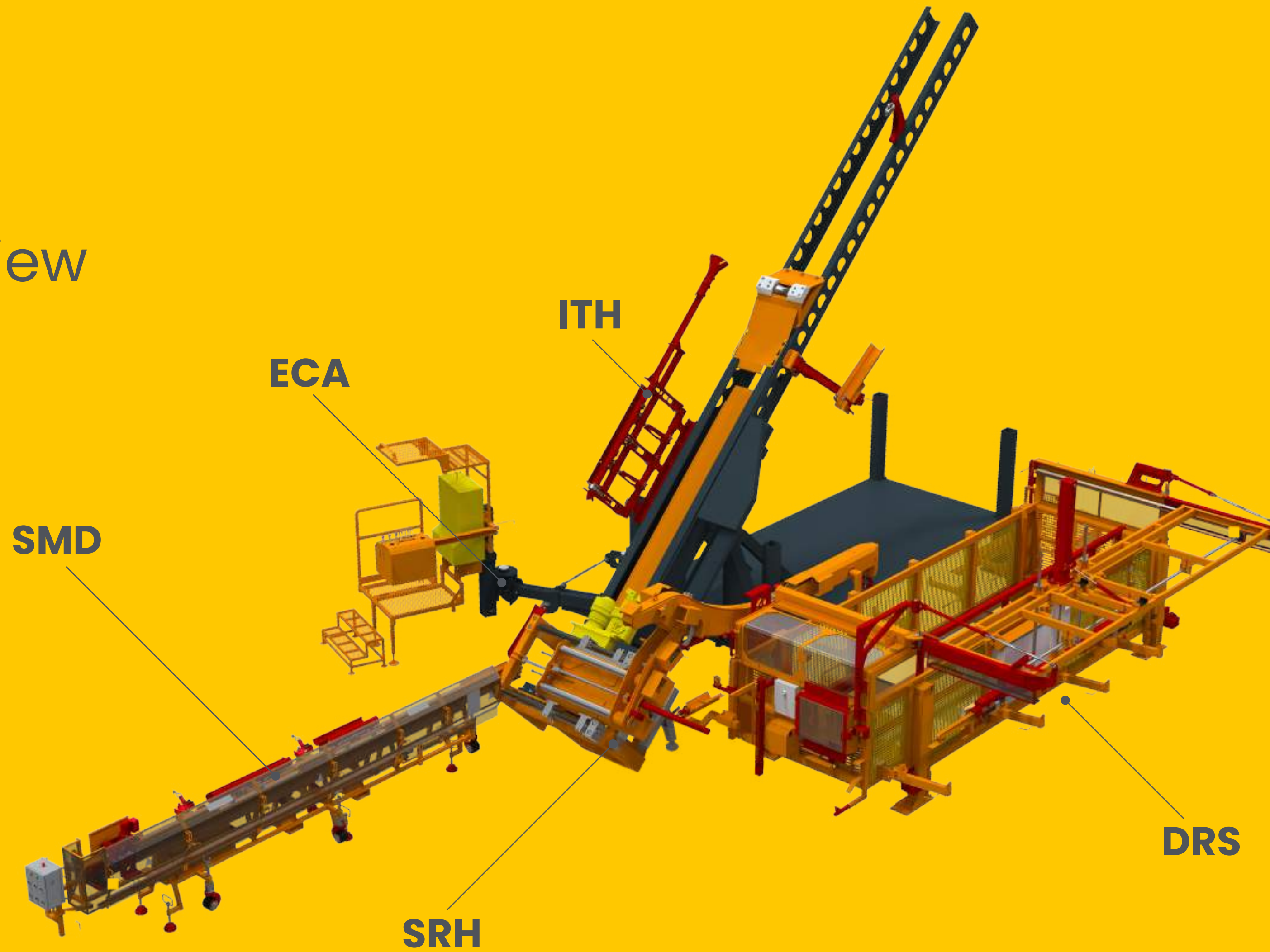
Rod Handling System

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Video surveillance circuit

RHS

System overview



SRH Side Rod Handler

DRS Dual Rod Sloop

ITH Inner Tube Handler

SMD Sample Manipulation Device

ECA Extended Console Arm

SRH

Side Rod Handler

A side-sliding rod handler, attached to the base of the drill rig's mast. It handles the feeding and retrieving of rods and casing between the DRS and drill rig, completely hands-free.

