



S.C. CONFIND S.R.L.
Câmpina

OPERATION MANUAL
WORKOVER RIG
40 tF WITH MAST

Code: P3668-MU.E	Date: Aug 2013
Sheet:1	Rev: 0

S.C. CONFIND S.R.L.

Workover rig 40 tF with mast

OPERATION MANUAL - PART I-st



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1. GENERAL OVERVIEW

1.1 Brief presentation

The workover rig 40 tF with mast, is designed and manufactured under API Specs and is intended for workover jobs and repair the wells, where maximum hook load requested, is not exceeding 40 tF.

Those components complying with API requests are: the mast (API 4F),drawworks (API 7K),travelling-block (API 8C&ATEX) and crown block (API 4F&8C).

Structural and stability calculations-for the unit c/w Anti-Spinning Device- are done by a third part inspection and comply with Eurocodes where in particular, were considering following standards:

- EN 1990: Eurocode-Basis of structural Design;
- EN 1991-1-4:Eurocode 1:Actions on Structures-Part1-4:General Actions-Wind Actions
- EN 1993-1-1:Eurocode 3:Design of steel Structures-Part1-1:General Rules and Rules for Buildings;
- EN 1993-1-8:Eurocode 3:Design of Steel Structures-Part 1-8:Design of Joints;
- EN 1993-3-1:Eurocode 3;Design of Steel Structures-Part 3.1:Towers,Masts and Chimneys-Tower and Masts.


The workover rig 40 tF with mast type is delivered with EC Declaration of Conformity, where CONFIND SRL declare by own responsibility that the complete unit as described in its documentation, confirms with the following directives:

- Machinery Directive 2006/42/EC;
- The Equipment for Protective Systems in Potentially Explosive Atmospheres Directive (ATEX) 94/9/EC;
- Electromagnetic Compatibility Directive 2004/108/EC;

Following harmonized standards have been applied:

- SR EN 12100:2011-3 Safety of Machinery. General Principle's for Design-risk Assessment and Risk Reduction;
- SR EN 1127-1:2011 Explosion Prevention and Protection. Basic Concepts and Methodology;
- SR EN 13463-Part 1:2009 and Part 5:2011 Non-electrical Equipment for Potentially Explosive Atmospheres.

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1.2 Scope of work

The workover rig 40 tF with mast will be used to perform following jobs:

- a/ running and pulling out of sucker rods, tubing, drilling/production tools and down-hole pumps;
- b/ installation and removal of the Christmas tree;
- c/ repairs and remedying operations: cement plug drilling, sand plug washing, fishing, etc.

1.3 Delivery set

The workover rig 40tF with mast is a self-propelled unit, installed on a Romanian heavy-duty truck 37.300 VFA type made of SC Roman SA-Romania, 8x6 drive configurations.

Both for driving and workover operations, the power package available with the w/o rig, consists of: diesel-hydraulic Caterpillar C9 ACERT engine(4-stroke,6 in-line cylinders, supercharged with intercooler, meets Tier 3, Stage III emission requirements) coupled with Caterpillar hydro-mechanical transmission TH 31-E61A type, equipped with torque converter TS 40-ESLF with stall torque at ratio 2.46

For rising diagram of the w/o rig, following transmission speed ratios will be used:

$$\begin{aligned} \text{Speed 1} - i_1 &= 4,4; & \text{Speed 2} - i_2 &= 2,33; & \text{Speed 3} - i_3 &= 1,53; \\ \text{Speed 4} - i_4 &= 1; & \text{Speed 5} - i_5 &= 0,71; & \text{Speed 6} - i_6 &= 0,6 \text{ and Reverse} - i_R &= 3,96 \end{aligned}$$

On the chassis beams is installed the base frame, where following components are fixed: the mast with its raising multi-sectional hydraulic cylinder and telescoping hydraulic cylinder, mast fixed support, folding working platform, chief driller platform, the bevel gear, the drawworks T1T-10 type and its braking control system, pneumatically system with air tanks and hydraulic system with the oil tank.


Power package (CAT C9 engine +TH 31-E61A automatic hydro-mechanical transmission) is powering:

- air compressor;
- 2(two) hydrostatic gear pumps, supplying the power:
 - a/-one to that hydraulic circuit for line-up the w/o rig, raising the mast, folding the mast and working platform;
 - b/- the other one, to run the water pump and the fan for cooling the rim's drum, the hydraulic winch Raptor 3.6 type and the hydraulic tong XYQ3C, type;
 - c/-if in need the hydraulic power for both circuits are to be cumulated and in this situation could by actuated the hydraulic rotary table.

Hydrostatic gear pumps are straight mounted with PTO's belonging to the automatic transmission TH31-E 61A and both of them are connected with the hydraulic circuit belonging to the w/o rig, in such manner to switch between them if one could be damaged.

Output power from the Caterpillar package, by means of a cardan shaft is transmitted to the main distribution box G 173-MAN type, where two direction to translate the power may be selected, either for the carrier powering the axles or for the drawworks, but not in the same time.

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Said selection for operating mode of the w/o rig is done from the cabin of the carrier, by means of electro-pneumatically control and operating circuits.

When running the drawworks is selected, the power is coming from the output of the main distribution box G 173-MAN type, by means of a cardan shaft to the bevel gear box; a three rows chain transmission, takes the output power from the bevel gear box, to be translated for the main drum shaft of the drawworks.

The bevel gear box is mounted on the main frame of the carrier, where input and output shafts fitted with bearings are mounted inside same casing, transmitting the power by means of a conical gear to the chain transmission.

The casing is provided with level indicator and oil draining plug; lubrication is done by the conical gearing itself.

The drawworks T1T-10, is the most important subassembly belonging to the hoisting system, consisting mainly of a casing in welded construction, fitted with the main drum shaft by means of the bearings; coupling the shaft is possible by means of a pneumatic bladder clutch, AB 700x200 type.

The clutch AB 700x200 is easily accessible with bellows for change or repair. It is mounted at the end of the shaft so that changing of bladders or shoe band brakes make it fast, with free access at the same.

The main drum shaft accommodates the hoisting drum, with brake rims (assembled by both sides of the drum) and the spirally-grooved wrapper, permitting the hoisting line to be wounded (OD=22mm).

OD for the brake rims at 1.100mm, water cooled inside.

The bearings of the main shaft are greased by means of the ball nipples, as far for the chain transmission the lube is done by the lower sprocket itself, which takes the oil from the bath.

Chain transmission casing is provided with deep stick oil level indicator and plexiglas cover, to have a good look for lubricating the chain.


Breaking system for the hoisting drum is feasible through two breaking rims and the breaking system (shoe band break type); said system, consists of two band brakes, equalizers and supports for manual adjustment the stand-off between the braking shoe and the rim.

The break bands are mechanically operated by means of the control levers actuated from the chief driller console; emergency breaking is pneumatically assisted, namely through a servomotor cylinder.

The pneumatic servomotor for emergency brake begins to work, whenever:

- is controlled by means of the chief driller control panel as far the pneumatic distributor (item 4.2 inside pneumatic layout) will be ON;
- is controlled by its dedicated pneumatic distributor (item 1.3 inside pneumatic layout) when the upper/lower stroke limiter feeler-finger is ON;
- is controlled by said distributor (item 1.3) from pneumatic control panel, which is actuated in case the maxim settled hook load is exceeded and the signal coming from hook load cell is ON.

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Cooling the rims is done in close loop circuit, by means of a hydrostatic powered water pump with radiator and dedicated hydrostatic fan for it.

Air source for pneumatically system is provided by a dedicated air compressor, driven from the CAT engine C9 ACERT and it's a separate pneumatic circuit against the pneumatic braking system (belonging to the carrier) which is proper for the truck, only!

The mast MU-65 type, is U shape made of angle bars, telescopic, with two sections may be retracted one inside the other, during transportation of the w/o rig. At the upper part of the mast the crown block and its table are assembled.

The bearing members for each section of the mast consists of 4 (four) uprights in open profile, interconnected by U-shape- for all those three sides- by means of the cross-bars in open profile.

During transportation, the upper section of the mast is retracted inside the lower one and it lies horizontally on the chassis, as follows:

- mast base is articulated with the fixed mast section at the rear side of the carrier, by means of those two rear stays welded with the lower section;
- top of the mast is supported on dedicated mast upper gin pole, fixed on the frame of the carrier.

Following steps are to be processed, to bring the mast in working position:

- line up the w/o rig on both directions;
- raising the folded mast by means of the multi-sectional hydraulic cylinder and locking with the fixed mast section when final working position will be reached;
- telescoping the upper section from the lower one, by means of the telescoping hydraulic cylinder, which is mounted inside said sections;
- locking the upper section against the lower one, by means of the locking device;
- fixing the mast in the final position by straining the inner guy lines (freestanding mast).

During its use, the mast is lightly inclined (almost 5.3°) towards the well axis.


The mast includes following parts:

- access ladders up to the crown block and anti-falling device;
- travelling and hook block support during transportation;
- clevis sheave for hydraulic cylinder rope;
- two guiding sheaves for the rope, belonging to the hydraulic winch Raptor 3.6 type;
- electric lighting system.

To level-up the w/o rig, in front of the carrier there are two hydraulic jacks and two of them are located at rear side, built-in as sleeper consoles hydraulically operated.

When the carrier will reach the final position for rigging-up, those two rear sleeper consoles will be folded out where the span will be at 4600mm (2300mm each side, from the longitudinal axis of the carrier).

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BEWARE!

- Is mandatory to be used the limiting stroke device mounted for both outriggers;
- Is forbidden to extend the sleeper consoles more than a span at 4600mm;
- Bearing surface for the rig side will be horizontal and specific pressure achieved will comply with those values indicated by the manufacturer at chapter 6.2-Specific Pressure at the ground Level.

Raising and folding the mast, as well powering all those four hydraulic jacks for levelling-up the w/o rig, is possible by means of the hydraulically distributors located on the auxiliary control panel, located at rear side of the carrier, near by the fixed mast section.

After raising the mast in working position by means of the multi-sectional hydraulic cylinder and when the final position of the mast is reached, the mast will be locked in that position with the mast locking device, connected with the fixed mast section.

Folding the upper section will be done after raising the mast in working position; hydraulic cylinder folding the mast is performing this job.

This operation is followed up by latching the upper and lower section in a manual mode, final locking will be done by means of a pneumatically cylinder.

Anchoring the mast is done by means of 4 (four) guy lines, two for the lower section and two for the upper one, at that level of the crown block table.

The lower connection for those four anchors will be done by means of the gin pole.

Fixed mast section makes connection between the lower section of mast and the carrier; it's provided with safety system to block the mast in working position and has side stabilizers against the wind.

Chief driller's controls console ensures all rigs' commands and speed up for CAT engine; is mounted with fixed mast section - at the rear of the carrier - in that place with clear visibility towards the well axis.

The side foldable platform is the working place for chief driller (fold/unfold for the side platform is done by means of its dedicated hydraulic cylinder) with handrails and a staircase for access from the ground.

General shut off button and shifting the gears of the hydro-mechanical transmission TH 31-E61A are remote controlled, from an ATEX control panel, located near by the chief driller controls console.


Working platform is located at the rear side of the carrier, foldable for transportation; its height is adjustable for each 200 mm, in the range from 800 up to 2.800 mm.

Make-up and break-out for the tubing is possible by means of a **hydraulic tong XYQ3C** type completed with its dedicated weight balancing hydraulic cylinder.

For hanging the tubing string a pneumatic spider elevator is available.

For easy access both of said devices, are located inside the fixed mast support.

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2. MAIN TECHNICAL FEATURES

- Maximum hook load..... 40 tf
- Maximum power/rpm224kw (300 HP)/2200 rpm
- Maximum output torque for the engine.....1220Nm/1400 rpm
- String-up system.....2x3(four lines)
- Max. height from the ground to the crown block frame..... ~20,5 m
- Maxim allowed wind speed with loaded hook.....44,18 knots(81 km/h)

- Mast:
 - type "U"-shape, telescopically in two sections
 - API capacity.....65 short-tons (59 metric tons)
 - Mast rising.....by means of a multi-sectional hydraulic cylinder
 - Mast folding.....by means of a foldable hydraulic cylinder
 - anchoring.....with 4 enforced anchors to the frame of the carrier

- Crown block
 - Available/used no of sheaves.....4/3 sheaves, OD= Φ560 mm

- Travelling and hook block:
 - Available/used sheaves.....3/2
 - API capacity.....65 ts (59 tf)

- Hoisting drum:
 - Maximum line pull, at the 3-rd layer.....10tf
 - wire rope sizeOD=ø22 mm
 - pneumatic bladder clutch type.....AB 700x200

- Engine.....Caterpillar C9 ACERT, diesel, 4 stroke, 6 in-line cylinders, supercharged, with intercooler, Tier 3/Stage III
 - cubic capacity..... 8,8 litres
 - rated power.....220 kW (300 CP)/1800-2200 rpm
 - maximum torque..... 1220 Nm/1400 rpm

- Torque converter.....TS 40-ELSE, stall torque ratio: 2,46

- Hydro-mechanical transmission.....TH 31-E61A, Caterpillar
 - gears forward+ reverse.....6+1R

 - transmission speed ratios:
 - speed 1 – i = 4,4;
 - speed 2 – i = 2,33;
 - speed 3 – i = 1,53;
 - speed 4 – i = 1,00;
 - speed 5 – i = 0,71;
 - speed 6 – i = 0,60;
 - reverse – i = 3,96.

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- PTO's.....2 pcs, mounted with the transmission
- Main distribution box:
 - type.....G173-MAN, differential inter-axles locked, permanent front coupling
 - controls.....electro pneumatically
- Transport carrier:
 - type.....37.700 VFA(8x6) Roman Braşov
 - total allowed weight.....37000 kg
 - carrier weight.....11500 kg
 - maxim speed allowed.....70 km/h
 - maxim slope allowed.....30%
 - min. clearance:
 - front.....326 mm
 - rear.....330 mm
 - wheels/tires.....12.00R2-tube type (on-off profile) 12 buc+1
- Rear axles.....PT 13+PS 13, driving with ABS, ratio 8,82
- Front axle.....PF 7 steering, driving with ABS, ratio 8,82
- Front axle.....V070 steering
- Electric power supply:
 - operating conditions.....ADR
 - voltage.....24V
 - alternator.....24 V/min 150 A
 - batteries.....2x12 V-min 150 Ah
- Overall dimensions for road transport:
 - length.....11.950 mm
 - width.....2.500 mm
 - height.....3.975 mm
- actual total weight..... 32.450 kg
- Working range temperature.....-20°C.....+40°C

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3 DELIVERY SET

ITEM NO.	DENOMINATION OF THE PARTS	Q-ty /unit	MISCELLANEOUS
1	SELFPROPELLED CARRIER (8X6) , which includes:	1	
	- power package, consisting of:	1	
	- Caterpillar C9 ACERT engine, diesel, 4-strokes, 6 in-line cylinders, supercharged, with intercooler, Tier III, 220 kW (300 CP)/1800-2200 rpm;	1	
	- torque converter TS 40-ELSE, stall torque ratio:2,46	1	
	- hydro-mechanical transmission TH 31-E61A, Caterpillar type, speed ratios: 6+1R;	1	
	- PTO's mounted with the transmission 11 and 13 hour mounted;	2	
	- longitudinal beams;	1set	
	- metallically cabin FNL type, 2 sits;	1	
	- digital tachograph DTCO 1381, type	1	
	- Webasto preheating system;	1	
	- main distribution box G173-MAN type;	1	
	- rear axles PT13+PS13, driving, i=8,82;	1	
	- Front axle PF 7, driving, steering;	1	
	- Front axle V070 steering;	1	
	- batteries	2	
	- cardan shaft between power package and main distribution box;	1	
	- steering system CALZONI type;	1	
- suspension with leaf springs;	1		
- wheels completed with tires;	12+1		
- full pneumatic braking system completed with ABS, which includes:	1		
-duty brake;	1		
-parking brake;	1		
-safety brake;	1		
- fuel tank at 315 liters capacity;	1		
- operating conditions for electric power supply ADR type.	1 set		
2	Basic frame	1	
3	FOLDABLE MAST MU-65 type , which includes:	1	
	-lower section complete assy.;	1	
	-upper section complete assy.;	1	
4	Fixed mast section	1	

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ITEM NO.	DENOMINATION OF THE PARTS	Q-ty /unit	MISCELLANEOUS
5	Gin pole	1	
6	Crown block 22.560-GF65 type , which includes: -crock block table; -hoisting line sheave; -clevis sheave; -guiding sheaves.	1 1 4 1 2	used:3.only
7	Travelling and hook block 3.22.560 MC65 type , which includes: -hoisting line sheave	1 3	used:2,only
8	Drawworks T1T-10 type , which includes: -main drum shaft, consisting of : -hoisting drum; -spirally-grooved wrapper ,proper for hoisting cable size $\Phi 22$ mm; -pneumatic bladder clutch AB 700x200 type; -braking system for hoisting drum;	1 1 1 1 1 1	
9	Braking system for the drum	1	
10	Bevel gear	1	
11	Chain transmission	1	
12	Cardan transmission	1	
13	Multi-sectional hydraulic cylinder fixture , which includes: -multi-sectional hydraulic cylinder for raising mast	1 1	
14	Hydraulic folding cylinder fixture , which includes: -hydraulic folding cylinder	1 1	
15	Levelling-up hydraulic jack fixture , which includes: -line-up hydraulic jack	1 2	
16	Fixed mast support hydraulic jack fixture , which includes: -hydraulic jack for fixed mast support	1 2	
17	Foldable working platform	1	
18	Chief driller's controls console	1	
19	Chief driller platform , which includes: -hydraulic cylinder	1 1	
20	Electric system for lighting the mast, foldable working platform and the carrier , including: -electrical panel at 24Vdc (mounted with the carrier); -lighting system with halogen bulbs at100W;	1 1 10	

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ITEM NO.	DENOMINATION OF THE PARTS	Q-ty /unit	MISCELLANEOUS
	-signalling box with indicating lamp 60W ; - 24Vdc plugs and receptacles; -branch boxes; -electrical cables; -electrical cable supports and accessories; -electric earthing system.	1 2+1 5 1set 1set 1set	
21	Electric system for controlling, signalling and protecting parameters for CAT engine , which includes: - junction box with electric panel for general shut-off and speed adjustment; - indicating console for engine parameters; - speed shifter module; - plugs and receptacles; - electrical cables; - electrical cable supports and accessories.	1 1 1 1 1 1	AMPLO
22	Hydrostatic system , which includes: - hydrostatic pumps; - oil tank; - oil filters ; - hydraulic parts and apparatus ; - hydraulically pipes and fittings.	1 2 1 1set 1set 1set	
23	Pneumatically system , which includes: - air tanks ; - pneumatic control panel ; - apparatus and pneumatically devices ; -pneumatically pipes and fittings.	1 5 1 1set 1set	
24	Wire rope $\Phi 22$ – API 9A	1	L=124m
25	Fixtures on the basically frame	1	
26	Guards and connection elements	1	
27	Measurement and Recording the Cable Load fixture , which includes: - Electronic Equipment for Measurement and Recording the Cable Load and Fuel Consumption EMIX-AM-100 type, which includes: - load tension transducer for hoisting cable; - I-Hook load indicator (analogue); - Data Acquisition Module, which includes: - industrial computer PC tablet ;	1 1 1 1 1 1	DIGILOG

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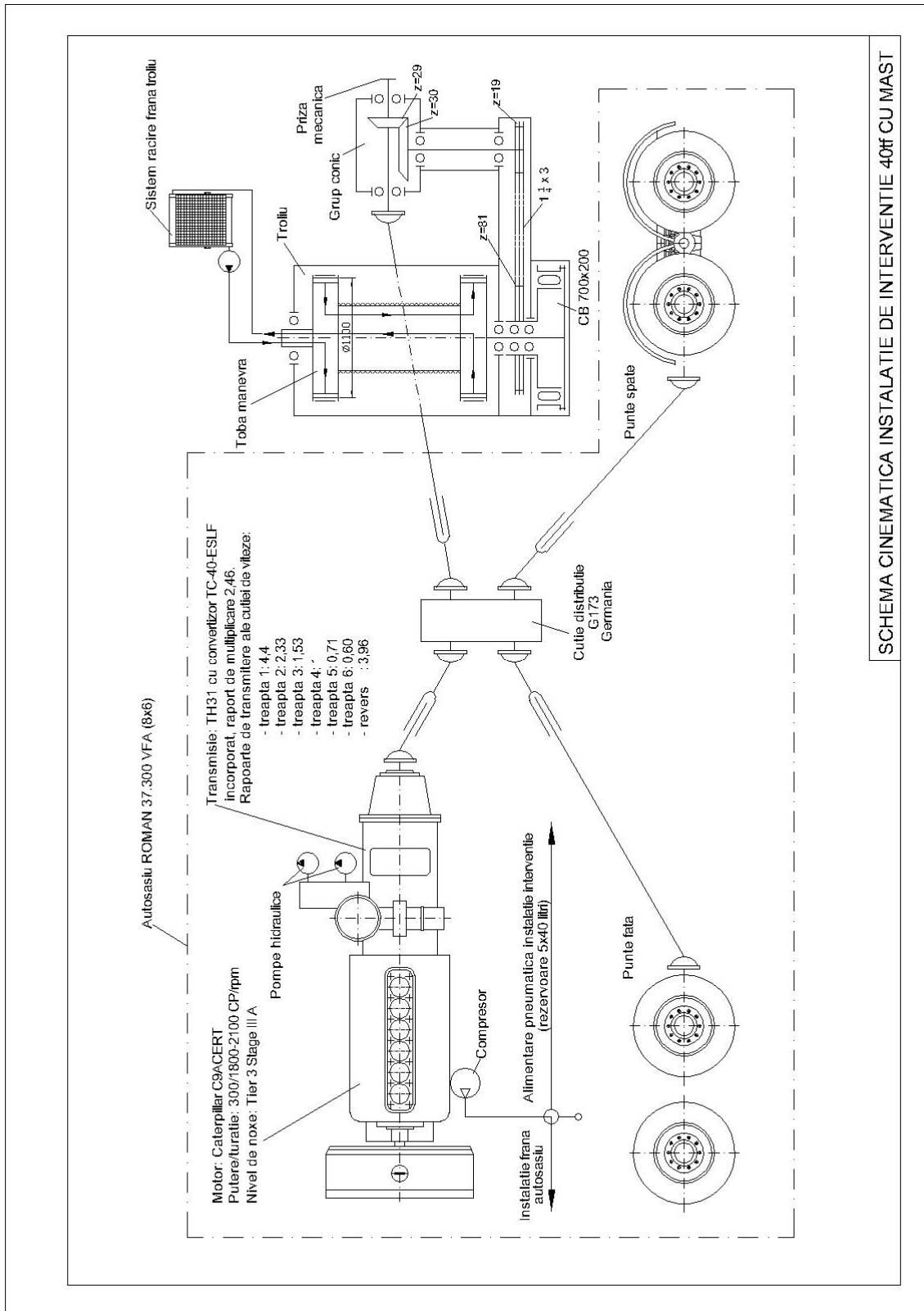
ITEM NO.	DENOMINATION OF THE PARTS	Q-ty /unit	MISCELLANEOUS
	- monitor LCD 10,7 in, touch screen; - power supply module for transducer; - ATEX safety and galvanic separation barrier; - acoustic warning and shut-off module; - converting recording and stocking programs; - connections cables for USB and USB EXT, DAQ,RS232,VGA and tension transducer; - gasoline flow-meter for supply and discharge lines; - warning alarm horn 24 Vdc.	1 1 1set 1set 1 1set 2 1	
28	Hydraulic tong XYQ3C type, for tubing in range of $2\frac{3}{8}'' \div 3\frac{1}{2}''$ - quick connection for supply and discharge lines;	1 2sets	
29	Hydraulic Winch Raptor 3.6 ,type	1	
30	Pneumatic spider-elevator $2\frac{3}{8}'' \div 3\frac{1}{2}''$,size - foot treadle and quick connection hoses;	1 1set	
31	MAST LOCKING DEVICE	1	
	ENFORCED ANCHORS	1set	
32	- anchors between crown block frame and the carrier frame; - anchors between lower section of the mast and carrier frame.	2 2	
	Anti-falling fixture , which includes:	1	
33	- complex safety belts; - protective steel anchoring cable with protection mat. pls=1m; - carbine.	1 1 1 1	
	LEVELING-UP SUPPORT	2	
34	- contact plate 600x600	4	
	BRAKE COOLING SYSTEM for drawworks, which includes:	1	
35	- water pump; - hydrostatic motor with fan; - radiator; - pipes and fittings;	1 1 1 1set	
36	CONTAINER FOR TOOLS	1	
37	ESTENGUISHER P12 ,type	2	
38	AUTO GAUGE ELECTRIC SIGNALLING SYSTEM	1	
39	ACCESS STAIRCASE CONTAINER FOR TOOLS	1	

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4 POWER FLOW DIAGRAM



SCHEMA CINEMATICA INSTALATIE DE INTERVENTIE 40t CU MAST



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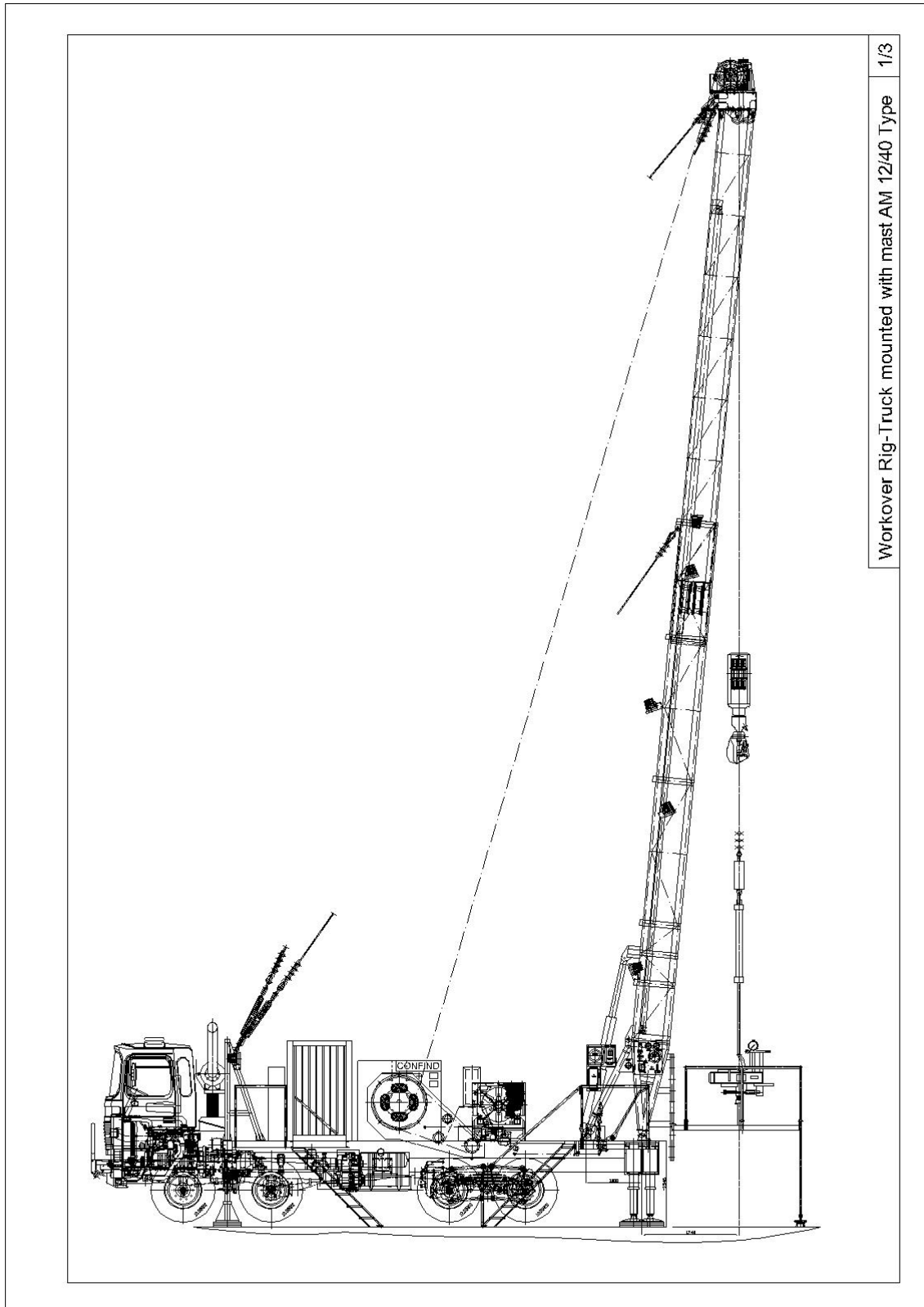
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5. GENERAL ASSEMBLY



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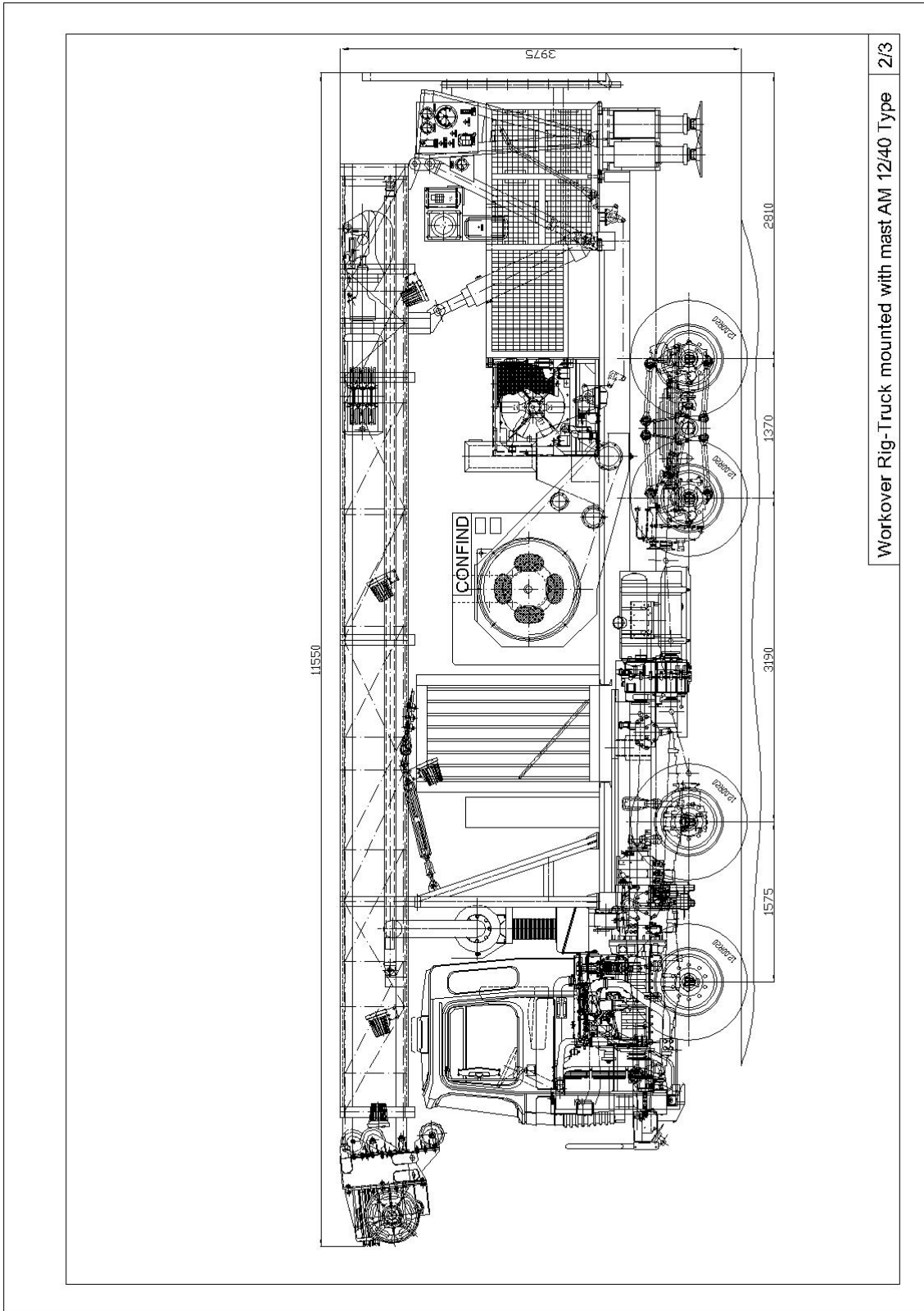
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Workover Rig - Truck mounted with mast AM 12/40 Type 2/3



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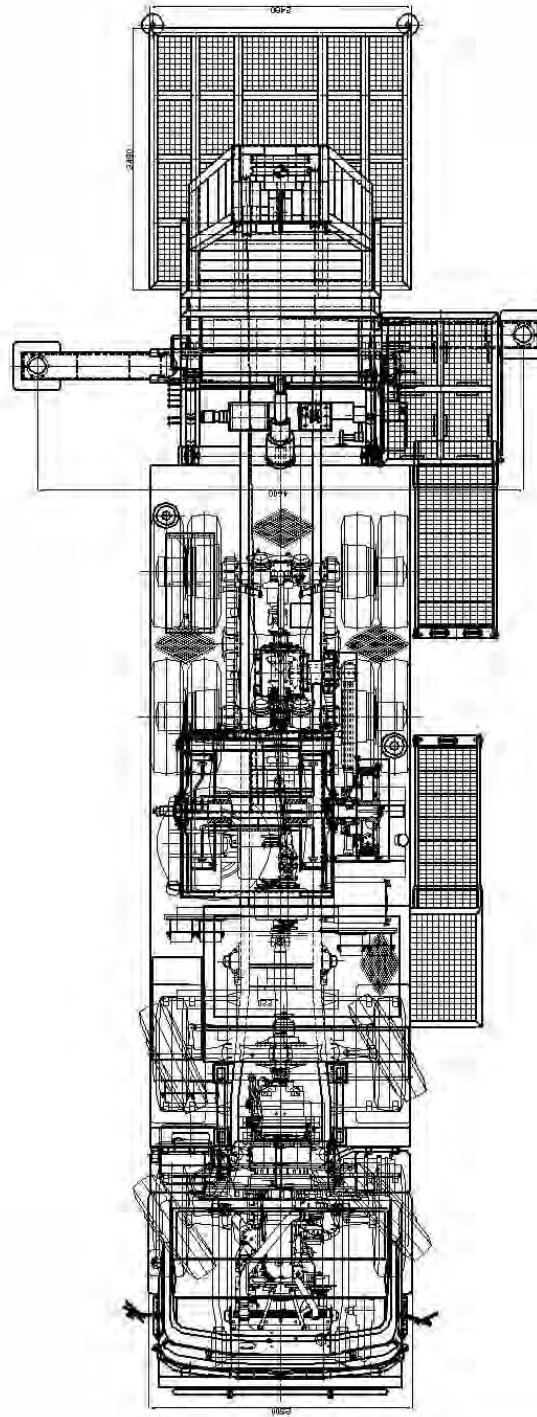
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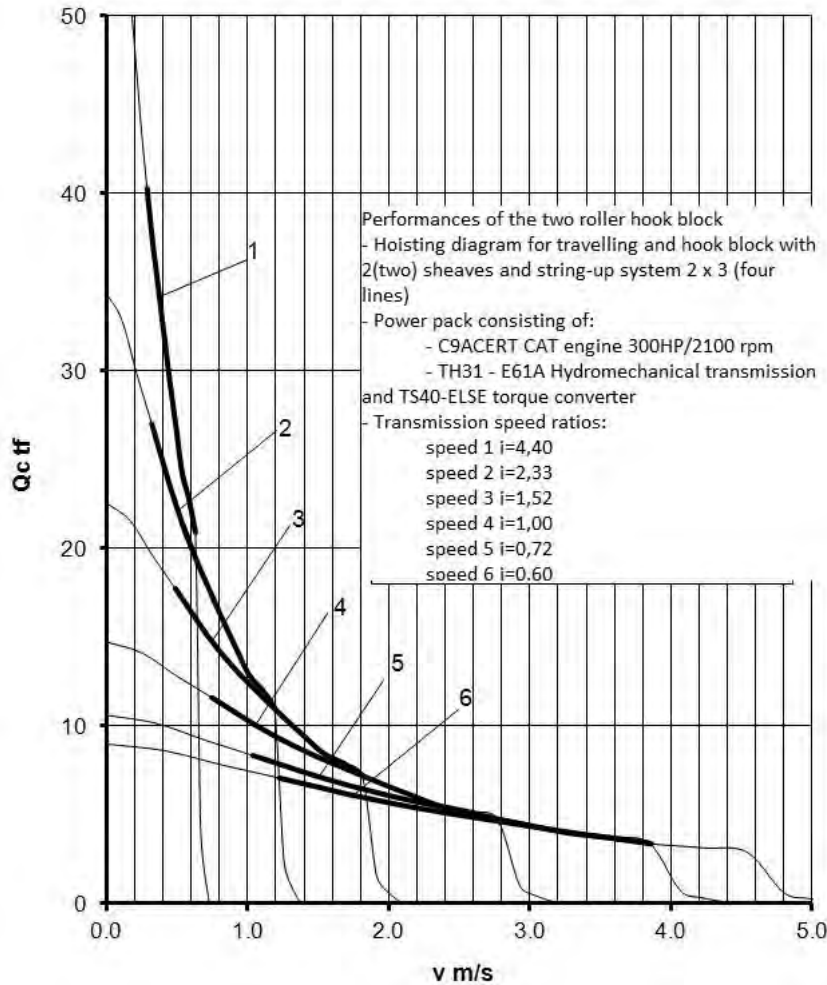


Workover Rig- Truck mounted with mast AM12/40A Type 3/3



6 DIAGRAMS AND NAMEPLATES

6.1 Hoisting diagram





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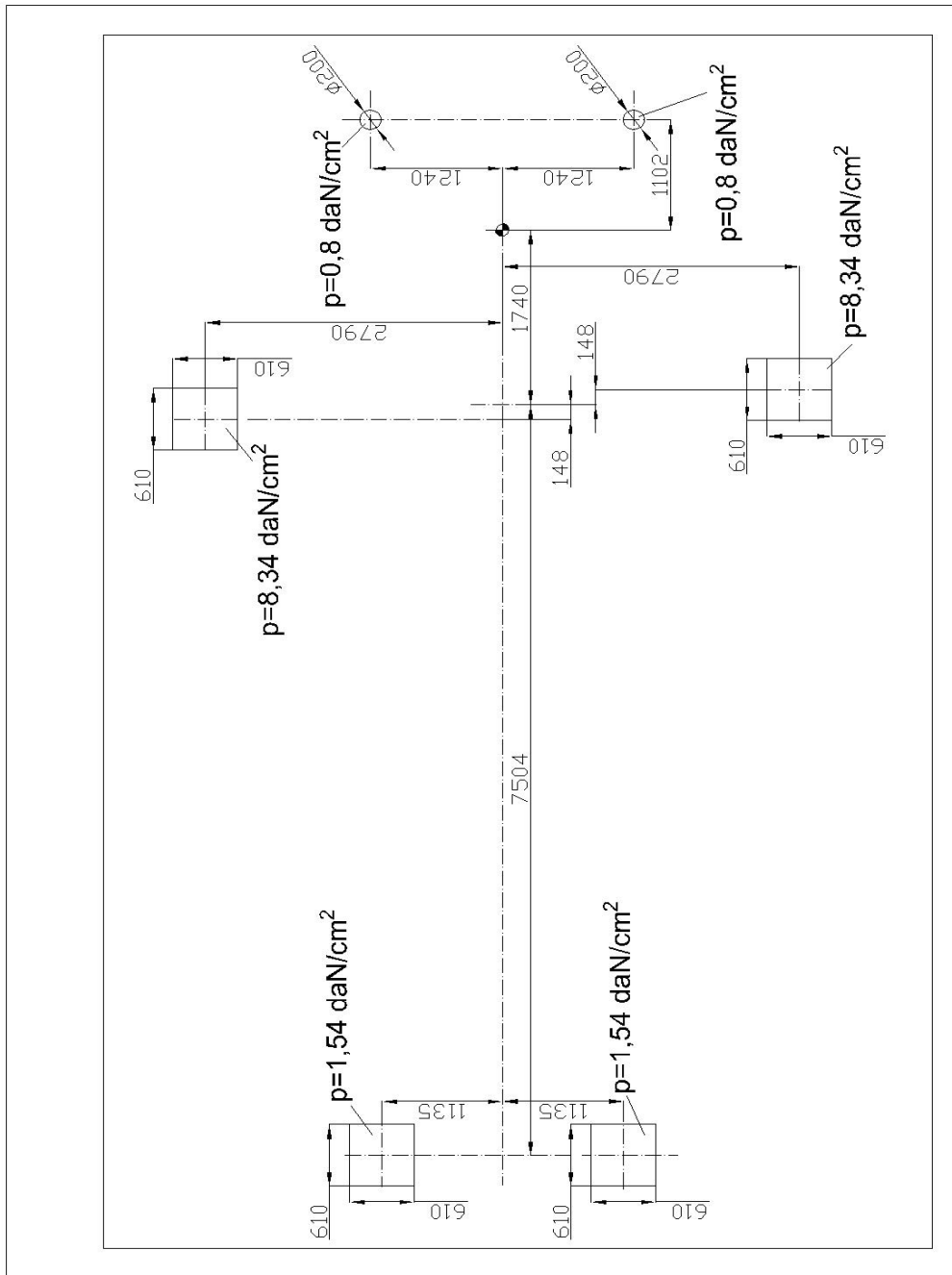
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6.2 SPECIFIC PRESSURE AT THE GROUND LEVEL





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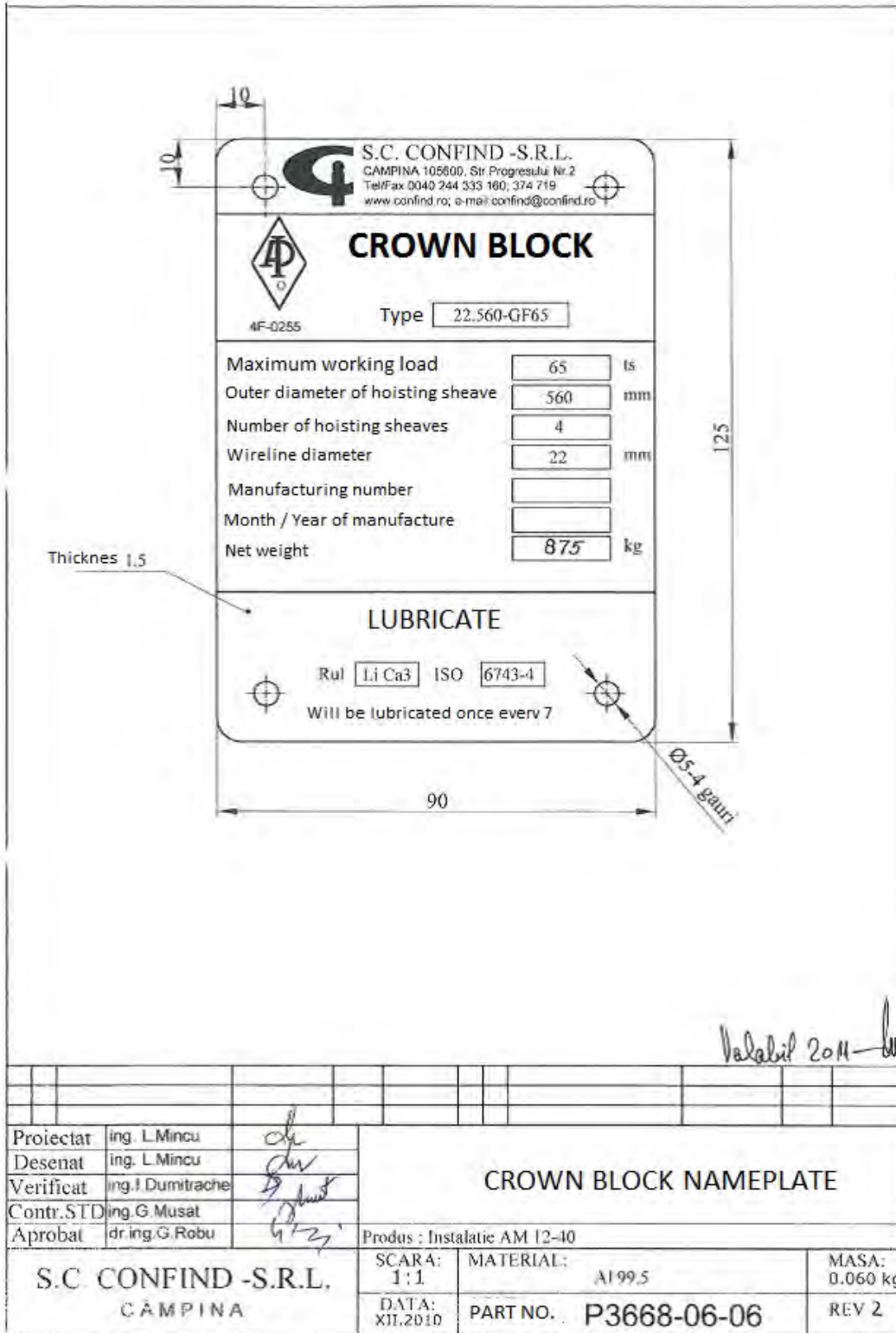
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6.3 Crown block nameplate





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6.4 Mast nameplate

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MAST Type: MU - 65

4F-0255

- Maximum static load / 6 wires 400 (44) kN(ts)
- Height from ground to te crown block 20,5 (67) m(ft)
- Max wind speed with no load in the hook 110 (60) m/s(knots)
- Height of mast from ground used in the project for the wind load 3,3 (10,8) m(ft)
- API Spec. 4F, ed. 3
- Placement quota: rig - well axle 1,740 (5,70) m(ft)
- Net weight 3920 Kg
- Manufacturing date (month,)
- Manufacturing

150

-WARNING ! Maximum load at the hook will be reduced if it operates in windy environment.