Handles rods, casing and core barrels, and also manipulates the kelly rod, by releasing it on a resting support while new rods are added to the string.

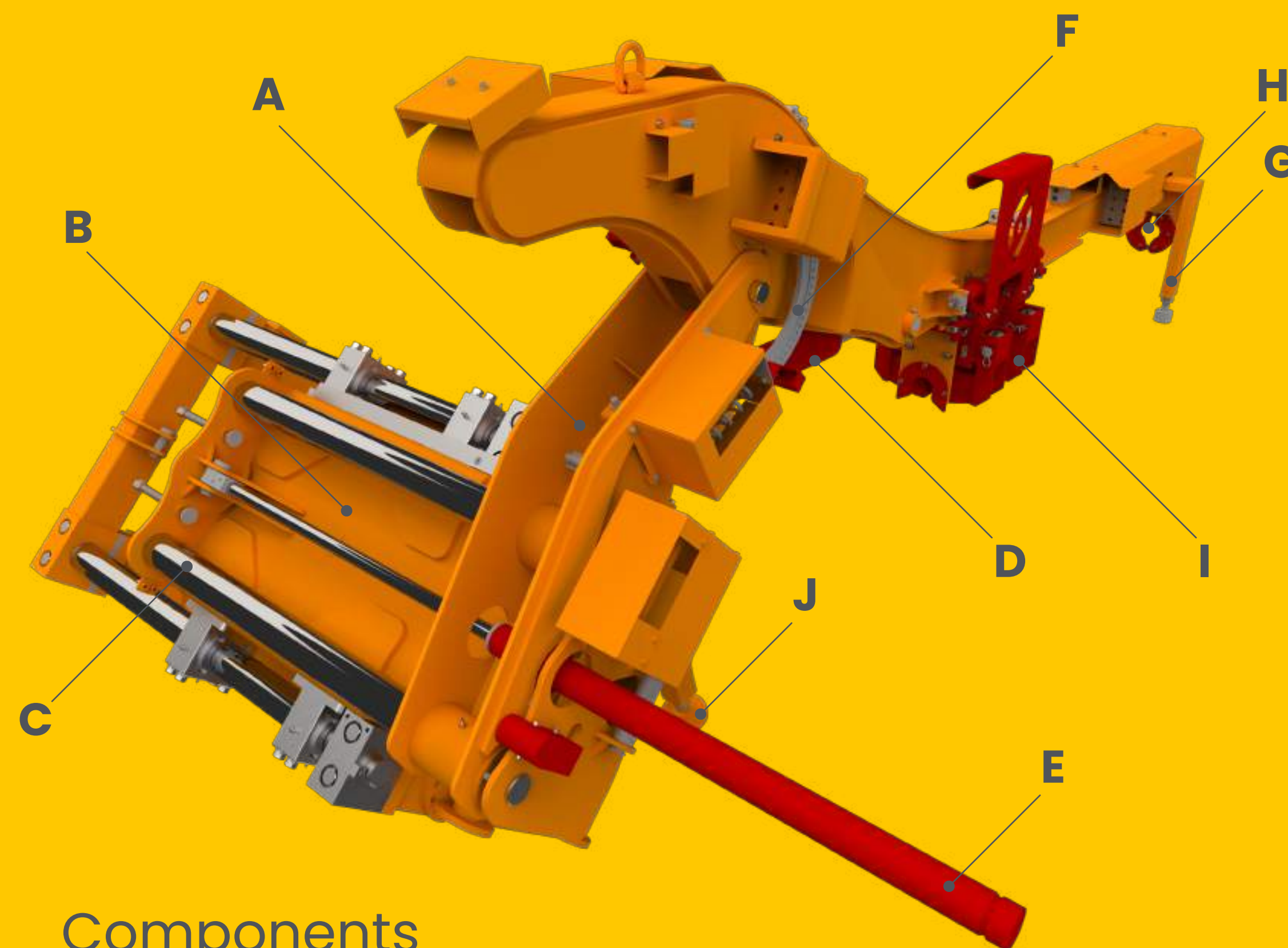
The side-sliding configuration allows positioning the DRS at the side of the drill rig, saving up to 40% of platform surface area, contributing to mining companies' goal of reducing their footprint.

A floating rod press which allows to screw in and out rods from the string without damaging the threads and ensuring the right torque to perform a perfect joint.

From the selection of a rod in the DRS to the screw-in of a new rod on the string, the complete work cycle lasts down to 60 seconds.

Specifications

| | | |
|---------------|---------|-------------------------|
| Length | 5,450mm | Hydraulic System |
| Width | 3,200mm | 40LPM@3,000PSI(207BAR) |
| Height | 5,789mm | Electric System |
| Weight | 2,250Kg | 12/24V |



Components

- | | |
|----------------------------------|-------------------------------|
| A Primary slide support | F Angle locking guides |
| B Secondary slide support | G Travel limiter |
| C Slide guides | H Gripper |
| D Lifting cylinder | I Floating rod press |
| E Displacement cylinder | J Stabilizer |

DRS

Dual Rod Sloop

An automated rod sloop, equipped with 4 hydraulic elevator jacks, allowing self-load/unload from the truck, and its positioning on any kind of terrain.

Rods are handled from a sliding hydraulic loading bridge that can lift rods and position them at both sides of the unit, making it possible to perform the self-loading and rod feeding maneuvers completely hands-free.

It holds rods through a magnetic mechanism which is not electrically powered, so in case of a failure, it will always stay on, and rods won't fall harming operators or damaging the surrounding elements.

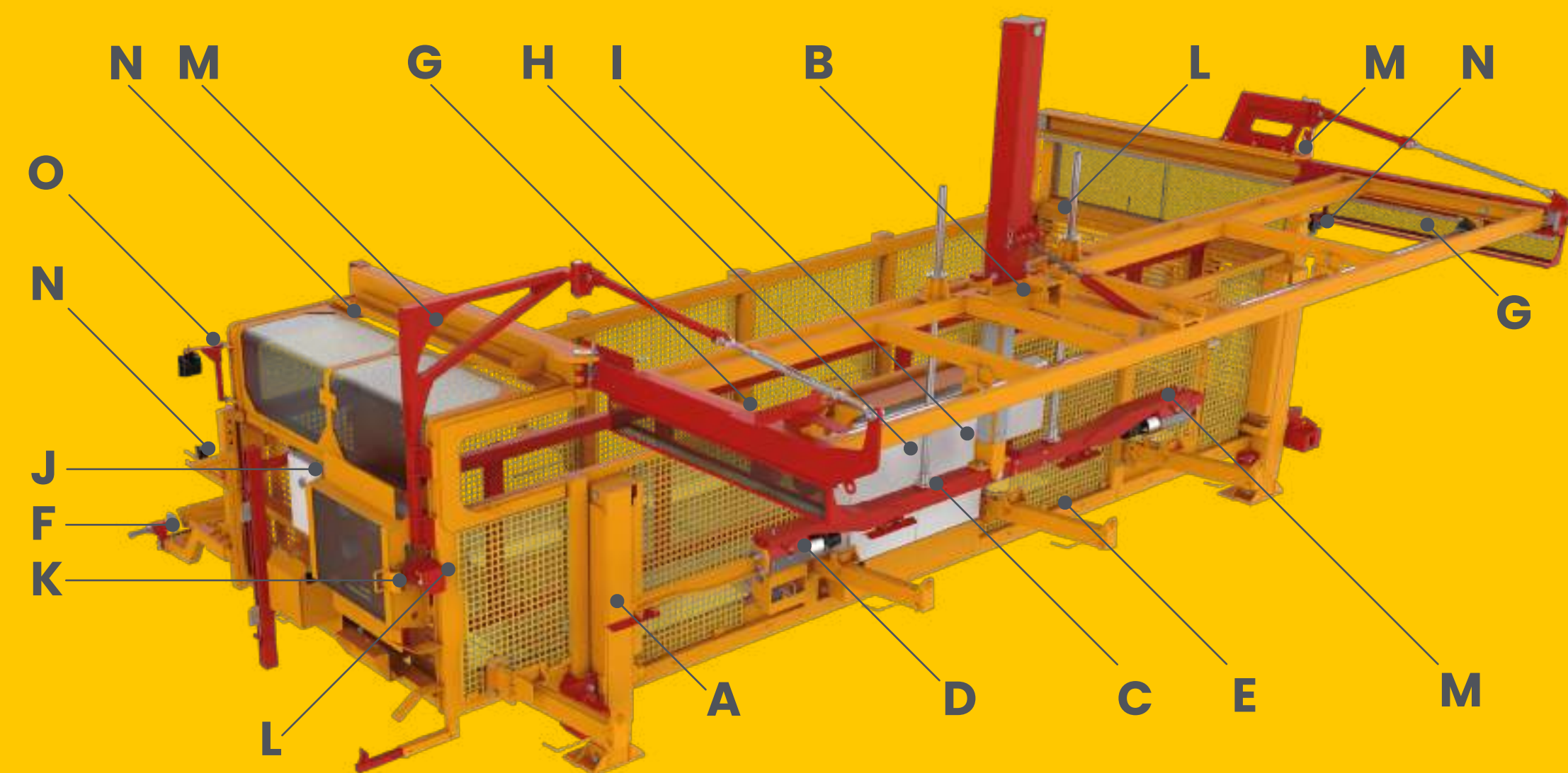
It has the size of a 20ft container, and is equipped with the same locking corners, which facilitates its transportation on a flatbed truck, with no special permits.