Lifting diagram

Reducing the load at the hook according to wind speed

120

Proiectat	sing. C.Balan		<p>NAMEPLATE</p>	<p>PLANSĂ</p> <p>1 / 1</p>	
AutoCAD	ing. C.Balan				
Verificat	ing. G.Musat				
Control STD	ing. G.Musat				
Aprobat	ing. G.Miloiu		<p>Prozolu:</p> <p>Mast MU 65</p>		
<p>S.C. CONFIND -S.R.L. CÂMPINA</p>			<p>SCARA:</p> <p>1:1</p>	<p>MATERIAL:</p> <p>Aluminiu</p>	<p>MASA:</p> <p>0,08</p>
			<p>DATA:</p> <p>20.04.2011</p>	<p>PART NO.:</p> <p>P3668-03.14.01</p>	<p>Revizie</p> <p>2</p>



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6.5 Weight point, when empty

WEIGHT POINT FOR W/O RIG AM 12/40 - when empty						
(x="0" - rare axles; "+" - towards front of the carrier; "-" - towards rear of the carrier)						
(z="0" - ground level)						
Item	Description	mi	xi	mi*xi	zi	mi*zi
1	Carrier	11500	2.7	31050	1.1	12650
2	Basically frame	1500	1.6	2400	1.2	1800
3	Mast MU65 type	3900	3.2	12480	3.6	14040
4	Fixed mast support	765	-2.8	-2138.2	2.1	1606.5
5	Gin pole	260	4.4	1144	2.05	533
6	Crown block 22.560-GF65	850	7.5	6375	3.5	2975
7	Travelling and hook block 3.22.560-MC65	1320	-0.5	-660	3.6	4752
8	Draworks T1T 10	4127	1.55	6396.85	2.1	8666.7
9	Braking system for the drm	139	0	0	1.1	152.9
10	Bevel gear	435	0.3	130.5	1.1	478.5
11	Chain transmission	175	0.75	131.25	2.05	358.75
12	Cardanic transmission	88	0.75	66	0.8	70.4
13	Multisectional hydraulic cilinder fixture	300	-1.5	-450	2	600
14	Hydraulic folding cilinder fixture	450	1.5	675	3.4	1530
15	Leveling-up hydraulic jack fixture	140	4.6	644	1	140
16	Fixed mast support, hydrtaulic jack fixture	1800	-2.8	-5040	2.1	3780
17	Flodable working platform	609	-3.3	-2009.7	2.2	1339.8
18	Chief driller's controls console	100	-2.75	-275	2.6	260
19	Chief driller platform	200	-1.9	-380	1.8	360
20	Electric system for lighting the mast	100	2.5	250	3.6	360
21	Electric system for controlling	50	-2.6	-130	2.8	140
22	Hydrostatic system	1000	2.8	2800	1.6	1600
23	Pneumatically system	200	2	400	1.6	320
24	Wirte rope d22 - API 9A	514	1.55	796.7	2.2	1130.8
25	Stand pipe	131	3.2	419.2	3.6	471.6
26	Fixtures on the basically frame	300	3.2	960	1.4	420
27	Guards and connection elements	50	2	100	1.3	65
28	Container for tools	400	3	1200	2	800
29	Load indicator fixture	47	-2	-94	1.6	75.2
30	Skid for hydrtaulic tong and spider-elevator	100	-2.5	-250	2.15	215
31	Hydraulic winch raptor 3.6 fixture	127	-1.2	-152.4	1.5	190.5
32	Hydraulic tong and spider-elevator fixture	255	-1.2	-306	1.8	459
33	Mast locking device	100	5	500	3.5	350
34	Enforced anchors	100	3	300	2.9	290
35	Side stars for lower section of the mast	50	3.1	155	3.5	175
36	Levelling-up support	118	4.8	566.4	1.1	129.8
37	Brake cooling system	150	-0.5	-75	1.7	255
	Total weight	20950				
	Total weight for W/O rig	32450	mi*xi=57979.63		mi*zi=63540.5	

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6.6 Weight point, when fully filled-in

WEIGHT POINT FOR W/O RIG AM 12/40 - when fully filled in							
(x="0" - rare axles; "+" - towards front of the carrier; "-" - towards rear of the carrier)							
(z="0" - ground level)							
Item	Description	mi	xi	mi*xi	zi	mi*zi	
1	Carrier	11784	2.7	31816.8	1.1	12962.4	
2	Basically frame	1500	1.6	2400	1.2	1800	
3	Mast MU65 type	3900	3.2	12480	3.6	14040	
4	Fixed mast support	765	-2.8	-2142	2.1	1606.5	
5	Gin pole	260	4.4	1144	2.05	533	
6	Crown block 22.560-GF65	850	7.5	6375	3.5	2975	
7	Travelling and hook block 3.22.560-MC65	1320	-0.5	-660	3.6	4752	
8	Drawworks T1T 10	4127	1.55	6396.85	2.1	8666.7	
9	Braking system for the drm	139	0	0	1.1	152.9	
10	Bevel gear	444	0.3	133.2	1.1	488.4	
11	Chain transmission	198	0.75	148.5	2.05	405.9	
12	Cardanic transmission	88	0.75	66	0.8	70.4	
13	Multisectional hydraulic cilinder fixture	300	-1.5	-450	2	600	
14	Hydraulic folding cilinder fixture	450	1.5	675	3.4	1530	
15	Leveling-up hydraulic jack fixture	140	4.6	644	1	140	
16	Fixed mast support, hydrtaulic jack fixture	1800	-2.8	-5040	2.1	3780	
17	Flodable working platform	609	-3.3	-2009.7	2.2	1339.8	
18	Chief driller's controls console	100	-2.75	-275	2.6	260	
19	Chief driller platform	200	-1.9	-380	1.8	360	
20	Electric system for lighting the mast	100	2.5	250	3.6	360	
21	Electric system for controlling	50	-2.6	-130	2.8	140	
22	Hydrostatic system	1630	2.8	4564	1.6	2608	
23	Pneumatically system	200	2	400	1.6	320	
24	Wirte rope d22 - API 9A	514	1.55	796.7	2.2	1130.8	
25	Stand pipe	131	3.2	419.2	3.6	471.6	
26	Fixtures on the basically frame	300	3.2	960	1.4	420	
27	Guards and connection elements	50	2	100	1.3	65	
28	Container for tools	400	3	1200	2	800	
29	Load indicator fixture	47	-2	-94	1.6	75.2	
30	Skid for hydrtaulic tong and spider-elevator	100	-2.5	-250	2.15	215	
31	Hydraulic winch raptor 3.6 fixture	127	-1.2	-152.4	1.5	190.5	
32	Hydraulic tong and spider-elevator fixture	260	-1.2	-312	1.8	468	
33	Mast locking device	100	5	500	3.5	350	
34	Enforced anchors	100	3	300	2.9	290	
35	Side stars for lower section of the mast	50	3.1	155	3.5	175	
36	Levelling-up support	118	4.8	566.4	1.1	129.8	
37	Brake cooling system	294	-0.5	-147	1.7	499.8	
	Total weight	21761					
	Total weight for W/O rig	33545		mi*xi=60452.38		mi*zi=65171.7	
				ogx=1802		ogz=2.99	

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6.7 Unshielded areas and their first moments

Item	Description	si(mp)	xi	zi	si*xi
1	Carrier	11784	2.7	31817	1.1
2	Basically frame	1500	1.6	2400	1.2
3	Mast MU65 type	3900	3.2	12480	3.6
4	Fixed mast support	765	-2.8	-2142	2.1
5	Gin pole	260	4.4	1144	2.05
6	Crown block 22.560-GF65	850	7.5	6375	3.5
7	Travelling and hook block 3.22.560-MC65	1320	-0.5	-660	3.6
8	Drawworks T1T 10	4127	1.55	6396.9	2.1
9	Braking system for the drm	139	0	0	1.1
10	Bevel gear	444	0.3	133.2	1.1
11	Chain transmission	198	0.75	148.5	2.05
12	Multisectional hydraulic cilinder fixture	88	0.75	66	0.8
13	Hydraulic folding cilinder fixture	300	-1.5	-450	2
14	Flodable working platform	450	1.5	675	3.4
15	Chief driller's controls console	140	4.6	644	1
16	Chief driller platform	1800	-2.8	-5040	2.1
17	Hydrostatic system	609	-3.3	-2009.7	2.2
18	Hydraulic winch raptor 3.6 fixture	100	-2.75	-275	2.6
19	Hydraulic tong and spider-elevator fixture	200	-1.9	-380	1.8
20	Mast locking device	100	2.5	250	3.6
21	Brake cooling system	50	-2.6	-130	2.8
			cg x=2.740		
			cg z=2.013		

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6.8 Weight for components, when empty and fully filled-in

1	Carrier	11500	11784
2	Basically frame	1500	1500
3	Mast MU65 type	3900	3900
4	Fixed mast support	765	765
5	Gin pole	260	260
6	Crown block 22.560-GF65	850	850
7	Travelling and hook block 3.22.560-MC65	1320	1320
8	Draworks T2T-10/5	4127	4127
9	Braking system for the drum	139	139
10	Bevel gear	435	444
11	Chain transmission	175	198
12	Cardanic transmission	88	88
13	Multisectional hydraulic cilinder fixture	300	300
14	Hydraulic folding cilinder fixture	450	450
15	Leveling-up hydraulic jack fixture	140	140
16	Fixed mast support, hydrtaulic jack fixture	1800	1800
17	Flodable working platform	609	609
18	Chief driller's controls console	100	100
19	Chief driller platform	200	200
20	Electric system for lighting the mast	100	100
21	Electric system for controlling	50	50
22	Hydrostatic system	1000	1630
23	Pneumatically system	200	200
24	Wirte rope d22 - API 9A	300	300
25	Fixtures on the basically frame	300	300
26	Guards and connection elements	50	50
27	Load indicator fixture	47	47
28	Skid for hydrtaulic tong and spider-elevator	100	100
29	Hydraulic winch raptor 3.6 fixture	127	127
30	Hydraulic tong and spider-elevator fixture	260	260
31	Mast locking device	100	100
32	Enforced anchors	100	100
33	Levelling-up support	118	118
34	Brake cooling system	150	294
	Fuel tank	284	
	Brake cooling water tank	144	
	Hydraulic oil tank	630	
	Hydraulic oil for bevel gear	9	
	Hydraulic oil for chain transmission		

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7. INSTRUCTIONS FOR TRANSPORT, RIGGING-UP AND OPERATING AT SITE

BEWARE!

-Before you start for commissioning and during operating with the w/o rig, will study carefully the instructions. It is mandatory, these instructions and complete technical documentation to accompany the w/o rig, throughout the service life!

-The personnel designated to work with the unit will be medium class graduated and is mandatory to participate for 2 days at the training courses, organised by the manufacturer!

**DO NOT RELY ON YOUR MEMORY!
IF YOU DO IT, THAT MAY LEAD TO SERIOUS ACCIDENTS.
YOU ARE RECOMMENDED STUDYING THESE INSTRUCTIONS CAREFULLY
BEFORE INSTALLATION AND DURING THE USE.**


7.1 TRANSPORTING FOR W/O RIG

-Maximum speed during transporting of the w/o rig on the road, is limited at 50 km/h.
-On the slopes and curves, speed will be reduced accordingly to avoid dynamic overloading and overturning of the carrier.

Before start the transport of the w/o rig, following will be checked:

- firm clamping between the mast and its dedicated gin pole, with attachments;
- proper blocking for the upper section inside the lower one, belonging to the mast;
- all hydraulic jacks and rear sleeping console, should be tightened and ensured with attachments;
- all those four anchors will be tightened and located in their designated place;
- travelling and hook block will be fixed with its dedicated support and firm tightened with attachments;
- the proper work for braking system belonging to the carrier;
- main supply valve, inside pneumatic system belonging to the w/o rig, will be closed at time for transporting;
- mast locking device will be blocked when in transport;
- lock the side platform when in transport;
- lock the working platform when in transport;
- lock the side staircase when in transport.

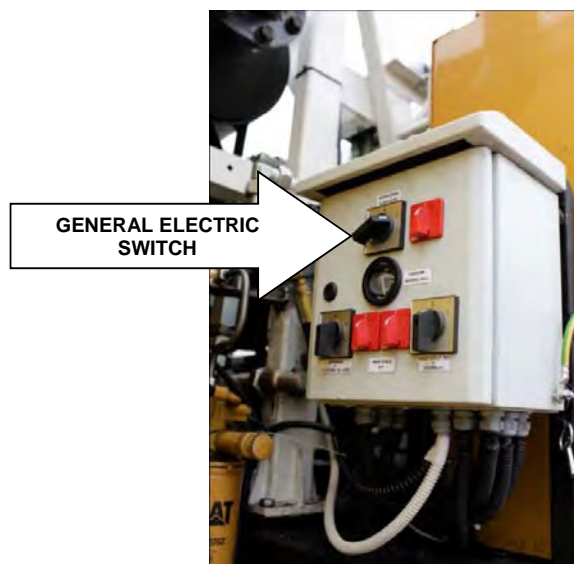
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7.2 RIGGING-UP

Take up following actions before rigging up the w/o rig:

- it will levelled-up, pressed and arranged the rig location in such manner to select those concrete blocks suitable with specific pressure as it's indicated inside chapter 6.2 (specific pressure against the ground);
- disconnect the power supply for position lamps, by means of the general switch when position "1" will be reached, on the main electrical panel.



BEWARE!

- Moving back of the carrier will be done at the lowest speed available, and will be coordinated only in a team, where the driver will be guided by his colleagues up to the final.
- Is forbidden such operation to be done by the driver himself, without being piloted, such event may lead to critical accidents!
- Working area will be marked with warning tape. Inside this area, during moving back with the carrier is not allowed to go inside!
- If a fire will be initiated, those extinguishers located in front of carrier will be used!

After one must observe above mentioned safety norms, could be continued with installing the carrier at its final position, as follows:

-move back the carrier towards the well axis, so that its longitudinal axis to line-up with the well one;


-make sure the distance between the well and rear jacks' axle, will be 1.740 mm;

-stop the carrier when 1.740 mm were reached;

-shift the gear lever in the "neutral" and use the parking brake;

-speed up and shifting the gear will be switched off from the carrier cabin to the chief driller panel (see the instruction inside operating and maintenance manual for the

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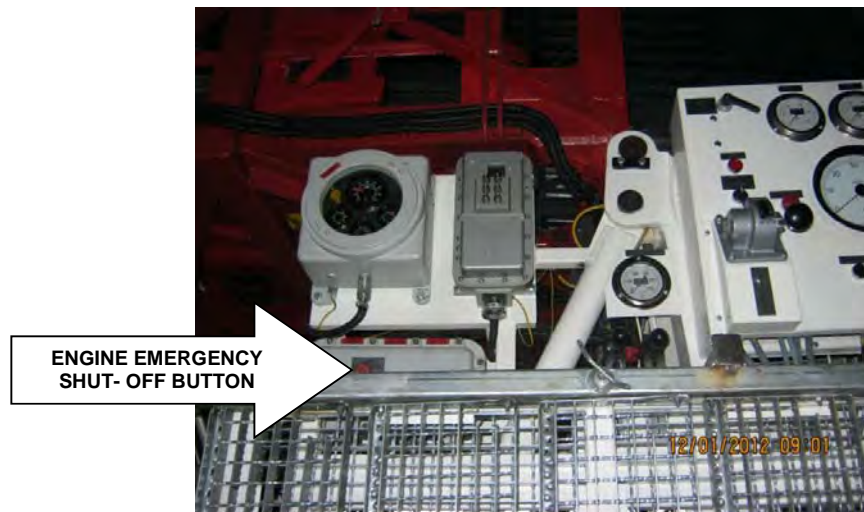
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- carrier 37.300VFA type);
- shift the main distribution box G 173-MAN type in neutral position (taking off the power from the carrier's axles);
- coupling that PTO's on the main distribution box, allowing to transmit full power to the drawworks.

So far, the w/o rig is prepared to start the levelling-up procedure.


REMARK:

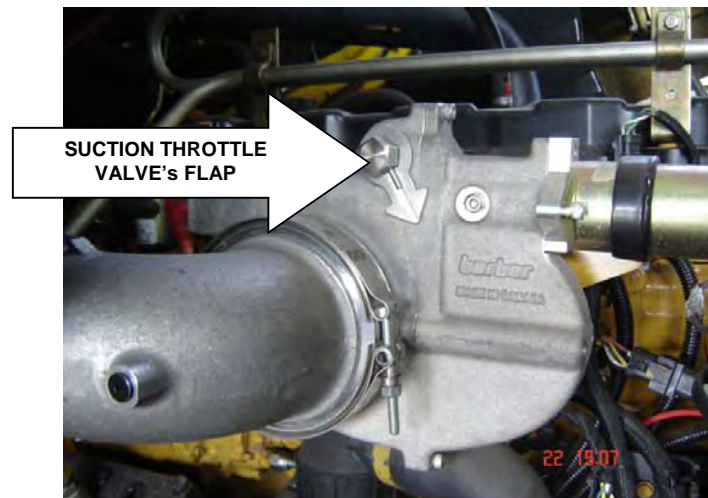
It is recommended shut-off of the engine to be done from the Driver Panel, of the carrier **(as far start-up of the engine is possible from the Driver Panel, only)**
For emergency situations Engine Emergency Shut-off Button (red ones, on the electric panel) may be used.



After pushing the engine emergency shut-off button is compulsory to unlock it (by rotating to the right) and put back the suction throttle valve's flap in "neutral" position.
If these actions are not processed, starting up of the engine is not possible.

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7.3 LEVELLING-UP

BEWARE!

- Levelling-up of the w/o rig by means of the hydraulic jacks will be made gradually, powering for each jack, to prevent distortions of the carrier or of the main frame.
- Levelling-up for the w/o rig will be followed-up all the time in operating.

- check the rig area, to comply with those values inside layout for specific load at ground;
- check for the level of hydraulic oil inside the tanks and fill, if needed;
- locate water hand levels on both directions of the w/o rig, to check for levelling;
- place on the ground support plates for both hydraulic jacks, located in front of the carrier;
- release the safety nuts for hydraulic jacks and start for levelling till the contact with the supports;

BEWARE!

If the personnel laying down on the ground those support plates, are in the area of action for the jacks is forbidden to power the hydraulic jacks.

The personnel will stand up and will wave that their job to fix the plates was finished.


- place on the ground support plates for both hydraulic jacks, located at the rear of the carrier;
- release the safety nuts and start folding for rear hydraulic jacks till the contact with the supports;

BEWARE!

Each of those ground support plates will be handled by two people.

- push the lever for hydraulic distributor's belonging to each of those hydraulic jacks (one by one) up to that moment when the stems will be in contact with the ground;

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- hydraulically distributors' lever will be acted one by one, in such manner to succeed levelling-up the w/o rig (during this operation, follow up both water hand levels indications and keep into consideration to have a maximum clearance- between basically frame and the ground-at 1.500 mm).
- all this time will follow up the indication of the both water hand levels indications in order to line-up the w/o rig for both directions;
- when levelling-up is reached, safety nuts will be blocked with each of those four hydraulic jacks;
- put ON, the lever of hydraulic distributor for that hydraulic cylinder, to start folding the side-platform.

BEWARE!

The operator shall ensure no persons exist, inside designated area; folding the side platform will be done after that.

- Unlock the ladder to access for the side platform and pull it until sits on the ground;
- Railing will be installed.

BEWARE!

- Is prohibited from working with the w/o rig before levelling-up or in that situation when this operation was improperly done*);
- It is prohibited from working with the w/o rig if all those four lock nuts- from the hydraulic jacks- were not proper fastened, otherwise possible technical and serious human injuries, may occur.
- It is prohibited to dismantle the w/o rig over the night, if you are not offered the clearest light, otherwise possible technical and serious human injuries, may occur.
- It is prohibited to work with asymmetric holds removed.
- It is prohibited to work with partially extended holds; the holds must be extended not more than 4.600 mm between their axles, ensuring before starting the work!

* Levelling-up is prohibited on a surface that does not match the specified loads inside dedicated layout.

7.4 RAISING THE MAST

- all the joints of the mast and multi-sectional hydraulic cylinder, will be greased;
- unlock the mast with the gin pole;
- unlock the lower and upper sections of the mast;
- unlock the travelling and hook block with its dedicated support.

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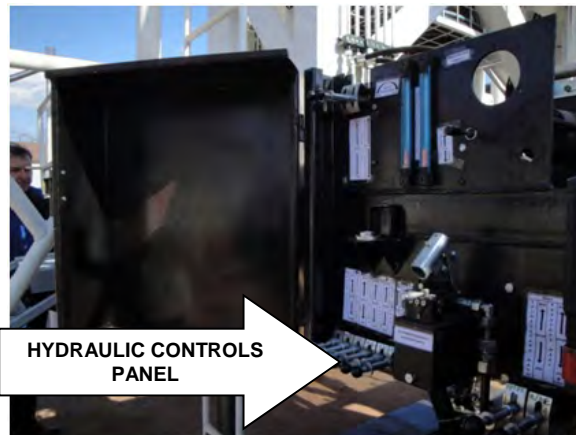
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-Perform the airing of the multi-sectional hydraulic cylinder.

BEWARE!

Raising the mast is prohibited prior complete removals of the air inside hydraulic circuit belonging to the multi-sectional hydraulic cylinder; otherwise, possible technical and serious human injuries may occur.



Airing of the multi-sectional hydraulic cylinder is made from the Hydraulic Controls Panel, in two stages:


-in the first stage:

-move the lever belonging to the airing distributor- located inside the control panel-on that position marked on the panel as "airing", while the lever for hydraulic distributor for raising the mast, will be moved in that position marked on the panel as "raising" (see the tags on the control panel);

-keep both levers as indicated above, until the level indicator gauge-mounted on the discharge line-is detecting a smooth flow for hydraulic oil, without any air bubbles;

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-move back both levers of the said distributors on that position, marked on the panel as "0".

-in the second stage:

-move the lever belonging to the airing distributor-located inside the control panel-on that position marked on the panel as "airing", while the lever of the hydraulic distributor for raising the mast, will be moved in that position marked on the panel as "lowering" (see the tags on the control panel);

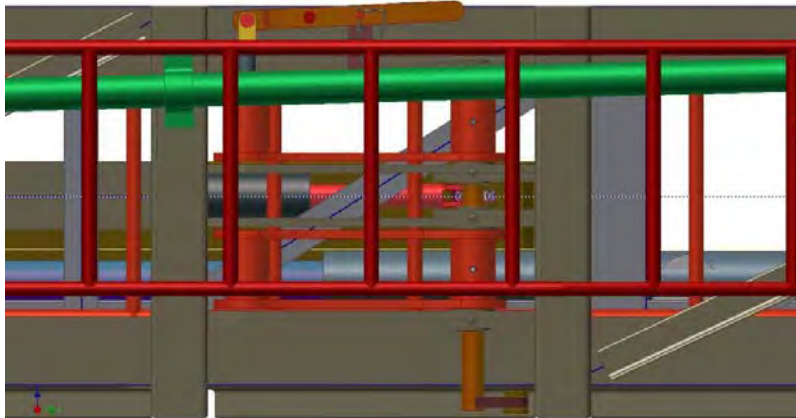
-keep both levers as indicated above, until the level indicator gauge- mounted on the discharge line-is detecting a smooth flow of the hydraulic oil, without any air bubbles;

- move back both levers of the said distributors on that position, marked on the panel as "0".

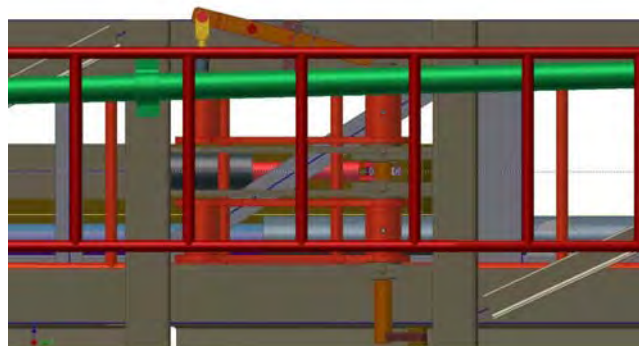
During performing both stages, as were mentioned above, C9 CAT engine will run for max speed at 1000 rpm; complete airing of the system is considered done, when both stages are completed.

Open up the Mast Raising Locking Device:


- a. remove the lever's safety pin;
- b. move the lever away, to release the latch system of the link;



- c. with the lever in above mentioned position, fix in place the safety pin.



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Rising of the mast is performed by means of the hydraulic distributor, mounted with the hydraulic control panel, located on the basically frame at rear-right place.

Push smoothly the lever towards "raising" up to max 200÷300 mm clearance between the mast and its dedicated gin pole and wait in this position for one minute; take a look about any leakage may occurs.

If no leakage, rising of the mast may continue; in case of any leakage detected, the mast will be lowered on the gin pole and fix the problem.

All that time for raising the mast, will take care about following safety norms:

- the braking system lever belonging to the hoisting drum, will be completely released to avoid overloading of the wire rope and will be safety insured by dedicated chain;
- avoid snagging for the wire rope. For this purpose, the personnel will stay near the rig all that time for raising the mast; stop raising if snagging will occurs.

BEWARE!

Is forbidden to stay under the mast while in raising or telescoping!

Rising of the mast will be closely followed up and immediate actions will be taken in the event of abnormal phenomena (get stacked, snatching, etc.) and to avoid clinging for different cables belonging to: anchors, hydraulic winch for the power tong or hydraulic winch Raptor 3.6 type.

In that situation such events may occur, stop the raising operation and remove the defect, if possible with the mast where the operation was interrupted. If this is not possible, lower the mast on its dedicated gin pole and fix the problem.

BEWARE!


Final position for raise-up of the mast is reached, when the hole in the ear of the lower section of the mast, will be lined up with the same in the fork, located with the fixed mast support.

The lever of the hydraulic distributor raising the mast will be hold in "raising "position, all the time.

During raise-up of the mast leakage, get stacked or snatching are not allowed.

When the mast reaches its final position, safety bolt will be installed with the fixed mast support and will be secured with staples.

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SAFETY BOLT TO FIX THE MAST IN WORKING POSITION, SECURED WITH STAPLES

BEWARE!

It is forbidden to perform any job inside hydraulic circuit for raise-up of the mast, when it's under pressure.

It is forbidden to support the mast by means of its multi-sectional hydraulic cylinder, instead of its dedicated gin pole.

Maxim working pressure

For proper working while raising and folding the mast, it's recommended that airing for hydraulic circuits belonging to multi-sectional and folding hydraulic cylinders to be done when the engine is in idle or maxim 1000 rpm. Only after performing both airing operations, the airing for hydraulic circuits will be considered as completed.

Maximum working pressure during raising the mast will be in that range of 120 up to 140 bar.


IMPORTANT!

Airing of the multi-sectional hydraulic cylinder, will be done any time when start the raising and/or lowering the mast, as well. During airing process the engine has to run at 1000 rpm maximum.

When raise-up the mast gets started, following matters are to be considered:

- easy detach of the mast, from its dedicated gin pole;
- smooth moving of the mast while raising, without vibration, shocks or sticking;
- no any left and/or right deviation is accepted for the mast, when loose the contact with its dedicated gin pole; if such may occurs stop raising of the mast and check for levelling-up.
Make necessary corrections for levelling as the case may be.
- Follow-up closely the raising for the mast in order to avoid any snagging for wire rope, guy-anchors, etc;
- the liners belonging to the multi-sectional hydraulic cylinder will fold up in a descending manner (first will be moved the bigger size liner);
- during raising of the mast is not a problem if the rear levelling support will lose the firm contact with the ground, but is mandatory to come back in contact, while the mast reached the working position;

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- after reaching the final position, is compulsory for the mast to be secured by means of those two safety bolts and staples;
- all those hydraulically jacks will be double checked to be in firm contact with the ground secured with the locking nuts.


BEWARE!

All over that time of raising the mast, will take care to avoid overloading of the active line of the wire rope by weakening the brake against hoisting drum.

FAULTS AND HOW TO FIX THEM WHEN RAISING THE MAST

ITEM No.	FAULT	ROOT	HOW TO FIX
1	When raising the mast the liners belonging to the multi-sectional hydraulic cylinder are not folding up in a descending manner	Mechanical get sticking	-Put the mast on its dedicated gin pole and fix the multi-sectional hydraulic cylinder
2	Snatchings when raise the mast	Airing of the multi-sectional hydraulic cylinder	-Put the mast on its dedicated gin pole and fix the airing of the cylinder
3	Left and/or right deviation of the mast when raised	Problems with leveling-up of the w/o rig	-Put the mast on its dedicated gin pole and fix the problem connected with the leveling of the rig
4	When lower the mast the liner belonging to the multi-sectional hydraulic cylinder are not retracted in an ascending manner (starts with the smaller size)	Mechanical get sticking	-Put the mast on its dedicated gin pole and fix the multi-sectional hydraulic cylinder
5	Oil leaks of the multi-sectional hydraulic cylinder	Corrupted gaskets	Remove said gaskets and replace with brand new ones

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7.5 FOLDING THE MAST

-Perform the airing for folding hydraulic cylinder, first above all.

BEWARE!

Folding the mast is prohibited prior complete removals of the air inside hydraulic circuit belonging to the hydraulic cylinders for telescoping; otherwise, possible technical and serious human injuries may occur.

Airing of the folding hydraulic cylinder is made from the Hydraulic Controls Panel:

- move the lever belonging to the airing distributor- located inside of the control panel-on that position marked on the panel as "airing", while the lever of the hydraulic distributor for folding the mast, will be moved in that position marked on the panel as "folding" (see the nameplates on the control panel);
- keep both levers as indicated above, until the level indicator gauge-mounted on the discharge line-is detecting a smooth flow of the hydraulic oil, without any air bubbles;
- move back both levers for said distributors on that position, marked on the panel as "0".


During performing airing for this hydraulic circuit- as were mentioned above- C9 CAT ACERT engine will run between idle and 1.000 rpm.

IMPORTANT!

Airing of the folding hydraulic cylinder, will be done any time when start the folding and/or retracting the mast sections, as well.

- Folding the mast is performed by means of the hydraulic distributor, mounted with the hydraulic control panel, located on the basically frame at rear-right place. Folding the mast will be closely followed up and immediate actions will be taken in the event of abnormal phenomena (get stacked, snatching, etc.) and to avoid clinging for different cables belonging to: anchors, power tong or hydraulic winch Raptor 3.6 type. In that situation such events may occur, stop the folding operation and remove the defect, if possible with the mast where the operation was interrupted. If this is not possible, retract the upper section inside the lower one and fix the problem.
When telescoping the mast will be stopped, the upper section will stay in that freeze position as far for the middle position of the dedicated hydraulic distributor is closed.
- The brake system lever- belonging to the hoisting drum- shall be in a position to avoid overloading for active side of the wire rope;

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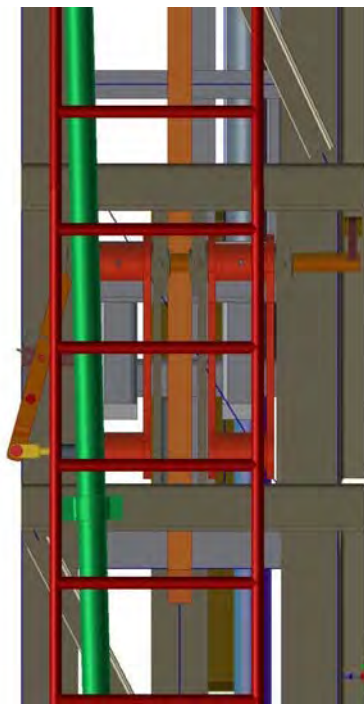
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- Folding the mast is completed while splay area located at the bottom of upper section will over pass with approx. 50 mm the hook's bolt installed with the lower section of the mast; after that, locking between sections will be done when the upper one will be retracted inside the lower one with those 50 mm, making sure the contact between hook's bolt and the splay area, will be located at the middle for last one!

BEWARE!

Folding the mast is mandatory to be completed. It is compulsory while folding, that splay area located at the bottom for upper section to over pass with approx. 50 mm the hook's bolt installed with the lower section for the same.

Down below, **Fig. 1** and **Fig 2** shown for a right folding.



RIGHT FOLDING

Fig. 1

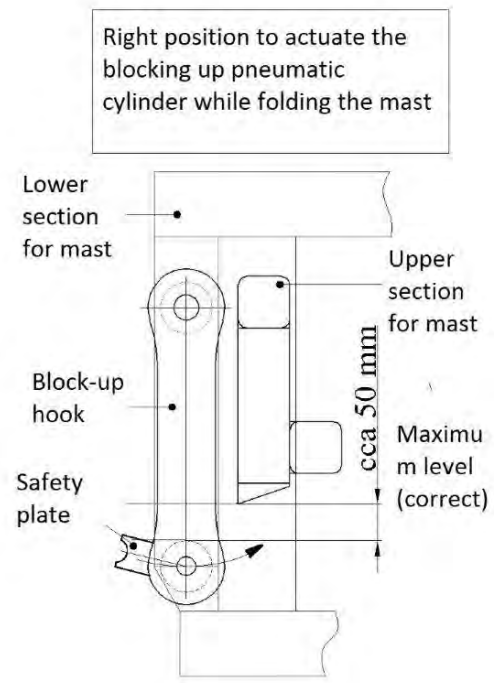


Fig. 2

Wrong folding (incomplete) is shown in **Fig. 3 and 4**



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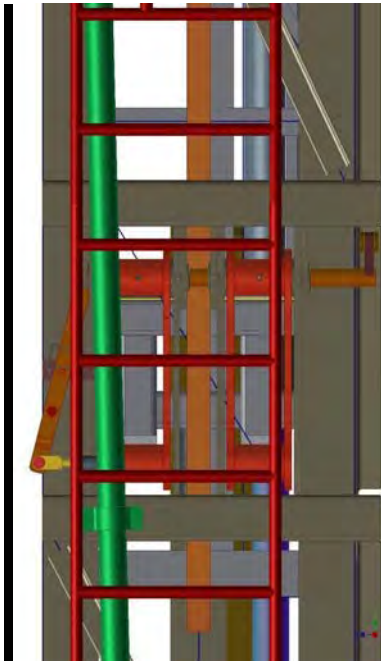


Fig. 3

**WRONG
FOLDING
(Incomplete)**

In such position the blocking up
pneumatic cylinder is forbidden
to be actuated

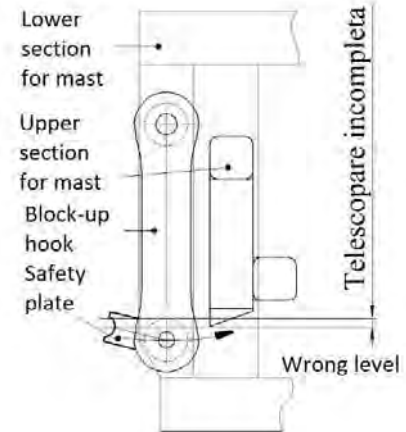



Fig. 4

- When folding the upper section of the mast was completed (see Fig.1 and Fig.2), block up pneumatic cylinder will be actuated in order to secure that latch for it. The block up pneumatic cylinder (Fig.5) is acting against hooks-belonging to the latch system for folding the mast-to secure locking between lower and upper sections of the mast. That Running the block up pneumatic cylinder is possible by means of that pneumatic distributor mounted with the auxiliary control panel, located on the right-back side of the carrier (Fig.6).

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BLOCK UP PNEUMATIC CYLINDER

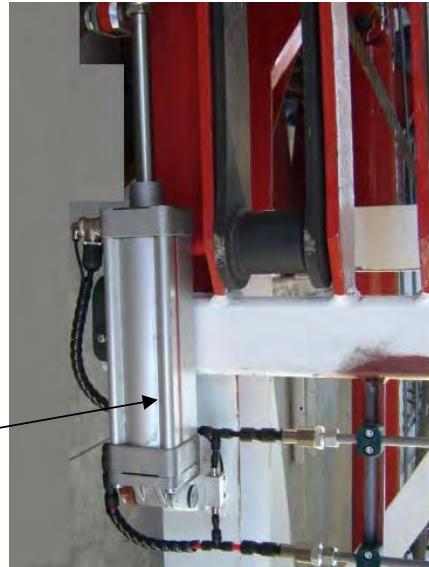


Fig. 5



PNEUMATIC DISTRIBUTOR's LEVER FOR BLOCK UP CYLINDER

Fig. 6

Will be followed up moving ahead for the hooks for blocking, until will be established firm contact with the limiter, welded with the upper section of the mast (Fig.7)

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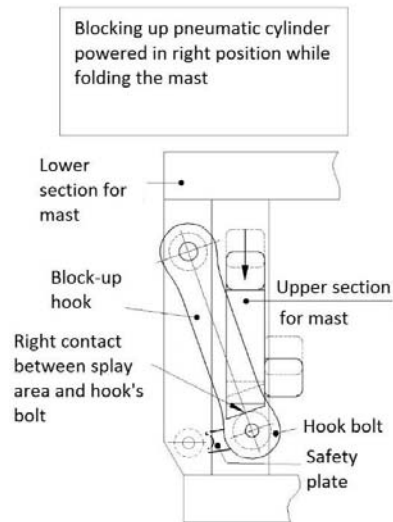


Fig. 7

BEWARE!

A metallic noise, when the lever of pneumatic distributor is actuated, does not warrant engagement of the hook for a safety lock!

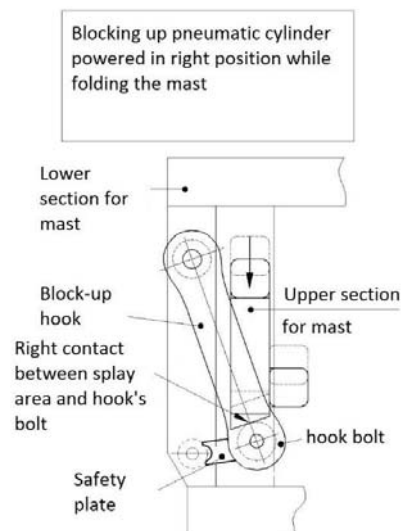



Fig. 8

Safety locking for sections of the mast is achieved when the upper section descent with those approx. 50 mm, while splay area at the bottom for upper section, will be in a firm contact with hook's bolt (see Fig.8, for details).

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When telescoping of the mast is done, the lever of the hydraulic distributor will be moved in position "free" meaning the oil will be connected to the reservoir, to avoid any problem may occur due to the expansion for the oil when the temperature will raise-up.

BEWARE!

Fig.9 is shown that wrong position to activate the block up pneumatic cylinder, while folding the mast.

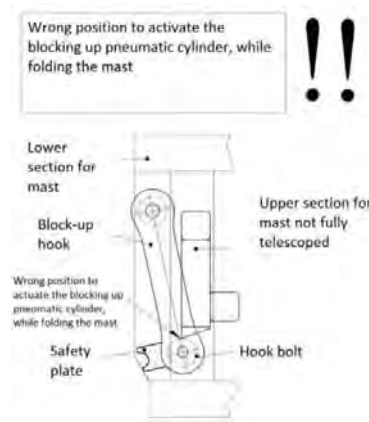


Fig. 9

BEWARE!

Is required for the driller to climb up the side stairs on the mast, to have a clear view for the contact between the splay area and the hook's bolt (i.e. the contact line will be located approximately at the middle for the splay area, belonging to the upper section of the mast).


Two situations may occur:

a/-wrong position for contact area between said parts, as is shown in Fig.9 (in this case, the lever for manual locking device, will not be possible to be set at "locked position").

In such condition, the driller will go down and the chief driller will perform following steps:

- folding up the upper section of the mast, make sure about over pass the lower one with said 50 mm, height;
- retracting the upper section, while the contact between splay area and hook's bolt will be achieved;
- secure by means of the manual locking device's lever, which will stay in "locked position".

b/-right position for two pars when the lever for manual locking device will be set at "locked position" as is presented in Fig.8.

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BEWARE!

Is forbidden climbing up the mast without safety belt and anti-falling safety device put on; otherwise possible human injuries may occur.

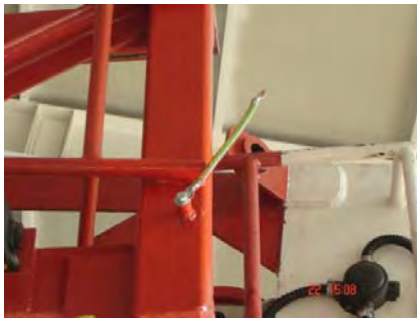
When the cable for the stopper will not taking-back, climbing up the mast is possible only if the support will have 2 connection points.

BEWARE!

It is forbidden to perform any job inside hydraulic circuit for folding the mast, when it's under pressure.

It is forbidden to support the upper section of the mast by means of its hydraulic folding cylinder, instead of its dedicated manual locking device.


-Finally, after the mast is bolted and secured with its fixed mast section, the electric circuit will be installed and connected.



While folding the mast, closely will be followed up:

- easy movement for upper section, inside the lower one;
- folding the upper section will be smoothly and continuously done, without any stuck, shock or vibration;
- during folding the mast, breaking for the hoisting drum will be easily released to prevent overloading for the wire rope.

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FAULTS AND HOW TO FIX THEM WHEN FOLDING THE MAST

ITEM No.	FAULT	ROOT	HOW TO FIX
1	When folding, upper section is not moving away, while the hydraulic pressure inside the circuit is zero.	Discharge valve is blocked in open position	Replace the discharge valve
		Airing discharge valve is blocked in open position	Replace airing discharge valve
2	When folding, upper section is not moving away, while high pressure inside the hydraulic circuit is noted.	Locking mechanical device for folding the mast is not released	Release locking mechanical device
		Solid parts inside sections of the mast	Remove solid parts existing between sections of the mast.
3	Vibrations and snatchings when folding the mast sections	Airing for folding hydraulic cylinder	Put down the upper section and fix the airing for hydraulic cylinder.
4	Oil leaks for hydraulic folding cylinder	Corrupted gaskets	Remove and replace with brand new gaskets.

7.6 ANCHORING THE W/O RIG

Is mandatory for the w/o rig to be fixed by means of its enforced anchors as follows:


- 2 pcs of anchors between the upper section and the carrier, being pre-tensioned at 1.500 lbs (681 kgf);
- 2 pcs of anchors between the lower section and the carrier, being pre-tensioned at 1.000 lbs (454 kgf).

Anchors will be pre-tensioned one by one, while screwing by their strainer. When pre-tensioning operation will be finished their strainers, will be locked in that position by means of dedicated locking-screws.

BEWARE!

Wrong anchoring may lead to possible serious human injuries.

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7.7 WORKING WITH THE W/O RIG WHEN THE WIND IS BLOWING

For the w/o rig stability is directly affected when the wind is blowing.

Running the w/o rig while wind is blowing, shall be subject to the strict observance when reducing for hook load versus the wind speed is mandatory.

Reduced hook load values are indicated on the mast nameplate (see Nameplate riveted on the lower section of the mast, acc. to drwg. P3368-03.14.01).

BEWARE!

Not using the chart for reducing the hook load against the wind speed, could lead for losing system stability and serious human accidents may occurs.

Make use about whether forecast to ensure for safety work with the w/o rig.