The operator can switch rod diameters as needed, resulting in faster diameter changes while drilling.

It is equipped with sensors and cameras to allow the operator to safely control every angle of the operation.

Specifications

| | | | | | |
|---------------|---------|-------------------------|------------------------|---------------|---------------|
| Length | 6.050mm | Hydraulic System | N rods | H rods | P rods |
| Width | 2.420mm | | 10LPM@2,500PSI(172BAR) | 346un | 210un |
| Height | 2.320mm | Electric System | 2.076m | 1.260m | 756m |
| Weight | 6.000Kg | | 12/24V | 15.846kg | 14.364kg |



Components

| | | |
|---------------------------|-------------------------------|--------------------|
| A Hydraulic Jacks | G Bridge extensions | M Sensor |
| B Sliding bridge | H Hydraulic board | N Camera |
| C Lifting arm | I Electric board | O Led light |
| D Magnetic grip | J Lights/control board | |
| E Resting arms | K Killswitch board | |
| F Centering guides | L Emergency stop | |

ITH

Inner Tube Handler

The ITH handles the core barrel from the mast, towards the SMD, releasing it exactly on the reception bucket, which then carries the core barrel to the horizontal position.



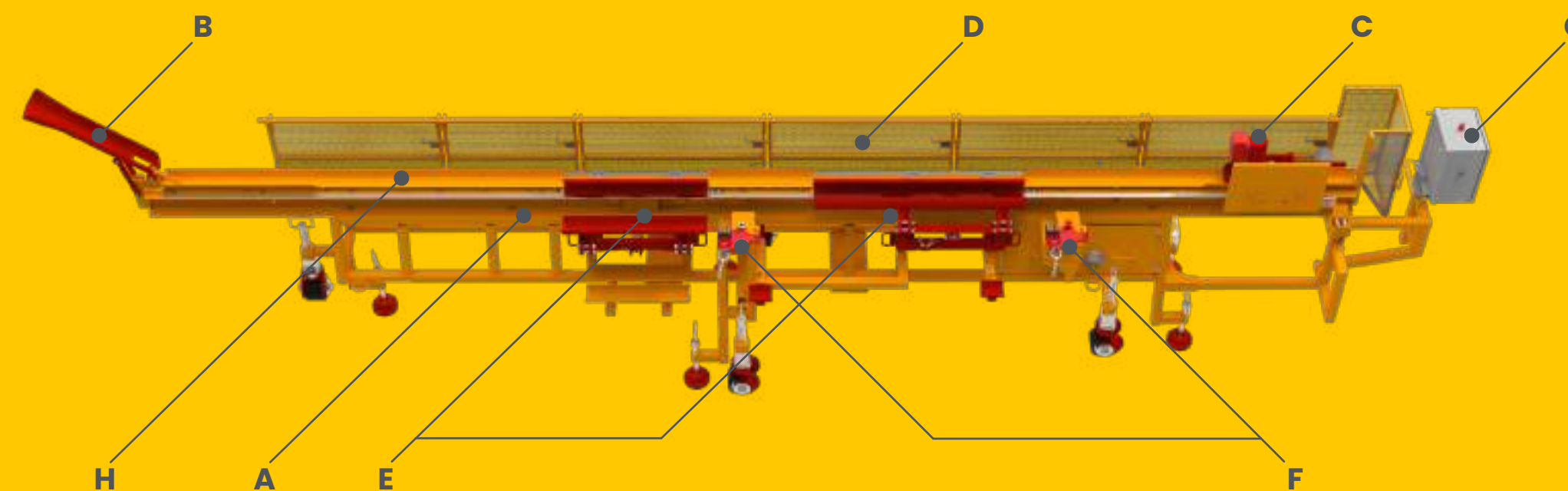
Specifications

| | | | |
|---------------|---------|--------------------------|---------------------------|
| Length | 3,428mm | Hydraulic System | |
| Depth | 400mm | | 5LPM@2,500psi (172BAR) |
| Width | 1,082mm | Handling diameter | |
| Weight | 225Kg | | 70-100mm [3m/10ft length] |

SMD

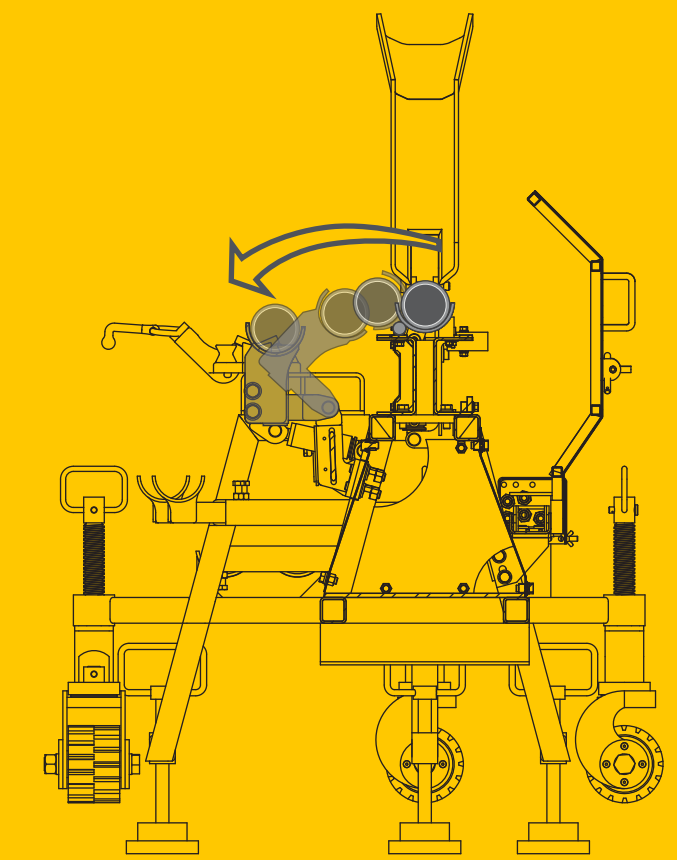
Sample Manipulation Device

After receiving the core barrel from the ITH, the SMD slides it carefully to the horizontal position, the helper unlocks the overshoot and activates the tilting mechanism which switches the barrel from the main tray to the secondary one. Done that, the helper locks the barrel with a chain-lock, and when it's done, the SMD unscrew the barrel, releasing the inner tube, and allowing the manipulation of it.



Specifications

| | | | |
|---------------|---------|--------------------------|------------------------|
| Length | 5,820mm | Electric System | 12/24v |
| Width | 1,085mm | Hydraulic System | 5LPM@2,500psi (172BAR) |
| Height | 1,390mm | Handling diameter | 70-100mm |
| Weight | 1,030Kg | Safety | Inductive sensors |



Tilting mechanism

Components

- A** Frame
- B** Reception guide
- C** Reception bucket
- D** Protections
- E** Feeding tray
- F** Secondary tray

ECA

Extended Console Arm

The ECA is an extended arm which allows to position the drill rig console away from the mast, placing the operator outside the risk zone.