WARNING!

Is forbidden to work with the w/o rig, while the wind speed exceeds 110 km/h!

Non-complying with above mention request, may leads for serious human accidents.

7.8 HOISTING BY MEANS OF THE HYDRAULIC WINCH RAPTOR 3.6


Hydraulic winch Raptor 3.6 type is used to hoist (up and down) different materials while their weight cannot exceed 2 tf.

A hydraulic control distributor- located nearby Chief Driller Console- actuates the winch.

Hydraulic Distributor's lever to actuate the Hydraulic Winch Raptor 3.6 type



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7.9 RUNNING-IN AND PULLING-OUT FOR TUBING

While folding and blocking for the mast were completed, next operation to be performed is folding the working platform, over the well hole. Maximum pulling load is limited for 2 tF.

This job, will be done using the hydraulic winch Raptor 3.6 type, as follows:

- hang the working platform with the hook's winch;
- remove those bolts, existing with the platform during transport for the w/o rig;
- by means of its designated distributor, the hydraulic winch is actuated to locate the working platform for desired height, over the ground;

BEWARE!

When folding the working platform will be decided, make sure no any person is inside designated area of work.

Make sure no any damage for tubing head spool may happened.

- fix the working platform by means of the bolts in that selected place with the fixed mast section;
- actuate the hook of the winch for lowering up to that moment when the working platform will rich the horizontal level;
- sits the working platform legs on the ground and tighten the nuts;
- lift and fix handrails, fold and fix the stairs.

Before starting to work with the w/o rig, hook block limit device will be verified.

In this respect, following steps will be performed:

- shift for speed I-i1;
- put ON pneumatic bladder clutch AB 700x200 type;
- put OFF the lever for braking system of the drawworks;
- speed up the C9 ACERT CAT engine ;
- speed down for the engine when travelling and hook block will be at 5-6 m below crown block table, inside the mast;
- make sure for automatically braking of the hoisting drum, by means of the safety pneumatic braking cylinder, when max 2,5-3 m will remain up to the crown block table.

BEWARE!


Overpassing the safety space at the upper part of the mast (settled for 2,5÷3 m) when raising up for the travelling and hook block MC 65 type, is not allowed!

If such happened, may leads for serious technical and human accidents.

Corrective actions are requested immediately as follows:

- when upper safety space is reached (2,5÷3 m) put full manual brake by acting against the braking lever;
- at this level, will be adjusted the position for hook block limit device (mounted with the drawworks frame);
- to make sure about adjustment, will be performed two tests in order to be checked the braking for the traveling block at that height as was settled above.

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BEWARE!

- Any operation against parts of the unit will be done after the engine was stopped.
- Will be avoided ant straight contact with heated parts of the engine (radiator, exhausting system, and so on).
- The chief driller may abandon its working place after the breaking lever are safety blocked by means of dedicated chain.
- When in operations, the access in the area for operation with the travelling block is forbidden.

Working with the unit is possible after the braking for travelling block inside safety space is done and certified by chief driller.

Unlocking in safety conditions for stroke limiting device means controlling the distributor from chief driller panel to release the breaking rims and moving the travelling block over the safety space inside the mast.

Unlocking in safety conditions for stroke limiting device, means controlling for the same distributor to release the breaking system and to allow the drilling stream weight to be discharged with the slips.

BEWARE!

- Is forbidden to work with the unit if no indication is shown with the analogue indicator (self-weight for the travelling block is almost at 1.3 tF),if such event occurs this means some inside the load transducer circuit is default!
- Stop working with the w/o rig, make sure the complete break is ON and fix the problem with the load transducer.

Raising the load:

- according with the raising diagram, shift the hydro-mechanical transmission in the proper speed, according with the actual value of the load, at the hook;
- speed up smoothly, by acting against speed up lever (push it no more than 8°÷10° forward) and command for coupling AB 700x200, pneumatically clutch;
- release the braking system for the hoisting drum, by acting against the brake system lever;
- act against the lever for final speed up for the travelling block.

BEWARE!

When unexpected stop for the engine may happened:


- put the brake acting against braking lever;
- take the weight's string by sitting the tubular with the slips;
- lock the braking lever by means of the chain;
- move the controls for speed-up und bladder in position "0".

Re-starting the engine is possible after performing all above mentioned steps.

Stop the load at different height:

- put the speed up lever in the initial position (the engine for idle) and put "OFF" the clutch;
- put ON the brake by acting against the brake system lever.

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Lowering the load:

- put OFF the brake by releasing the band brake system;
- put ON the brake by acting against the lever, when intend to stop.

Brake lever has an equalizing system which make possible each of those two band brakes to have same load against and there is installed a warning system in such case one band will be broken; if this event stop working with the unit and fix the problem with the broken band.

BEWARE!

- Is forbidden to operate against the drawworks or to adjust the band brakes when is under the load with the travelling block.
During such operations the travelling block will sit on the ground or on the working platform.
- The control lever for braking will be adjusted in a convenient position, due to the rabbets existing with the main braking shaft.

When handling loads for bigger values, need to take care about overheating for the brake rims; to avoid such, cooling water pump and its dedicated fan for cooling will be powered by acting against the hydraulically distributor lever, located on the hydraulic panel at the chief driller panel(for details see below).

BEWARE!

- The water pump and the fun are ON when the gear hydraulic pumps are coupled, without any possibility for human error.
- There are installed at chief driller location two thermocouples for warning as follows:
-when the water temperature reached 75°C up to 85°C an alarm horn will sign about such heating and need a break for cooling the water;
-if not stop the work and the range of temperature will be at 85°C up to 95°C-very close by boiling- the second thermocouple will order STOP for the engine.

7.10 WORKING WITH HYDRAULIC TONG XYQ3C TYPE

Hydraulic tong XYQ3C is used for make-up and break-down threaded joints for tubing. Quick hydraulic connections FASTER type are used to install the hydraulic tong with the hydraulic circuit, located at the rear of the carrier.

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Câmpina

OPERATION MANUAL
WORKOVER RIG
40 tF WITH MAST

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Quick connection for XYQ3C

7.11 DISMANTLING THE W/O RIG

Following steps are to be performed when dismantling the w/o rig:

- fold-up the working platform in transportation position and lock it by means of bolts and staples;
- grease all those joints as for mast and both hydraulic cylinders (multisectional and folding);
- airing both above mentioned hydraulic cylinders;

BEWARE!


It's forbidden to fold and lower the mast, before airing for folding and lowering hydraulic cylinders!

Steps to be performed when dismantling the w/o rig, as follows:

- disconnect all inside electrical circuits;
- fold-up the working platform, by means of hydraulic winch Raptor 3.6 type;
- lock the working platform in transportable position by means of bolts and staples;
- unlock the block system, between those sections of the mast, by acting against the lever;
- act the hydraulic distributor lever for folding cylinder, in such manner to raise the mast with 30 up to 50 mm;
- push the lever for pneumatically cylinder, to open the hook locks;

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- when the hooks are opened, you may act the lever for retracting the folding hydraulic cylinder (if hook locks are not opened while first command, will be repeated all steps from raising the mast with said 30÷50mm) when the upper section will be retracted inside lower one, belonging to the mast;
- follow-up closely all that time for retracting the sections one inside the other, to avoid any problem may be created due to the snatching, get stacked or clinging the different cables belonging to anchors and hydraulic winch (in that situation such may happened, stop retracting and solve the fault);
- remove the staples and the bolts between the lower section of the mast and fixed mast section;
- power the multi-sectional hydraulic cylinder for retracting, in order to start lowering the mast;
- this operation will be carefully done smoothly releasing the band brake of the drawworks;
- install the travelling block on its dedicated support, located inside the lower section of the mast and make sure it's safety ensured;
- make sure the mast is in firm contact with its dedicated gin pole and no any damage for the wire rope and anchors were produced;
- lock the mast and gin pole by means of those side screws;
- un-tight the safety nuts for the hydraulic jacks, up to the lowest position;
- retract one by one all said hydraulic jacks;
- lock those jacks for transporting position;
- connect the power supply for position lamps by means of the general electric switch located on the main electrical panel.

7.12 TRANSPORTING THE W/O RIG BETWEEN LOCATIONS

Before leaving the old location, is mandatory to perform following operations:

- the mast is firm located on its dedicated gin pole and lateral screws are tighten;
- all hydraulic jacks are fully retracted and secured against folding during transportation;
- all those four enforced anchors are fixed in their own location;
- travelling and hook block is located on its dedicated support and secured for transportation;
- pneumatic circuit for the carrier's brakes, will be in good working position;
- lighting and signalling systems for the w/o rig, will work proper.

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8. SAFETY REGULATIONS

8.1 The workover rig 40 tF with mast was designed to accomplish all those main requests governing safety regulations, as follows:

a/ All protective devices delivered by the manufacturer along with the w/o rig shall be mounted as shown in the technical documentation; no improvisation are admitted.

b/ whenever you load and unload the equipment, make sure you meet those general norms for weight handling operations; perform such operations by making use of manual or mechanical handling devices;

c/ Whenever you are to store components, you must meet the mounting order to avoid any damage against the equipment;

d/If you do not put on work the w/o rig and its spares at side immediately, you will take actions to be carefully kept, labelled and cured to avoid their damage due to the bad weather, avoiding any problem with their access to the transport means;

e/No any bolt mentioned inside the documentation will miss, at that time when mast components are to be assembled;

f/Tensioning for the guy lines will not exceed values inside the documentation for the mast;

g/You need to comply with all those functional parameters for the mast as are shown in the documentation, namely that max. static working load, max allowed wind speed specially;

h/Before raising and folding the mast will be checked carefully both hydraulic cylinders- for raising and folding- to avoid any malfunctions;

i/Grease those articulations for mast, fixed section and hydraulic cylinders before use;

j/Mount all the access ladders, secure the flooring by fixing them adequately and completely;

K/Whenever the mast is to be raised and telescoped, the personnel must remain at a minimum 20m distance away from its longitudinal axle;

l/Use a theodolite to check the mast for being stand up in the proper manner;

m/In case of deviation from standing up the mast that might not be eliminated by means of the existing adjustment system, lower the mast and fix the defaults having been found out;

n/You may not raise the mast over the night;

o/The personnel performing installation, working with the rig, revisions and repairs over this one, must be periodically trained and tested for such purposes;


p/Whenever certain safety requirements are not accomplished, you must stop the activity with the rig and will go on only when labour safety conditions were met again;

r/You may not install the hook block in case of missing guards or screws and avoid any friction for the wire rope, due to any distorted guard;

s/Control the mechanical braking system for the drawworks when starts the shift, making sure about the wear- related to the breaking shoes –not exceeding the allowed one value;

t/You must be sure of the adequate adjustment for the band brakes where all necessary correction will be done according with the special instructions issued by the manufacturer when comes about standoff between brake shoes and the rim;

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u/Check the safety valves-for gripping and rust point of view- installed with the air tanks, on daily basis;

v/Using lubricants being different from those specified in the lubrication schedule may cause damages for related components;

x/Whenever the operators start their activity, they must check the w/o rig, chains and all moving parts for adequate operation and lubrication, protective guards will be installed, without exception;

z/Hook load limiter will be checked daily for safety work.

8.2. In accordance with the law No. 319/2006 health and safety at work, chapter III, section 4, article 13, subparagraph (e), the beneficiary is obliged to draw up instructions for completing and/or the application of safety and health at work, taking into account the particularities of the workplaces under their responsibility;

8.3. The workers have the obligation to acquire and to follow up the rules and guidelines for safety labour and to implement all such safety regulations, working with proper technology, discipline at work, to use the correct protective equipment; they are fully responsible to report any technical failure or other situation may lead for an accident or professional illness. The access inside the rig area is prohibited for the persons who are not skilled to work with such equipment; access is permitted only after graduating for a training course regarding accident prevention;

8.4. Commissioning and start-up for the workover rig, as well as for those auxiliary equipment will be done on the basis of the final acceptance report, made at the rig side. No any exception from the safety regulations will be accepted; start up for the rig will be possible, when the final inspection report will be signed, only.

8.5. Any work performed against the w/o rig (review, repair, adjustment, greasing, clean-up, removal of parts, removing the chain, the belts or any covers) will be done, but after complete stopping of the equipment, cut off the voltage and make sure against any accidental start up.

8.6. Commissioning and start-up for wire rope will be drawn up according to the technical instructions of the supplier for cables and will comply with those requested inside API 9A.

8.7. Head of staff for commissioning and start-up, operation and maintenance must study the specification of the rig and all those safety regulations involved. He must be trained with the most important operations: assembly the rig at site, raising-up and lowering the mast.


8.8 Each member of the crew will be trained with the safety regulations which will stay valid all the time they will work at the site.

8.9 Working at height (upper and lower section of the mast, fixed mast support, foldable working platform) is forbidden in those situations, as are mentioned below:

a) unfriendly weather conditions:

-high wind speed, which exceeds of 60 km/h;

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- heavy rain;
- electric shocks;
- blizzard or ice;
- ringing frost (below -20°C);
- fog (no visibility);
 - b) slippery floor (dirty oil or other substances on the floor which are frozen, snow, etc.);
 - c) over the night, if the workplace is inadequate lighting.

Head of the crew is that person empowered to decide about stopping the work.

8.10. Hand tools will be held, as appropriate, in boxes or drawers and will be kept cleaned after each use. Tools required to carry out the work at a height must be carried out in special bags of durable material individually or linked separately – if necessary. They shall not exceed a total of 10 kg weight. It is prohibited to climb keeping tools by hands or inside the pockets. The work to be performed at the height will use hand tools with hand fastening bracelet to prevent accidental falls.

8.11 It's forbidden:

- to modify any inside the w/o rig, without designer's agreement;
- running the equipment without covers, safety devices or instruments to indicate and control the parameters of the rig;
- dismounting said protective devices and covers when the rig is operating.

8.12. All those equipment inside the w/o rig will be inspected regularly and repaired if necessary, according to the instructions issued by the manufacturer.

Chief driller is that responsible person to ensure against continuity in operating for all those apparatus and devices for protection and safety;

8.13. It is mandatory during running with the w/o rig to perform noise measurements- at regular intervals- to determine the daily exposure to noise for employees;

8.14. In such cases when the noise level, exceeds the allowed one (87dB) is compulsory for employees to wear personal protective equipment against noise (preferably external helmets);

8.15. Where the w/o rig is not to be commissioned and started-up for a while, it must be kept neatly preserved, labelled, and stored in a proper manner;


8.16. Running the w/o rig is prohibited unless all the guards and handrails fitted to their seats, according to the documentation, that is:

- chains and moving parts are covered with the defenders;
- working platform and foldable chief driller platform has handrails;

8.17. Safety regulation when working with the travelling and hook block:

- the travelling and hook block is fitted with two side guards where it's forbidden to run this equipment as time said guards, are not in place;

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- before starting the work with the travelling and hook block, will be checked the proper functioning of the locking device for the hook and double check all threaded connections of the equipment;
 - it's compulsory to stop running with the travelling and hook block if the rider cannot be locked, remedy the malfunction for the rider and start working, after that;
 - the wire rope will be closely verified before starting the shift;
 - the travelling and hook block is not allowed to run with missing screws, guards, even for short-term operations;
 - the sheave guards must not be distorted, in order to avoid friction with the rope;
 - wire rope will be supplied wrapped, on its own cable drum, where at time to be installed with the hoisting system, the drum will be put over a gin pole;
 - the hook belonging to the block will have the safety lock device in good condition to prevent against any free release for the swivel bail, or the links;
 - handling of safety against the rotation of the hook will be working on the platform with a special hook with long arm;
- lock index device for the hook will be checked at the beginning for each shift when a long arm special hook will be used for this;


8.18 Using the helmet and the proper equipment is mandatory inside the w/o rig area;

8.19. In the event of accidents at work during commissioning and start-up or during operation, revision/repair both contractor and customer will make sure to provide all those conditions connected with first aid, by applying the appropriate procedures laid down in the "Guide to first aid accident ", edited by the Ministry of labour and social protection of Labour Protection Department.

8.20. The environmental protection:

- chief driller is the first person responsible to carry out the rules for environmental protection, moreover to take all necessary measures to prevent ecological disasters;
- through its operation, the w/o rig does not have a negative influence on the environment;
- for said w/o rig AM 12/40, noise level values do not exceed 100dB;
- oil and fuel tanks belonging to the w/o rig were sealed do not allow any leaks for oil, liquids, but to work safely, do not pollute the environment;
- filling the tanks with the oil, will be made carefully so as not to exceed the maximum level;
- special vessels will be used, when the oil will be removed from the tank, if is in need to repair the parts;
- filling-up the fuel will be made carefully, that it does not fall on the ground. If it happened this will take immediate steps to clean-up the place.

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-all those seals for the parts will check at the beginning for the shift, in order to detect possible leakages;

-all the pipelines and connecting hoses, will be leak proof and tight;

-for pollution control, it will be made measurements of the air around the working platform of the rig and if you'll experience symptoms of pollution, corrective actions will be taken, to eliminate them;

-at a concentration of hydrocarbon vapours exceeding 300 mg/m³, has stopped working, and people moved away from the area with danger.

8.21 In case of fire the unit is provided with two extinguishers, one for each side for the base frame of the carrier, which will be used if such situation may occurs.

8.22 When the rig will be breakdown as a scrap, following safety norms will be considered:

- The personnel doing this job will have on safety equipment;
- Rising for different parts will be done with proper cranes;
- The battery handling will be done carefully by two persons having on adequate safety equipment to avoid any contact with the acid inside the battery.

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Workover rig 40 tF with mast

Operation Manual Part II-nd


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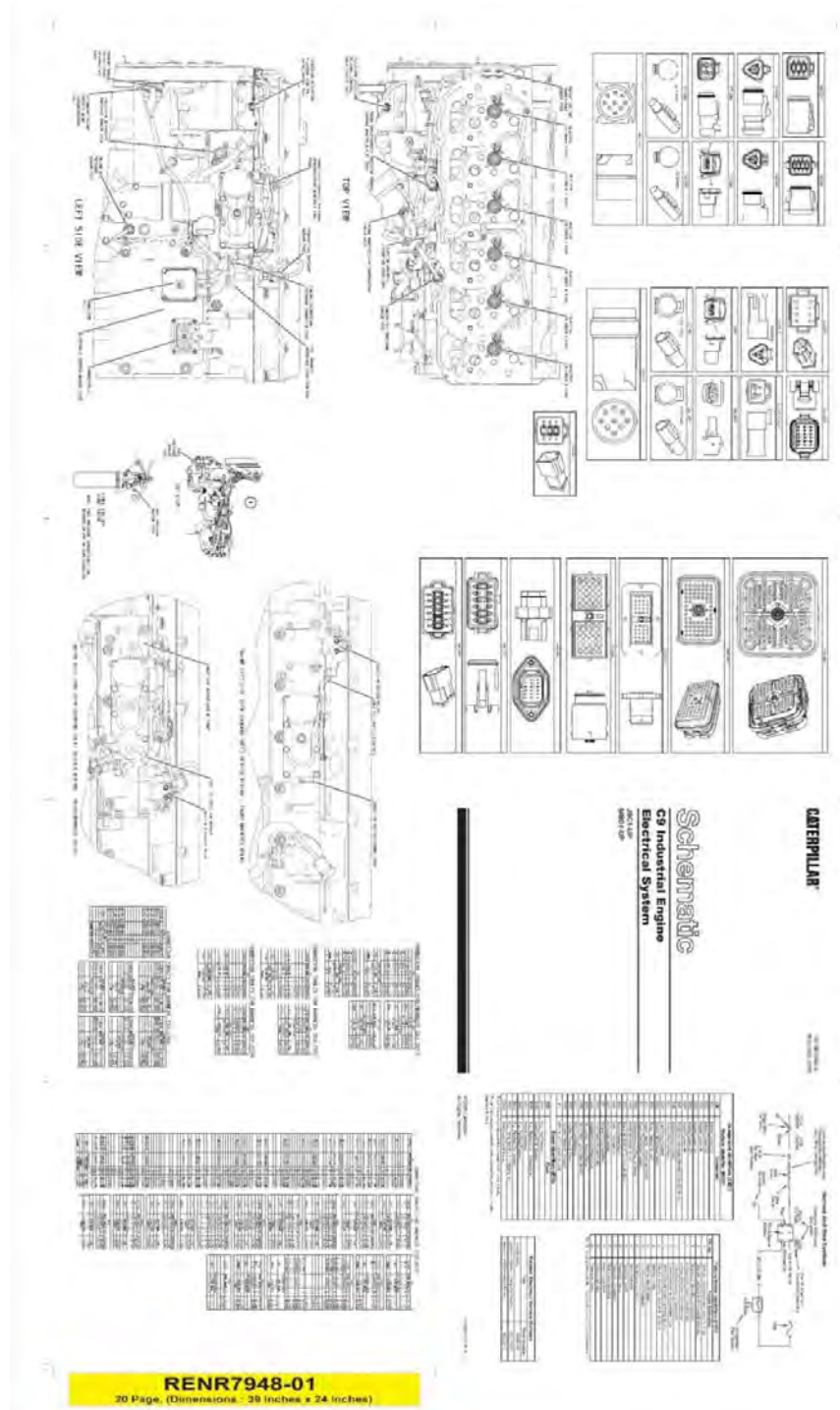
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9. WIRING DIAGRAM FOR CAT C9 ACERT+TH 31 E 61A





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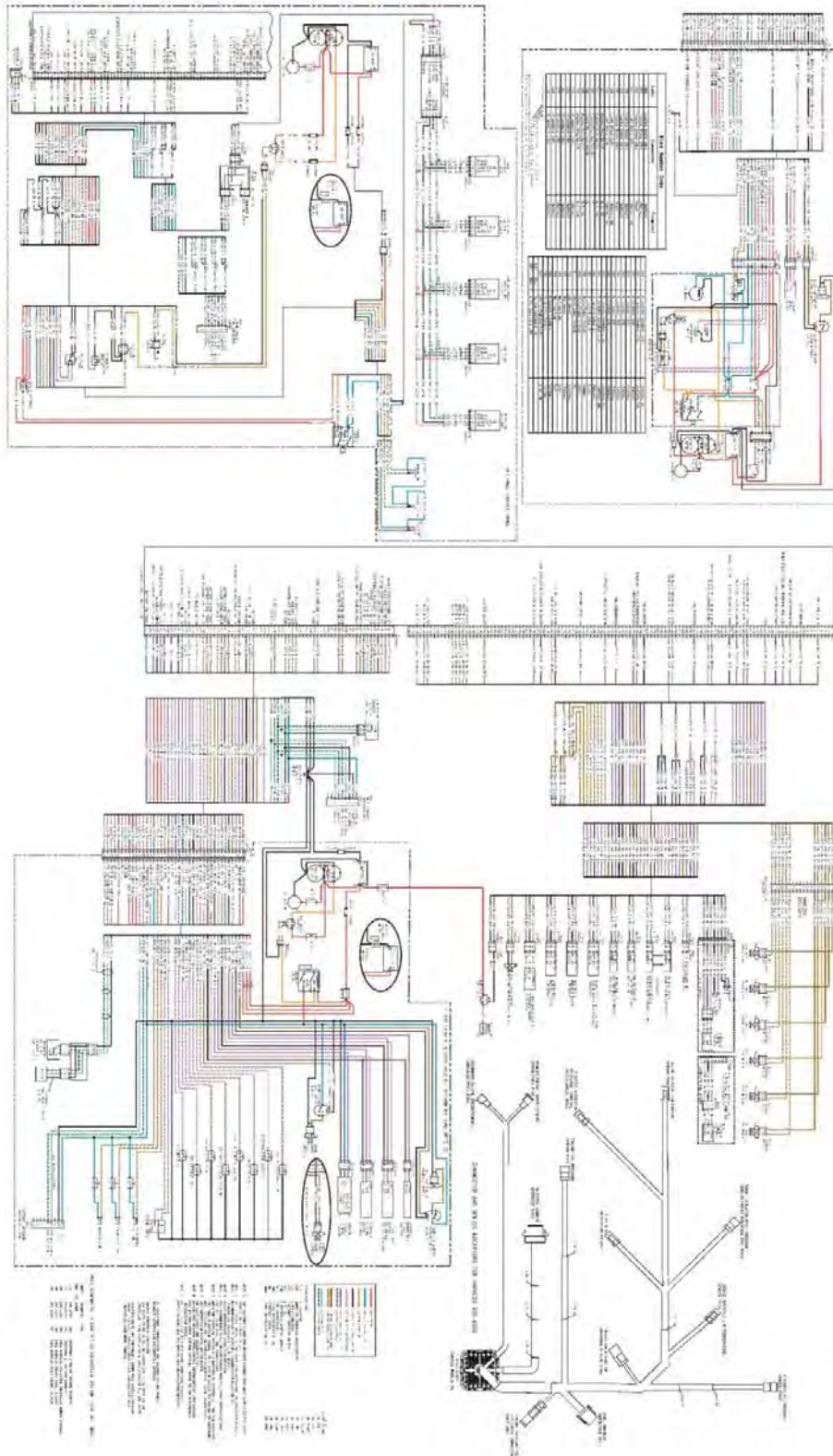
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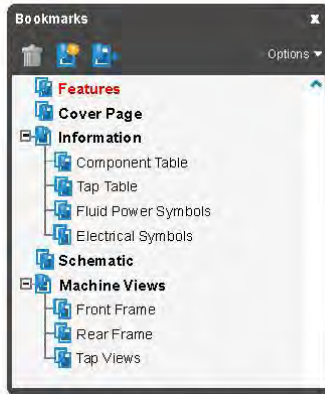
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INTERACTIVE SCHEMATIC



The Bookmarks panel will allow you to quickly navigate to points of interest.

This document is best viewed at a screen resolution of 1024 X 768.

To set your screen resolution do the following:

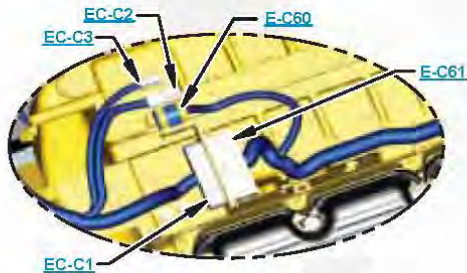
RIGHT CLICK on the **DESKTOP**.

Select **PROPERTIES**.

CLICK the **SETTINGS TAB**.

MOVE THE SLIDER under **SCREEN RESOLUTION** until it shows **1024 X 768**.

CLICK OK to apply the resolution.



Click on any text that is BLUE and underlined. These are hyperlinks that can be used to navigate the schematic and machine views.

VIEW ALL CALLOUTS

When only one callout is showing on a machine view this button will make all of the callouts visible. This button is located in the top right corner of every machine view page.

HOTKEYS (Keyboard Shortcuts)

	FUNCTION	KEYS
	Zoom In	"CTRL" / "+"
	Zoom Out	"CTRL" / "-"
	Fit to Page	"CTRL" / "0" (zero)
	Hand Tool	"SPACEBAR" (hold down)
	Find	"CTRL" / "F"





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KENR6699-02
January 2010

Schematic

TH31 and TH35 Petroleum Transmission Electrical System

TH31 Transmission:	TH35 Transmission:	TH31 Package:	TH35 Package:
DDB321-UP	TNB419-UP	PAY1-UP	PBL1-UP
LWC126-UP	TZM171-UP	PAZ151-UP	PBN151-UP
LAD126-UP	SDS329-UP	PFZ1-UP	PBW152-UP
SSD206-UP	SMS300-UP		PBY152-UP
SKY138-UP	PZT297-UP		PBZ1-UP

With Dropbox Option





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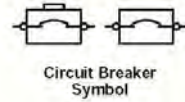
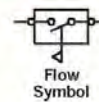
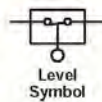
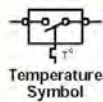
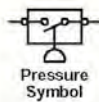
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HARNES and WIRE
Electrical Schematic Symbols



Symbols



Symbols and Definitions

Fuse: A component in an electrical circuit that will open the circuit if too much current flows through it.

Switch (Normally Open): A switch that will close at a specified point (temp, press, etc.). The circle indicates that the component has screw terminals and a wire can be disconnected from it.

Switch (Normally Closed): A switch that will open at a specified point (temp, press, etc.). No circle indicates that the wire cannot be disconnected from the component.

Ground (Wired): This indicates that the component is connected to a grounded wire. The grounded wire is fastened to the machine.

Ground (Case): This indicates that the component does not have a wire connected to ground. It is grounded by being fastened to the machine.

Reed Switch: A switch whose contacts are controlled by a magnet. A magnet closes the contacts of a normally open reed switch; it opens the contacts of a normally closed reed switch.

Sender: A component that is used with a temperature or pressure gauge. The sender measures the temperature or pressure. Its resistance changes to give an indication to the gauge of the temperature or pressure.

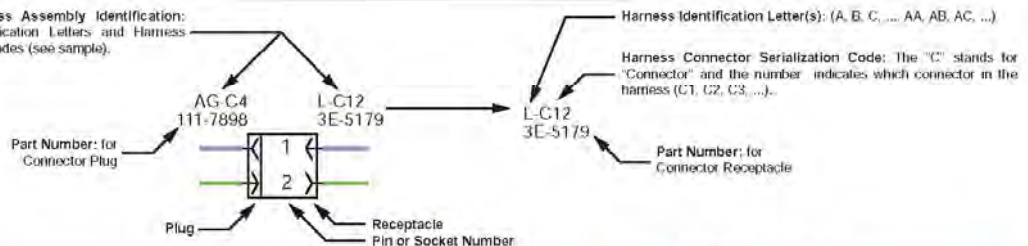
Relay (Magnetic Switch): A relay is an electrical component that is activated by electricity. It has a coil that makes an electromagnet when current flows through it. The electromagnet can open or close the switch part of the relay.

Solenoid: A solenoid is an electrical component that is activated by electricity. It has a coil that makes an electromagnet when current flows through it. The electromagnet can open or close a valve or move a piece of metal that can do work.

Magnetic Latch Solenoid: A magnetic latch solenoid is an electrical component that is activated by electricity and held latched by a permanent magnet. It has two coils (latch and unlatch) that make electromagnet when current flows through them. It also has an internal switch that places the latch coil circuit open at the time the coil latches.

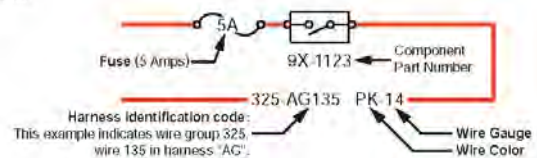
Harness and Wire Symbols

Wire, Cable, or Harness Assembly Identification:
Includes Harness Identification Letters and Harness
Connector Serialization Codes (see sample).



Deutsch connector: Typical representation of a Deutsch connector. The plug contains all sockets and the receptacle contains all pins.

Sure-Seal connector: Typical representation of a Sure-Seal connector. The plug and receptacle contain both pins and sockets.





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WIRE DESCRIPTION



Wire Description					
Wire Number	Wire Color	Description	Wire Number	Wire Color	Description
Power Circuits			Control Circuits (Continued)		
101	RD	Battery To Battery Breaker	E964	WH	Engine Output Speed Sensor (+)
126	PK	Battery (+)	K900	YL	Can Data Link (+)
Ground Circuits			K952	BR	Solenoid Return
202	BK	Battery (-)	K972	BR	Start Relay / Backup Alarm Relay Return
A234	BK	Can Data Link Shield	K977	PK	Transmission Oil Temperature Sensor
Control Circuits			K990	GN	Can Data Link (-)
306	GN	Start Relay	L910	PK	Torque Converter Output Speed Sensor (+)
307	OR	Key Switch "Start"	L911	YL	Torque Converter Output Speed Sensor (-)
308	YL	Key Switch "Run"	X952	OR	Quick To Neutral Switch
331	OR	Backup Alarm Relay	X953	BU	Work Mode Fork Position Sensor
410	WH	Transmission Warning Lamp	X954	PK	Front Wheel Drive Fork Position Sensor
419	YL	Park Brake Pressure Switch	X955	GN	Rear Wheel Drive Fork Position Sensor
426	BR	Transmission Filter Bypass Switch	X956	OR	Work Mode Engage Solenoid
705	PK	Lockup Clutch Solenoid	X957	YL	Work Mode Disengage Solenoid
709	OR	Sensor Power Supply	X958	GN	Rear Wheel Drive Engage Solenoid
720	PU	Service Brake Pressure Switch	X959	BU	Rear Wheel Drive Disengage Solenoid
751	GN	Transmission Shift Solenoid #1	X960	PU	Front Wheel Drive Engage Solenoid
752	YL	Transmission Shift Solenoid #2	X961	GY	Front Wheel Drive Disengage Solenoid
754	BU	Transmission Shift Solenoid #3	X962	WH	Front Wheel Drive Disconnect Speed Sensor (+)
755	OR	Transmission Shift Solenoid #4	X963	GY	Front Wheel Drive Disconnect Speed Sensor (-)
F704	YL	Torque Converter Oil Temperature Sensor	X966	BR	Rear Wheel Drive Disconnect Speed Sensor (+)
J765	BU	Sensor Return	X967	OR	Rear Wheel Drive Disconnect Speed Sensor (-)
K744	BU	Not Used	Y974	BU	PTO #1 Increment Switch
M739	YL	Solenoid Return	Y975	BU	PTO #1 Decrement Switch
892	BR	Can Data Link (-)	Y976	BU	PTO #2 Increment Switch
893	GN	Can Data Link (+)	Y977	BU	PTO #2 Decrement Switch
K808	GY	2WD/4WD Selector Switch	Y978	BU	Alternate Max Gear (Primary Shifter) Switch
900	PU	Transmission Shift Solenoid #5	Y979	BU	Output Speed Driver
901	WH	Transmission Shift Solenoid #6 (TH35 ONLY)	Y980	BU	Converter Output Speed Driver
921	WH	Transmission Shift Solenoid Return #1	Y981	BU	PTO #1 Enable Switch
922	BR	Transmission Shift Solenoid Return #2	Y982	BU	PTO #2 Enable Switch
961	BR	Shifter Selector Switch	Y984	BR	Lockup Clutch Disable Switch (N/C)
E900	WH	Transmission Output Speed Sensor A+	Y985	BR	Lockup Clutch Lamp
E901	GN	Transmission Output Speed Sensor A-	Y986	BR	Alternate Max Gear (Secondary Shifter) Switch
E906	OR	Transmission Output Speed Sensor B+	Y987	BR	Primary Shifter Mode Lamp
E907	GY	Transmission Output Speed Sensor B-	Y988	BR	Lockup Clutch Disable Switch (N/O)
E963	BK	Engine Output Speed Sensor (-)	Y989	BR	Secondary Shifter Mode Lamp



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CODES AND RELATED MANUALS



Related Electrical Service Manuals

Title	Form Number
Specs / SysOp / T&A:	KENR5097
Troubleshooting / SysOp / T&A:	KENR5902

Event Codes Transmission Control

Event Code	Condition
0047	Transmission Abuse Warning
0049	Coasting in Neutral Warning
0084	Machine Overspeed Warning
0155	High Hydraulic Retarder Oil Temperature Warning
0329	Transmission Oil Filter Plugged
0330	Transmission Output Speed Mismatch

Failure Mode Identifiers (FMI)¹

FMI No.	Failure Description
0	Data valid but above normal operational range.
1	Data valid but below normal operational range.
2	Data erratic, intermittent, or incorrect.
3	Voltage above normal or shorted high.
4	Voltage below normal or shorted low.
5	Current below normal or open circuit.
6	Current above normal or grounded circuit.
7	Mechanical system not responding properly.
8	Abnormal frequency, pulse width, or period.
9	Abnormal update.
10	Abnormal rate of change.
11	Failure mode not identifiable.
12	Bad device or component.
13	Out of calibration.
14	Parameter failures.
15	Parameter failures.
16	Parameter not available.
17	Module not responding.
18	Sensor supply fault.
19	Condition not met.
20	Parameter failures.

¹The FMI is a diagnostic code that indicates what type of failure has occurred.

Component Identifiers (CID)¹

Module Identifier (MID)²

Transmission Control (MID No. 027)

CID	Component
0041	8 Volt DC Supply
0144	Backup Alarm Relay
0168	Electrical System Voltage
0177	Transmission Oil Temperature Sensor
0190	Engine Speed Sensor
0247	J1939 Data Link
0262	5 Volt DC Supply
0444	Starter Motor Relay
0585	Transmission Output Speed Sensor #1
0668	Transmission Shift Lever
0672	Torque Converter Output Speed Sensor
0673	Transmission Output Speed Sensor #2
0709	Transmission Lockup Clutch Solenoid
0718	Transmission System
0826	Torque Converter Oil Temperature Sensor
1326	ECM Location Code
1401	Transmission Solenoid #1
1402	Transmission Solenoid #2
1403	Transmission Solenoid #3
1404	Transmission Solenoid #4
1405	Transmission Solenoid #5
1406	Transmission Solenoid #6 (For 1H35 Only)
1823	Shift Rail #1 Position Sensor (Work Mode)
1824	Shift Rail #2 Position Sensor (Rear Wheel)
1825	Shift Rail #3 Position Sensor (Front Wheel)
1834	Ignition Key Switch
2859	Transmission Dropbox Disconnect #1 Engage (Work Mode)
2860	Transmission Dropbox Disconnect #2 Engage (Rear Wheel)
2861	Transmission Dropbox Disconnect #3 Engage (Front Wheel)
2862	Transmission Dropbox Disconnect #1 Disengage (Work Mode)
2863	Transmission Dropbox Disconnect #2 Disengage (Rear Wheel)
2864	Transmission Dropbox Disconnect #3 Disengage (Front Wheel)
2991	Transmission Shifter #2
2998	Transmission Dropbox Disconnect #1 Speed Sensor
2999	Transmission Dropbox Disconnect #2 Speed Sensor
3000	Transmission Dropbox Disconnect #3 Speed Sensor
3013	Lockup Clutch Disable Switch

¹The CID is a diagnostic code that indicates which circuit is faulty.

²The MID is a diagnostic code that indicates which electronic control module diagnosed the fault.



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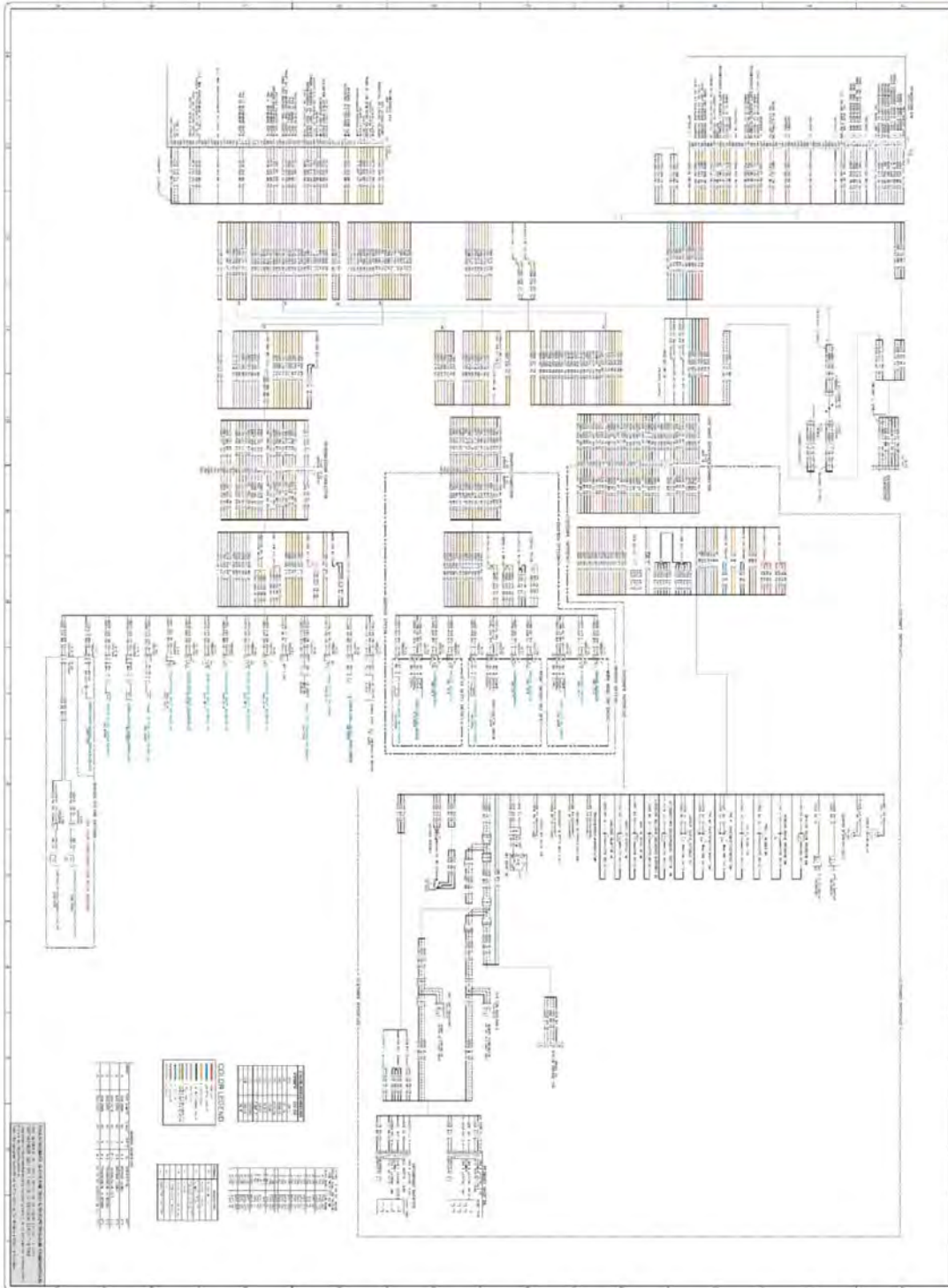
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KENR6699-02

36 Page, 2000mm x 1400mm (A3)





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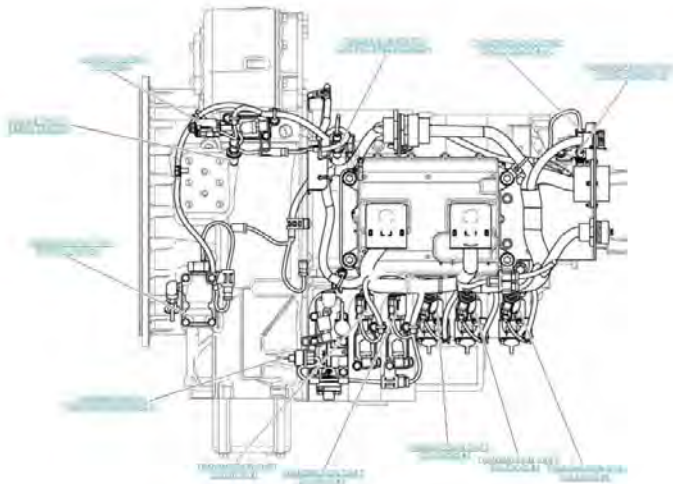
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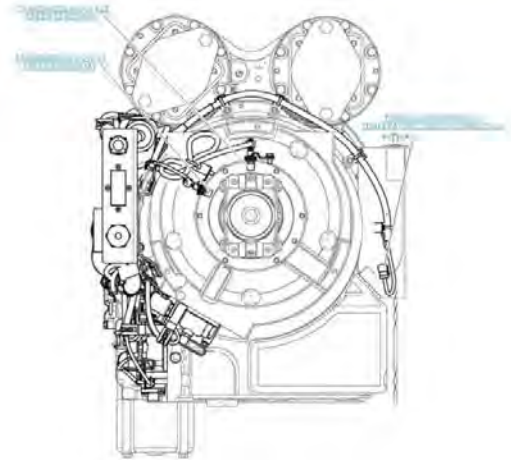
TH31 TRANSMISSION WITHOUT DROPBOX



VIEW ALL CALLOUTS




LEFT SIDE VIEW OF TRANSMISSION



REAR VIEW OF TRANSMISSION

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10. ELECTRONIC EQUIPMENT FOR MEASUREMENT EMIX-100

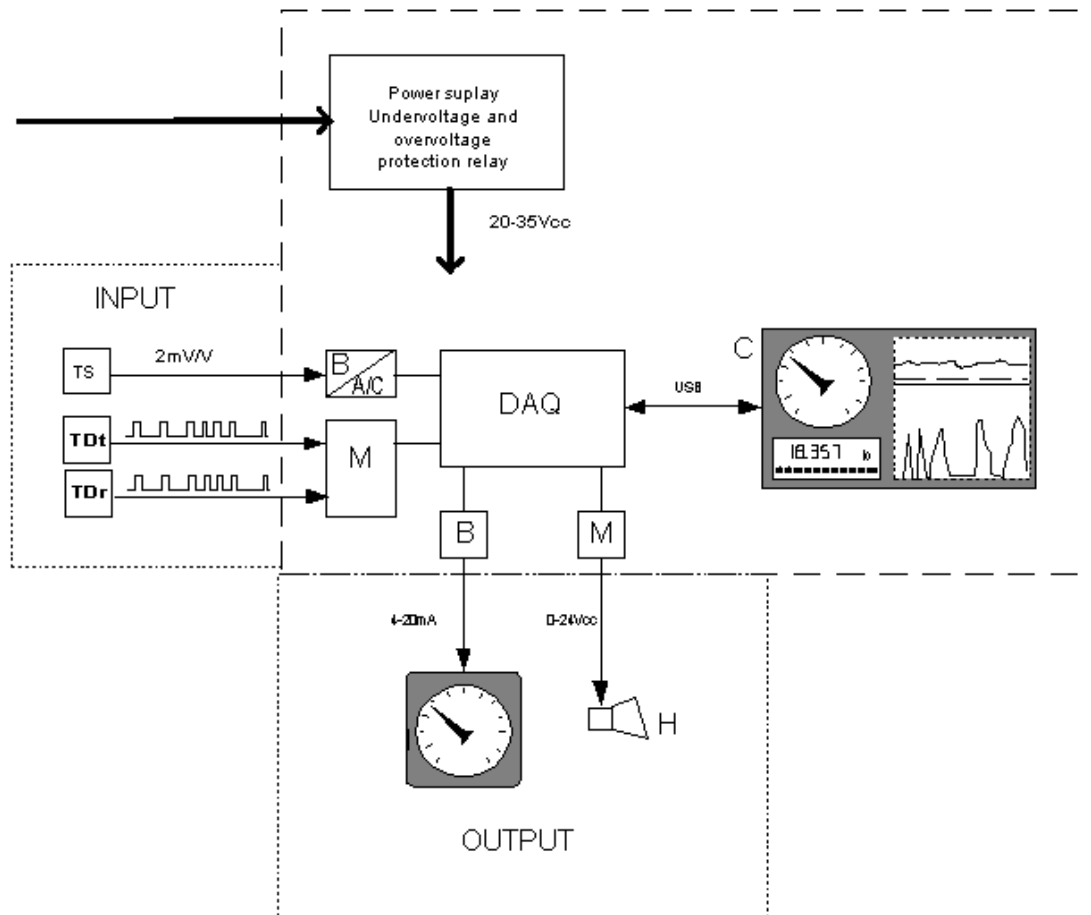
10.1 Scope


The electronic load measuring and registration equipment for workover rigs is a product specially designed for this purpose, which incorporates the most recent technologies.

For improved reliability and measuring accuracy, "EMIX-100" incorporates a specialized data acquisition module produced in USA, a cable tension transducer (specially built for this purpose) an industrial computer with monitor incorporated, an analogue indicator to display the hook load and an acoustic warning module.

The program for data acquisition, processing, display, storage, registration and printing, called by us "WellAid DAQ", is produced in cooperation with a specialized supplier internationally certified in this domain.

10.2 Brief description



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- TS- Cable tension transducer
- A/D- Transducer signal supplying and conversion module
- B- Intrinsic separation and protection barriers for explosive environments
- M- Signals conversion and separation modules
- DAQ- Data acquisition module
- I-Hook load indicator (analogue indicator)
- C-Calculation and registration unit (Industrial PC)
- TDt-Diesel flow transducer (mounted on the tour)
- TDr-Diesel flow transducer (mounted on the return)
- H –Acoustic warning device

10.3 Operating mode

10.3.1 The electronic transducer (TR) with strain gauges measures the cable tension and generates an electric signal proportional with this one. The transducer has intrinsic ATEX certification and the supply is only through a specialized barrier (with ATEX certification) containing the signal converter (A/D) as well.


10.3.2 The signal converter (A/D) takes over the signal from transducer and converts it into an electrical unified signal 4-20mA. In order to meet ATEX standards regarding intrinsic protection, the signal converter is included in the galvanic separation and intrinsic protection barrier.

10.3.3 The data acquisition module (DAQ) takes over the analogue or digital signals, by case, measures them and turns them into digital signals sent to the calculation and registration unit (C) through the USB port. It also takes over digital signals from calculation and registration unit and sends analogue and digital signals to the external equipment (hook load indicator mounted on the chief driller's panel and the acoustic warning). Those signals are transferred through intrinsic barriers with galvanic separation on ATEX certified equipment, and through specially built modules on the other devices.

10.3.4 The intrinsic separation and protection barriers, their goals is to achieve insulating the data acquisition module DAQ from the signals sent or received from outside and securing the voltage and signal levels in agreement with the intrinsic explosion protection standard ATEX.

10.3.5 The signal conversion and separation modules (M) (own production) convert the input/output signals from DAQ module in order to be compatible with the external equipment (flow transducer and acoustic warning device) and, at the same time, protect DAQ module from overvoltage by opt-galvanic separation.

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10.3.6 Analogue indicator continuously displays the hook load value. The indicator is ATEX certified and is built to resist environments with severe temperatures, shocks and vibrations.

10.3.7 Under-voltage and overvoltage protection relay is a module specially designed by manufacturing company; it practically protects the equipment by disconnecting it from supply voltage when it drops below 16V or increases over 38V. The relay is provided with visual indicators (LEDs) that show why the equipment was disconnected (too low or too high voltage). This module is integrated with stabilized supply sources with voltages of 24 and 12 V.

10.3.8 The calculation and registration unit (DAQ) performs the following functions with the WellAid program:

1. **Measuring function** converts the signal received from the data acquisition module into load numerical values (tons), depending on the transducer's measuring range and the number of crane wires, it calculates the average fuel flow consumed and measures the total volume of that consumed fuel.
2. **Display function** allows the measured load and the maximum permitted load numeric values to be displayed on the indicator mounted on the chief driller's panel and on its own screen and, at the same time, the average flow of fuel consumed is displayed. This function also allows the real time display of the current date and time, as well as a bar-graph style display to monitor the measured load variation compared to the maximum allowed load, and a screen where the displaying is made through an analogue indicator with two needles (software achieved), which indicates the instantaneous load value and the maximum value reached during operation. At the same time, you can monitor on another screen, at your wish, the graphical representation of the load and consumed fuel flow in time (chart) for different periods of time, between 15 minutes and 24 hours.
3. **The registration function** performs data storage on the Hard Disk in binary files, for 24 hours periods. In this way the graphs regarding load and fuel consumption progress in time are registered throughout the equipment operation period.
4. **The alarming function** allows an electric signal to be generated when the maximum admitted load is exceeded. This function generates an acoustic signal that draws attention on the fact that the alarming threshold value is reached or exceeded.
5. **The blocking function** determines, when the maximum admitted hook load value will be reached (39 tons), by coupling a relay, to activate a solenoid valve that blocks the rig operation.
6. **The saved data analysing and printing function** allows the electronic reading of the graphs (diagrams) and/or printing them for periods of 15 min, 30 min, 1 hour, 2

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hours, 3 hours, 4 hours, 6 hours, 8 hours, 12 hours or 24 hours. This function is achieved with the help of another program (WellAid Analyser), which is delivered together with "WellAid DAQ". "WellAid Analyser" can run at the same time with the program "WellAid DAQ" or it can be installed on any computer, and the diagrams can be viewed and printed at any time and in no matter how many copies.

This function allows introducing comments within the diagram to explain the operating mode over different periods of time.

- 7. The registered data saving function** allows the saving of the files that contain databases in backup files on the Hard Disk (this type of saving is automatic). Data are saved in two distinct locations, one accessible to the rig personnel and another location accessible only to specialized personnel, thus the data are protected from accidental deletion.

The data are saved manually on an external memory stick, and both the current file and any previous database can be saved, at your wish.

Data regarding the date, time, minute and second when the equipment started and stopped are saved in separate files (accessible to the specialized personnel).


Time when the number of crane wires was changed and their value is saved as well.

- 8. GPS Location function** is optional and allows, together with the calculation unit specialized module, to store the geographic location coordinates in the databases throughout the equipment operation period.


The equipment has the following features:

- Displays on the screen in digital format the Hook load, Maximum admitted load, average fuel flow, date & time and the geographical coordinates;
- Displays the Hook load value on the analogue indicator mounted on the chief driller panel;
- Performs 1,000 measurements per second and their average is displayed at 0.5 seconds intervals;
- You can watch on the display, in real time, as a graph (load and diesel flow depending on time), the progress of the "Instantaneous load" and the average diesel consumption, for periods of 15 min, 30 min, 1 hour, 2 hours, 3 hours, 4 hours, 6 hours, 8 hours, 12 hours or 24 hours at your choice;
- The program allows the electronic analysis (reading) of registered diagrams, for periods starting from 15 minutes, making possible to accurately read the values measured for parameters registered at a certain moment in time.
- Visual warning in the cabin where the system is mounted, when the maximum admitted load is exceeded;

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- Acoustic warning when the maximum admitted load set by the operator based on a password is reached or exceeded;
- The program saves online on the Hard Disk, depending on time, all the values of the measured and calculated parameters, in files containing data throughout one day. Because they are stored in a special format, they use very little space on the Hard Disk and thus, a large volume of data can be stored for more than 1 year, practically the entire period can be stored in which “**EMIX 100**” system worked.
- The files stored on the Hard Disk can be easily saved on a Memory Stick and then, they can be viewed and/or printed on any computer.
- If the program “WellAid Analyser” is installed on any computer connected to a printer, the registered graphs can be printed at any time. The load and flow charts depending on time can be printed at any time (on demand) for 24 hours periods or, at your choice, for periods of 1, 2, 4, 6, 8 or 12 hours, on an A4 format page.
- In order to store the charts as simple as possible, they can be saved in an image format *.png and thus, they will take very little space. This format allows viewing (but not the analysis) on any computer, even if the “WellAid Analyser” program is not installed.
- Before printing the charts (or at any other time) the operator can insert text messages (explanatory notes) regarding the operation mode and conditions. The comments can be in any number, because the program “WellAid Analyser”, with the help of a special algorithm, doesn’t allow overlapping the comments, and if they cover a surface too large of the chart, all it needs is to press just one button in order to hide or view the comments.
- In the registered databases you can introduce from keyboard the following fields:
Beneficiary;
SAP Order;
Working formation name;
Rig Identification Number.....
This information is included in the database and cannot be modified after closing it.
- Besides the above data, the authorized personnel can set at any time, based on a password, the number of crane wires and the maximum alarm level for each equipment;
- The followings are displayed and printed on the chart: Total diesel consumption, number of motor operating hours, average diesel consumption for the day and working time with the installation.
- Both on the graphs in electronic format and on the printed graphs messages are displayed regarding the equipment start and stop times, any time the equipment was stopped or started intentionally or accidentally.
- The input signal from transducers and from data acquisition module are galvanically separated between them and from the supply source , which confers an increased system protection against accidental electric discharges;

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- The equipment can be set to work with or without fuel flow-meter, without being necessary to change the software (it is only necessary to fit the flow-meter and connect it to the mounting bracket);

10.4 Benefits

- The equipment in the present configuration allows measuring, registration and display of "Cable load" for different types of installations that use traction cables with different diameters and maximum loads.
- Ease of operation, the equipment, once installed, does not require special configurations or PC operation knowledge. It is only necessary to turn it on and off.
- By choosing a PC as data processing unit, equipment upgrading to measure other parameters desired by the beneficiary or the transmission of automatically measured data by e-mail etc., will be achieved at low costs and easily implemented.

10.5. Additional options

For the this equipment with computer-based electronic recorders-our company can provide, as additional option, components that can also measure and Local Display of Anchor tightening tension.

10.6. System configuration

The configuration below provides the hook load and fuel consumption registration and indication, in such a way that it answers all current monitoring requirements for the wells intervention and repair installation.

Components.


Cable tension transducer (hook load)

Analogue load indicator

Fuel flow-meter - tour

Fuel flow-meter - return

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The mounting bracket and central unit module, with the following structure:

- Industrial computer
- 10,7” monitor
- Data acquisition module (DAQ)
- Protection module related to supplied equipment
- Galvanic separation barrier and explosion intrinsic protection
- Signal conversion module and opt-galvanic separation
- Acoustic warning module

The data processing, registration and storage programs (“**WellAid DAQ**” and “**WellAid Analyzer**” programs are offered with unlimited user license).

Connection, mounting and protection elements (the equipment is mounted into a metal case that can be closed and fixed rigidly in the rig cabs).

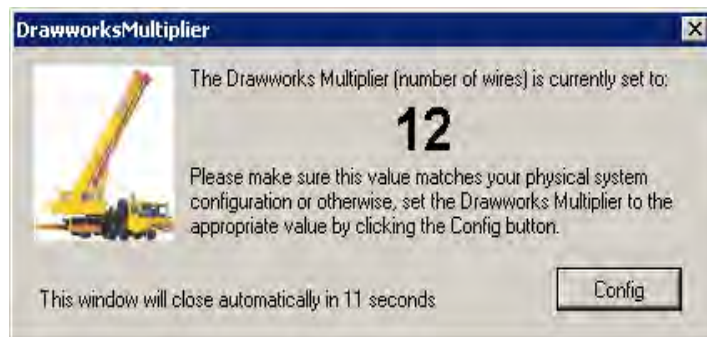
10.7 Instructions for use

I. Installation and start up

1. Open the protection cover of the mounting bracket and swing in horizontal position;
2. Engage equipment’s general supply switch (on the right side) to **Power** position;
3. Monitor the existence of the supply voltage, the green optical indicator must be lit.
4. Wait for the operating system to load and then start up “WellAid Daq” software,
5. Watch the message for the number of crane wires and set the correct number,


if necessary, by pressing “**Config**” button. In case it is not necessary to change the number of wires, the program starts up automatically after 15 seconds.

6. *The equipment is operating now and for a correct display and registration it is only necessary to introduce certain data regarding the well and maximum warning limit, as described below.*




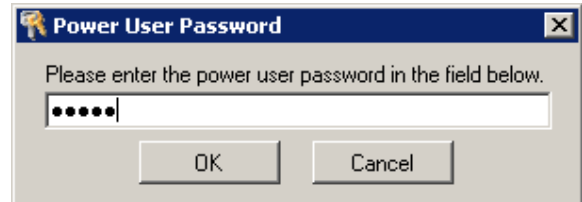
The central unit has a touch-screen display, so that all operations usually performed with the mouse, will be made by touching the screen with the finger

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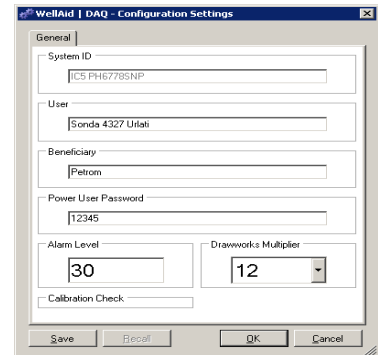
II. WELLAID DAQ software operating

1. Touch the button **“Settings”**  on the display and a window opens, in which you should type the access password and then press **OK**.



A dialog box titled "Power User Password" with a close button (X) in the top right corner. The text inside says "Please enter the power user password in the field below." Below the text is a text input field containing five dots. At the bottom are two buttons: "OK" and "Cancel".

2. If you introduce the correct password, a new window appears, in which you can register the followings;



A dialog box titled "WellAid | DAQ - Configuration Settings" with a close button (X) in the top right corner. It has a "General" tab. The fields are: System ID (IC5 PH67785NP), User (Sonda 4327 Uriati), Beneficiary (Petrom), Power User Password (12345), Alarm Level (30), Drawworks Multiplier (12), and Calibration Check (unchecked). At the bottom are buttons: Save, Recall, OK, and Cancel.


- Data regarding the beneficiary in the **“Beneficiary”** field.
E.g.: Petrom
- Data regarding the installation and the team performing the work in the **“User”** field. E.g.: Team x well xxxx
- The number of crane wires is selected in **“Drawworks Multiplier”** field; this can be 2, 4, 6, 8, 10 or 12.
- Set the alarming value **“Alarm Level”** (when this level is reached, the equipment generates an acoustic signal that warns about the danger of excessive traction);
- You can set the access password for these modifications in this window as well, in Password field.
- Press the buttons **“Save”** and then **“OK”**

BEWARE!

If you set a value different than the actual number of crane wires, the hook load value indication will be wrong.

If you work with a workover rig where the travelling block doesn't change, the parameter showing the crane wires number shall not be changed.

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The program starts displaying and recording the data measured at that moment.

Displaying on the screen is made using a two needles indicator that shows the instantaneous load value, the red needle, and the maximum value reached during operation, the white needle (the value is saved).

The maximum value is also displayed with a digital indicator.

On the right side of the screen are displayed the current date (**DATE**), the current time (**TIME**), the instantaneous hook load value (**HOOK LOAD**), the alarm threshold (**ALARM LEVEL**), the average diesel consumption (**FUEL FLOW**) and the geographical position (**LOCATION**, if a GPS-GPRS receiver is fitted).

3. If you want to display screen away from display by The same window colour, and the diesel



the load and consumption progress chart in time, switch the pressing the “**Chart**” button.

allows viewing the load graphic progress in time, with blue consumption variation, with green colour. The alarming level is also indicated on the same chart with red colour.

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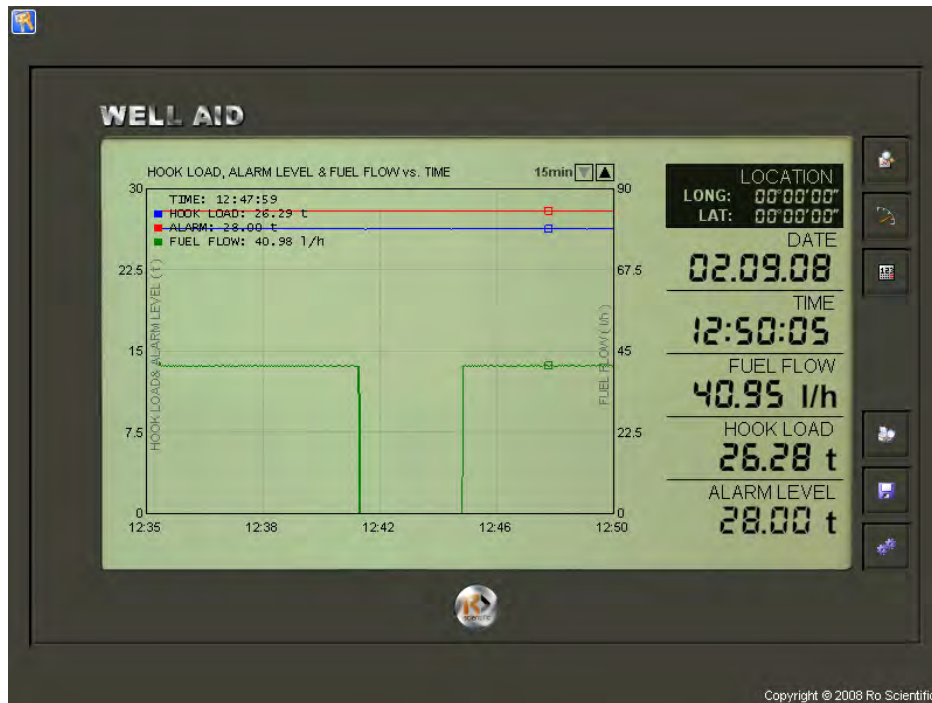
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The scale for the hook load is on the left side and the scale for the fuel consumption is located to on the right.

The chart initially indicates the progress over an 8 hours period, but this value can be changed with the two controls “▲ ▼” located on upper right side of the chart.

The chart width can thus accommodate periods of time of 15 minutes, 30 minutes, 1 hour, 2 hours, 3 hours, 4 hours, 6 hours, 8 hours, 12 hours and 24 hours. This feature allows accurately watching the hook load and the fuel consumption variation in time.

The chart provides a self-scaling over that period of time, so that you may have the measured values at that moment on the right side of the chart.

In order to read the graphical indication, place the pointer on the desired spot of the chart and the time, hook load value, alarming level, fuel flow shall be displayed in the upper left side for that moment in time.

4. Switch to the first screen at any time by pressing “**Analogic**” button.




5. In order to watch the load indication in another format, screen by pressing “**Digital**” button, which offers a larger format visible from distance. A Bargraph type indicator is also present



you can switch to the third digital indication that can be here, and it shows the classification of the load indication compared to the alarming threshold level.

If the hook load value exceeds the alarming threshold, the bar-graph shall be red on that sector and the Alarm indicator shall be a flashing red light.

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6 The program automatically creates databases for each working day of the equipment. The database is created at 00:00 hours and is automatically named with a string previously set for each equipment, which may contain the type of installation, registration or inventory number and the date.

If the equipment is stopped at 00:00 hours, the database shall be automatically created when the equipment is started up.

The databases contain all the data measured by the equipment and all the modifications made. Database files are created in a special format and they can only be viewed with **“WellAid Analyser”** software.

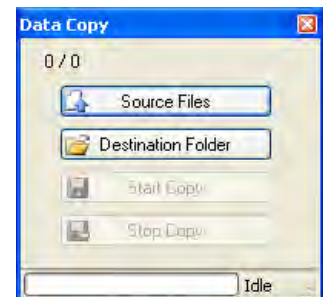
7. To save the databases on a memory stick the equipment is provided with a **“Save”** button.




When pressing this button, a small window **“Data Copy”** opens where you can set the followings:

If you press the **“Source Files”** button, a window opens and you can select the file or files to be copied; then press **“Open”** button.

Afterwards, press the **“Destination Folder”** button and in the opened window select the location where the databases are to be saved (generally the memory-stick that appears as the F disk)



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Press the button “**Start Copy**” after these operations and thus the copying is achieved.

8. In order to view the 24 hours load/flow/time graph or the graph for the previous days, an “**Analysér**” button is provided; when pressed, this button opens another program that allows viewing the graph as if it was listed on a printer.



While working with the “**WellAid Analyser**”, the program “**WellAid Daq**” continues the data acquisition and storage, so the operation is not disturbed.

III.SOFTWARE OPERATION FOR WELLAID ANALISER

1.When the program “WellTracer Analyser” will be opened this starts automatically loading data base from the current working day.

This is visible by displaying the current date above the chart and this doesn't contain the identification data set in the respective fields.

2.Due to this reason on display may followed up the evolution during the day for measured parameters starting with 0 hour (if the unit already worked) up to the moment when the program “WellAid Analyser” will be opened (at the lower side of the diagram a message will appear STOP hh:mm:ss wich will be located on the time axle).

3.The program allows loading for viewing any database (for every day in which **EMIX 100** equipment worked).



The program opens only the files with extension *.wah of the program WellAID DAQ.

In order to open another database it is necessary to press **Open** icon, select the day you want

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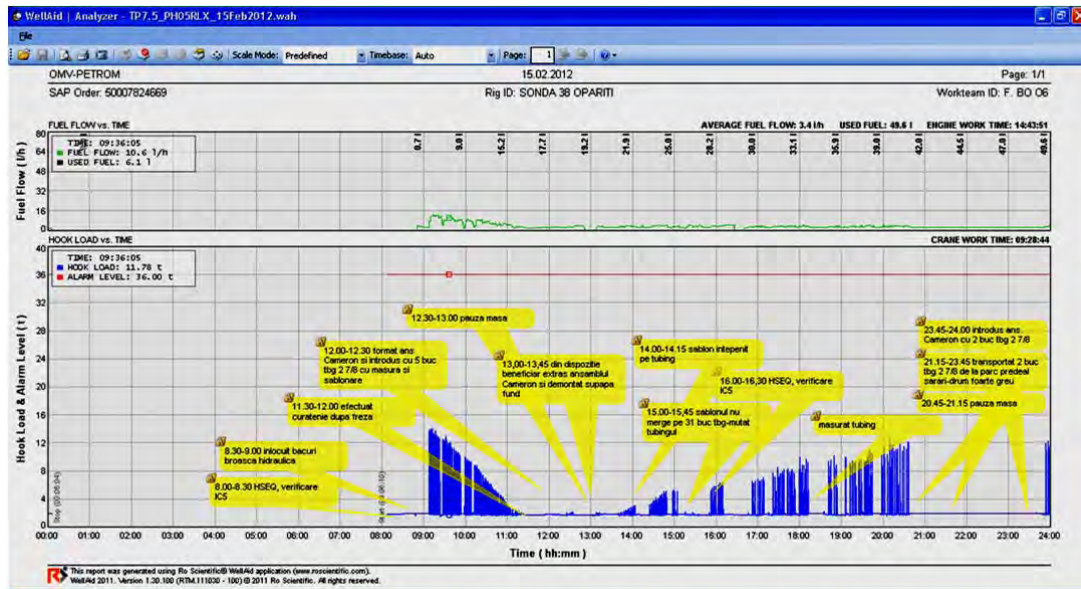
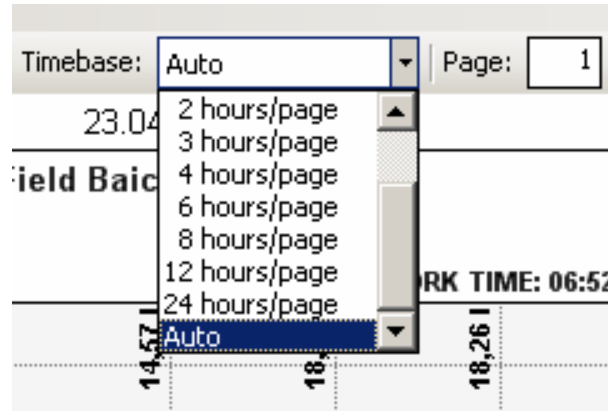
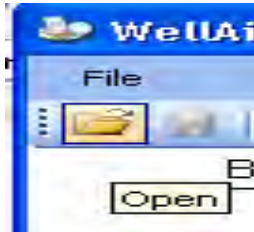
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from the window and then press **Open** button; the database will be automatically loaded and displayed on the screen.



The chart has two parts.

The upper part shows the fuel consumption graph in liters/hour depending on time, drawn with green and in the part above the explicit value of the fuel consumption volume in liters shall be placed at different moments in time.


BEWARE!

Displayed value is the measured value over the Emix 100 equipment operation during that day. The hook load measuring value graph (in blue) and the value of the maximum alarming limit (drawn with red) in tons are shown in the lower part.

On the right side above the graph are mentioned: the total fuel consumption **USED FUEL** for that day (for the period of time when the equipment functioned), the average consumption "**AVERAGE**

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FLOW”, and the time during which the motor of the installation worked **“WORK TIME”**.

The hook load progress graph in time and additionally, the value of the acoustic warning limit (with red) are shown in the lower part.

On the upper right side of the chart the crane working time is displayed (“Crane Work Time”).

The display scales of the two parameters “Fuel Flow” and “Hook Load & Alarm Level” can be displayed in two ways. In the default mode “Scale Mode: Auto” or in case, from different reasons, very high values occur, exceeding the domain of acquisition set in the “Predefined” Mode.

In automatic mode the graphs are displayed so that the scaling is achieved automatically and the graph shall occupy the entire diagram, no matter if the values are very small or very high (at small values the scale shall be reduced and at higher values, the scale shall be automatically increased). This auto-scaling mode is very visible when the graph is divided into more pages and where you can have another scale on every page, depending on the graph values.

In the “predefined” mode, the displaying scales shall be the ones set within the WellAid DAQ program and shall be fix no matter the measured parameters.

In order to open another database it is necessary to press **Open** icon, select the day you want from the window and then press **Open** button; the database will be automatically loaded and displayed on the screen.

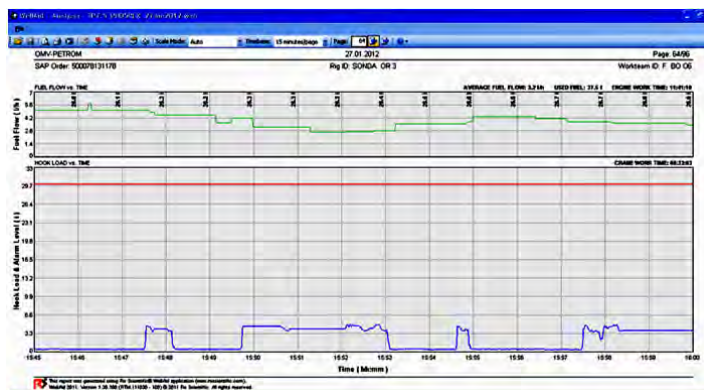
The databases can be opened on any storage space HD, CD-DVD or USB Stick.

When a database is opened, the entire base is displayed on the screen, and thus the entire period of work during that day (if the equipment worked from 7:00, then the data between that time and the turning off of the equipment shall be displayed).


The program starts with the field “Time-base” on <Auto>.

If it is necessary to view a certain, more limited period of time on one page, that interval can be selected for periods of 15 minutes, 30 minutes, 1 hour, 2 hours, 3 hours, 4 hours, 6 hours, 8 hours, 12 hours.

In order to change the period displayed on a page, press the **Time-base** field; you can see here the previously indicated period list from which you can select the period you want. Once you have changed the period of time, the screen shows the selected period.



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When a certain time period is selected, the screen automatically displays the corresponding period starting with 00:00h, and the graph is automatically divided in a number of pages corresponding to the period displayed on the page and the graph length. The **Next Page** icon is used to go to the next displayed page.

By pressing this icon you go forward to a new page, which is equal to the selected period of time. If you want to go back to the previous page, press **Previous Page** icon.

The number of the displayed page is indicated in the **Page** field:

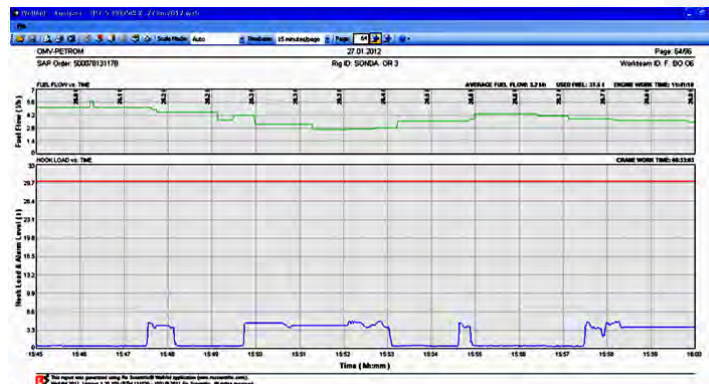
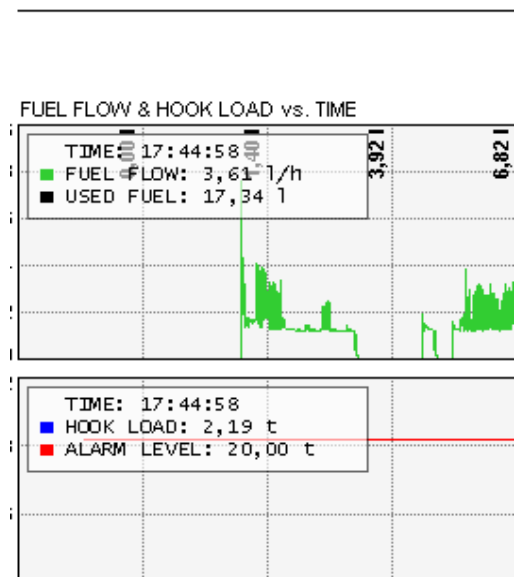
In order to interpret the graphic values on the screen for all the parameters at a certain moment in time, “**WellAid Analyser**” program is provided with the electronic reading feature. If you press any point on a graph, the program displays in the upper left side the explicit name, value and unit of measure for each parameter, at a certain moment in time.

Moving the pointer left – right on the diagram results in permanently displaying the parameters value for that moment. You can thus read the exact value of any parameter for the entire period when EMIX system worked.


This feature of the “WellAid Analyser” program eliminates difficult and subjective reading of the diagrams, starting from measure and time scales.

In the lower part of the chart messages with equipment start and stop times are displayed. If the equipment has worked for 24 hours, they are not displayed. If more registration stops and starts occur during one day, the messages “start hh:mm:ss” and “stop hh:mm:ss” will appear on the chart for each interruption.

It is possible to insert comments within the chart, in order to explain various periods on the chart. As a rule, such comments are made at the well (on the computer that acquires the data), but they can also be made



on the computers at the working places where the charts are analysed. These comments shall include

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explanations regarding the well and the operations performed on certain time levels, and they can be accurately positioned on a time level.

It is simple to insert a comment: double-press on the screen in the area where you want to insert it, and then write the text in the opened window.

If you press somewhere else on the screen, the comment closes and it can be opened as specified above.

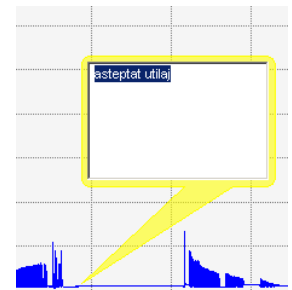
The program WellAid Analyser has a special algorithm that doesn't allow comments overlapping, so they reposition automatically (keeping, though, the point of origin) when it is possible to overlap.

To save the comments created in the database, press **Save** icon.



To edit the text of an existing comment, press twice on its contents and then make the changes you want.

Attention! If the comments are made at the well and an access password is set in WellAid DAQ program, the comments can only be edited after entering the correct password.



Six icons are located in the upper part of the chart to help you working with comments.

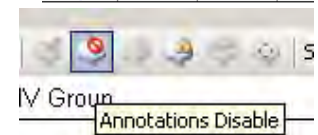
If the comments impede proper graph viewing, they can be removed by pressing the icon "Annotations Disable".

To return to the display with comments, press the icon "Annotations Enable".

The comments on the installation equipment shall be secured with access password from equipment settings. For certain clarifications upon the working periods with the installation, other comments can be introduced within the chart by any person who has Wellaid Analyser program installed on the computer and, of course, has the database in question.

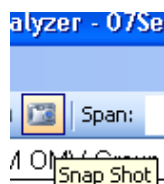
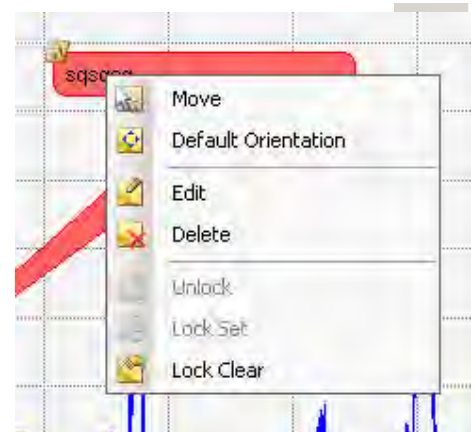
All comments can be edited, deleted, repositioned etc. by activating the menu and double-clicking the comment selected for modification.

In order to edit the comments secured by password, of course, the password must be first entered in the window that appears when this is required.




The comments can be repositioned on the graph by selecting, maintaining the left click pressed and moving the comment where necessary.

In order to save the graphs in electronic format (image type) *.png, the program is provided with an icon with the symbol of a camera and named **Snap Shot**.



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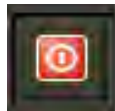
If you press that icon, the program opens a window in which you can select the place where to save file and under what name (by default, the file has the same name as the database). Once you have done this, press **Save** button and the graph on the screen shall be saved.

BEWARE!

If you want to save periods less than 24 hours, the program shall attempt to save using the same name for each period of a day, so it is necessary to rename them.

IV. DISMOUNTLING AND SHUT OFF

1.Close the program and the computer by pressing the red button located on the monitor in right-down side.



2.Wait until on the screen will appear the message announcing safety stop for the computer (Windows).

3. Cut off the voltage switching the breaker in position OFF.

4.Close the protective cover of the mounting bracket.

5.Plug off the power and signal supply connector from the load transducer.

6.Dismount the load transducer (if necessary) and put it into dedicated box.

7.Power cable will be coiled on a wheel!

NOTE!


Operations from items 5,6 and 7 will be done if will be necessary!

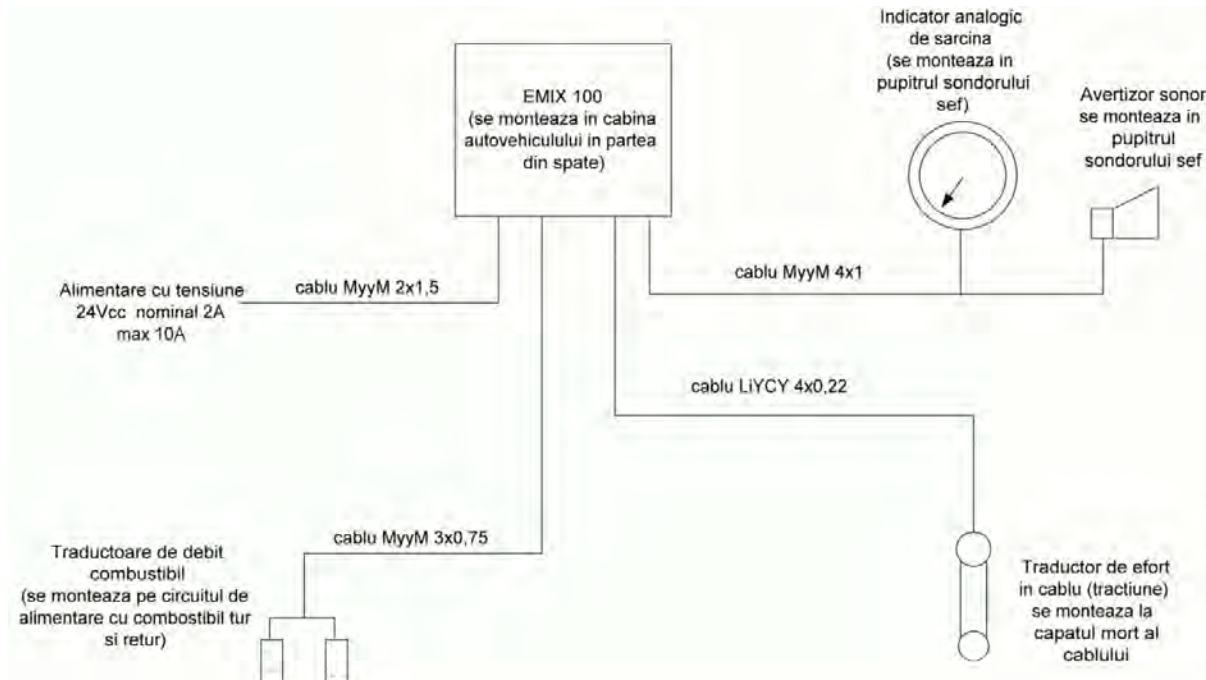
8.Close the protective cover from the analogue weight indicator.

BEWARE!

Signal and power supply cable will be connected with the load transducer when the equipment is not under the voltage (switch-breaker in position OFF, and control lamp lighting off!)

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11. CONTROL AND DISPLAY PANELS FOR ENGINE'S PARAMETERS AND AUTOMATIC HYDRO-MACANICAL TRANSMISSION

A. General


The panels are used for the control and display of the parameters in the operating area of the AM12/40 unit; they are connected on the same CAN network with the indicators and the key-shifter located in the chassis cabin.

The equipment ensures the safe operation according to the Ex zone (zone 1).

11.1. DESCRIPTION AND COMPONENTS OF THE SYSTEM

The equipment includes the following elements:

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- Master stop control panel + junction box
- Engine read-out panel
- Speed shift selector
- Interconnecting electrical cables
- Coupling joining to the electronic equipment of the engine and gearbox

The communication with the computer of the engine and gearbox is of a CAN - J1939 type.

The CAN signal transmission conductors (differential signal) are shielded and distorted.

A block diagram of the operation panel is presented in Fig. 1.

The block diagram also indicates the equipment the operation panel interconnects with.

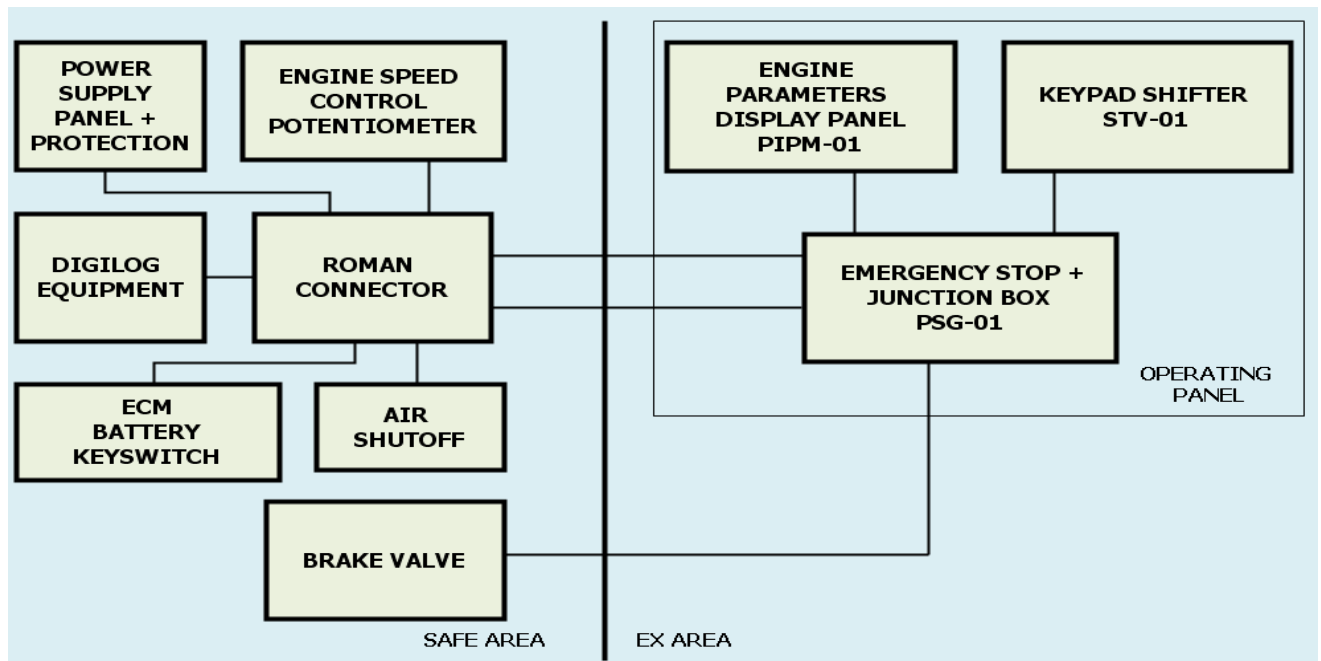



Fig.1

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The layout of the system's elements for each unit is shown in Fig. 2.




1 - OPERATING PANEL

3 - INTERCONNECTING CABLE

2 - BRAKE VALVE

4 - ROMAN CONNECTOR

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11.1.1. Master stop control panel + junction box

The PSG -01 control panel consists mainly of the following parts:

- type "d" (flameproof) explosion proof housing
 - button for the "Emergency Stop" control
 - relay for the multiplication of the "Emergency Stop" control
 - control timing relay for the "Air shutoff" valve's gearing solenoid
- binding clips (CL-1, CL-2, CL-3) used for the connection with the car computer (ECM) and with other panels.

The housing is composed of the body, cover and cable connections. All the housing elements meet the frame-proof protection requirements.

The control panel is also used as a junction box with the other elements of the system. The wiring diagram of the control panel is shown in Fig. 3.

The connections to the CAN network are executed using some Y's to get the network nodes, the latter being connected with a 120 ohms terminal resistance.

The d1 relay has four ND contacts with the following use:

- 11-14 activation of the timing relay for the "Air shutoff valve" control by closing the 15 – 18 contact.
- 21 - 24 activation of the brake solenoid valve
- 31-34 activation of the Digilog horn and control of the lock solenoid valve of the calf wheel..
- 41-44 activation of the remote shutdown engine

The 21 terminal of the Roman coupling and the 21-CL1 terminal of the control panel will be connected by the wire marked with number 7 of the PAAR-CY-OZ cable, code: 17036.