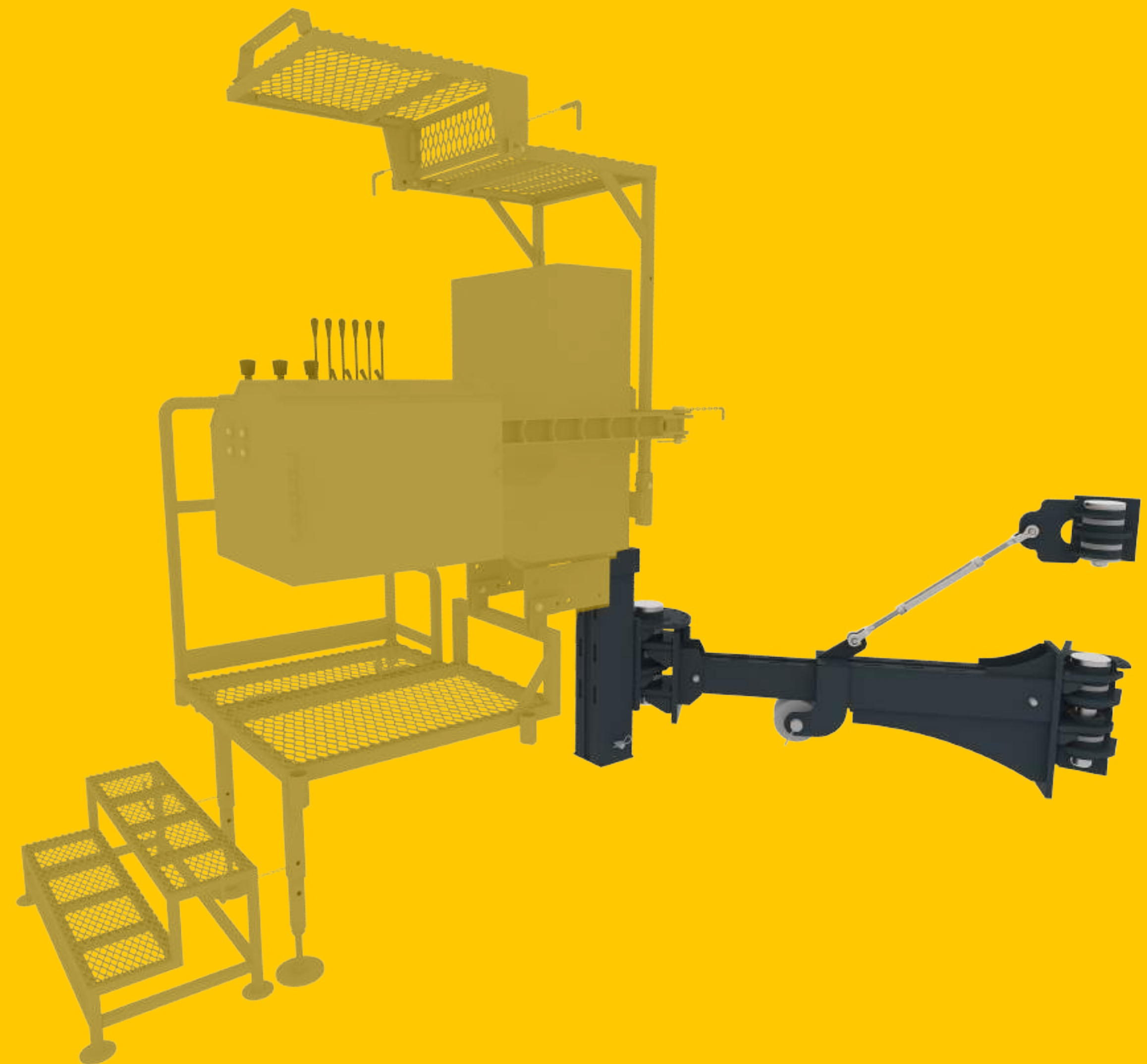
It holds both the drill rig and the RHS commands in the same place. Operator can hydraulically adjust the console height to ensure a proper position.

Is attached directly to the rig's rear left hydraulic jack, folds in to save space and is locked mechanically to secure it during transportation maneuvers.

The ECA is compatible with Atlas Copco-Epiroc CS3001, CS4002 and CT20 drill rigs.

Specifications

| | |
|--------------------------|---------|
| Length (Deployed) | 2,264mm |
| Width | 400mm |
| Height (Deployed) | 1,570mm |
| Weight | 637Kg |





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