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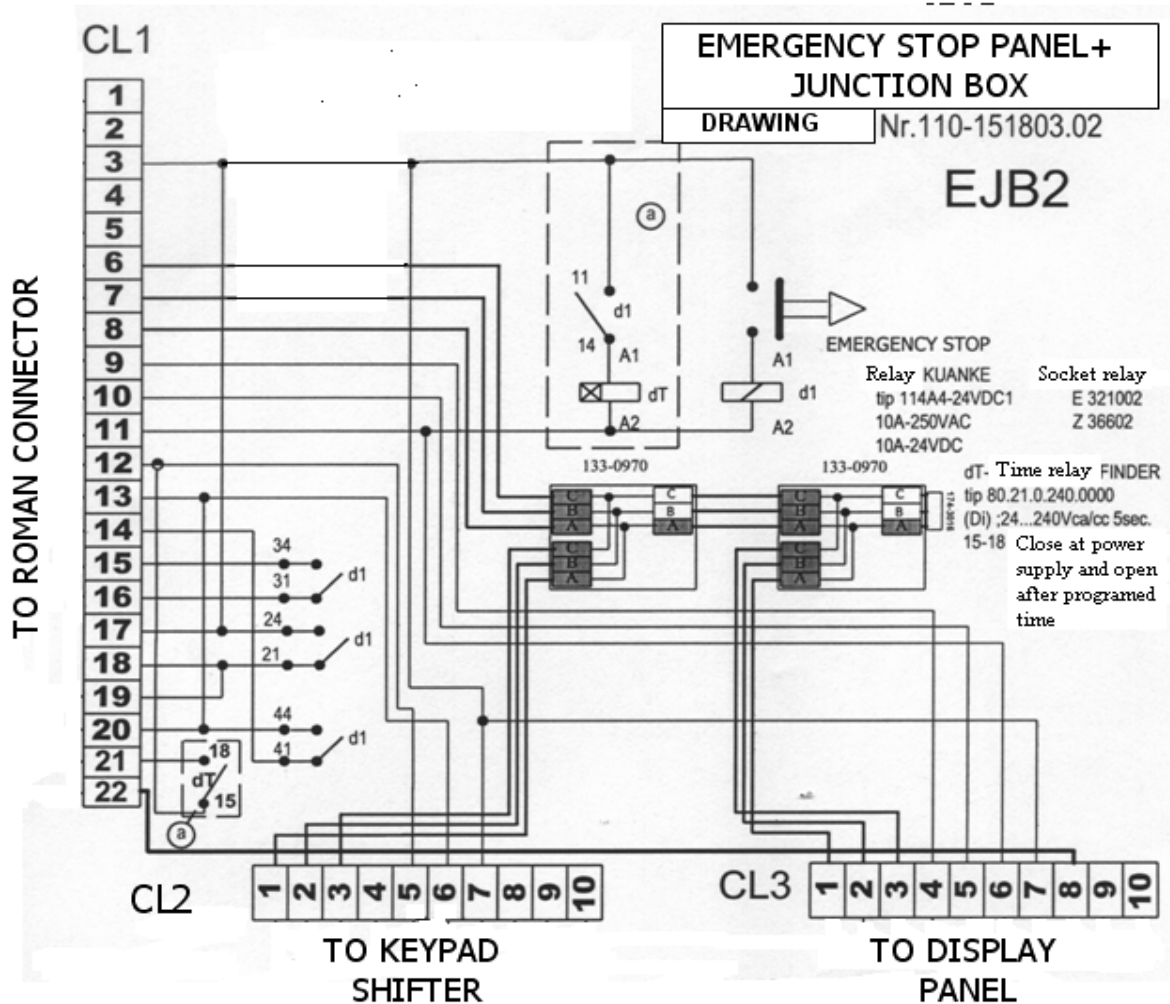



Fig.3

The connection between the master stop control panel and the Roman coupling is executed by two cables, one of them being shielded and twisted and is used for the CAN network.

The signification of pins connected to Roman connector is presented below:

- 1- POTENTIOMETER
- 2- POTENTIOMETER
- 3- +24Vcc – IGNITION(KEYSWITCH)

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- 5- POTENTIOMETER
- 6- CAN- Shield
- 7 – CAN- Low
- 8 – CAN- High
- 9- POWERTRAIN WARNING (+24V from battery)
- 10- POWERTRAIN WARNING (command from ECU)
- 11 - (-) 24Vcc (ground)
- 12 - (+) 24Vcc (battery)
- 13 - (-) 24Vcc (ground)
- 14 – REMOTE SHUT DOWN (pin 44 - 70 pins connector-ECU)
- 15,16-COMMAND FOR BLOCKING VALVE OF MANEVR DRUM
(Is a parallel command with overload and is used by Digilog equipment)
- 19,20-VALVE COMMAND FOR ACTIVATING A BRAKE(The command is active at pressing EMERGENCY STOP button

- 21 –AIR SHUTOFF coil command(Is a time controlled command for activating coil for AIR SHUTOFF necessary for stop engine in critical situations).
- 22 – Signalling lamp for minimal transmission oil pressure.

An overview of the safety stop control panel is shown in Fig. 4.

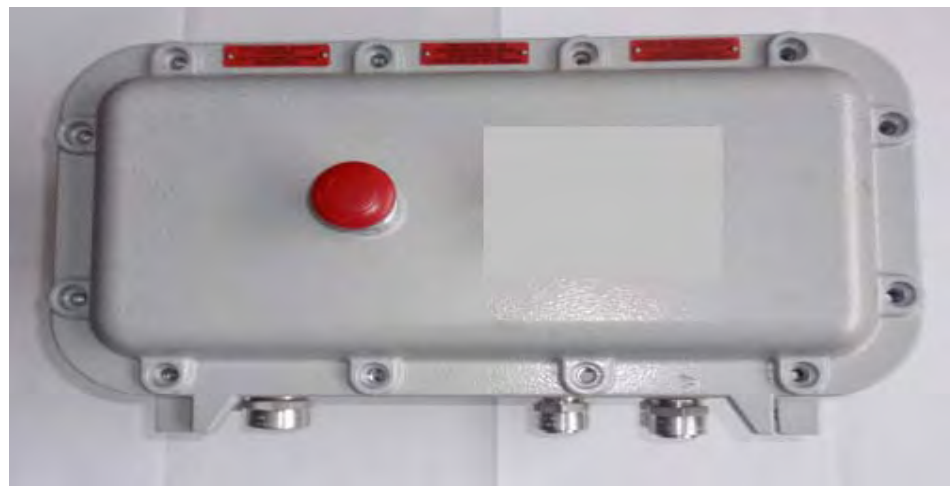



Fig.4

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The signification for connectors CL1, CL2, CL3 is presented below:

CL1


- 1- Free
- 2- Free
- 3- +24Vcc –IGNITION(KEYSWITCH)
- 4- Free
- 5- Free
- 6- CAN- Shield
- 7 – CAN- Low
- 8 – CAN- High
- 9- POWERTRAIN WARNING (+24V from battery)
- 10- POWERTRAIN WARNING (command from ECU)
- 11 - (-) 24Vcc (ground)
- 12 - (+) 24Vcc (battery)
- 13 - (-) 24Vcc (ground)
- 14 – REMOTE SHUT DOWN (pin 44 - connector 70 pins-ECU)
- 15,16-COMMAND FOR BLOCKING VALVE OF MANEVR DRUM
(Is a parallel command with overload and is used by Digilog equipment)
- 19,20-VALVE COMMAND FOR ACTIVATING A BRAKE(The command is active at pressing EMERGENCY STOP button)
- 21 –AIR SHUTOFF coil command (Is a time controlled command for activating solenoid for AIR SHUTOFF necessary for stop engine in emergency situations).
- 22 – Signalling lamp for minimal transmission oil pressure.

CL2

- 1 – CAN- High
- 2 - CAN- Low
- 3 - CAN- Shield
- 4- Free
- 5 - (+) 24Vcc (battery)
- 6 - (-) 24Vcc (ground)
- 7 - +24Vcc KEY-SWITCH
- 8 – Free
- 9 – Free
- 10 – Free

CL3

- 1 – CAN- High
- 2 - CAN- Low
- 3 - CAN- Shield
- 4 - POWER TRAIN WARNING (+24V from battery)
- 5 – POWER TRAIN WARNING (command from ECU)
- 6 - (-) 24Vcc (ground)
- 7 - +24Vcc KEYSWITCH
- 8 – Signalling minimal transmission oil pressure
- 9 – Free
- 10 – Free

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11.1.2. PIPM-01 engine parameters read-out panel

The read-out panel displays the following parameters:

- Engine's number of rotations
- Temperature of the gear oil
- Engine's oil pressure
- Temperature of the coolant
- Alarm LED of the „POWERTRAIN”
- Lamp indicating the minimum pressure of the oil in the gearbox

The read-out panel also includes the adaptive interface of the analog indicators to the CAN network, two terminating resistances (120 ohms) and the binding clips of the panel to the junction box (by means of CL-3).

The wiring diagram of the engine read-out panel is shown in Fig. 5.

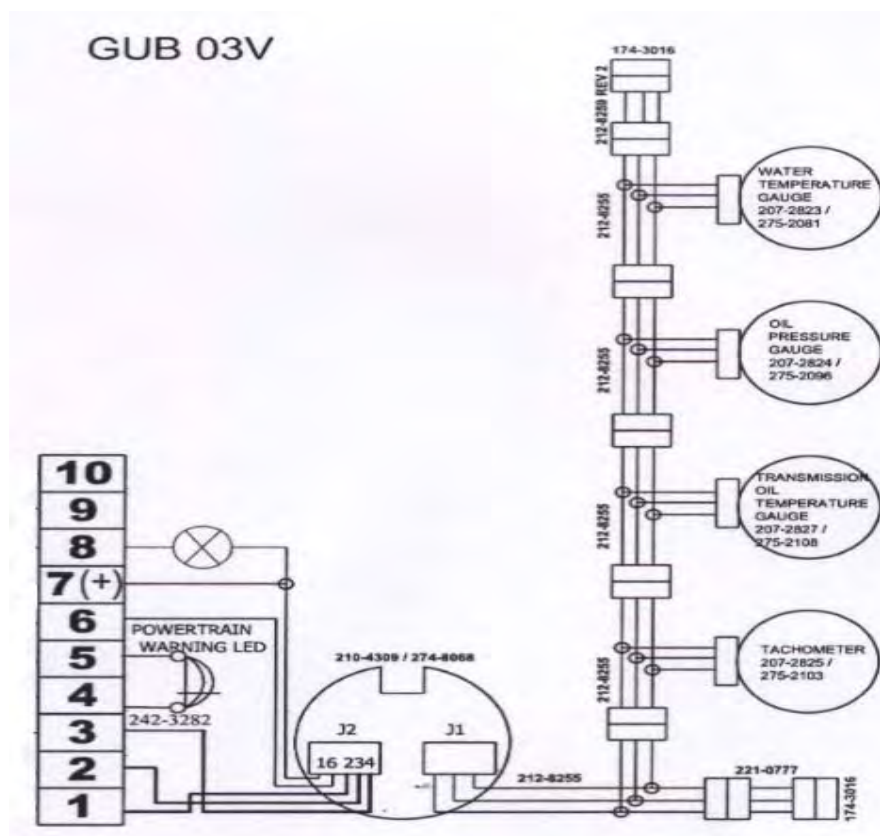



Fig.5

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Signification for pins of display panel module is presented below:

- 1 – CAN- High
- 2 - CAN- Low
- 3 - CAN- Display
- 4 - POWER TRAIN WARNING (+24V from battery)
- 5 – POWER TRAIN WARNING (command from ECU)
- 6 - (-) 24Vcc (ground)
- 7 - +24Vcc- KEYSWITCH
- 8 - Signalling minimal transmission oil pressure
- 9 – Free
- 10 – Free

An overview of the engine read-out panel is shown in Fig. 6.

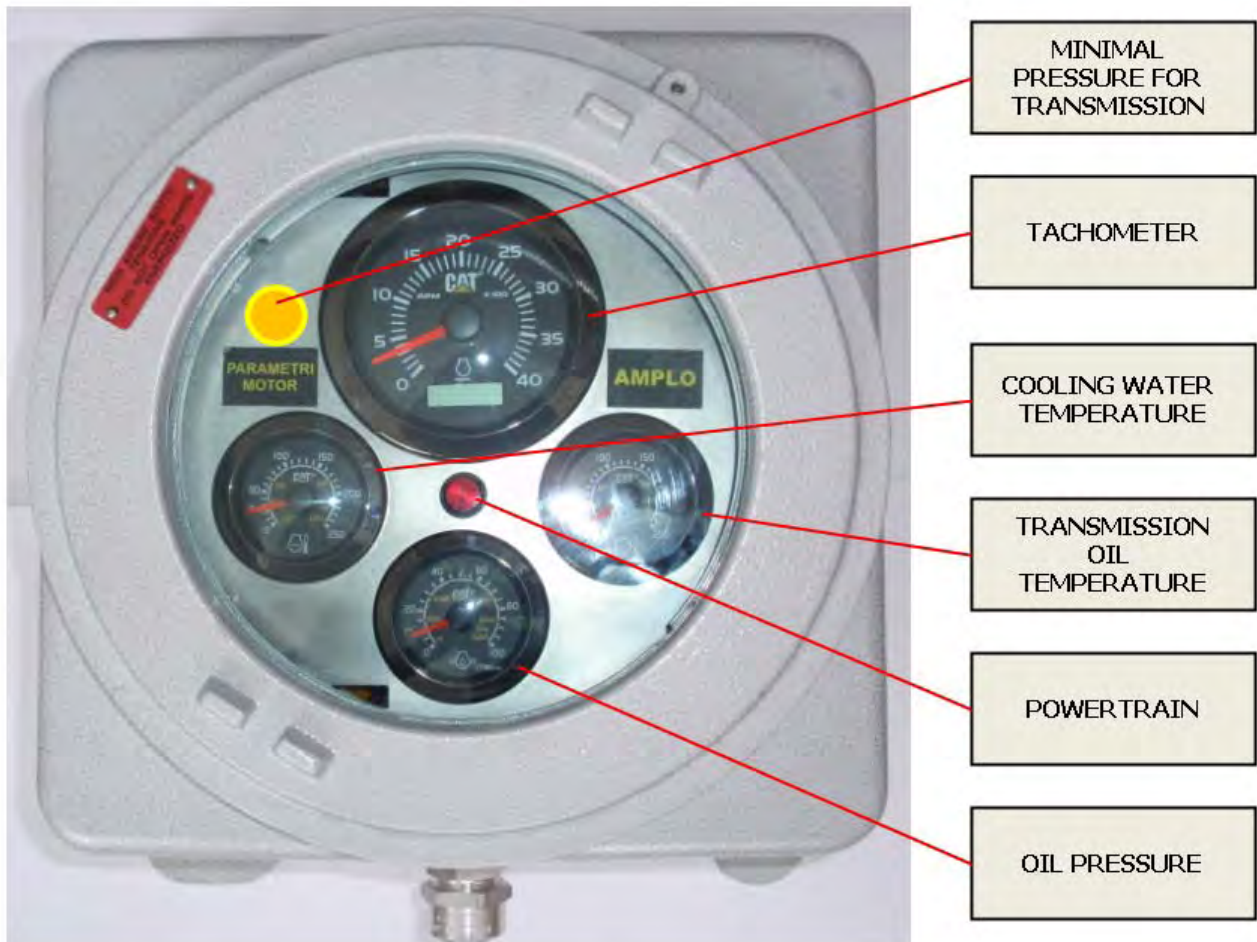



Fig. 6

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11.1.3. STV-01 speed selector

Speed shift selector includes the second "Key pad shifter" for the control of the speed shifts in the operating area of the AM12/40 unit. It is configured as a "Secondary" key-shifter by connecting the terminal 8 to the ground.

It is connected to the car computer by means of the junction box (by CL-2).

The STV-01 type speed shift selector consists mainly of the following parts:

- "d" type (flameproof) explosion proof housing
- push buttons
- electronic speed selector
- series of clips

The housing is composed of the body, cover and cable connections.

The housing cover (over the buttons) has an observation hole that shows a two digit display: the first one displays the control activated by pushing the button and the second one – the execution of the control.

The push buttons are marked with letters and arrows having the following meanings:


- R: Back
- N: Neutral
- D: Next
- M Mode (unused)
- ↑: Go to higher gear
- ↓: Go to lower gear

The speed shift selector is connected to the car computer via CAN network by means of two twisted and shielded wire cable.

Signification for pins of keypad shifter module is presented below:

- 1 – CAN- High
- 2 - CAN- Low
- 3 - CAN- Shield
- 4- Free
- 5 - (+) 24Vcc (battery)
- 6 - (-) 24Vcc (ground)

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- 7 - +24Vcc- KEY-SWITCH
- 8 – Free
- 9 – Free
- 10 – Free

The wiring diagram of the speed selector is shown in Fig. 7.

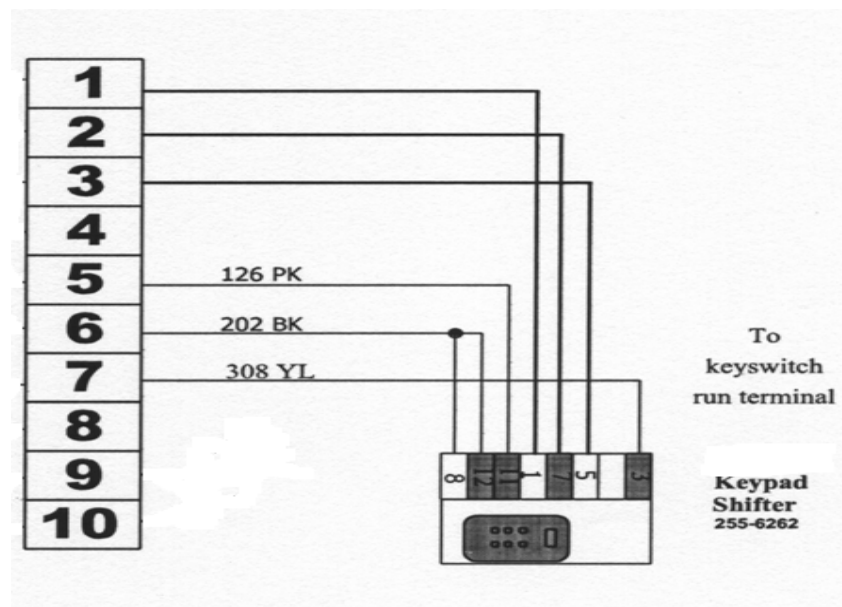



Fig.7

Keypad shifter is coupled to equipment through 12 pins connector with following signification (Fig.8):

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NR.PIN	SEMNFICATION
1	CAN - H
2	SHIFT SELECTOR ID=1
3	IGNITION(KEYSWITCH)
4	FREE
5	CAN - SHIELD
6	DIMR
7	CAN - LOW
8	SHIFT SELECTOR ID=2
9	FREE
10	FREE
11	(+) BATTERY
12	GROUND


Fig.8

Keypad shifter can be assigned as primary or secondary function of its destination. In our application it was assigned as secondary. Allocation table is presented in Fig.9

PIN2	PIN8	SELECTOR ASSIGNMENT
0	0	INVALID
0	1	PRIMARY
1	0	SECONDARY
1	1	UNUTILISABLE
NOTE: 0=GROUND, 1=OPEN		

Fig.9

An overview of the speed selector is shown in Fig. 10.

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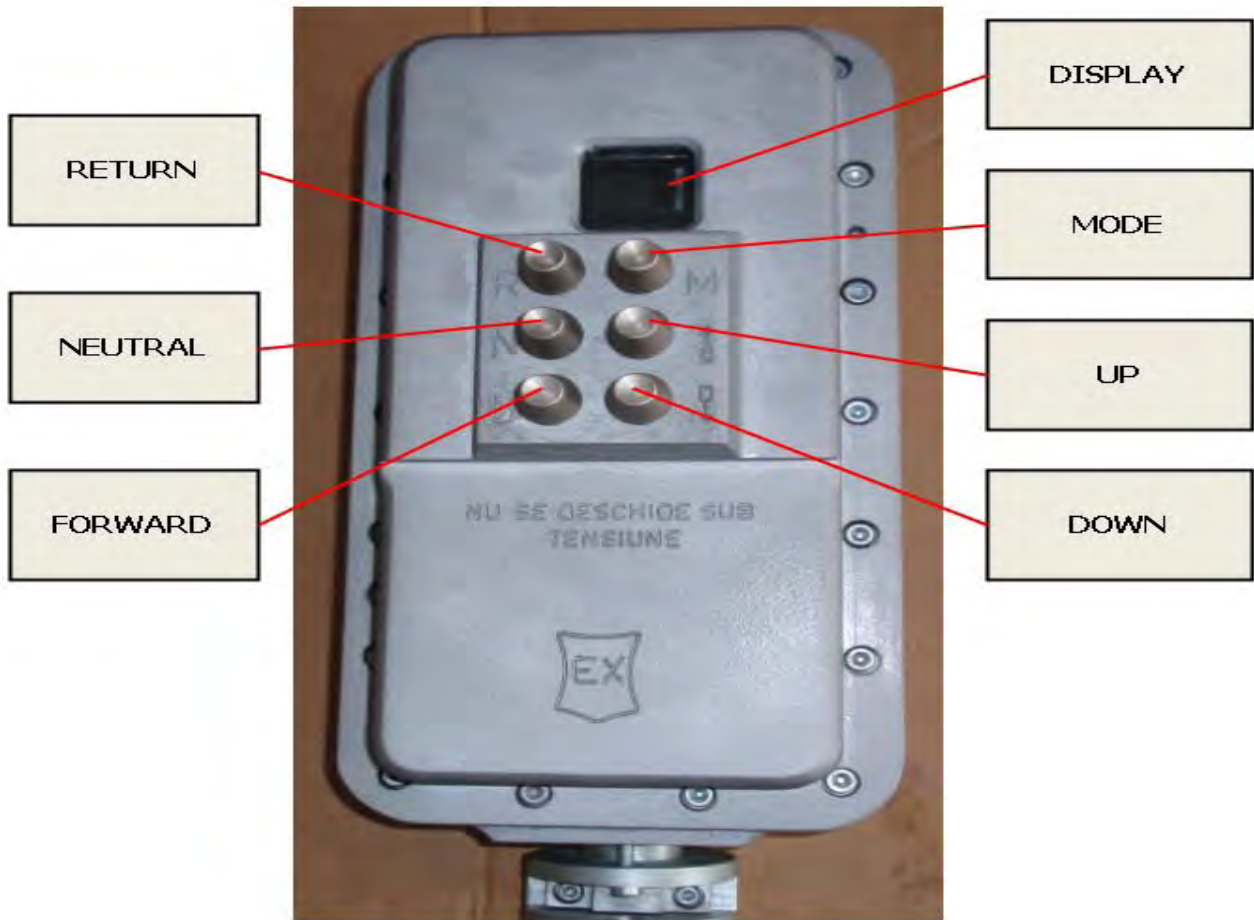


Fig.10



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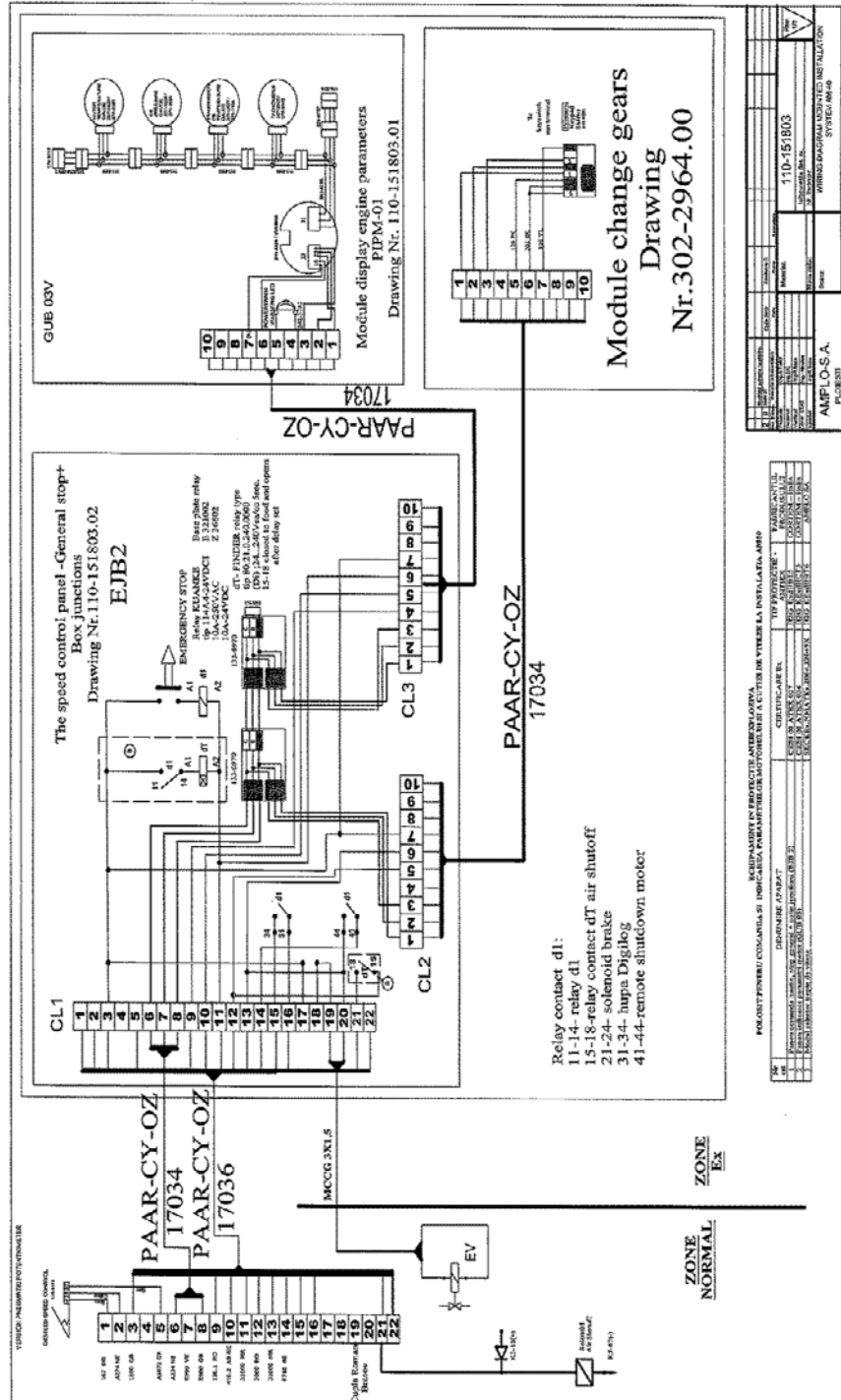
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11.2 CERTIFICATIONS, TEST REPORTS AND DECLARATION OF CONFORMITY

S.C. AMPLO S.A.

10 Petrolului blv.
PLOIESTI, zip code 100521
Registered in Trade Registry under J29/13/1991
V.A.T. code: RO1359038
Registered capital: 6 657 272 lei

[logo of Amplo]

Tel.: 0244 573 641
Fax: 0244 571 506
e-mail: marketing@amplo.ro Certified
www.amplo.ro ISO 9001 : 2008

DECLARATION of CONFORMITY

NO. 328/ 16.11.2010

FOR PARTS USED IN POTENTIALLY EXPLOSIVE ENVIRONMENT

We, **S.C. AMPLO S.A.** with the head office in PLOIESTI, 10 Petrolului blv., assure, guarantee and declare on our own risk that the product:

GEAR SELECTOR MODULE

Series: 048/2010;

Type: STV-01;


Technical features:

- Normal degree of protection: IP65;
- Explosion-proof type: II2G ExdIIBT6;
- Supply voltage: 24 Vcc, +10%, -15%;
- Operating temperature: - 29 C ... +40 C;
- Gauge dimensions: 430x200x200 mm;
- Weight: 10 kg;

complies by design and manufacturing with the requirements of the following directives and standards:

- Directive for the explosion-proof equipment and systems operated in potentially explosive environment, 94/9/EC-HG 752/2004;
- Directive for electromagnetic compatibility, 89/336/CEE-HG982/2007;
- SR EN 60079-0:2007 - Electrical devices for explosive gas atmospheres. Part 0: General rules;
- SR EN 60079-1:2008 - Explosive atmospheres. Part 1: Electrical equipment protected by 'd' explosion-proof housing;
- SR EN 60529:1995 - Degrees of protection provided by housings (IP code);
- SR EN 60068-1:2007 - Environmental testing. Part 2-1: Tests – A Test: Cold;

SC CONFIND SRL	Adresa : 105600, Câmpina, str. Progresului, nr. 2, jud. Prahova, Romania Tel/Fax : 0244333160 / 0244374719 ; E-mail : confind@confind.ro
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 S.C. CONFIND S.R.L. Câmpina	OPERATING MANUAL WORKOVER RIG 40 tF WITH MAST	Code: P3668-MU.E	Date: August,2013
		Sheet:44	Rev: 0

- SR EN 60068-2-78:2004 - Environmental testing. Part 2-78: Tests – Cab Test: moist, continue heat;
provided that the product is installed, maintained and used in accordance with the application for which it was designed, in accordance with the regulations, the norms in force, supplier's instructions and with the professional practices.

Ploiesti, 16.11.2010

**General Manager,
Petre Marica (engineer)**

[illegible signature and company's round stamp]

Traducere din limba romana/ Translation from Romanian

S.C. AMPLO S.A.

10 Petrolului blv.
PLOIESTI, zip code 100521
Registered in Trade Registry under J29/13/1991
V.A.T. code: RO1359038
Registered capital: 6 657 272 lei

[logo of Amplo]

Tel.: 0244 573 641
Fax: 0244 571 506
e-mail: marketing@amplo.ro
www.amplo.ro

Certified
ISO 9001 : 2008

**INSPECTION NOTE
NO. 352/ 06.12.2010**

1. Inspected equipment: **ENGINE READ-OUT PANEL**

Technical features:

- Type: PIPM-01;
- Series: 016/2010;
- Normal degree of protection: IP66;
- Explosion-proof type: II2G ExdIICT5;
- Supply voltage: 24 Vcc, +10%, -15%;
- Operating temperature: - 20 C +55 C;
- Gauge dimensions: 276x276x200 mm;
- Weight: 15 kg;

2. Equipment used: standard thermometer kit - standard thermometer series 5391 / 0 51
C from the kit series 40699/E.C. - no. PH-632-127T/2010.

3. Inspection result: Checking the maximum temperature on the surface.


The inspection was performed while supplying the panel with a voltage of 24 Vc.c.; after 2 hours of use, the temperature was measured in the hottest point.

Measured value: 32 C.

Imposed value: max. 100 C

Ambient temperature: 20 C

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 S.C. CONFIND S.R.L. Câmpina	OPERATING MANUAL WORKOVER RIG 40 tF WITH MAST	Code: P3668-MU.E	Date: August,2013
		Sheet:45	Rev: 0

COMPLIES

AMPLO
PH - 111N/2010

4. Declaration of supplier:

- The tests were not performed under pressure of any kind.
- The note may not be copied without the approval of the issuing laboratory.
- The note will be included in the documentation for the Ex certification of the device.

NAME AND SURNAME

POSITION

SIGNATURE

DRAWN BY STENTA GHEORGHE (engineer) Metrology laboratory coordinator [illegible signature]
CHECKED BY TUDOR STOICA (engineer) Quality Department Head [illegible signature]

Traducere din limba romana/ Translation from Romanian

S.C. AMPLO S.A.

[logo of Amplo]

10 Petrolului blv.
PLOIESTI, zip code 100521
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Registered capital: 6 657 272 lei

Tel.: 0244 573 641
Fax: 0244 571 506
e-mail: marketing@amplo.ro [Certification logos]
www.amplo.ro

CONFORMITY DECLARATION NO. 351/06.12.2010 FOR PARTS USED IN POTENTIALLY EXPLOSIVE ENVIRONMENT

We, **S.C. AMPLO S.A.** with the head office in PLOIESTI, 10 Petrolului blv., assure, guarantee and declare on our own risk that the product:

ENGINE READ-OUT PANEL

Series: 016/2010;


Type: PIPM-01;

Technical features:

- Normal degree of protection: IP66;
- Explosion-proof type: II2G ExdIICT5;
- Supply voltage: 24 Vc.c., +10%, -15%;
- Operating temperature: - 20 C +55 C;
- Gauge dimensions: 276x276x200 mm;
- Weight: 15 kg;

complies by design and manufacturing with the requirements of the following directives and standards:

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 S.C. CONFIND S.R.L. Câmpina	OPERATING MANUAL WORKOVER RIG 40 tF WITH MAST	Code: P3668-MU.E	Date: August,2013
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- Directive for the explosion-proof equipment and systems in potentially explosive environment, 94/9/EC-HG 752/2004;
 - Directive for electromagnetic compatibility, 89/336/CEE-HG982/2007;
 - SR EN 60079-0:2007 - Electrical devices for explosive gas atmospheres. Part 0: General rules;
 - SR EN 60079-1:2008 - Explosive atmospheres. Part 1: Electrical equipment protected by 'd' explosion-proof housing;
 - SR EN 60529:1995 - Degrees of protection provided by housings (IP code);
 - SR EN 60068-1:2007 - Environmental testing. Part 2-1: Tests – A Test: Cold;
 - SR EN 60068-2-78:2004 - Environmental testing. Part 2-78: Tests – Cab Test: moist, continue heat;
- provided that the product is installed, maintained and used in accordance with the application for which it was designed, in accordance with the regulations, the norms in force, supplier's instructions and with the professional practices.

Ploiesti, 06.12.2010

**General Manager,
Petre Marica (engineer)**

[illegible signature and company's round stamp]

Traducere din limba romana/ Translation from Romanian

S.C. AMPLO S.A.

10 Petrolului blv.
PLOIESTI, zip code 100521
Registered in Trade Registry under J29/13/1991
V.A.T. code: RO1359038
Registered capital: 6 657 272 lei

[logo of Amplo]

Tel.: 0244 573 641
Fax: 0244 571 506
e-mail: marketing@amplo.ro Certified
www.amplo.ro ISO 9001 : 2008

**INSPECTION NOTE
NO. 327/ 15.11.2010**


1. Inspected equipment: **GEAR SELECTOR MODULE**

- **Series:** 048/2010;
- **Type:** STV-01;

Technical features:

- Normal degree of protection: IP65;
- Explosion-proof type: II2G ExdIIBT6;
- Supply voltage: 24 Vcc, +10%, -15%;
- Operating temperature: - 29 C ... +40 C;

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 S.C. CONFIND S.R.L. Câmpina	OPERATING MANUAL WORKOVER RIG 40 tF WITH MAST	Code: P3668-MU.E	Date: August,2013
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- Gauge dimensions: 430x200x200 mm;
- Weight: 10 kg;

2. Equipment used: pressure gauge with elastic element 0 16 bar, series 8520, E.C. – 136/01.07.2010.

3. Inspection result: Checking the maximum temperature on the surface.
The inspection was performed under static overpressure of the pressure-proof encapsulation at a pressure of 15 bar during one minute.

COMPLIES

AMPLO
PH - 111N/2010

4. Declaration of supplier:

- The tests were not performed under pressure of any kind.
- The note may not be copied without the approval of the issuing laboratory.
- The note will be included in the documentation for the Ex certification of the device.

NAME AND SURNAME	POSITION	SIGNATURE
DRAWN BY STENTA GHEORGHE (engineer)	Metrology laboratory coordinator	[illegible signature]
CHECKED BY TUDOR STOICA (engineer)	Quality Department Head	[illegible signature]


Traducere din limba romana/ Translation from Romanian

[TIAB logo]

[SR AC ISO 9001 logo]

SUPPLIER: S.C. TIAB S.A. Bucharest

SC TIAB S.A. MAINTENANCE Agency CERTIFICATE No. 5959/2010	INSPECTION NOTE no. 1670 / 06.12.2010 TESTING THE ELECTRICAL EQUIPMENT	BENEFICIARY: S.C. AMPLO S.A. Ploiesti NAME OF OBJECT: ENGINE READ-OUT PANEL, type PIMP-1	Page
EQUIPMENT USED: –Megohmmeter, type Metriso 5000AK; 1000/2500V- sr.1127; –Digital multimeter, type Hioki 3801 - sr. 030900445; –Electronic timer type TS - sr. 740324;			
SC CONFIND SRL	Adresa : 105600, Câmpina, str. Progresului, nr. 2, jud. Prahova, Romania Tel/Fax : 0244333160 / 0244374719 ; E-mail : confind@confind.ro		

 S.C. CONFIND S.R.L. Câmpina	OPERATING MANUAL WORKOVER RIG 40 tF WITH MAST	Code: P3668-MU.E	Date: August,2013
		Sheet:48	Rev: 0

-Test unit with voltage increased by ca., sr.: 899377

INSPECTION RESULT:

Inspected equipment: - ENGINE READ-OUT PANEL, type PIPM-01

Technical features: type: PIPM-01, Sn: 016/2010, Un: 24 V DC,

Ta: -20 +55 °C;

- Insulation resistance between the short-circuited supply terminals compared to the weight:

R is. = 2200 M

- Increased voltage test: U t = 1000V ca; 50Hz; for 1 min.

During the increased voltage test there were not break overs or breakdowns of the dielectric insulation of the above-mentioned device.

Declaration of supplier:

- The tests were not performed under pressure of any kind.
- The note may not be copied without the approval of the issuing laboratory.
- The note may be used for the application of voltage to the above-mentioned device and will be included in the documentation for the homologation of the device.

Notes and conclusions:

- The results obtained further to the inspection comply with the standard PE116/94.

NAME AND SURNAME

DRAWN BY ACSINTE ADRIAN (engineer)
CHECKED BY BURLAN CRISTIAN (engineer)
stamp]

POSITION

Test Laboratory Operator
Test Laboratory Head

SIGNATURE

[illegible signature]
[illegible signature and square stamp]

Traducere din limba romana/ Translation from Romanian


[TIAB logo]

[SR AC ISO 9001 logo]

SUPPLIER: S.C. TIAB S.A. Bucharest

SC TIAB S.A. MAINTENANCE Agency CERTIFICATE No. 5959/2010	INSPECTION NOTE no. 1668 / 19.11.2010 TESTING THE ELECTRICAL EQUIPMENT	BENEFICIARY: S.C. AMPLO S.A. Ploiesti NAME OF OBJECT: GEAR SELECTOR MODULE, type STV-01	Page
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 S.C. CONFIND S.R.L. Câmpina	OPERATING MANUAL WORKOVER RIG 40 tF WITH MAST	Code: P3668-MU.E	Date: August,2013
		Sheet:49	Rev: 0

EQUIPMENT USED:

- Megohmmeter, type Metriso 5000AK; 1000/2500V- sr.1127;
- Digital multimeter, type Hioki 3801 - sr. 030900445;
- Electronic timer type TS - sr. 740324;
- Test unit with voltage increased by ca., sr.: 899377

INSPECTION RESULT:
Inspected equipment: - GEAR SELECTOR MODULE, type STV-01

Technical features: type: STV-01, Sn: 048/2010, Un: 24 V DC,

Ta: -29 +40 °C; fn: 50 Hz

- Insulation resistance between the short-circuited supply terminals compared to the weight:

R is. = 2200 M

- Increased voltage test: U t = 1000V ca; 50 Hz; for 1 min.

During the increased voltage test there were not discovered breakovers or breakdowns of the dielectric insulation of the above-mentioned device.

Declaration of supplier:

- The tests were not performed under pressure of any kind.
- The note may not be copied without the approval of the issuing laboratory.
- The note may be used for the application of voltage to the above-mentioned device and will be included in the documentation for the homologation of the device.

Notes and conclusions:

- The results obtained further to the inspection comply with the standard PE116/94.

NAME AND SURNAME

DRAWN BY ACSINTE ADRIAN (engineer)
CHECKED BY BURLAN CRISTIAN (engineer)
stamp]

POSITION

Test Laboratory Operator
Test Laboratory Head

SIGNATURE

[illegible signature]
[illegible signature and square stamp]

Traducere din limba romana/ Translation from Romanian

[company's logo]

S.C. ENERGO-METR S.R.L.
535600 Odorheiu Secuiesc
51 Beclean street
Harghita county, Romania

[logo of ALL CERT]


ISO 9001:2008
Tel.: 40-(266)-218200, fax: 40-(266)-212130
e-mail: office@energo-metr.ro
www.energo-metr.ro

[logo of ALL CERT]

[logo of ALL CERT]

OHSAS 18001:2007

SC CONFIND SRL	Adresa : 105600, Câmpina, str. Progresului, nr. 2, jud. Prahova, Romania Tel/Fax : 0244333160 / 0244374719 ; E-mail : confind@confind.ro
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 S.C. CONFIND S.R.L. Câmpina	OPERATING MANUAL WORKOVER RIG 40 tF WITH MAST	Code: P3668-MU.E	Date: August,2013
		Sheet:50	Rev: 0

Entry stamp: [S.C. AMPLO S.A. PLOIESTI, entry no. 4377 dated 05.11.2010]

[hand-written illegible text]

CERTIFICATE OF QUALITY

In compliance with the provisions of law on the liability for the quality of the products delivered by S.C. AMPLO PLOIEȘTI S.A. - Ploiesti with the invoice no. 073477/21.09.2010, it is hereby certified that the products 'eye-glass with size 65x65x8 mm' were heat treated and are resistant to mechanical shock.

Kovacs Andras,

Technical Manager

[illegible signature and company's round stamp]


J19/1559/1994, Fiscal code: RO7029764

Bank: BCR Odorheiu Secuiesc, IBAN code: RO51 RNCB 0156 0163 2602 0001

Raiffeisen Bank Odorheiu Secuiesc, IBAN code: RO44 RZBR 0000 0600 1216 8445

Traducere din limba romana/ Translation from Romanian

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	Tel/Fax : 0244333160 / 0244374719 ; E-mail : confind@confind.ro

 S.C. CONFIND S.R.L. Câmpina	OPERATING MANUAL WORKOVER RIG 40 tF WITH MAST	Code: P3668-MU.E	Date: August,2013
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Research and Design Institute for Electrical Engineering

TESTING DEPARTMENT FOR ELECTRICAL PRODUCTS CERTIFICATION

TEST REPORT

Entry stamp: [S.C. AMPLO S.A. PLOIESTI, entry no. 2301 dated 25.08.2003]

No. 476/19.06.2003
Page 1/4

Test required	Tests conducted in compliance with SF 152 – 2002 Partial tests
Equipment	GEAR MANUAL SELECTOR MODULE
Manufacturer	S.C. AMPLO S.A. – Ploiesti
Client (name, address)	S.C. AMPLO S.A. – Ploiesti 10 Petrolului blv., Ploiesti Order no. 1446/28.05.2003
Chief of laboratory	Alexandru Bobelniceanu (engineer)
Chief of department	Maria Marinescu (engineer)
Quality manager	Paul Pencioiu (PhD, engineer)

THE TEST RESULTS REFER ONLY TO THE UNITS SUBMITTED FOR TEST.

THIS DOCUMENT MAY BE REPRODUCED ONLY IN ITS ENTIRETY.


SPLAIUL UNIRH No.313, SECTOR 3, BUCUREȘTI, 74204, ROMÂNIA
TEL / FAX : 346.72.20, TEL : 346.72.04 /1365, FAX : 346.72.68

Form code F-MC1-22/1B

Traducere din limba romana/ Translation from Romanian

TESTING DEPARTMENT FOR ELECTRICAL PRODUCTS CERTIFICATION
Report no. 476/2003

SC CONFIND SRL	Adresa : 105600, Câmpina, str. Progresului, nr. 2, jud. Prahova, Romania Tel/Fax : 0244333160 / 0244374719 ; E-mail : confind@confind.ro
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 S.C. CONFIND S.R.L. Câmpina	OPERATING MANUAL WORKOVER RIG 40 tF WITH MAST	Code: P3668-MU.E	Date: August,2013
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Page 2/4

TECHNICAL DATA OF THE PRODUCT:

- Supply voltage: 24 Vc.c.
- Power consumption: max. 50 VA
- Protection degree: IP 65

Type of product: series zero

Receipt date of product: 10.06.2003

Test period: 11.06 ... 18.06.2003

Sampling mode: Unknown. The product was submitted to tests by the applicant.

No. of tested products: 1

Responsible for testing: Viorel Ciobanu (engineer) [illegible signature]
Checked: Cornelia Hahui (engineer) [illegible signature]

CONCLUSIONS AND OBSERVATIONS:

The product has been tested according to SF 152-2002 and the results are specified in the following pages.

The product corresponded to the tests performed.

NOTES:

- 1) Company standard SF 152-2002 was drawn up by and belongs to S.C. AMPLO S.A. – Ploiesti.
- 2) Tests to be performed were specified by the customer in the order.

SECTION 1. INSPECTION OF THE BEHAVIOUR TO THE ACTION OF CLIMATIC FACTORS

1.1 The product has been subjected to cold test according to SR EN 60068-2-1 + A1 + A2: 1996,

Ab method, with the following parameters:

- Temperature: - 40 ° C
- Duration: 4 h


1.2 The product has been subjected to continuous moist heat, according to STAS 8393/4-81, Ca method, with the following parameters:

- Relative humidity: 95% ± 3%
- Temperature: 45 ° C
- Time: 48 h

Immediately after the end of the conditioning period, the following were tested:

- wet insulation resistance (section 2 of R.I.)

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 S.C. CONFIND S.R.L. Câmpina	OPERATING MANUAL WORKOVER RIG 40 tF WITH MAST	Code: P3668-MU.E	Date: August,2013
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- wet dielectric strength (section 3 of R.I.)

COMPLIES

SECTION 2. INSPECTION OF THE INSULATION RESISTANCE

The insulation resistance was measured in cold, dry and wet condition between the current paths and the housing:

- in cold and dry condition: > 400 M Ω , imposed: min. 10 M Ω
- in wet condition: 30 M Ω , imposed: min 2 M Ω

COMPLIES

SECTION 3. INSPECTION OF THE DIELECTRIC RIGIDITY

The dielectric rigidity was examined under the same conditions as above (section 2 of the R.I.). The loading voltage $U_{test} = 1000 V_{ef}$, 50 Hz, was applied for 1 min. No breakovers or breakdowns occurred.

COMPLIES

SECTION 4. INSPECTION OF THE PROTECTION DEGREE

The inspection was performed according to SR EN 60529:1995. The product ensures the IP 65 protection degree.

COMPLIES

SECTION 5. FUNCTION INSPECTION

The continuity of the stub cable's connections to the range of clamping jaws was checked. There was applied a supply voltage of 24 Vc.c. and there were performed several maneuvers to change the gear; consequently, the proper operation was ascertained.

COMPLIES


SECTION 6. INSPECTION OF THE MAXIMUM TEMPERATURE ON SURFACE

The maximum surface temperature was checked while the product was running and it was mounted on the Tw 125 unit and supplied at nominal voltage 24 Vc.c. (the battery of the chassis) for 2 h.

The maximum temperature measured on the outer surface of the selector module was 25.6 °C, required: max. 85 °C.

Ambient temperature was $t_a = 24$ °C.

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 S.C. CONFIND S.R.L. Câmpina	OPERATING MANUAL WORKOVER RIG 40 tF WITH MAST	Code: P3668-MU.E	Date: August,2013
		Sheet:54	Rev: 0

NOTE: The test has performed within S.C. UPET - S.A. – Targoviste.

COMPLIES

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[logo] **TRADE COMPANY AXON- SRL** ISO 9001.2000
108 Lupeni Str., Ploiești, Prahova county 20 100 B2002753
R.C. J29/3182/94; C.F. RO 666 0260
Tel/Fax: 0244 577430; Mobil: 0744 351 854
E-mail: axon.ploiesti@gmail.com

Test report no. 1220/19.11.2010

RUBBER MIXTURE PN 9A (PN80 - SR7278)

	FEATURE	IMPOSED VALUES (SR 7278)	RESULTED VALUES
a) Current samples (șarja 128):			
	Hardness, Shore A degree	80 ± 5	80
	Tensile strength, kgf/cm ² , min.	140	180
	Breaking elongation, %, min.	125	320
b) Periodic samples:			
	Remanent compressive deformation la compresiune, %, max. (24h x 100°C)	35	10
	Resistance to accelerated aging (70hx100°C)		
	- Loss of tensile strength, %, max.	25	0
	- Loss of breaking elongation, %, max.	50	5
	- Hardness increase, Shore A degree, max.	15	2


Drawn by,

Anton Viorica

Approved by,

Vita Sorin (engineer)

SC CONFIND SRL	Adresa : 105600, Câmpina, str. Progresului, nr. 2, jud. Prahova, Romania Tel/Fax : 0244333160 / 0244374719 ; E-mail : confind@confind.ro
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 S.C. CONFIND S.R.L. Câmpina	OPERATING MANUAL WORKOVER RIG 40 tF WITH MAST	Code: P3668-MU.E	Date: August,2013
		Sheet:55	Rev: 0

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[illegible signature and company's round stamp]



S.C. CONFIND S.R.L.
Câmpina

OPERATING MANUAL
WORKOVER RIG
40 tF WITH MAST

Code:
P3668-MU.E

Date:
August, 2013

Sheet: 56

Rev: 0

18-02-2011
IEȘIRE NR. 403



INSTITUTUL NAȚIONAL DE
CERCETARE-DEZVOLTARE
PENTRU SECURITATE MINIERĂ
ȘI PROTECȚIE ANTIEXPLOZIVĂ
INSEMEX PETROȘANI

DESTINATAR:
S.C. AMPLO S.A.
B-DUL. PETROLULUI
nr. 10
cod poștal:
localitate: PLOIESTI
JUDET: PRAHOVA
FAX: 0244/ 571 506

S.C. AMPLO S.A. PLOIESTI

INTRARE / IEȘIRE NR. 092

Ziua 7 luna 02 anul 2011

Nr. Reg. Com.: J20/1504/1992
CUI: RO 2664676
Adresa: str. G-ral Vasile Milea, nr. 32-34
C.P. 332047, Petroșani, jud. Hunedoara
Tel.: 0254 / 541.621 / 541.622
Fax: 0254 / 546.277
cod IBAN: RO 18 RNCB 0165020175140001
Banca: B.C.R. Petroșani
E-mail: insemex@insemex.ro
http://www.insemex.ro
ROMANIA

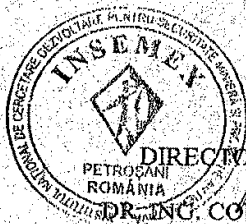
Referitor: C-da.Nr.7444 /09.12.2010 Ref. Dvs.4733 /07.12.2010 Nr. ieșire:

SERVICIUL PENTRU CERTIFICARE ECHIPAMENTE Ex - SECEEx

Contract nr. 9935/ 2010 – 2013

Vă trimitem anexat Certificatul de Examinare EC de tip, **INSEMEX-OEC.ATEX.2011.3.0005X** pentru produsul „Panou indicator parametri motor tip PIPM 01”, conform contractului nr. 9935/ 2010 - 2013.

Cu stima,



DIRECTOR GENERAL
PETROȘANI
ROMANIA
DR. ING. CONSTANTIN LUPU

ȘEF SECEEx
DRD. ING. SORIN BURIAN

MM - LEEExp





S.C. CONFIND S.R.L.
Câmpina

OPERATING MANUAL
WORKOVER RIG
40 tF WITH MAST

Code:
P3668-MU.E

Sheet:57

Date:
August,2013

Rev: 0



INSEMEX Petrosani



acreditat pentru
CERTIFICARE



SR EN 45011:2001
CERTIFICAT DE ACREDITARE
nr. ON 006/2010

**CERTIFICAT DE EXAMINARE EC DE TIP /
EC-TYPE EXAMINATION CERTIFICATE**

Echipamente sau sisteme protectoare destinate pentru folosire în atmosfere potențial explozive
HG 752/2004 luând în considerare Directiva 94/9/EC /
Equipment and Protective Systems Intended for Use in Potentially Explosive Atmospheres
HG 752/2004, considering the Directive 94/9/EC

Numărul certificatului de examinare EC de tip / EC-type-examination certificate number:
INSEMEX-OEC.ATEX.2011.3.0006X

Produsul / Equipment: Panou Indicator parametri motor tip PIPM 01 / Motor parameters indicating
panel type PIPM 01.

Fabricantul / Manufacturer: S.C. AMPLO S.A.

Adresa / Address: PLOIESTI, Bd. Petrolului, nr. 10, jud. Prahova.

7 Aceste echipamente sau sisteme protectoare și toate variantele acceptabile pentru acestea, sunt specificate în anexa prezentului certificat și în documentele menționate în aceasta. / This equipment or protective systems and any acceptable variation thereto are specified in the schedule to this certificate and the documents therein referred to.

INSEMEX-OEC, organismul de evaluare a conformității acreditat și notificat la nivel european, prin intermediul serviciului pentru certificare echipamente Ex, INSEMEX-SECEEX, conform HG 752/2004 cu modificările ulterioare, luând în considerare Directiva 94/9/EC.

- certifică pentru aceste echipamente sau sisteme protectoare că a fost constatată conformarea cu Cerințele esențiale pentru sănătate și securitate referitoare la proiectarea și construcția echipamentelor și sistemelor protectoare destinate pentru folosire în atmosfere potențial explozive prevăzute în Anexa nr.2 a HG 752/2004 (Anexa II a Directivei 94/9/EC).

8 INSEMEX-OEC, the accredited and notified body at European level for conformity assessment, through INSEMEX-SECEEX, the department for certification of Ex equipment, according to HG 752/2004 with further modifications, considering the Directive 94/9/EC.

- certifies that these protective equipment or systems are in compliance with the essential requirements of health and safety that refers to the design and the construction of the protective equipment and systems designed to be used in potentially explosive atmospheres stipulated in the Annex no. 2 of the HG 752/2004 (Annex II in the Directive 94/9/EC).

Rezultatele examinării și încercărilor sunt înregistrate în Raportul de evaluare confidențial / The results of the tests and examinations are recorded in the confidential assessment report no: 5/ 2011.

9 Conformarea cu Cerințele esențiale pentru sănătate și securitate a fost asigurată prin conformare cu SR-EN 60079-0/2007, SR-EN 60079-1/2008, cu referire la cerințele menționate la Art.18 din anexa prezentului certificat. / The compliance of the product with The essential health and safety requirements has been supplied in accordance with SR-EN 60079-0/2007, SR-EN 60079-1/2008, with reference to the requirements stipulated in the clause no. 18 in the annex of this certificate for which the demonstration of the protection method is included in the reference report.

10 Dacă după numărul certificatului este pus semnul "X", acesta atenționează că echipamentele sau sistemele protectoare sunt supuse la condiții speciale pentru folosire sigură specificate în ANEXA prezentului certificat. / If the mark "X" follows after the number of the certificate, this means that the protective equipment or systems are subjected to special conditions for a safe use specified in the annex of this certificate.

Prezentul certificat poate fi reprodus numai în totalitatea sa fără nici o modificare, inclusiv anexa /
This certificate shall be reproduced only in totality with no change including the annex.

1 / 5



S.C. CONFIND S.R.L.
Câmpina

OPERATING MANUAL
WORKOVER RIG
40 tF WITH MAST

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August,2013

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INSEMEX Petrosani



Numărul certificatului de examinare EC de tip / EC-type-examination certificate number:
INSEMEX-OEC.ATEX.2011.3.0005X

- 11 Prezentul CERTIFICAT DE EXAMINARE EC DE TIP se referă numai la proiectul și construcția echipamentelor sau sistemelor protectoare specificate. După caz, se aplică în continuare alte cerințe prevăzute în Directiva 94/9/EC – ATEX, preluată prin HG 752/2004 cu modificările ulterioare, pentru fabricarea și livrarea acestor echipamente sau sisteme protectoare sau pentru asigurarea conformității la utilizarea destinată, prevăzute la pct. 18 din anexă.

This EC TYPE EXAMINATION CERTIFICATE refers only to the design and the construction of specified components, protective equipment or systems. When necessary, other requirements stipulated in the above mentioned in Directive 94/9/EC taken in to account by HG 752/2004 with further modifications, shall apply for the manufacturing and the delivery of these components, protective equipment or systems or to supply compliance when using in accordance with the intended purpose, stipulated at clause no. 18 in the annex.

- 12 Marcarea echipamentelor sau sistemelor protectoare trebuie să includă următoarele :
The marking of the protective equipment or systems shall include the following:

CE 1809 II 2 G Ex d IIC T5

Acest certificat poate fi folosit numai în aplicația menționată, numai la sediul de la adresa menționată (pct.6) și poate fi reprodus numai în integritatea sa fără nici o modificare, incluzând și anexa. /

This certificate can be used only in the mentioned application, only at the office located at the address mentioned at clause no. 6 and can be reproduced only in totality with no change including the annex.

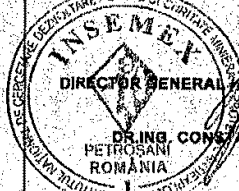
Data certificării inițiale / Date of primary certification: 07.02.2011

Data certificării curente / Date of current certification: 07.02.2011

Prezentul certificat este valabil până la / This certificate is valid until: 07.02.2014

Desar SECEEx Nr. / SECEEx File No. 492 / 2010

Petrosani, 07.02.2011



DIRECTOR GENERAL / GENERAL MANAGER ȘEF INSEMEX-OEC / HEAD OF INSEMEX-OEC

DR.ING. CONSTANTIN LUPU
PETROSANI
ROMANIA

DR.ING. CONSTANTIN LUPU



ȘEF ÎNTR-UNU PENTRU CERTIFICAREA ECHIPAMENTELOR / HEAD OF SECEEx

Petrosani
INSEMEX IURIAN

Prezentul certificat poate fi reprodus numai în totalitatea sa fără nici o modificare, inclusiv anexa /
This certificate shall be reproduced only in totality with no change including the annex.

2 / 5

Institutul Național de Cercetare Dezvoltare
pentru Securitate Minieră și Protecție Antiexplozivă
Str.Gen.V.Milea nr.32-34 Petrosani 332047 România
Tel.(++4)0254541821,22, 542233;Fax.(++4) 0254548277
E-mail : insemex@insemex.ro.



S.C. CONFIND S.R.L.
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ANEXA/ SCHEDULE

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14 **CERTIFICAT DE EXAMINARE EC DE TIP / EC-TYPE-EXAMINATION CERTIFICATE:**
INSEMEX-OEC.ATEX.2011.3.0005X

15 **Descrierea echipamentelor sau sistemelor protectoare / Description of the protective equipment or systems**

Panoul indicator parametri motor tip PIPM 01 este destinat sa fie folosit in spatii inchise sau in aer liber, in atmosfere potential explozive de gaze, vapori, de grupa II, subdiviziunea C / PIPM 01 type motor parameters indicating panel, is designed for indoor and outdoor use, in potentially hazardous atmospheres, containing combustible gases, vapors of group II, subdivision C.

Panoul indicator are rolul de a afisa urmatoorii parametri / The scope of the indicating panel is to indicate the following parameters:

- Turatia motorului / the number of revolutions of the motor;
- Temperatura uleiului de transmisie / The temperature of the transmission oil;
- Presiunea uleiului de motor / The pressure of the motor oil;
- Temperatura apei de racire / The temperature of the cooling water.

In plus este prevazut si cu LED pentru alarmare / Additionally it is equipped with LED for issuing an alarm „ POWER TRAIN”

Aceste echipamente pot fi folosite in zona 1 si zona 2. / This equipment can be used in zone 1 and zone 2.

Gradul normal de protectie al aparaturii este IP 66. / The normal degree of protection for the apparatus is IP 66.

Domeniul de temperaturi ambiante in care sunt prevazute sa functioneze aparaturile este cuprins intre - 40°C ... + 55°C. / The range of ambient temperatures for which the apparatus is designed to function is - 40°C ... + 55°C.

Carcasa antideflagranta si racordurile pentru cablurile electrice sunt fabricate de CORTEM S.p.A Italia si sunt certificate ca si carcasa antideflagranta goala (component Ex) de CESI Italia / The enclosure as well as the cable entries are manufactured by CORTEM S.p.A Italy and are certified as an empty flameproof enclosure (Ex component) – certificat nr. / certificate no. CESI 01 ATEX 036U.

Parametrii aparaturii / Technical parameters:

- Grad normal de protectie / Normal degree of protection: IP 66;
- Tip de protectie / Type of protection: Ex d II C;
- Clasa de temperatura / Temperature class: T5;
- Categoria echipamentului / Equipment category: 2 G;
- Temperatura ambienta / Ambient temperature: -40°C... +55°C;
- Tensiune nominala / Rated voltage: 24 V c.c. + 10% - 15%;
- Temperatura de depozitare / Storing temperature: -35°C ... +80°C;
- Umiditate relativa / Relative humidity: 65% +/- 15%;
- Volumul interior liber al carcasei fara parti componente / The internal volume of the enclosure with the components mounted: 8800 cm³;



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ANEXA/ SCHEDULE

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**CERTIFICAT DE EXAMINARE EC DE TIP / EC-TYPE-EXAMINATION CERTIFICATE:
INSEMEX-OEC.ATEX.2011.3.0005X**

16

Numere de rapoarte / Numbers of reports: 5/ 2011.

17

Condiții speciale pentru folosire sigură / Special conditions for safe use:

Prezentul certificat se referă numai la caracteristicile încercate conform SR-EN 60079-1/2008 / This certificate refers only to the characteristics tested according to SR-EN 60079-1/2008.

Pentru celelalte caracteristici utilizatorul trebuie să pretindă producătorului să certifice pe răspundere proprie conformitatea cu SR-EN 60079-0/2007 și proiectul aprobat prin prezentul certificat. / For the other characteristics the user must ask the manufacturer to certify the conformity according to SR-EN 60079-0/2007 and the design approved with this certificate.

Fiecare reper ce contribuie la realizarea tipului de protecție capsulare antideflagrantă trebuie să fie supus, înainte de montare, unei suprapresiuni statice de 20 bar, timp de 1 minut. / Each piece of equipment which is part of the flameproof enclosure has to be subjected, before mounting, to a static overpressure test of 20 bar, for one minute.

Întreținerea pe durata folosirii, reparațiile și reviziile trebuie să se conformeze cu instrucțiunile indicate de producător. / The maintenance, service and overhaul of the product must be done according to the instructions defined by the manufacturer.

Reparațiile și înlocuirile de piese defecte sau uzate trebuie realizate numai de către personal specializat și cu piese de schimb furnizate de către SC AMPLO SA. Reparații care afectează protecția la explozie trebuie efectuate numai de către firma SC AMPLO SA. / Repairs and replacement of damaged or faulty parts must be carried out by skilled and experienced personnel with spare parts supplied by SC AMPLO SA. Repairs that affect explosion proof protection may only be carried out by SC AMPLO SA.

În scopul supravegherii postcertificare, titularul certificatului trebuie să-și îndeplinească obligațiile care rezultă din sistemul de calitate aprobat, care se supune în continuare schemei de supraveghere a organismului notificat responsabil cu evaluarea sistemului de asigurare a calitatii. / For the post certification surveillance the owner of the certificate must comply with the requirements resulted from the quality assurance system approved by the notified body responsible with the quality management system.

4/5



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ANEXA/ SCHEDULE

- 13
14 **CERTIFICAT DE EXAMINARE EC DE TIP / EC-TYPE-EXAMINATION CERTIFICATE:**
INSEMEX-OEC.ATEX.2011.3.0005X
18 **Cerințe esențiale pentru sănătate și securitate / Health and safety essential requirements**

Cerințe esențiale pentru sănătate și securitate necuprinse în standardele menționate la (9) / Health and safety essential requirements that are not included in the standards mentioned at clause no. (9)

ECHIPAMENTE ȘI SISTEME PROTECTOARE / PROTECTIVE EQUIPMENT AND SYSTEMS

Paragraf/ Paragraph	Object / Object	Conformare / Compliance
0	1	2
1.0.1	Principiile de integrare a securității la explozie / Principles of integration of safety to explosion	A se vedea Raportul SECEEX- 5/ 2011 See Report SECEEX- 5/ 2011
1.0.2	Cerințe de proiectare / Requirements for the design	- // -
1.0.4	Condițiile mediului înconjurător / Environmental conditions	- // -
1.0.5	Marcarea / Marking	- // -
1.0.6	Instrucțiuni / Instructions	- // -
1.2.1	Protecția la explozie / Protection to explosion	- // -
2.2	Cerințe pentru categoria 2 a grupeii II de echipamente / Requirements for category 2 of group II of equipment	- // -

19 DESENE / DRAWINGS

Număr / Number	Ediția	Data / Date	Name
110 - 151803.01.00	1	10.2010	Panou indicator parametri motor / Motor parameters indicating panel
110 - 151803.01.06.00	1	01.2010	Modul afisare parametri motor / Motor parameters indicating module
110 - 151803.01.06.06	1		Placa panou indicare parametri motor / Motor parameters indicating plate panel
110 - 151803.01.06.08	1	09.09.2010	Contrapanou instrumente indicatoare / Counterpanel indicating instruments
191 - 1390.05.02	1	03.2010	Ax / Shaft Φ 3
197 - 1473.05.03	1	03.2010	Piesa mobila / Mobile piece
110 - 151803.01.08.16	1	11.2010	Piulita / Nut M 4
110 - 151803.01.10	1	29.09.2010	Niplu pentru copex Φ 14 interior (cablu 12) / Niple for copex Φ 14 interior (cable 12).
110 - 151803.01.16	1	11.2010	Eticheta / Nameplate

Grup tehnic de lucru / Working technical group:

Dr.ing. Mihai Magyari

Dr. Ing. Lucian Moldovan

Prezentul certificat poate fi reprodus numai în totalitatea sa și fără nici o modificare, inclusiv anexa / This certificate shall be reproduced only in totality with no change including the annex

Liste cuvintelor cheie SECEEX / SECEEX key words: SIMAPIS 01



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CESICERT

1026

EC-TYPE EXAMINATION CERTIFICATE



- [1] **EC-TYPE EXAMINATION CERTIFICATE**
- [2] Component intended for use on/in equipment or protective system intended for use in potentially explosive atmospheres
Directive 94/9/EC
- [3] EC-Type Examination Certificate number:
CESI 01 ATEX 025 U
- [4] Component: Signal and control operators series M-0...
- [5] Manufacturer: **COR.TEM S.p.A.**
- [6] Address: Via Aquileia 6, 34070 Villesse (Gorizia - Italy)
- [7] This component and any acceptable variation thereto is specified in the schedule to this certificate and the documents therein referred to.
- [8] CESI, notified body n° 0722 in accordance with Article 9 of the Council Directive 94/9/EC of 23 March 1994, certifies that this component has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of components intended for use in potentially explosive atmospheres given in Annex II to the Directive.
The examination and test results are recorded in confidential report n° EX-A1/012113.
- [9] Compliance with the Essential Health and Safety Requirements has been assured by compliance with:
EN 50014: 1997 + A1..A2 EN 50018: 2000 EN 50281-1-1 (1999)
- [10] The sign "U" placed after the certificate number indicates that this certificate must not be mistaken for a certificate intended for an equipment or protective system. This partial certification may be used as a basis for certification of an equipment or protective system.
- [11] This EC-TYPE EXAMINATION CERTIFICATE relates only to the design, examination and tests of the specified component in accordance with the directive 94/9/CE.
Further requirements of the directive apply to the manufacturing process and supply of this component. These are not covered by this certificate.
- [12] The marking of the component shall include the following:

II 2 GD EEx d IIC IP 65

This certificate may only be reproduced in its entirety and without any change, schedule included.

date April 12th, 2001 - translation issued on April 12th, 2001

prepared CERT - M. Balaz

approved CERT - U. Colombo

CESI
CENTRO ELETTROTECNICO SPERIMENTALE ITALIANO
Responsabile Area Certificazione

page 1/2

CESI
Centro Elettrotecnico
Sperimentale Italiano
Giacinto Motta spa

Via R. Rubattino 54
20134 Milano - Italia
Telefono 0221251 r.a.
Fax 022125440
http://www.cesi.it

Capitale sociale 16 miliardi
Interamente versato
CCIAA di Milano n. 429222
Registro delle Imprese
di Milano n. 84067

Sezione Ordinaria
Tribunale Milano
P.I. IT00793580150
C.F. 00793580150

MOD. EC-C-UK

67

SC CONFIND SRL

Adresa : 105600, Câmpina, str. Progresului, nr. 2, jud. Prahova, Romania
Tel/Fax : 0244333160 / 0244374719 ; E-mail : confind@confind.ro



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CESICERT

Inspection and Certification Services

[13]

Schedule

[14] EC-TYPE EXAMINATION CERTIFICATE N° CESI 01 ATEX 025 U

[15] Description of component

The signal and control operators type M-0... are components suitable to be mounted on flameproof enclosures.

Component	Type
switch handles	M-0...
signaling buttons	M-0428
buttons	M-0429
emergency-buttons	M-0430
signaling lights	M-0457
double buttons	M-0427
key handles	M-093
emergency buttons	M-0...

[16] Report N° EX-A1/012113

Routine tests

The manufacturer shall carry out the routine tests prescribed at clause 24 of the EN 50014 standard.

Descriptive documents (prot. EX-A1/012114)

- Technical note n° A4-4169 Rev. 0 (2 pages)	dated 15.12.2000
- Drawing n° A2-4137 Rev.0	dated 15.12.2000
- Safety instructions n° F-265 Rev. 0 (8 pages)	dated 15.12.2000
- Attestation of conformity for components n° 0029	dated 15.12.2000

One copy of all documents is kept in CESI files.

[17] Schedule of limitations

The service temperature of the signal and control operators type M-0... shall not exceed 100 °C.
The tests on the components have been carried out so that the components can be used on flameproof enclosures without any restriction of volume.

[18] Essential Health and Safety Requirements

Covered by standards.

This certificate may only be reproduced in its entirety and without any change, schedule included.

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S.C. CONFIND S.R.L.
Câmpina

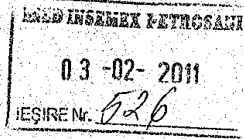
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August, 2013

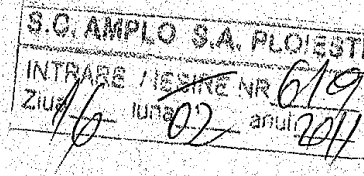
Sheet: 64

Rev: 0



INSTITUTUL NAȚIONAL DE
CERCETARE-DEZVOLTARE
PENTRU SECURITATE MINIERĂ
ȘI PROTECȚIE ANTIEXPLOZIVĂ
INSEMEX PETROȘANI

DESTINATAR:
S.C. AMPLO S.A.
B-DUL. PETROLULUI
nr. 10
cod poștal: 100521
localitate: PLOIESTI
JUDET: PRAHOVA
FAX: 0244/ 571 506



Nr.Reg.Com.: J20/1504/1992
CUI: RO 2664676
Adresa: str. G-ral Vasile Milea, nr. 32-34
C.P. 332047, Petroșani, jud. Hunedoara
Tel.: 0254 / 541.621 / 541.622
Fax: 0254 / 546.277
cod IBAN: RO 18 RNCB 0165020175140001
Banca: B.C.R. Petroșani
E-mail: insemex@insemex.ro
http://www.insemex.ro
ROMÂNIA

Referitor: C-da.Nr.6166 /26.10.2010 Ref. Dvs.4118 /25.10.2010 Nr. ieșire:

D. Lupa Tudaz Strida
16.02.2011

SERVICIUL PENTRU CERTIFICARE ECHIPAMENTE Ex - SECEEx

Contract nr. 9935/ 2010 – 2013

Vă trimitem anexat Certificatul de Examinare EC de tip, **INSEMEX-OEC.ATEX.2011.3.0003X** pentru produsul „**Modul selector manual trepte de viteza tip STV 01**”, conform contractului nr. **9935/ 2010 - 2013**.

Cu stima,



[Signature]
DR. ING. CONSTANTIN LUPU

ȘEF SECEEx

[Signature]
DRD. ING. SORIN BURIAN



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INSEMEX Petrosani



acreditat pentru
CERTIFICARE

SR EN 45011:2001
CERTIFICAT DE ACREDITARE
nr. ON 006/2010

**CERTIFICAT DE EXAMINARE EC DE TIP/
EC-TYPE EXAMINATION CERTIFICATE**

Echipamente sau sisteme protectoare destinate pentru folosire în atmosfere potențial explozive
HG 752/2004 luând în considerare Directiva 94/9/EC/
Equipment and Protective Systems Intended for Use in Potentially Explosive Atmospheres
HG 752/2004, considering the Directive 94/9/EC

Numărul certificatului de examinare EC de tip / EC-type-examination certificate number:
INSEMEX-OEC.ATEX.2011.3.0003X

Produsul / Equipment: Modul selector manual trepte de viteza tip STV 01 / Manual shift gear module
type STV 01.

Fabricantul / Manufacturer: S.C AMPLO S.A.

Adresa / Address: PLOIESTI, Bd. Petrolului, nr. 10, jud. Prahova.

Aceste echipamente sau sisteme protectoare și toate variantele acceptabile pentru acestea, sunt specificate în anexa prezentului certificat și în documentele menționate în aceasta. / This equipment or protective systems and any acceptable variation thereto are specified in the schedule to this certificate and the documents therein referred to.

INSEMEX-OEC, organismul de evaluare a conformității acreditat și notificat la nivel european, prin intermediul serviciului pentru certificare echipamente Ex, INSEMEX-SECEEX, conform HG 752/2004 cu modificările ulterioare, luând în considerare Directiva 94/9/EC.

- certifică pentru aceste echipamente sau sisteme protectoare că a fost constatată conformarea cu Cerințele esențiale pentru sănătate și securitate referitoare la proiectarea și construcția echipamentelor și sistemelor protectoare destinate pentru folosire în atmosfere potențial explozive prevăzute în Anexa nr.2 a HG 752/2004 (Anexa II a Directivei 94/9/EC).

INSEMEX-OEC, the accredited and notified body at European level for conformity assessment, through INSEMEX-SECEEX, the department for certification of Ex equipment, according to HG 752/2004 with further modifications, considering the Directive 94/9/EC.

- certifies that these protective equipment or systems are in compliance with the essential requirements of health and safety that refers to the design and the construction of the protective equipment and systems designed to be used in potentially explosive atmospheres stipulated in the Annex no. 2 of the HG 752/2004 (Annex II in the Directive 94/9/EC).

Rezultatele examinării și încercărilor sunt înregistrate în Raportul de evaluare confidențial / The results of the tests and examinations are recorded in the confidential assessment report no: 3/ 2011.

Conformarea cu Cerințele esențiale pentru sănătate și securitate a fost asigurată prin conformare cu SR-EN 60079-0/2007, SR-EN 60079-1/2008, cu referire la cerințele menționate la Art.18 din anexa prezentului certificat. / The compliance of the product with The essential health and safety requirements has been supplied in accordance with SR-EN 60079-0/2007, SR-EN 60079-1/2008, with reference to the requirements stipulated in the clause no. 18 in the annex of this certificate for which the demonstration of the protection method is included in the reference report.

Dacă după numărul certificatului este pus semnul "X", acesta atenționează că echipamentele sau sistemele protectoare sunt supuse la condiții speciale pentru folosire sigură specificate în ANEXA prezentului certificat. / If the mark "X" follows after the number of the certificate, this means that the protective equipment or systems are subjected to special conditions for a safe use specified in the annex of this certificate.

Prezentul certificat poate fi reprodus numai în totalitatea sa fără nici o modificare, inclusiv anexa / This certificate shall be reproduced only in totality with no change including the annex.



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INSEMEX Petrosani



Numărul certificatului de examinare EC de tip / EC-type-examination certificate number:
INSEMEX-OEC.ATEX.2011.3.0003X

- 11 Prezentul CERTIFICAT DE EXAMINARE EC DE TIP se referă numai la proiectul și construcția echipamentelor sau sistemelor protectoare specificate. După caz, se aplică în continuare alte cerințe prevăzute în Directiva 94/9/EC – ATEX, preluată prin HG 752/2004 cu modificările ulterioare, pentru fabricarea și livrarea acestor echipamente sau sisteme protectoare sau pentru asigurarea conformității la utilizarea destinată, prevăzute la pct. 18 din anexă.
This EC TYPE EXAMINATION CERTIFICATE refers only to the design and the construction of specified components, protective equipment or systems. When necessary, other requirements stipulated in the above mentioned in Directive 94/9/EC taken in to account by HG 752/2004 with further modifications, shall apply for the manufacturing and the delivery of these components, protective equipment or systems or to supply compliance when using in accordance with the intended purpose, stipulated at clause no. 18 in the annex.
- 12 Marcarea echipamentelor sau sistemelor protectoare trebuie să includă următoarele :
The marking of the protective equipment or systems shall include the following:

CE 1809  II 2 G Ex d IIB T6

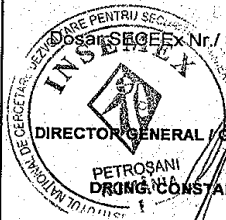
Acest certificat poate fi folosit numai în aplicația menționată, numai la sediul de la adresa menționată (pct.6) și poate fi reprodus numai în integritatea sa fără nici o modificare, incluzând și anexa. /

This certificate can be used only in the mentioned application, only at the office located at the address mentioned at clause no. 6 and can be reproduced only in totality with no change including the annex.

Data certificării inițiale / Date of primary certification: 01.02.2011

Data certificării curente / Date of current certification: 01.02.2011

Prezentul certificat este valabil până la / This certificate is valid until: 01.02.2014



Dosar SECEEx Nr. / SECEEx File No. 397/ 2010

Petroșani, 01.02.2011

DIRECTOR GENERAL / GENERAL MANAGER
PETROȘANI
DR.ING. CONSTANTIN LUPU

ȘEF INSEMEX-OEC / HEAD OF INSEMEX-OEC
DR.ING. CONSTANTIN LUPU



Prezentul certificat poate fi reprodus numai în totalitatea sa fără nici o modificare, inclusiv anexa /
This certificate shall be reproduced only in totality with no change including the annex.

2 / 5

Institutul Național de Cercetare Dezvoltare
pentru Securitate Minieră și Protecție Antiexplozivă
Str.Gen.V.Milea nr.32-34 Petroșani 332047 România
Tel.(++4)0254541621,22, 542233;Fax.(++4) 0254546277
E-mail : insemex@insemex.ro.



S.C. CONFIND S.R.L.
Câmpina


OPERATING MANUAL
WORKOVER RIG
40 tF WITH MAST

Code:
P3668-MU.E

Date:
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ANEXA/ SCHEDULE

13

14 **CERTIFICAT DE EXAMINARE EC DE TIP / EC-TYPE-EXAMINATION CERTIFICATE:
INSEMEX-OEC.ATEX.2011.3.0003X**

15 **Descrierea echipamentelor sau sistemelor protectoare / Description of the protective equipment or systems**

Modulul selector manual trepte de viteza tip STV 01 este destinat sa fie folosit in spatii inchise sau in aer liber, in atmosfere potential explozive de gaze, vapori, de grupa II, subdiviziunea B / STV 01 type manual shift gear module, is designed for indoor and outdoor use, in potentially hazardous atmospheres, containing combustible gases, vapors of group II, subdivision B. Aceste aparaturi pot fi folosite in zona 1 si zona 2. / This apparatus can be used in zone 1 and zone 2.

Produsul este parte componenta a instalatiilor de foraj si interventie care lucreaza la sondele de titei si gaze, in atmosfere potential explozive / The product is part of the drilling and intervention installations which carry activities at the oil and gas rigs, in potentially explosive atmospheres.

Gradul normal de protectie al aparaturii este IP 65. / The normal degree of protection for the apparatus is IP 65.

Domeniul de temperaturi ambiante in care sunt prevazute sa functioneze aparaturile este cuprins intre - 29 °C ... + 45°C. / The range of ambient temperatures for which the apparatus is designed to function is - 29 °C ... + 45°C.

Parametrii aparaturii / Technical parameters:

- Grad normal de protectie / Normal degree of protection: IP 65;
- Tip de protectie / Type of protection: Ex d II B;
- Clasa de temperatura / Temperature class: T6;
- Temperatura ambianta / Ambient temperature: -29°C... +45°C;
- Tensiune nominala / Rated voltage: 12 sau / or 24 V c.c.
- Putere consumata / Rated power: max. 50 VA;
- Temperatura de depozitare / Storing temperature: -35°C ... +45°C;
- Umiditate relativa / Relative humidity: 65% +/- 15%.

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ANEXA/ SCHEDULE

14

**CERTIFICAT DE EXAMINARE EC DE TIP / EC-TYPE-EXAMINATION CERTIFICATE:
INSEMEX-OEC.ATEX.2011.3.0003X**

16

Numere de rapoarte / Numbers of reports: 3/ 2011.

17

Condiții speciale pentru folosire sigură / Special conditions for safe use:

Prezentul certificat se referă numai la caracteristicile încercate conform SR-EN 60079-1/2008 / This certificate refers only to the characteristics tested according to SR-EN 60079-1/2008.

Pentru celelalte caracteristici utilizatorul trebuie să pretindă producătorului să certifice pe răspundere proprie conformitatea cu SR-EN 60079-0/2007 și proiectul aprobat prin prezentul certificat. / For the other characteristics the user must ask the manufacturer to certify the conformity according to SR-EN 60079-0/2007 and the design approved with this certificate.

Fiecare reper ce contribuie la realizarea tipului de protecție capsulare antideflagrantă trebuie să fie supus, înainte de montare, unei suprapresiuni statice de 15 bar, timp de 1 minut. / Each piece of equipment which is part of the flameproof enclosure has to be subjected, before mounting, to a static overpressure test of 15 bar, for one minute.

Întreținerea pe durata folosirii, reparațiile și reviziile trebuie să se conformeze cu instrucțiunile indicate de producător. / The maintenance, service and overhaul of the product must be done according to the instructions defined by the manufacturer.

Reparațiile și înlocuirile de piese defecte sau uzate trebuie realizate numai de către personal specializat și cu piese de schimb furnizate de către SC AMPLO SA. Reparații care afectează protecția la explozie trebuie efectuate numai de către firma SC AMPLO SA. / Repairs and replacement of damaged or faulty parts must be carried out by skilled and experienced personnel with spare parts supplied by SC AMPLO SA. Repairs that affect explosion proof protection may only be carried out by SC AMPLO SA.

În scopul supravegherii postcertificării, titularul certificatului trebuie să-și îndeplinească obligațiile care rezultă din sistemul de calitate aprobat, care se supune în continuare schemei de supraveghere a organismului notificat responsabil cu evaluarea sistemului de asigurare a calitatii. / For the post certification surveillance the owner of the certificate must comply with the requirements resulted from the quality assurance system approved by the notified body responsible with the quality management system.





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- 13 ANEXA/ SCHEDULE
14 CERTIFICAT DE EXAMINARE EC DE TIP / EC-TYPE-EXAMINATION CERTIFICATE:
INSEMEX-OEC.ATEX.2011.3.0003X
18 Cerințe esențiale pentru sănătate și securitate / Health and safety essential requirements

Cerințe esențiale pentru sănătate și securitate necuprinse în standardele menționate la (9)/ Health and safety essential requirements that are not included in the standards mentioned at clause no. (9)

ECHIPAMENTE ȘI SISTEME PROTECTOARE / PROTECTIVE EQUIPMENT AND SYSTEMS

Paragraf/ Paragraph	Object / Object	Conformare / Compliance
0	1	2
1.0.1	Principiile de integrare a securității la explozie / Principles of integration of safety to explosion	A se vedea Raportul SECEEX- 3/ 2011 See Report SECEEX- 3/ 2011
1.0.2	Cerințe de proiectare / Requirements for the design.	- // -
1.0.4	Condițiile mediului înconjurător / Environmental conditions	- // -
1.0.5	Marcarea / Marking	- // -
1.0.6	Instrucțiuni / Instructions	- // -
1.2.1	Protecția la explozie / Protection to explosion	- // -
2.2	Cerințe pentru categoria 2 a grupeii II de echipamente / Requirements for category 2 of group II of equipment	- // -

19 DESENE / DRAWINGS

Număr / Number	Ediția	Data / Date	Name
302 - 2964.00A	1	09.2010	Modul selector manual trepte de viteza tip STV 01 / Manual shift gear module type STV 01
302 - 2964.01A	1	03.2010	Corp / Body
302 - 2964.02	1	03.2010	Capac / Cover
302 - 2964.06	1	03.2010	Rama vizor / Glass frame
302 - 2964.07	1	03.2010	Vizor / Glass
302 - 2964.08	1	03.2010	Garnitura geam / Glass seal
302 - 2964.09.A	1	03.2010	Ghidaj butoane / Buttons guidance
302 - 2964.11	1	27.11.2002	Buton / Button
302 - 2964.14.00	1	03.2010	Ax / Shaft
183 - 1233.20.05	1	03.2010	Bucsa / Bushing
302 - 2964.24A	1	24.09.2010	Bucsa de strangere / Tightening bushing
302 - 2964.26	1	03.2007	Distantier / Distance provider
302 - 2964.28A	1	27.11.2002	Distantier / Distance provider
302 - 2964.29A	1	05.2002	Suport / Suport
302 - 2964.32	1	03.2010	Eticheta / Nameplate

Grup tehnic de lucru / Working technical group:

Dr.ing. Mihai Magyari

Dr. Ing. Lucian Moldovan

Prezentul certificat poate fi reprodus numai în totalitatea sa și fără nici o modificare, inclusiv anexa / This certificate shall be reproduced only in totality with no change including the annex.

Lista cuvintelor cheie SECEEX / SECEEX key words: STV 01



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CESI

EXTENSION n. 02/07

to EC-Type Examination Certificate CESI 01ATEX 025U

Report n. EX-A7023517

Routine tests

The manufacturer shall carry out the routine tests prescribed at par. 27 of the EN 60079-0, at par. 16 of the EN 60079-1 and at par. 24 of the EN 61241-0 (2006) Standards.

Descriptive documents (prot. EX-A7023520)

- Technical Note A4-4979	Rev. 00	dated	20/03/2007
- Drawing n°. A4-4951	Rev. 00	dated	02/04/2007
- Drawing n°. A4-4952	Rev. 00	dated	02/04/2007
- Attestation of Conformity		dated	20/03/2007
- Safety Instruction mod. F-265 (8 pg.)	Rev. 01	dated	20/03/2007

One copy of all documents is kept in CESI files.

Essential Health and Safety Requirements

The Health and Safety Requirements are assured by compliance with the following Standards:

- EN 60079-0 : 2006 Electrical apparatus for explosive gas atmospheres.
General requirements
- EN 60079-1 : 2004 Flamoproof enclosures "d".
- EN 61241-0 : 2006 Electrical apparatus for use in the presence of combustible dust.
General requirements
- EN 61241-1 : 2004 Protection by enclosures "tD"

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S.C. CONFIND S.R.L.
Câmpina

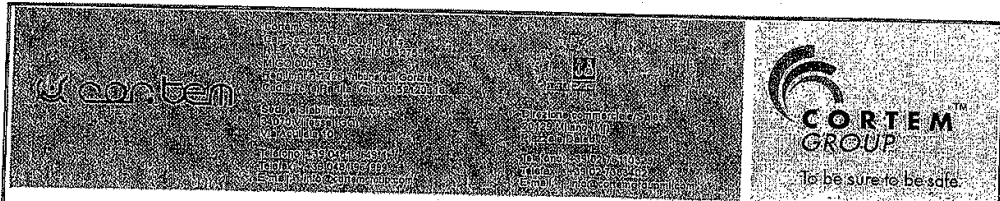
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ATTESTATO DI CONFORMITA' DEI COMPONENTI
Attestation of conformity for components
N° 0018

IL COSTRUTTORE
we:

CORTEM S.p.A.
Via Aquileia, 10
34070 VILLESSE (GO) - ITALY

DICHIARA QUI DI SEGUITO CHE IL PRODOTTO:
hereby declare that the product:

CUSTODIE VUOTE:
empty boxes:

EJB..

MODO DI PROTEZIONE:
Protection mode:

II 2GD Ex d IIB Ex tD A21 IP65 (66/67)
II 2GD Ex d IIB+H2 Ex tD A21 IP65 (66/67)
I M2 Ex d I IP65 (66/67)

CERTIFICATO:
certificate:

CESI 00 ATEX 036U

ORGANISMO NOTIFICATO:
Notify Body:

n.0722 CESI via RUBATTINO,54 (MI) ITALY

RISULTA IN CONFORMITA' CON LE SEGUENTI DIRETTIVE COMUNITARIE:
is in conformity with the following comunitary directives:

94/9/EC

E CHE SONO STATE APPLICATE LE SEGUENTI NORME ARMONIZZATE
and that the following harmonized standards have been applied:

EN 60079-0 2006
EN 60079-1 2004
EN 61241-0 2006
EN 61241-1 2004
EN 60529 1991

LE CUSTODIE SONO STATE SOTTOPOSTE ALLA PROVA DI SOVRAPRESSIONE INTERNA IN ACCORDO AL PAR.15.1.3.1 DELLA EN 60079-1 CON I SEGUENTI VALORI:
11,9BAR (GRANDEZZE DA 1 A 5) 11,5BAR (GRANDEZZA 6) PER 1 MINUTO.
the housings have been submitted to the overpressure test in accordance to 15.1.3.1 of EN 60079-1 with the following values: 11,9bar (for sizes from 1 to 5) 11,5bar (for size 6) for 1 minute.

Villesse, 21.03.2007

Firma

Signature

Riccardo Gratton
Riccardo Gratton
Vicepresident



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coritem



To be sure to be safe

DICHIARAZIONE DI CONFORMITA' - Declaration of conformity



N° 0019

IL COSTRUTTORE
we:

CORTEM S.p.A.
Via Aquileia, 10
34070 VILLESSE (GO) - ITALY

DICHIARA QUI DI SEGUITO CHE IL PRODOTTO:
hereby declare that the product:

CUSTODIE PORTAMORSETTI, UNITA' DI COMANDO E CONTROLLO:
Terminal boxes, command and control units: EJB..

MODO DI PROTEZIONE:
Protection mode: II 2GD Ex d IIB T5/T6 Ex td A21
IP65(66/67) T100°C/T85°C
II 2GD Ex d IIB+H2 T5/T6 Ex td A21
IP65(66/67) T100°C/T85°C

CERTIFICATO:
Certificate: CESI 01 ATEX 026
CESI 01 ATEX 027

ORGANISMO NOTIFICATO:
Notify body: n.0722 CESI via RUBATTINO,54(MI) ITALY

RISULTA IN CONFORMITA' CON LE SEGUENTI DIRETTIVE COMUNITARIE:
is in conformity with the following comunitary directives:

89/336/EEC 94/9/EC
92/31
93/68

E CHE SONO STATE APPLICATE LE SEGUENTI NORME ARMONIZZATE
and that the following harmonized standards have been applied:

EN 60439-1 EN 60079-0 2006
EN 60079-1 2004
EN 61241-0 2006
EN 61241-1 2004
EN 60529 1991

Villesse, 21.03.2007

Firma
Signature
Riccardo Gratton
Vice president



S.C. CONFIND S.R.L.
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CESICERT

Inspection and Certification Services

1015

[1] **EC-TYPE EXAMINATION CERTIFICATE**



[2] Component intended for use on/in equipment or protective system
intended for use in potentially explosive atmospheres
Directive 94/9/EC

[3] EC-Type Examination Certificate number:

CESI 00 ATEX 036 U

[4] Component: Empty enclosures series CCF...and EJB... for control and signaling equipment

[5] Manufacturer: COR.TEM S.p.A.

[6] Address: Via Aquileia 6, 34070 Villesse (Gorizia), Italy

[7] This component and any acceptable variation thereto is specified in the schedule to this certificate and the documents therein referred to.

[8] CESI, notified body n° 0722 in accordance with Article 9 of the Council Directive 94/9/EC of 23 March 1994, certifies that this component has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of components intended for use in potentially explosive atmospheres given in Annex II to the Directive.

The examination and test results are recorded in confidential report n° EX-A0/024869.

[9] Compliance with the Essential Health and Safety Requirements has been assured by compliance with:

EN 50014: 1997 + A1..A2 EN 50018: 1994

[10] The sign "U" placed after the certificate number indicates that this certificate must not be mistaken for a certificate intended for an equipment or protective system. This partial certification may be used as a basis for certification of an equipment or protective system.

[11] This EC-TYPE EXAMINATION CERTIFICATE relates only to the design and construction of the specified component. If applicable, further requirements of this Directive apply to the manufacture and supply of this component.

[12] The marking of the component shall include the following:

II 2 G EEx d IIB

This certificate may only be reproduced in its entirety and without any change, schedule included.

date July 24th, 2000 - translation issued on July 26th, 2000

prepared CERT - M. Balaz

CESI

CENTRO ELETTROTECNICO SPERIMENTALE ITALIANO
Responsabile Area Certificazione

approved CERT - U. Colombo

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CESI
Centro Elettrotecnico
Sperimentale Italiano
Giacinto Motta spa

Via R. Rubattino 54
20134 Milano - Italia
Telefono 0221251 r.a.
Fax 022125440
http://www.cesi.it

Capitale sociale 16 miliardi
interamente versato
CCIAA di Milano n. 429222
Registro delle Imprese
di Milano n. 84067

Sezione Ordinaria
Tribunale Milano
P.I. IT00793580150
C.F. 00793580150



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CESICERT

Inspection and Certification Services

[13]

Schedule

[14] EC-TYPE EXAMINATION CERTIFICATE N° CESI 00 ATEX 036 U

[15] Description of component

Empty enclosures series CCF... and EJB... for control and signaling equipment.

The CCF... and EJB... series are identical in every detail. The code CCF or EJB refers only to the firm which puts into the market the product.

The various items of the code show the size of the enclosure (from 1 to 6), constructional modifications, the type of material used, the presence of glass windows.

The complete codes of all the enclosures subject of this certificate are reported in the drawing A1-4094 annexed.

The enclosures are made normally in aluminium or in stainless steel (see technical note A1-4099 annexed).

Other characteristics of the enclosures are reported in the drawings annexed to this certificate, in particular:

- holes on the covers used for mounting accessories: drawing A1-4096.
- dimensions and characteristics of glass windows: drawing A1-4097.
- number and dimensions of possible holes for cable entries: drawing A1-4095.

The accessories used for cable entry and for closing unused apertures shall be certified according to the standards EN 50014 and EN 50018.

Plate warnings

"Use screws of quality A2-70 according UNI 7323 with ultimate tensile strength of at least 700 N/mm²."

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CESI

1039

EXTENSION n. 01/02



to EC-Type Examination Certificate CESI 00 ATEX 036 U

Equipment: Empty enclosures series CCF... and EJB... for control and signalling equipment

Manufacturer: COR.TEM S.p.A.

Address: Via Aquileia 10, Villesse, Gorizia (Italy)

Admitted variation

- new models CCFE-01 and AQS. -1

Report n. EX-A2/020657

Descriptive documents (prot. EX-A2/020661)

- n. A4-4254 Rev. 0 dated 18.04.2002
- n. A1-4252 Rev. 0 dated 18.04.2002
- n. A1-4253 Rev. 0 (2 p.) dated 18.04.2002
One copy of all documents is kept in CESI files.

This extension and annexed descriptive documents must be annexed to the EC-Type Examination Certificate CESI 00 ATEX 036 U.

This document may only be reproduced in its entirety and without any change.

date 26th June 2002 - translation issued on 26th June 2002

prepared CERT - M. Balaz

approved CERT - U. Colombo

CESI

CENTRO ELETTROTECNICO SPERIMENTALE ITALIANO
Business Unit Certificazione

Il Responsabile

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Prot. A2/020679
Keywords

P: 1
13010R 24080T 48010M 54250O 66540E



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CESI

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EXTENSION n. 01/02



to EC-Type Examination Certificate CESI 00 ATEX 036 U

Equipment: Empty enclosures series CCF... and EJB... for control and signalling equipment

Manufacturer: COR.TEM S.p.A.

Address: Via Aquileia 10, Villesse, Gorizia (Italy)

Admitted variation

- new models CCFE-01 and AQS. -1

Report n. EX-A2/020657

Descriptive documents (prot. EX-A2/020661)

- n. A4-4254 Rev. 0 dated 18.04.2002
- n. A1-4252 Rev. 0 dated 18.04.2002
- n. A1-4253 Rev. 0 (2 p.) dated 18.04.2002
One copy of all documents is kept in CESI files.

This extension and annexed descriptive documents must be annexed to the EC-Type Examination Certificate CESI 00 ATEX 036 U.

This document may only be reproduced in its entirety and without any change.

date 26th June 2002 - translation issued on 26th June 2002

prepared CERT - M. Balaz

approved CERT - U. Colombo

CESI

CENTRO ELETTROTECNICO SPERIMENTALE ITALIANO
Business Unit Certificazione

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Prot. A2/020679
Keywords

P: 1
13010R 24080T 48010M 54250O 66540E



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CESI

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EXTENSION n. 02/02



to EC-Type Examination Certificate CESI 00 ATEX 036 U

Equipment: Empty enclosures series CCF... and EJB... for control and signalling equipment

Manufacturer: COR.TEM S.p.A.

Address: Via Aquileia 10, Villesse, Gorizia (Italy)

Admitted variation

- added degree of protection IP 65 or IP 66/67 (EN 60529 - 1991)
- new category II 2 GD (added protection against the risk of explosion from combustible dusts in conformity with the standard EN 50281-1-1)
- use of glass windows of rectangular shape

The results of verifications and tests are reported in the confidential report EX-A2/025603.

Identification and description of the component

Empty enclosures series CCF... and EJB... for control and signalling equipment.

The enclosures of these units are made in aluminium or in stainless steel (see technical note A4-4099 annexed to this extension).

The various items of the code indicate the size of the enclosure (from 1 to 6), constructional modifications, the type of material used, the presence of glass windows.

On the enclosures command and signalling operators CORTEM type M-0 and operators model FONDISONZO can be installed.

The complete codes of all the units subject of this extension are reported in the drawings A1-4094 and A1-4098 annexed.

Other characteristics of the enclosures are reported in the drawings annexed to this extension, in particular:

- holes on the covers for mounting accessories: drawing A1-4096.
- dimensions and characteristics of the glass windows: drawings A1-4097 and A1-4232.
- number and dimensions of the holes for cable entries admissible on the enclosures: drawing A1-4095.
- characteristics of the command and signalling operators type M-0: drawing A2-4137.

This extension and annexed descriptive documents must be annexed to the EC-Type Examination Certificate CESI 00 ATEX 036 U.

This document may only be reproduced in its entirety and without any change.

date 26th February 2003 revision of the document issued on 6th August 2002

prepared CERT - M. Balaz

approved CERT - U. Colombo

CESI
CENTRO ELETTROTECNICO SPERIMENTALE ITALIANO
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Identification and description of the component (follows)

The enclosures series CCF and EJB are made in two different versions as regards the degree of protection IP:

- enclosures with silicone grease placed between the body and the cover: IP 65
- enclosures with sealing gasket placed between the body and the cover: IP 66/67

When operators model FONDISONZO are used (drawing A1-4096) the enclosures are of category II 2 G with degree of protection IP 54.

According to the protection adopted the enclosures series CCF and EJB can have the following marking:

	II 2 G	EEx d IIB		enclosures protected only against flammable gases
	II 2 GD	EEx d IIB	IP 65	enclosures with silicone grease
	II 2 GD	EEx d IIB	IP 66/67	enclosures with sealing gasket without command and signalling operators
	II 2 GD	EEx d IIB	IP 66	enclosures with sealing gasket with command and signalling operators type M-0.

The accessories used for cable entries and for closing unused apertures on the enclosures category 2 G shall be certified according to the standards EN 50014 and EN 50018.

The accessories used for cable entries and for closing unused apertures on the enclosures category 2 GD shall be certified according to the standards EN 50014, EN 50018 and EN 50281-1-1 and shall have a degree of protection IP equal to that of the enclosure.

Warning label

"Use screws of quality A2-70 according UNI 7323 with ultimate tensile strength of at least 700 N/mm²".

Schedule of limitations

The sealing used for windows and for signalling lamps shall not be submitted to a temperature higher than 100 °C.
The signalling lamps model FONDISONZO (drawing A1-4096) shall not be submitted to high risk of mechanical danger.

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Routine tests

The manufacturer shall carry out the routine tests prescribed at clause 24 of the EN 50014 standard.
The routine overpressure test shall be carried out with the static method (clause 15.1.3.1 of EN 50018 standard) at the pressure of:

- 11.9 bar for enclosure size from 1 to 5
- 11.5 bar for enclosure size 6

Descriptive documents (prot. EX-A2/025611)

- n. A4-4099 Rev. 1 (2 p.)	dated	27.09.2002
- n. A1-4094 Rev. 2	dated	27.09.2002
- n. A1-4095 Rev. 2	dated	27.09.2002
- n. A1-4096 Rev. 2	dated	27.09.2002
- n. A1-4097 Rev. 2	dated	27.09.2002
- n. A1-4098 Rev. 2	dated	27.09.2002
- n. A1-4170 Rev. 1	dated	27.09.2002
- n. A1-4232 Rev. 3	dated	27.09.2002
- n. A2-4137 Rev. 1	dated	12.03.2002
- n. A3-4305 Rev. 0	dated	19.07.2002
- n. A4-4129 Rev. 0	dated	26.06.2000
- Safety instructions F-252 Rev. 1 (4 p.)	dated	27.09.2002
- Technical specification Rhodorsil (3 p.)	dated	08.1981
- Technical specification Blue tech (2 p.)	dated	23.03.1999
- Attestation of conformity for components N.0018	dated	27.09.2002

One copy of the above mentioned documents is kept in CESI files.

Essential Health and Safety Requirements

Compliance with the Health and Safety Requirements has been assured by compliance with the following standards:
EN 50014 - 1997 + A1..A2 – General requirements
EN 50018 - 2000 - Flameproof enclosures "d"
EN 50281-1-1 – 1999 – Electrical apparatus for use in the presence of combustible dust. Part 1-1: Electrical apparatus protected by enclosures – Construction and testing.



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EXTENSION n. 03/03



to EC-Type Examination Certificate CESI 00 ATEX 036 U

Equipment: Empty enclosures series CCF... and EJB... for control and signalling equipment

Manufacturer: **COR.TEM S.p.A.**

Address: Via Aquileia 10, Villesse, Gorizia (Italy)

Admitted variation

- use of rectangular windows of larger size

Report n. EX-A3/035013

Descriptive documents (prot. EX-A3/035016)

- n. A1-4232 Rev. 4 dated 31.03.2003

One copy of all documents is kept in CESI files.

This extension and annexed descriptive documents must be annexed to the EC-Type Examination Certificate CESI 00 ATEX 036 U.

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date 8th October 2003 - translation issued on 8th October 2003

prepared CERT - M. Balaz

approved CERT - U. Colombo

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Prot. A3/035025
Keywords

P: 1
13010R 24080T 48010M 54250O 66540E.



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EXTENSION n. 04/07



to EC-Type Examination Certificate CESI 00ATEX036U

Component: Empty enclosures series CCF... and EJB... for control and signalling equipment

Manufacturer: CORTEM S.p.A.

Address: Via Aquileia, 10 Villesse (Gorizia), Italia

Admitted variation

- Conformity to EN 60079-0 (2006), EN60079-1 (2004), EN 61241-0 (2006), EN 61241-1 (2004) Standards
- Update of nameplate
- Execution IIB + H₂
- Execution I M2 Ex d I (series EJBX in stainless steel)
- Add new boxes:
 - EJB-55, EJB-55B
 - EJBX7 (only for stainless steel material)
- Modification of the ambient temperature range and the service temperature range.

Identification and description of the component

The marking of the equipment shall include the following:

- II 2G Ex d IIB
- II 2G Ex d IIB+H₂
- II 2GD Ex d IIB; Ex tD A21 IP65 o IP66/67
- II 2GD Ex d IIB+H₂; Ex tD A21 IP65 o IP66/67
- I M2 Ex d I

This extension and annexed descriptive documents must be annexed to the EC-Type Examination Certificate CESI 00ATEX036U.

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date 19 November 2007 - translation issued the 19th November 2007

prepared Pierluigi Molinari

verified Mirko Balaz

approved Fiorenzo Bregani

CESI S.p.A.
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to EC-Type Examination Certificate CESI 00ATEX036U

Identification and description of the component (follows)

The enclosures series CCF and EJB are made in two different versions as regards the degree of protection IP:

- enclosures with silicone grease placed between the body and the cover: IP 65
- enclosures with sealing gasket placed between the body and the cover: IP 66/67

Cable entries

The accessories used for cable entries and for unused holes shall be subject of separate certification:

- for the unit of category II 2G in the execution Ex d IIB (or Ex d IIB+H2) shall be certified according to the Standards: EN 60079-0 (2006); EN 60079-1 (2004);
- for the unit of category II 2GD in the execution Ex d IIB (or Ex d IIB+H2) and Ex tD A21 shall be certified according to the standards: EN 60079-0 (2006); EN 60079-1 (2004); EN 61241-0 (2006); EN 61241-1 (2004) and shall guarantee a degree of protection IP equal to that of the enclosure according to EN 60529 (1991) Standard.
- for the unit of category I M2 in the execution Ex d I shall be certified according to the Standards: EN 60079-0 (2006); EN 60079-1 (2004).

Warning label

"Use screws of quality A2-70 according UNI 7323 with ultimate tensile strength of at least 700 N/mm²".

Report n. EX- A7/030648

Routine tests

The manufacturer shall carry out the routine tests prescribed at par. 27 of the EN 60079-0 (2006) and at par. 24 of the EN 61241-0 (2006) Standards.

The overpressure routine test shall be carried out with static method, at the pressure of

- 11.9 bar for enclosure size from 1 to 5
- 11.5 bar for enclosure size 6
- 10 bar for enclosure size 7

in conformity to the par. 15.1.3.1 of the EN 60079-1 Standard



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Descriptive documents (prot. EX-A7/030659)

- Technical Note A4-4972 Rev. 0 (2 pg.)	dated	21.03.2007
- Dwg. n. A1-4094 Rev. 3	dated	21.03.2007
- Dwg. n. A1-4098 Rev. 3	dated	21.03.2007
- Dwg. n. A1-4170 Rev. 2	dated	21.03.2007
- Dwg. n. A3-5025 Rev. 0 (2 sheets)	dated	21.03.2007
- Dwg. n. A3-5028 Rev. 0 (2 sheets)	dated	21.03.2007
- Dwg. n. A2-4137 Rev. 2	dated	21.03.2007
- Document A4-4951 Rev. 0	dated	02.04.2007
- Document A4-4952 Rev. 0	dated	02.04.2007
- Safety instructions F-276A Rev. 0 (7 pg.)	dated	21.03.2007
- Attestation of conformity for components n. 0018	dated	21.03.2007

One copy of all documents is kept in CESI files.

Schedule of limitations

- The ambient temperature range of empty enclosures series CCF... and EJB... in execution Ex d I; Ex d IIB; Ex d IIB+H2 and Ex tD A21 is: - 20 °C + 60 °C.
- The ambient temperature range of empty enclosures series CCF... and EJB... sizes 1, 2, 3, 3B, 4, 4B, 45, 45B, 5, 5B, 503, 55, 55B, 6, e 6B in execution Ex d IIB only and with silicone grease placed between the body and the cover for IP 65 is: - 20 °C + 100 °C.
- The enclosures for group I M2 are made in stainless steel (series EJBX...) in this case are admitted only stainless steel command and signal operators series M-0 (drawing A2-4137 rev.2) onto enclosures.
- The sealing used for windows and for signalling lamps shall not be submitted to a temperature higher than 100 °C.
- The maximum service temperature of empty enclosures series CCF... and EJB... with the accessories, control-signal operators and windows shall not exceed 100 °C.
- The maximum service temperature of empty enclosures series CCF... and EJB... (without the accessories, control-signal operators, windows and with silicone grease placed between the body and the cover for IP 65) is up to 150 °C.
- The contents of the enclosure shall comply with the appropriate requirements of relevant standards for electrical apparatus.
- When the accessories and operators FONDISONZO (drawing A1-4096) are used the empty enclosures are category II 2G with the degree of protection IP 54. The signalling lamps model FONDISONZO (drawing EE.225.1) shall not be submitted to high risk of mechanical danger.

Essential Health and Safety Requirements

Compliance with the Health and Safety Requirements has been assured by compliance with the following standards:
EN 60079-0: 2006 - Electrical apparatus for explosive gas atmospheres. Part 0: General requirements
EN 60070-1: 2004 - Electrical apparatus for explosive gas atmospheres. Part 1: Flameproof enclosure
EN 61241-0: 2006 - Electrical apparatus for use in the presence of combustible dust. Part 0: General requirements
EN 61241-1: 2004 - Electrical apparatus for use in the presence of combustible dust. Part 1: Protection by enclosures "tD"



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EXTENSION n. 04/07



to EC-Type Examination Certificate CESI 00ATEX036U

Component: Empty enclosures series CCF... and EJB... for control and signalling equipment.

Manufacturer: CORTEM S.p.A.

Address: Via Aquileia, 10 Villesse (Gorizia), Italia

Admitted variation

- Conformity to EN 60079-0 (2006), EN60079-1 (2004), EN 61241-0 (2006), EN 61241-1 (2004) Standards
- Update of nameplate
- Execution IIB + H₂
- Execution I M2 Ex d I (series EJBX in stainless steel)
- Add new boxes:
 - EIB-55, EJB-55B
 - EJBX7 (only for stainless steel material)
- Modification of the ambient temperature range and the service temperature range.

Identification and description of the component

The marking of the equipment shall include the following:

- II 2G Ex d IIB
- II 2G Ex d IIB+H₂
- II 2GD Ex d IIB; Ex tD A21 IP65 o IP66/67
- II 2GD Ex d IIB+H₂; Ex tD A21 IP65 o IP66/67
- I M2 Ex d I

This extension and annexed descriptive documents must be annexed to the EC-Type Examination Certificate CESI 00ATEX036U.

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date 19 November 2007 - translation issued the 19th November 2007

prepared Pierluigi Molinari

verified Mirko Balaz

approved Fiorenzo Bregani

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EST-CE-COMP-91-1

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EC-TYPE EXAMINATION CERTIFICATE



[2] Equipment or Protective System intended for use
in potentially explosive atmospheres
Directive 94/9/EC

[3] EC-Type Examination Certificate number:

CESI 01 ATEX 027

[4] Equipment: Command, control and signalling units series CCF... and EJB...

[5] Manufacturer: CORTEM S.p.A.

[6] Address: Via Aquileia 6, 34070 Villesse, Gorizia (Italy)

[7] This equipment or protective system and any acceptable variation thereto is specified in the schedule to this certificate and the documents therein referred to.

[8] CESI, notified body n. 0722 in accordance with Article 9 of the Council Directive 94/9/EC of 23 March 1994, certifies that this equipment or protective system has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment and protective systems intended for use in potentially explosive atmospheres given in Annex II to the Directive.

The examination and test results are recorded in confidential report n. EX-A1/012141.

[9] Compliance with the Essential Health and Safety Requirements has been assured by compliance with:

EN 50014: 1997 + A1...A2 EN 50018: 2000

[10] If the sign "X" is placed after the certificate number, it indicates that the equipment or protective system is subject to special conditions for safe use specified in the schedule to this certificate.

[11] This EC-TYPE EXAMINATION CERTIFICATE relates only to the design, examination and tests of the specified equipment or protective system in accordance to the Directive 94/9/EC. Further requirements of the Directive apply to the manufacturing process and supply of this equipment or protective system. These are not covered by this certificate.

[12] The marking of the equipment or protective system shall include the following:

II 2 G EEx d IIB T6, T5, T4

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date April 12th, 2001 - translation issued on April 12th, 2001

prepared CERT - M. Balaz

Balaz

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approved CERT - U. Colombo

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[13] **Schedule**

[14] EC-TYPE EXAMINATION CERTIFICATE N. CESI 01 ATEX 027

[15] **Description of equipment**

Command, control and signalling units series CCF... and EJB...

The enclosures of these units are made in aluminium or in stainless steel (see technical note A4-4105 annexed to this certificate).

The CCF... and EJB... series are identical in every detail. The code CCF or EJB refers only to the firm which puts the product into the market.

The various items of the code show the size of the enclosure (from 1 to 6), constructional modifications, the type of material used, the presence of glass windows.

The complete codes of all the units subject of this certificate are reported in the drawing A1-4100 annexed to the certificate.

The enclosures of the command, control and signalling units are subject of the certificate of component CESI 00 ATEX 036 U. All the constructional details of the enclosures are reported in the drawings annexed to this certificate of component.

The types of electrical and electronic components installed inside the command, control and signalling units are reported in the technical note A4-4105 together with their electrical characteristics.

On the enclosures of the CCF and EJB units, accessories and windows as indicated in the certificate of component CESI 00 ATEX 036 U and type M-0...command and signalling operators as indicated in the certificate of component CESI 01 ATEX 025 U can be installed.

Electrical characteristics

Rated voltage	24 + 1000 V a.c.	12 + 250 d.c.
Rated frequency	50 + 60 Hz	----
Max. current in fuses and contacts	400 A	400 A
Ambient temperature	- 20 + +40 °C - 20 + +55 °C	

Maximum lamp power	5 W for ambient temperature - 20 + + 40 °C 3 W for ambient temperature - 20 + + 55 °C
--------------------	--

Temperature class	T6, T5, T4 as a function of the enclosure dimension, ambient temperature and power dissipated inside the enclosure
-------------------	--

Maximum values of the power which can be dissipated inside the enclosure CCFE-6 having the maximum volume

Ambient temperature	+ 40 °C			+55 °C		
Temperature class	T6	T5	T4	T6	T5	T4
Dissipated power [W]	600	910	1740	460	680	1300

The maximum power which can be dissipated inside the enclosure and the maximum current on contacts and fuses are a function of enclosure size, of the temperature class and of the ambient temperature as specified in details in the documentation annexed to this certificate.

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[13] **Schedule**

[14] **EC-TYPE EXAMINATION CERTIFICATE N. CESI 01 ATEX 027**

The accessories used for cable entry and for closing unused apertures shall be certified according to the standards EN 50014 and EN 50018.

The service temperature of windows and of signal and control operators type M-0... shall not exceed 100 °C.

Warning label

"Use screws of quality A2-70 according UNI 7323 with ultimate tensile strength of at least 700 N/mm²".

Additional warnings

In case of enclosures including capacitors:

"After de-energizing, wait 10 minutes before opening"

In case of enclosures of temperature class T4 or in case of enclosures of temperature class T5 when the temperature is higher than 70 °C at the cable entry point or 80 °C at the branching point of the conductors:

"Use cables suitable for a temperature of 100 °C:

[16] **Report n. EX-A1/012141**

Routine tests

The manufacturer shall carry out the routine tests prescribed at clause 24 of the EN 50014 standard.

The routine overpressure test shall be carried out with the static method (clause 15.1.3.1 of EN 50018 standard) at the pressure of:

- 11.9 bar for enclosure size from 1 to 5
- 11.5 bar for enclosure size 6

Descriptive documents (prot. EX-A1/012142)

- n. A4-4105 Rev. 0 (2 p.)	dated 17.07.2000
- n. A1-4100 Rev. 1	dated 07.07.2000
- n. A4-4129 Rev. 0	dated 26.06.2000
- Safety instructions mod. F-253 Rev. 0 (5 p.)	dated 17.07.2000
- EC declaration of conformity	dated 17.07.2000

One copy of all documents is kept in CESI files.

[17] **Special conditions for safe use**

None.

[18] **Essential Health and Safety Requirements**

Covered by standards.

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EXTENSION n. 01/03



to EC-Type Examination Certificate CESI 01 ATEX 027

Equipment: Command, control and signalling units series CCF... and EJB...

Manufacturer: COR.TEM S.p.A.

Address: Via Aquileia 10, Villesse, Gorizia (Italy)

Admitted variation

- new types CCFE-1, AQS-1 and AQSE-1
- new category II 2 GD (added protection against the risk of explosion from combustible dusts in conformity with the standard EN 50281-1-1)
- use of glass windows of rectangular shape
- maximum current on contacts: 650 A

The results of verifications and tests are reported in the confidential report EX-A3/033811.

Identification and description of the equipment

The enclosures of these units are made in aluminium or in stainless steel (see technical note A4-4418 annexed to this extension).

The various items of the code indicate the size of the enclosure (from 1 to 6), constructional modifications, the type of material used, the presence of glass windows.

The enclosures of the command, control and signalling units series CCF and EJB are subject of the component certificate CESI 00 ATEX 036 U. All the constructional details of the enclosures are reported in the drawings annexed to this certificate.

The types of electric and electronic components installed in the units are indicated in the technical note A4-4418 together with their electrical characteristics.

On the units subject of this extension it is possible to mount windows as indicated in the component certificate CESI 00 ATEX 036 U and command and signalling operators CORTEM type M-0 subject of the component certificate CESI 01 ATEX 025 U.

The complete codes of the units subject of this extension are reported in the drawings A1-4100 and A1-4417.

This extension and annexed descriptive documents must be annexed to the EC-Type Examination Certificate CESI 01 ATEX 027.

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date 10th October 2003 translation issued on 10th October 2003

prepared CERT - M. Balaz

approved CERT - U. Colombo

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EXTENSION n. 01/03

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Identification and description of the equipment (follows)

The enclosures series CCF and EJB are made in two different versions as regards the degree of protection IP:
- enclosures with silicone grease placed between the body and the cover: IP 65
- enclosures with sealing gasket placed between the body and the cover: IP 66/67

According to the protection adopted the units series CCF and EJB can have the following marking (together with the code relevant to the maximum surface temperature):

	II 2 G	EEx d IIB		enclosures protected only against flammable gases
	II 2 GD	EEx d IIB	IP 65	enclosures with silicone grease
	II 2 GD	EEx d IIB	IP 66/67	enclosures with sealing gasket without command and signalling operators
	II 2 GD	EEx d IIB	IP 66	enclosures with sealing gasket with command and signalling operators type M-0.

Electrical characteristics

Rated voltage	24 + 1000 V a.c.	12 + 250 d.c.
Rated frequency	50 + 60 Hz	---
Max. current in contacts	650 A	650 A
Ambient temperature	-20 + +40 °C	-20 + +55 °C
Maximum lamp power	5 W for ambient temperature -20 + +40 °C	3 W for ambient temperature -20 + +55 °C
Temperature class of the units cat. G:	T6, T5, T4 as a function of the enclosure dimension, ambient temperature and power dissipated inside the enclosure	
Max. surface temperature of the enclosure of the units cat. GD:	T85°C + T135°C as a function of the enclosure dimension, ambient temperature and power dissipated inside the enclosure	

The accessories used for cable entries and for closing unused apertures on the enclosures category 2 G shall be certified according to the standards EN 50014 and EN 50018.

The accessories used for cable entries and for closing unused apertures on the enclosures category 2 GD shall be certified according to the standards EN 50014, EN 50018 and EN 50281-1-1 and shall have a degree of protection IP equal to that of the enclosure.

The service temperature of windows and of signal and control operators type M-0... shall not exceed 100 °C.

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Warning label

"Use screws of quality A2-70 according UNI 7323 with ultimate tensile strength of at least 700 N/mm²".

Additional warnings

In case of enclosures including capacitors:

"After de-energizing, wait 10 minutes before opening"

In case of enclosures of temperature class T4 or T5:

"Use cables suitable for a temperature of 100 °C"

Routine tests

The manufacturer shall carry out the routine tests prescribed at clause 24 of the EN 50014 standard.

The routine overpressure test shall be carried out with the static method (clause 15.1.3.1 of EN 50018 standard) at the pressure of:

- 11.9 bar for enclosure size from 1 to 5
- 11.5 bar for enclosure size 6

Descriptive documents (prot. EX-A3/033814)

- n. A4-4418 Rev. 0 (3 p.)

dated 18.03.2003

- n. A1-4417 Rev. 0

dated 18.03.2003

One copy of the above mentioned documents is kept in CESI files.

Essential Health and Safety Requirements

Compliance with the Health and Safety Requirements has been assured by compliance with the following standards:

EN 50014 - 1997 + A1..A2 - General requirements

EN 50018 - 2000 + A1 - Flameproof enclosures "d"

EN 50281-1-1 - 1998 + A1 - Electrical apparatus for use in the presence of combustible dust. Part 1-1: Electrical apparatus protected by enclosures - Construction and testing.

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EXTENSION n. 02/05

to EC-Type Examination Certificate CESI 01 ATEX 027



Equipment: Command, control and signalling units series CCF... and EJB...

Manufacturer: COR.TEM S.p.A.

Address: Via Aquileia 10, Villesso, Gorizia (Italy)

Admitted variation

Installation of ignition transformers in the enclosures

The results of verifications and tests are reported in the confidential report EX-A 5033526.

Identification and description of the equipment

The ignition transformers can be installed inside the command, control and signalling units series CCF... and EJB...

Electrical characteristics

Ignition transformers

- Primary voltage

max. 1000 V

- Secondary voltage

max. 15 kV

max. impulse 25 kV for 3 micro-seconds

- Secondary current

15 mA

- Ambient temperature

-20 + +40 °C

-20 + +55 °C

- Maximum lamp power

5 W for ambient temperature -20 + +40 °C

3 W for ambient temperature -20 + +55 °C

Temperature class for category 2G. units: T6 or T5 as a function of the enclosure dimension, ambient temperature and power dissipated inside the enclosure.

Maximum surface temperature for category 2.D units: T85 °C or T100 °C as a function of the enclosure dimension, ambient temperature and power dissipated inside the enclosure.

This extension and annexed descriptive documents must be annexed to the EC-Type Examination Certificate CESI 01 ATEX 027.

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date 8th June 2005 translation issued on 8th June 2005

prepared CBRT - M. Balaz

approved CBRT - U. Colombo

CESI
CENTRO ELETTROTECNICO SPERIMENTALE ITALIANO
Business Unit Certification
of the process

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S.C. CONFIND S.R.L.
Câmpina

OPERATING MANUAL
WORKOVER RIG
40 tF WITH MAST

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CESI


EXTENSION n. 02/05

to EC-Type Examination Certificate CESI 01 ATEX 027

Identification and description of the equipment (follows)

According to the protection adopted the units series CCF and EJB can have the following marking (together with the code relevant to the maximum surface temperature):

 II 2 GD EEx d IIB IP 66/67 enclosures with sealing gasket without command and signalling operators

 II 2 GD EEx d IIB IP 66 enclosures with sealing gasket with command and signalling operators type M-0.

Warning label

In case of enclosures including capacitors:
"After de-energizing, wait 10 minutes before opening"

Descriptive documents (prot. EX-A5033231)

- n. A4-4736 Rev. 0 dated 02.07.2003
- n. A1-4503 Rev. 0 dated 02.07.2003

One copy of the above mentioned documents is kept in CESI files.

Essential Health and Safety Requirements

Compliance with the Health and Safety Requirements has been assured by compliance with the following standards:
EN 50014 - 1997 + A1..A2 - General requirements
EN 50018 - 2000 + A1 - Flameproof enclosures "d"
EN 50281-1-1 - 1998 + A1 - Electrical apparatus for use in the presence of combustible dust. Part 1-1: Electrical apparatus protected by enclosures - Construction and testing.

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CESI

EXTENSION n. 03/08

to EC-Type Examination Certificate CESI 01 ATEX 027



Equipment: Command and control units series EJB

Manufacturer: CORTEM S.p.A.

Address: Via Aquileia, 10 Villesse (Gorizia), Italia

Admitted variation

- Conformity to EN 60079-0 (2006), EN60079-1 (2004), EN 61241-0 (2006), EN 61241-1 (2004) Standards
- Update of nameplate
- New electrical characteristics of ignition transformers
- Execution IIB +H₂
- Add new boxes:
 - EJB-55, EJB-55B, EJBX-55, EJBX-55B
 - EJBX7 (only for stainless steel material)

Equipment identification and description

The marking of the equipment shall include the following:

For gas only:

II 2 G Ex d IIB T6/T5/T4

With silicone grease on the flanges:

II 2 GD Ex d IIB T6/T5/T4 Ex tD A21 IP65 T85°C/T100°C/T135°C

or:

II 2 GD Ex d IIB+H2 T6/T5/T4 Ex tD A21 IP65 T85°C/T100°C/T135°C

With seal gasket but without operators series M-0 installed:

II 2 GD Ex d IIB T6/T5/T4 Ex tD A21 IP66/67 T85°C/T100°C/T135°C

or:

II 2 GD Ex d IIB+H2 T6/T5/T4 Ex tD A21 IP66/67 T85°C/T100°C/T135°C

With seal gasket and with operators series M-0 installed:

II 2 GD Ex d IIB T6/T5/T4 Ex tD A21 IP66 T85°C/T100°C/T135°C

or:

II 2 GD Ex d IIB+H2 T6/T5/T4 Ex tD A21 IP66 T85°C/T100°C/T135°C

This extension and annexed descriptive documents must be annexed to the EC-Type Examination Certificate CESI 01ATEX027.

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date 6 february 2008 - translation issued 6 february 2008

prepared Giorgio Chinnici

Giorgio Chinnici

verified Mirko Balaz

Mirko Balaz

approved Fiorenzo Bregani

CESI S.p.A.
Divisione Energia
"Area Tecnica Certificazione"
Il Responsabile

Fiorenzo Bregani

page 1/3

ENF-CESI-CEI-EQUIP-ENI

CESI
Centro Elettrotecnico
Sperimentale Italiano
Giulio Motta SpA

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20134 Milano - Italia
Telefono +39 022125.1
Fax +39 022125440

Capitale sociale 8 450 000 Euro
Interamente versato
Codice fiscale e numero
iscrizione CCIAA 00793580150

Registro Imprese di Milano
Sezione Ordinaria
N. R.E.A. 428222
P.I. IT00793580150



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CESI

EXTENSION n. 03/08

to EC-Type Examination Certificate CESI 01 ATEX 027

Electrical characteristics of the ignition transformer

Primary voltage: 1000 V max
Secondary voltage: 20 kV (impulse 25 kV max for 3 µsec)
Secondary current: 50 mA

Constructive characteristics

The execution IIB+H₂ and the new boxes:

- EJB-55, EJB-55B, EJBX-55, EJBX-55B
- EJBX7 (only for stainless steel material)

Are subject of the component certificate CESI 00 ATEX 036U. All the constructional details of the enclosures are reported in the documents annexed to the above mentioned component certificate.

Cable entries

The accessories used for cable entries and for unused holes shall be subject of separate certification:

- in the unit of category II 2G shall be certified according to the standards: EN 60079-0 (2006); EN 60079-1 (2004);
 - in the unit of category II 2GD shall be certified according to the standards: EN 60079-0 (2006); EN 60079-1 (2004);
- EN 61241-0 (2006); EN 61241-1 (2004) and shall guarantee a degree of protection IP66 according to EN 60529 (1991) Standard.

Warning label

"Use screws of quality A2-70 according UNI 7323 with ultimate tensile strength of at least 700 N/mm²."

Additional warnings

For enclosures including capacitors:

"After de-energizing, wait 10 minutes before opening"

For enclosures of temperature class T4:

"Use cables suitable for a temperature of 100 °C:

For enclosures with temperature class T5, when the temperature under rated condition is higher than 70°C at the cable entry point or 80°C at the branching point of the conductors:

"use cables suitable for temperatures of 90°C"

Report n. EX- A8003819

Routine tests

The manufacturer shall carry out the routine tests prescribed at par. 27 of the EN 60079-0 (2006) and at par. 24 of the EN 61241-0 (2006) Standards.

The overpressure routine test shall be carried out with static method, at the pressure of

- 11.9 bar for enclosure size from 1 to 5
- 11.5 bar for enclosure size 6
- 10 bar for enclosure size 7

in conformity to the par. 15.1.3.1 of the EN 60079-1 Standard

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Descriptive documents (prot. EX-A8003821)

- Technical Note n. A4-4974 Rev. 0 (2 pages)	dated 21 march 2007
- Drawing A1-4100 Rev. 2 (1 page)	dated 21 march 2007
- Drawing A1-4417 Rev. 1 (1 page)	dated 21 march 2007
- Drawing A4-4951 Rev. 0 (1 page)	dated 02 april 2007
- Drawing A4-4952 Rev. 0 (1 page)	dated 02 april 2007
- EC Declaration of Conformity (1 page)	dated 21 march 2007
- Safety instructions F-276 C (8 pages)	dated 21 march 2007

One copy of all documents is kept in CESI files.

Essential Health and Safety Requirements

The Health and Safety Requirements are assured by compliance with the following Standards:

- EN 60079-0 : 2006: Electrical apparatus for explosive gas atmospheres.
General requirements
- EN 60079-1 : 2004: Flammoproof enclosures "d".
- EN 61241-0 : 2006: Electrical apparatus for use in the presence of combustible dust.
General requirements
- EN 61241-1 : 2004: Protection by enclosures "ID"

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CUSTODIA SERIE EJB...
ESECUZIONE Ex d IIB + H2 T...
Ex d I
ISTRUZIONI DI SICUREZZA,
USO E MANUTENZIONE

Enclosures series EJB...
execution Ex d IIB + H2 T...
Ex d I
safety, maintenance and mounting
instructions

IN ACCORDO ALLA DIRETTIVA 94/9/CE
according to directive 94/9/EC

SALES

Piazzale Dateo, 2
20129 Milano, Italia

NATIONAL SALES

tel. +39 02 76 1103 29
fax +39 02 73 83 402
info@cortemmilano.it

EXPORT SALES

tel. +39 02 76 1105 01
fax +39 02 70 00 54 71
export@cortemmilano.it

WORKS and HEADQUARTER

Via Aquileia 10, 34070 Villesse (Gorizia), Italia
Tel. 0481-964911 fax. 0481-964999





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CUSTODIE SERIE EJB...
ISTRUZIONI DI SICUREZZA, USO E MANUTENZIONE
ENCLOSURES SERIES EJB...
SAFETY, MAINTENANCE AND MOUNTING INSTRUCTIONS

1 INFORMAZIONI GENERALI
CONFORMITA' ALLE NORMATIVE STANDARD
CUSTODIE EJB... COSTRUITE IN ACCORDO ALLE NORMATIVE EN 60079-0, EN 60079-1,
EN 61241-1, EN 61241-0 ED IN ACCORDO ALLA DIRETTIVA 94/9/EC DEL 23 MARZO 1994

1 GENERAL INFORMATION
COMPLIANCE WITH THE STANDARD RULES
TERMINAL BOXES EJB... MANUFACTURED IN COMPLIANCE WITH THE STANDARDS EN 60079-0,
EN 60079-1, EN 61241-1, EN 61241-0 AND WITH THE DIRECTIVE 94/9/EC OF 23rd MARCH 1994



ISTRUZIONI DI SICUREZZA

RIVOLTE A PERSONALE QUALIFICATO IN ACCORDO CON LE LEGGI NAZIONALI ,INCLUSE LE
RELATIVE NORME E, DOVE APPLICABILE, IN ACCORDO CON IEC 79.17 RIGUARDANTE LE
APPARECCHIATURE ELETTRICHE PER ATMOSFERE POTENZIALMENTE ESPLOSIVE
- LE CUSTODIE NON DEVONO ESSERE INSTALLATE IN AREA PERICOLOSA ZONA 0
- DEVONO ESSERE RISPETTATI I DATI TECNICI INDICATI SULLE CUSTODIE
- NON SONO AMMESSE MODIFICHE AL PRODOTTO
- LE CUSTODIE POSSONO ESSERE INSTALLATE SOLO SE COMPLETAMENTE INTEGRE
- DEVONO ESSERE UTILIZZATE ESCLUSIVAMENTE PARTI DI RICAMBIO CORTEM GROUP
- LE OPERAZIONI DI MANUTENZIONE ORDINARIE E STRAORDINARIE DEVO ESSERE
EFFETTUATE SOLO DA ELETTRICISTI QUALIFICATI CON L'APPROVAZIONE DI PERSONALE
"ESPERTO"
- DEVONO ESSERE STRETTAMENTE OSSERVATE LE NORME NAZIONALI DI SICUREZZA E
PREVENZIONE INFORTUNI, E LE PRESCRIZIONI INDICATE CON "Δ" NEL PRESENTE FASCICOLO
TECNICO

SAFETY INSTRUCTIONS

THESE INSTRUCTIONS ARE ADDRESSED TO QUALIFIED PERSONNEL IN COMPLIANCE WITH THE
NATIONAL LAWS, INCLUDING THE RELEVANT RULES, AND WITH IEC 79.17 (WHEN APPLICABLE)
CONCERNING THE ELECTRICAL EQUIPMENT FOR POTENTIALLY EXPLOSIVE ATMOSPHERES.
- THE TERMINAL BOXES WILL NOT BE INSTALLED IN ANY DANGEROUS AREA (ZONE 0)
- THE TECHNICAL DATA INDICATED ON THE TERMINAL BOXES WILL BE COMPLIED WITH
- THE TERMINAL BOXES WILL BE INSTALLED ONLY IF THEY ARE WHOLLY INTACT
- USE EXCLUSIVELY SPARE PARTS CORTEM GROUP
- ROUTINE AND EXTRAORDINARY SERVICING OPERATIONS WILL BE CARRIED OUT
EXCLUSIVELY BY QUALIFIED ELECTRICIANS WITH THE SUPERVISION OF "EXPERT" PERSONNEL
- THE NATIONAL SAFETY RULES AND THE INSTRUCTIONS MARKED BY "Δ" IN THIS TECHNICAL
HANDBOOK WILL STRICTLY BE COMPLIED WITH.

MATERIALI STANDARD:
CORPO E COPERCHIO IN LEGA DI ALLUMINIO CON CONTENUTO DI MAGNESIO MAX.6% IN PESO, O IN
ACCIAIO INOX AISI 303/304/316. VITI DI FISSAGGIO COPERCHIO E DI COLLEGAMENTO DELLA TERRA
INTERNA / ESTERNA IN ACCIAIO INOX.

STANDARD MATERIALS:
BODY AND TOP OF ALUMINIUM ALLOY (MAX. WEIGHT CONTENT OF MAGNESIUM: 6%) OR OF
STAINLESS STEEL AISI 303/304/316. SCREWS OF STAINLESS STEEL FOR FIXING THE TOP AND
FOR THE CONNECTION WITH THE INTERNAL/EXTERNAL EARTHING SYSTEM.

USO E CONFORMITA':
LE CUSTODIE VENGONO USATE IN ZONE PERICOLOSE, DOVE ESISTE PERICOLO DI ESPLOSIONI O
COMBUSTIONI DI GAS E/O POLVERI COMBUSTIBILI..
SONO PRINCIPALMENTE USATE PER IMPIANTI IN TUBO CONDUIT O CON PRESSACAVI , E POSSONO
AVERE DELLE APPLICAZIONI SULLE PARETI COME QUADRI DI CONTROLLO E SEGNALEZIONE.
SONO COSTRUITE IN ACCORDO ALLE NORMATIVE EUROPEE.

USE AND COMPLIANCE:
THE TERMINAL BOXES ARE USED IN DANGEROUS AREAS WITH RISKS OF EXPLOSIONS OR
FIRES OF GASES AND/OR EXPLOSIVE DUST.
THEY ARE MAINLY USED FOR SYSTEMS IN CONDUITS OR WITH CABLE GLANDS; THEY CAN
ALSO BE APPLIED ONTO WALLS AS SIGNALLING AND CONTROL BOARDS. THEY HAVE BEEN
MANUFACTURED IN COMPLIANCE WITH THE EUROPEAN STANDARDS.

**COR.TEM GROUP è da sempre impegnata nella salvaguardia dell'ambiente ed in tal senso raccomanda
di smaltire i contenitori e gli imballaggi usati secondo le prescrizioni e le normative vigenti nel Paese di
destinazione, evitando di disperderli nell'ambiente dopo l'utilizzo.**

*COR.TEM GROUP cares for the environmental protection and recommends therefore to dispose properly
of the packing and wrapping of its goods, according to the prescriptions and regulations in force in the
destination country. The differentiated waste disposal is strongly recommended.*



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CUSTODIE SERIE EJB...
ISTRUZIONI DI SICUREZZA, USO E MANUTENZIONE

ENCLOSURES SERIES EJB...
SAFETY, MAINTENANCE AND MOUNTING INSTRUCTIONS

INFORMAZIONE AGLI UTENTI DI APPARECCHIATURE DOMESTICHE O PROFESSIONALI



Ai sensi dell'art. 13 del Decreto Legislativo 25 luglio 2005, n. 151 "Attuazione delle Direttive 2002/95/CE, 2002/96/CE e 2003/108/CE, relative alla riduzione dell'uso di sostanze pericolose nelle apparecchiature elettriche ed elettroniche, nonché allo smaltimento dei rifiuti"

Il simbolo del cassonetto barrato riportato sull'apparecchiatura o sulla sua confezione indica che il prodotto alla fine della propria vita utile deve essere raccolto separatamente dagli altri rifiuti. L'utente dovrà, pertanto, conferire l'apparecchiatura giunta a fine vita agli idonei centri di raccolta differenziata dei rifiuti elettronici ed elettrotecnici, oppure riconsegnarla al rivenditore al momento dell'acquisto di una nuova apparecchiatura di tipo equivalente, in ragione di uno a uno.

Nel caso di utenti professionali (aziende o enti), ai sensi della normativa sopra citata, la raccolta differenziata della presente apparecchiatura giunta a fine vita è organizzata e gestita:

- a) direttamente dall'utente, nel caso in cui questo decida di disfarsi dell'apparecchiatura senza sostituirla con una apparecchiatura nuova equivalente ed adibita alle stesse funzioni;
- b) dal produttore, inteso come il soggetto che ha per primo introdotto e commercializzato in Italia o rivende in Italia col proprio marchio l'apparecchiatura nuova che ha sostituito la precedente, nel caso in cui, contestualmente alla decisione di disfarsi dell'apparecchiatura a fine vita, l'utente effettui un acquisto di un prodotto di tipo equivalente ed adibito alle stesse funzioni. In tale ultimo caso, l'utente potrà richiedere al produttore il ritiro della presente apparecchiatura entro e non oltre 15 giorni naturali consecutivi dalla consegna della suddetta apparecchiatura nuova.

L'adeguata raccolta differenziata per l'avvio successivo dell'apparecchiatura dismessa al riciclaggio, al trattamento e allo smaltimento ambientalmente compatibile contribuisce ad evitare possibili effetti negativi sull'ambiente e sulla salute e favorisce il reimpiego e/o riciclo dei materiali di cui è composta l'apparecchiatura.

Lo smaltimento abusivo del prodotto da parte dell'utente comporta l'applicazione delle sanzioni di cui alla corrente normativa di legge.

INFORMATION TO USERS OF DOMESTIC AND PROFESSIONAL EQUIPMENT



According to art. 13 of Legislative Decree dated 25 July 2005 No. 151 "Putting into effect Directives 2002/95/CE, 2002/96/CE and 2003/108/CE, aimed to limit the use of dangerous substances in electronic and electrical equipment, and related to waste disposal".

The symbol of the crossed dustbin shown on the equipment or on its package indicates that the product must be collected separately from other waste, at the end of its lifetime. The user shall bring the equipment at the end of its lifetime in places dedicated to collect electrical and electronic waste, or he shall return it to a dealer, buying equivalent equipment (one back, one in).

In the case of professional users (companies or organizations), the subject equipment collection at the end of its lifetime is managed as following indicated:

- a) Directly by the user, if he decides to throw the equipment away and not to replace it with a new equivalent one with the same functions;
- b) By the manufacturer (i.e. he who first introduced and put on the Italian market, or he who resells in Italy with his brand the new equipment that replaced the previous one), in case the user decides to throw away the old equipment and to replace it with a new equivalent one with the same functions. In this last case, the user can ask the manufacturer to pick up the subject equipment within and not later than 15 days, natural and consecutive, after the new equipment has been delivered.

Separating waste and recycling is aimed to environmentally compatible waste treatment and disposal, in order to limit negative effects on environment and health and to promote recycling the old equipment construction materials and its remake into new products.

Illegal disposal of the product by the user is subject to fines, as per the current applicable law.



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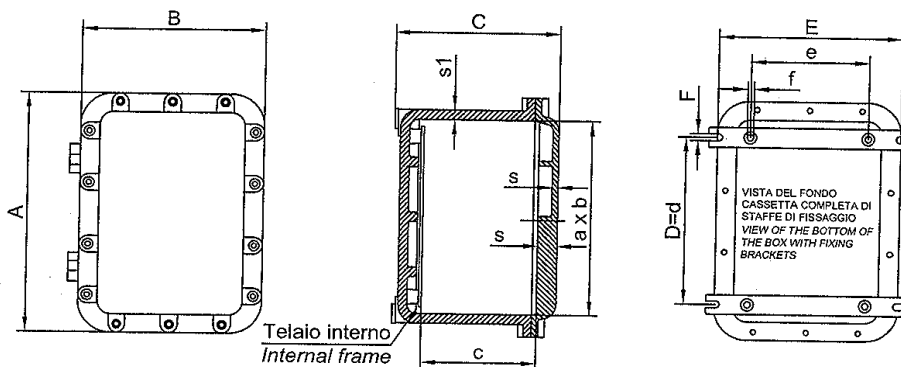
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CUSTODIE SERIE EJB...
ISTRUZIONI DI SICUREZZA, USO E MANUTENZIONE
ENCLOSURES SERIES EJB...
SAFETY, MAINTENANCE AND MOUNTING INSTRUCTIONS

DIMENSIONI CUSTODIE FLANGIA ESTERNA EJB....
DIMENSIONS OF TERMINAL BOXES WITH EXTERNAL FLANGE EJB...

TIPO CUSTODIA TYPE OF TERMINAL BOX	DIMENSIONI DIMENSIONS													
	ESTERNE OUTSIDE			INTERNE INSIDE					FISSAGGIO STD. STD. FIXING			FISSAGGIO CON STAFFE FIXING WITH BRACKETS		
	A	B	C	a	b	c	s	s1	d	e	f	D	E	F
EJB-1	304	204	218	240	140	160	9	14	230	130	M8	230	210	9
EJB-1A	304	204	218	240	140	153	24	14	230	130	M8	230	210	9
EJB-2	424	224	218	360	160	159	10	14	350	150	M8	350	230	9
EJB-2A	424	224	218	360	160	153	24	14	350	150	M8	350	230	9
EJB-3B			218											
EJB-3	364	284	278	300	220	154	10	14	290	210	M8	290	290	9
EJB-3BA			218			153								
EJB-3A	364	284	278	300	220	213	24	14	290	210	M8	290	290	9
EJB-4B			229			148								
EJB-4	432	332	299	360	260	218	10	14	350	250	M10	350	330	11
EJB-4BA			229			163								
EJB-4A	432	332	299	360	260	233	24	14	350	250	M10	350	330	11
EJB-45B			253			160								
EJB-45	560	380	298	490	305	210	13	14	360	236	M10	360	356	11
EJB-45BA			253			179								
EJB-45A	560	380	298	490	305	229	24	14	360	236	M10	360	356	11
EJB-5B			271			186								
EJB-5	632	432	341	560	360	256	15	16	550	350	M10	550	430	11
EJB-5BA			271			205								
EJB-5A	632	432	341	560	360	275	24	16	550	350	M10	550	430	11
EJB-55B			350			282								
EJB-55	710	510	455	630	430	387	25	20	606	406	M10	606	496	11
EJB-503	632	432	397	560	360	331	24	16	550	350	M10	550	430	11
EJB-6B			380			253								
EJB-6	870	650	480	760	540	353	24	25	680	460	M16	680	580	14
EJB-7B			400			240								
EJB-7	1000	700	500	890	590	340	30	30	810	510	M16	810	655	18
EJB-01	282	182	105	214	213	58	13	13	160	154	Ø8			
AQS-1	500	450	195	430	380	127	12	15	420	300	M12			





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ENCLOSURES SERIES EJB...
SAFETY, MAINTENANCE AND MOUNTING INSTRUCTIONS

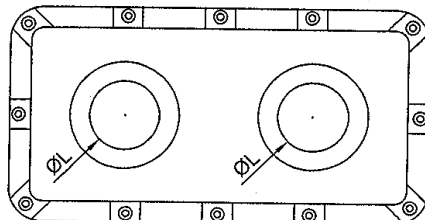
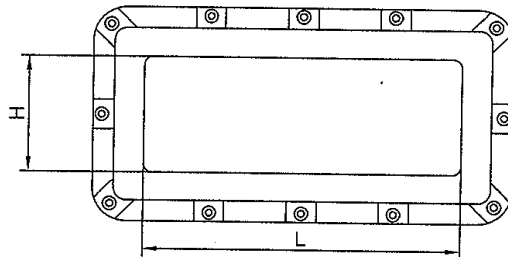
DIMENSIONI LUCE PER CUSTODIE CON FINESTRE RETTANGOLARI E OBLO'
(MAX. DIMENSIONE DELLA SUPERFICIE IN VETRO E MAX. NUMERO DI OBLO'
dimensioni in mm)

DIMENSIONS OF PORTS OF TERMINAL BOXES WITH RECTANGULAR WINDOWS
AND PORTHOLES (MAX. SIZE OF PANED SURFACE AND MAX. NUMBER OF
PORTHOLES, dimensions in mm)

TIPO CUSTODIA TYPE OF TERMINAL BOX	CUSTODIE CON FINESTRA BOXES WITH WINDOW	CUSTODIE CON OBLO' BOXES WITH PORTHOLES	
	DIMENSIONE MASSIMA DELLA FINESTRA L x H MAXIMUM DIMENSIONS OF THE WINDOW L x H	DIMENSIONE LUCE Ø L DIMENSION OF THE PORT Ø L	N° MAX. OBLO' MAX. NUMBER OF PORTHOLES
EJB-1	150X80	90	1
EJB-2	250X80	90	1
EJB-3B	200X150	90	1
EJB-3			
EJB-4B	300X200	90	2
EJB-4		140	1
EJB-45B	300X200	90	2
EJB-45		140	1
EJB-5B	300X200	90	2
EJB-5		140	2
EJB-503		180	1
EJB-55B	300X200	90	3
EJB-55		140	2
EJB-55		180	2
EJB-6B	300X200		
EJB-6			

NOTA: IL NUMERO MASSIMO DI OBLO' SI RIFERISCE ALLE SINGOLE DIMENSIONI
ES: NELLA CUSTODIE EJB-4 STANNO N° 2 OBLO' CON LUCE 90 OPPURE N° 1 OBLO'
CON LUCE 140. LA DISPOSIZIONE DELLE FINESTRE E DEGLI OBLO' PUO' ESSERE
AUTORIZZATA ESCLUSIVAMENTE DA CORTEM.

N.B.: THE MAXIMUM NUMBER OF PORTHOLES IS REFERRED TO EACH DIMENSION. E.G.: THE TERMINAL
BOXES EJB-4 WILL HAVE 2 (Ø 90 mm) OR 1 (Ø 140 mm) PORTHOLES, DEPENDING ON THE DIMENSION OF
THE PORTS.
THE ARRANGEMENT OF WINDOWS AND PORTHOLES CAN BE AUTHORIZED EXCLUSIVELY BY CORTEM.





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CUSTODIE SERIE EJB...
ISTRUZIONI DI SICUREZZA, USO E MANUTENZIONE
ENCLOSURES SERIES EJB...
SAFETY, MAINTENANCE AND MOUNTING INSTRUCTIONS

CUSTODIE VUOTE
EMPTY BOXES

ESECUZIONE: Ex d IIB o IIB+H2 I12G IP65 (con grasso al silicone sulle flange)
EXECUTION: or
Ex d IIB o IIB+H2 I12GD Ex tD A21 IP65 (con o senza operatori serie M-0... montati)
or (with silicone grease on the flanges)
(with or without operators of series M-0... installed)

Ex d IIB o IIB+H2 I12GD Ex tD A21 IP66/67 (con guarnizione senza operatori serie M-0... montati)
or (with seal without operators of series M-0... installed)

Ex d IIB o IIB+H2 I12GD Ex tD A21 IP66 (con guarnizione con operatori serie M-0... montati)
or (with seal with operators of series M-0... installed)

Ex d IIB o IIB+H2 I12G IP54 (con guarnizione o grasso al silicone e con operatori serie Fondisonzo montati)
or (with seal or silicone grease and with operators of series "Fondisonzo" installed)

SOLO PER CUSTODIE ACCIAIO INOX:
ONLY FOR STAINLESS STEEL ENCLOSURES:

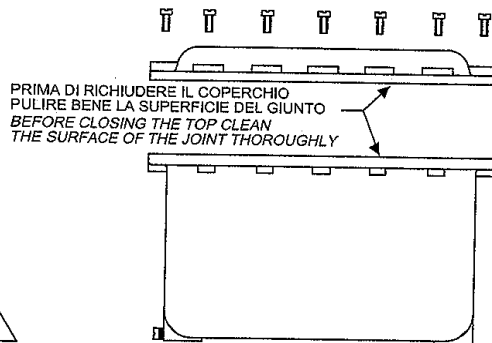
I M2 Ex d I IP.... (AMMESSE SOLO OPERATORI ACCIAIO INOX MARCATI M-0... Ex d I IP66)
(ADMITTED ONLY STAINLESS STEEL OPERATORS MARKED M-0... Ex d I IP66)

CERTIFICATO: CESI 00 ATEX 036U
CERTIFICATE: CESI 00 ATEX 036U

ZONE DI INSTALLAZIONE: ZONA 1, ZONA 2, ZONA 21, ZONA 22
INSTALLATION ZONES: ZONE 1, ZONE 2, ZONE 21, ZONE 22

PROVE INDIVIDUALI: LA PROVA INDIVIDUALE E' STATA EFFETTUATA A 11,9 bar PER LE
GRANDEZZE DA 1 A 5 E A 11,5 bar PER LA GRANDEZZA 6

INDIVIDUAL TESTS: THE INDIVIDUAL TEST HAS BEEN CARRIED OUT AT 11,9 bars
FOR THE TYPES FROM 1 TO 5, AND AT 11.5 bars FOR THE TYPE 6



VERIFICARE CHE SOTTO OGNI VITE DI CHIUSURA DEL COPERCHIO, SIA POSTA LA RONDELLA.



DON'T FORGET TO PLACE A WASHER IS PLACED UNDER EACH CLOSING SCREW



USO E MANUTENZIONE:

TUTTE LE OPERAZIONI DI INSTALLAZIONE E MANUTENZIONE DEVONO ESSERE QUANDO IL CIRCUITO NON E' IN TENSIONE. FATTE BISOGNA RISPETTARE I DATI TECNICI DELLE CUSTODIE CHE SONO INDICATI SULLA TARGHETTA. FARE MOLTA ATTENZIONE A NON DANNEGGIARE I GIUNTI DI ACCOPPIAMENTO, PULENDOLI ACCURATAMENTE PRIMA DI MONTARLI. NEL CASO DI CUSTODIE CON GRASSO AL SILICONE SULLE FLANGE, DOPO L'APERTURA, PRIMA DI RICHIUDERE LA CUSTODIA, BISOGNA RIPRISTINARE IL GRASSO. NEL CASO DI CUSTODIE CON GUARNIZIONE, DOPO L'APERTURA, PRIMA DI RICHIUDERE LA CUSTODIA, VERIFICARE L'ESATTA POSIZIONE DELLA GUARNIZIONE NELLA PROPRIA SEDE, VERIFICARE CHE LA GUARNIZIONE NON SIA DANNEGGIATA, VERIFICARE CHE SOTTO OGNI VITE DI CHIUSURA DEL COPERCHIO, SIA POSTA UNA RONDELLA. EVENTUALI FORI FILETTATI POSTI SUL COPERCHIO O SUL CORPO, CHE NON SIANO USATI DEVONO ESSERE CHIUSI CON TAPPI CERTIFICATI.

LE VITI DI CHIUSURA DEL COPERCHIO SONO IN ACCIAIO INOX DI QUALITA' A2-70 SECONDO UNI 7323 CON UN CARICO UNITARIO DI ROTTURA DI 700 N/mm².

USE AND SERVICE:

ALL THE OPERATIONS OF INSTALLATION AND SERVICE WILL BE CARRIED OUT WHEN THE CIRCUIT IS NOT POWERED. THE TECHNICAL DATA INDICATED IN THE RATING PLATE OF THE TERMINAL BOX WILL BE COMPLIED WITH. TAKE EXTREME CARE IN NOT DAMAGING THE COUPLING JOINTS. CLEAN THE JOINTS THOROUGHLY BEFORE APPLYING THEM. IN THE CASE OF TERMINAL BOXES WITH SILICONE GREASE ON FLANGES, AFTER OPENING THEM APPLY THE GREASE AGAIN BEFORE CLOSING. IF THE TERMINAL BOXES HAVE A SEAL, AFTER OPENING THEM CHECK THE EXACT POSITION OF THE SEAL IN ITS SEAT. CHECK THAT THE SEAL IS NOT DAMAGED. DON'T FORGET TO PLACE A WASHER IS PLACED UNDER EACH CLOSING SCREW. ANY THREADED HOLE OF THE TOP OR OF THE BODY BEING NOT USED WILL BE CLOSED WITH CERTIFIED PLUGS. THE CLOSING SCREWS OF THE TOP ARE OF STAINLESS STEEL A2-70 ACCORDING TO UNI 7223, WITH A UNIT BREAKING LOAD OF 700 N/mm².



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CUSTODIE SERIE EJB...
ISTRUZIONI DI SICUREZZA, USO E MANUTENZIONE
ENCLOSURES SERIES EJB...
SAFETY, MAINTENANCE AND MOUNTING INSTRUCTIONS

CUSTODIE PORTAMORSETTI
BOXES FOR TERMINAL CONNECTIONS

ESECUZIONE: Ex d IIB o IIB+H2 II2G o II2GD Ex tD A21 IP65 o IP66(67) T6 o T5
EXECUTION: or or or

CERTIFICATO: CESI 01 ATEX 026
CERTIFICATE: CESI 01 ATEX 026

ZONE DI INSTALLAZIONE: ZONA 1, ZONA 2, ZONA 21, ZONA 22
INSTALLATION ZONES: ZONE 1, ZONE 2, ZONE 21, ZONE 22

TEMPERATURA AMBIENTE: -20°C +40°C o -20°C +55°C
AMBIENT TEMPERATURE: -20°C +40°C or -20°C +55°C

CLASSI DI TEMPERATURA: T6 per temp. amb. -20°C +40°C o T5 per temp. amb. -20°C +55°C
CLASSES OF TEMPERATURE: T6 for amb. temp. of -20°C +40°C, or T5 for amb. temp. of -20°C +55°C

TEMPERATURA MASSIMA SUPERFICIALE PER PROTEZIONE CONTRO LE POLVERI
COMBUSTIBILI "D" o "GD": T85°C per classe temp. T6 T100°C per classe temp. T5
MAXIMUM SURFACE TEMPERATURE FOR PROTECTION AGAINST EXPLOSIVE
DUST "D" or "GD": T 85°C for class of temp. T6 T 100°C for class of temp. T5

CARATTERISTICHE ELETTRICHE GENERALI:
GENERAL ELECTRICAL CHARACTERISTICS:

TENSIONE NOMINALE: 24 + 800 V
RATED VOLTAGE: 24 to 800 V

FREQUENZA NOMINALE: 50/60 Hz
RATED FREQUENCY: 50/60 Hz

SEZIONE MORSETTI COMPONENTI: 2,5 + 240 mm²
SECTION OF ASSEMBLABLE TERMINALS: 2.5 to 240 mm²

CORRENTE NOMINALE: 12,5 + 400 A
RATED CURRENT: 12.5 to 400 A

MAX. DENSITA' DI CORRENTE: 0,8 + 7 A/mm²
MAX. CURRENT DENSITY: 0.8 to 7 A/mm²

SEZIONE MORSETTIERE / MORSETTI A LISTELLO: 3X16 + 3X315 mm²
SECTION OF TERMINAL CONNECTIONS / STRIP TERMINALS: 3X16 to 3X315 mm²

CORRENTE NOMINALE: 48 + 252 A
RATED CURRENT: 48 to 252 A

MAX. DENSITA' DI CORRENTE: 0,8 + 3 A/mm²
MAX. CURRENT DENSITY: 0.8 to 3 A/mm²



USO E MANUTENZIONE:

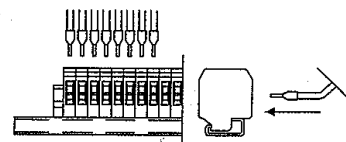
LE CARATTERISTICHE DEI MORSETTI SONO INDICATE SULLA TARGHETTA DELLA CUSTODIA. TUTTI I CABLAGGI ALL'INTERNO DELLE CUSTODIE DEVONO ESSERE FATTI RISPETTANDO LE CARATTERISTICHE DEI COMPONENTI. I CAVI DEVONO ESSERE COMPLETI DI PUNTALINO/CAPOCORDA, E BLOCCATI LUNGO IL LORO PERCORSO. LE DISTANZE TRA LE MORSETTIERE DEVONO ESSERE TALI DA CONSENTIRE COMODAMENTE IL COLLEGAMENTO DEI CONDUTTORI. SE SULLA TARGHETTA DELLA CUSTODIA E' INDICATA LA CLASSE DI TEMPERATURA "T5" USARE CAVI DI COLLEGAMENTO ADATTI A TEMPERATURE DI 90°C. COLLEGARE I CAVI DI MESSA A TERRA SULLE APPOSITE VITI PREVISTE ALL'INTERNO - ESTERNO DELLA CUSTODIA CONTRASSEGNALE CON IL SIMBOLO DI TERRA.

USE AND SERVICE:

THE CHARACTERISTICS OF THE TERMINALS ARE INDICATED ON THE RATING PLATE OF THE TERMINAL BOX. ANY WIRING INSIDE THE BOXES WILL BE CARRIED OUT IN COMPLIANCE WITH THE CHARACTERISTICS OF THE COMPONENTS. LEADS WILL BE PROVIDED WITH WIRE TERMINALS AND FASTENED ALONG THEIR PATH. THE DISTANCES BETWEEN THE TERMINAL CONNECTIONS WILL ENABLE TO CONNECT THE LEADS EASILY. IF THE CLASS OF TEMPERATURE "T5" IS INDICATED ON THE RATING PLATE, USE CONNECTING CABLES BEARING TEMPERATURES OF 90°C. CONNECT THE EARTHING CABLES WITH THE PROPER SCREWS INSIDE AND OUTSIDE THE TERMINAL BOX MARKED WITH THE EARTH SYMBOL.

GLI ELEMENTI DI CONNESSIONE PER I CONDUTTORI DI PROTEZIONE (MESSA A TERRA) DEVONO PERMETTERE IL COLLEGAMENTO ALMENO DELLE SEGUENTI SEZIONI DI CAVO (S):
THE CONNECTING ELEMENTS FOR THE PROTECTION (EARTHING) CABLES WILL ENABLE THE CONNECTION OF AT LEAST THE FOLLOWING SECTIONS (S) OF CABLE:

PER CONDUTTORI DI FASE	$S \leq 16 \text{ mm}^2$	TERRA = S FASI
PER CONDUTTORI DI FASE	$16 < S \leq 35$	TERRA S = 16mm ²
PER CONDUTTORI DI FASE	$S > 35$	TERRA 0,5 S FASI
FOR PHASE CONDUCTORS	$S \leq 16 \text{ mm}^2$	EARTH = PHASE - S
FOR PHASE CONDUCTORS	$16 < S \leq 35$	EARTH - S = 16 mm ²
FOR PHASE CONDUCTORS	$S > 35$	EARTH = 0.5 PHASE - S





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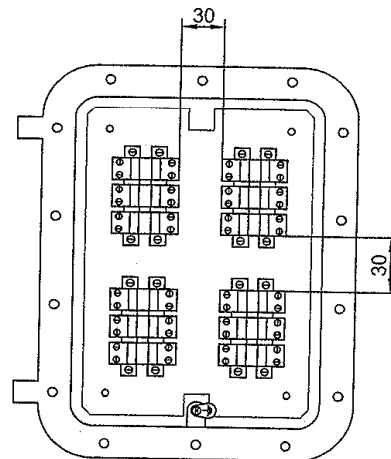
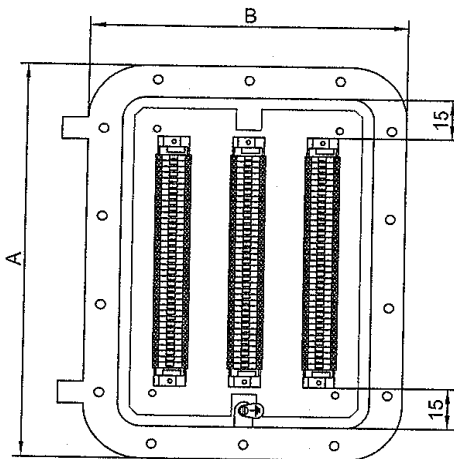
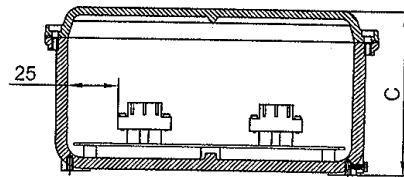
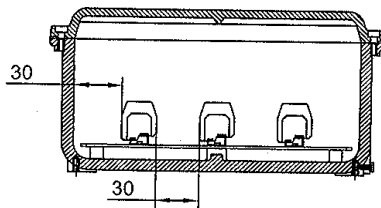
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CUSTODIE SERIE EJB...
ISTRUZIONI DI SICUREZZA, USO E MANUTENZIONE
ENCLOSURES SERIES EJB...
SAFETY, MAINTENANCE AND MOUNTING INSTRUCTIONS

ESEMPIO DI TIPICA DISPOSIZIONE DI MORSETTI/MORSETTIERE NELLE CUSTODIE.
NELLO SVILUPPO PER CUSTODIE PORTAMORSETTI CORTEM HA TENUTO CONTO
DEI LIMITI DI SPAZIO E DISSIPAZIONE DI CALORE INTERNI.

EXAMPLE OF TYPICAL ARRANGEMENT OF TERMINALS/TERMINAL CONNECTIONS
IN THE BOXES. WHEN DESIGNING THESE BOXES FOR TERMINAL CONNECTIONS,
CORTEM HAS CONSIDERED THE INTERNAL LIMITS OF SPACE AND HEAT
DISSIPATION.





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SAFETY, MAINTENANCE AND MOUNTING INSTRUCTIONS

UNITA' DI COMANDO, CONTROLLO E SEGNALAZIONE
CONTROL, CHECK AND SIGNALLING UNITS

ESECUZIONE: Ex d IIB o IIB+H2 (Ex) II2G o (Ex) II2GD Ex tD A21 IP65 o IP66(67) T6 o T5 o T4
EXECUTION: or or or or or

CERTIFICATO: CESI 01 ATEX 027
CERTIFICATE: CESI 01 ATEX 027

ZONE DI INSTALLAZIONE: ZONA 1, ZONA 2, ZONA 21, ZONA 22
INSTALLATION ZONES: ZONE 1, ZONE 2, ZONE 21, ZONE 22

TEMPERATURA AMBIENTE: -20°C +40°C o -20°C +55°C
AMBIENT TEMPERATURE: -20°C +40°C, or -20°C +55°C

CLASSI DI TEMPERATURA: T6, T5, T4 per temp. amb. -20°C +40°C o per temp. amb. -20°C +55°C
IN FUNZIONE DELLE DIMENSIONI DELLA CUSTODIA, DELLA TEMPERATURA AMBIENTE E DELLA
POTENZA DISSIPATA ALL'INTERNO DELLA CUSTODIA
CLASSES OF TEMPERATURE: T6, T5, T4 for amb. temp. of -20°C +40°C, or for amb. temp. of -20°C +55°C
ACCORDING TO THE DIMENSIONS OF THE BOX, TO THE AMBIENT TEMPERATURE AND TO THE
POWER DISSIPATED INSIDE THE BOX

TEMPERATURA MASSIMA SUPERFICIALE PER PROTEZIONE CONTRO LE POLVERI
COMBUSTIBILI "D" o "GD": T85°C per classe temp. T6 T100°C per classe temp. T5 T135°C per
classe temp. T4
MAXIMUM SURFACE TEMPERATURE FOR PROTECTION AGAINST EXPLOSIVE DUST "D" or
"GD": T85°C for class of temp. T6 T100°C for class of temp. T5

CARATTERISTICHE ELETTRICHE GENERALI:
GENERAL ELECTRICAL CHARACTERISTICS

TENSIONE NOMINALE: 24 + 1000 V c.c.
RATED VOLTAGE: 24 to 1000 V d.c.

FREQUENZA NOMINALE: 50/60 Hz
RATED FREQUENCY: 50/60 Hz

CORRENTE MAX. NEI CONTATTI E FUSIBILI: 400 A
MAX. CURRENT ACROSS CONTACTS AND FUSES: 400 A

POTENZA MASSIMA PER LE LAMPADE: 5W per T amb. -20°C +40°C 3W per T amb. -20°C +55°C
MAXIMUM POWER FOR LAMPS: 5 W for amb. temp. of -20°C +40°C; 3 W for amb. temp. of -20°C +55°C



IN ACCORDO ALLA EN/IEC 60079.1
L'apparecchiatura contenuta all'interno della custodia può essere posizionata in qualsiasi modo, a condizione che una superficie di almeno il 20% di
ogni sezione rimanga libera.

ACCORDING TO EN/IEC 60079.1
The content of the enclosure equipment may be placed in any arrangement, provided that an area of at least 20% of each cross-sectional area
remains free.



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CUSTODIE SERIE EJB...
ISTRUZIONI DI SICUREZZA, USO E MANUTENZIONE

ENCLOSURES SERIES EJB...
SAFETY, MAINTENANCE AND MOUNTING INSTRUCTIONS

TABELLA DELLE CARATTERISTICHE ELETTRICHE STANDARD DI COMPONENTI INSTALLABILI NELLE CUSTODIE, NELLO SVILUPPO PER UNITA' DI CONTROLLO, COMANDO E SEGNALAZIONE, CORTEM HA TENUTO CONTO DEI SEGUENTI LIMITI. (I valori si riferiscono ai cataloghi dei principali costruttori di componenti elettrici/elettronici in commercio)

TABLE OF STANDARD ELECTRICAL CHARACTERISTICS OF COMPONENTS THAT CAN BE INSTALLED IN THE TERMINAL BOXES. WHEN DESIGNING BOXES FOR CONTROL AND SIGNALLING UNITS, CORTEM HAS CONSIDERED THE FOLLOWING LIMITS. (These values have been extracted from the catalogues of the main manufacturers of electric/electronic components available on the market).

TIPO DI COMPONENTE TYPE OF COMPONENT	V MAX (VOLT)	I MAX (AMPER)	MAX POTENZA DISSIPATA MAX DISSIPATED POWER (WATT)
STRUMENTI ANALOGICI E DIGITALI ANALOG AND DIGITAL INSTRUMENTS	660	5	10
REATTORI/INVERTER ELETTRONICI ELECTRONIC REACTORS/INVERTERS	400	-	10
PLC, MULTIPLEXER E AMPLIFICATORI PLC, MULTIPLEXERS AND AMPLIFIERS	240	-	80
DISPOSITIVI DI CONTROLLO E MISURA MEASURING AND CONTROL DEVICES	240	-	100
INTERRUTTORI AUTOMATICI AUTOMATIC SWITCHES	660	650	-
FUSIBILI FUSES	660	400	-
RELE' RELAYS	500	10	12
DISPOSITIVI DI CONTROLLO ELETTRONICI ELECTRONIC CONTROL DEVICES	660	-	100
CONTATTORI CONTACTORS	660	650	30
TEMPORIZZATORI TIMERS	240	10	5
RELE' CREPUSCOLARI TWILIGHT RELAYS	240	-	2
CONDENSATORI CAPACITORS	660	-	-
TRAFORMATORI TRANSFORMERS	660	-	200
RESISTORI RESISTORS	240	-	300
MORSETTI TERMINALS	660	-	-
REATTORI REACTORS	277	7.5	40

MINIMA DISTANZA IN ARIA TRA I
COMPONENTI

MINIMUM DISTANCE
BETWEEN THE COMPONENTS

VOLTAGGIO COMPONENTI (V a.c.) VOLTAGE OF COMPONENTS (V a.c.)	MIN. DISTANZA IN ARIA (mm) MINIMUM DISTANCE (mm)
60-250	6
250-380	8
380-500	10
500-660	12
660-1000	20
VOLTAGGIO COMPONENTI (V c.c.) VOLTAGE OF COMPONENTS (V d.c.)	MIN. DISTANZA IN ARIA (mm) MINIMUM DISTANCE (mm)
12-250	6



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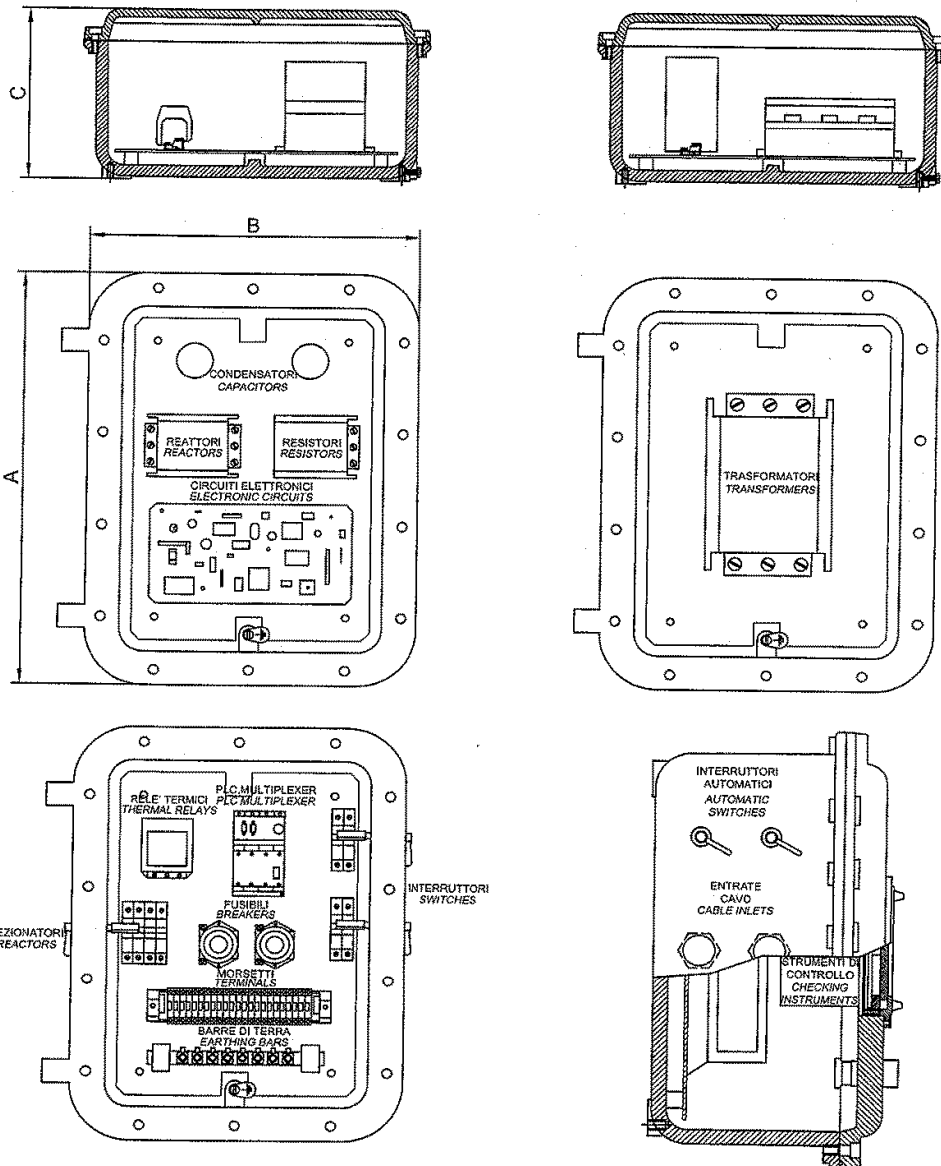
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CUSTODIE SERIE EJB...
ISTRUZIONI DI SICUREZZA, USO E MANUTENZIONE
ENCLOSURES SERIES EJB...
SAFETY, MAINTENANCE AND MOUNTING INSTRUCTIONS

ESEMPIO DI TIPICA DISPOSIZIONE DI ACCESSORI INTERNI/ESTERNI NELLE CUSTODIE
EXAMPLE OF TYPICAL ARRANGEMENT OF INTERNAL/EXTERNAL COMPONENTS IN THE TERMINAL BOXES



- NEL CASO IN CUI IL PRODOTTO VENGA FORNITO SENZA PRESSACAVI SARÀ CURA DEL CLIENTE ADOTTARE TAPPI O PRESSACAVI IN ACCORDO ALLE NORME IMPIANTISTICHE

- In case the product is supplied without cable glands, it is up to the customer to adopt plugs or cable glands in accordance with the plant engineering rules.



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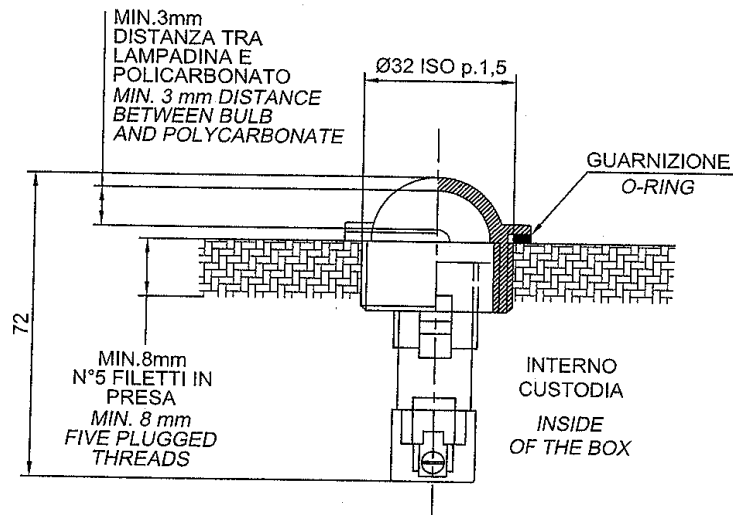
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ISTRUZIONI DI SICUREZZA, USO E MANUTENZIONE
ENCLOSURES SERIES EJB...
SAFETY, MAINTENANCE AND MOUNTING INSTRUCTIONS

ESEMPIO DI OPERATORI DI COMANDO E SEGNALAZIONE SERIE M-0...
INSTALLABILI SUI CORPI O SUI COPERCHI DELLE CUSTODIE EJB...
EXAMPLE OF CONTROL AND SIGNALLING OPERATORS OF SERIES M-0...
THAT CAN BE INSTALLED ON THE BODIES OR TOPS OF THE TERMINAL BOXES EJB...

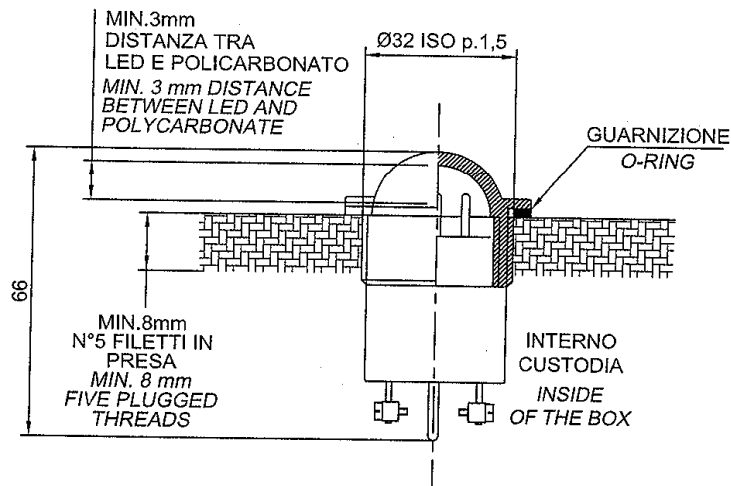
ESECUZIONE Ex d IIC (Ex) II2GD Ex tD A21 IP66
EXECUTION

CERTIFICATO CESI 01 ATEX 025U
CERTIFICATE CESI 01 ATEX 025U

LAMPADINE DI SEGNALAZIONE
SIGNALLING LAMPS



LED DI SEGNALAZIONE
SIGNALLING LED





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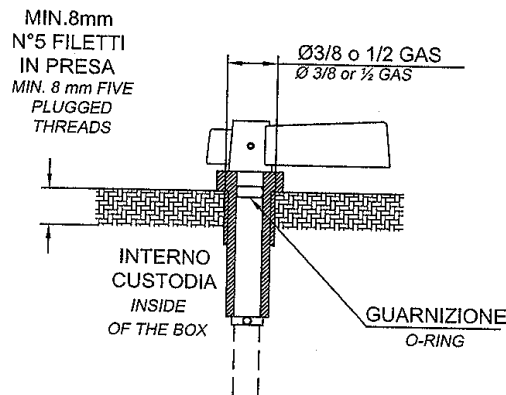
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CUSTODIE SERIE EJB...
ISTRUZIONI DI SICUREZZA, USO E MANUTENZIONE
ENCLOSURES SERIES EJB...
SAFETY, MAINTENANCE AND MOUNTING INSTRUCTIONS

MANOVRE PER INTERRUPTORI ROTATIVI
OPERATIONS FOR ROTARY SWITCHES



PULSANTI - OPERATORI CON MOVIMENTO ASSIALE
PUSHBUTTONS - OPERATORS WITH AXIAL MOVEMENT



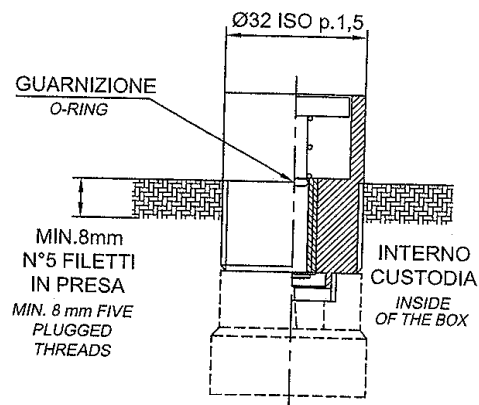
SOSTITUZIONE DEGLI OPERATORI:
ESSENDO BLOCCATI AI COPERCHI DELLE CUSTODIE, GLI OPERATORI COMPLETI NON POSSONO ESSERE SOSTITUITI. SOLO IN CASI PARTICOLARI SOTTO LA SORVEGLIANZA DI CORTEM, ALCUNI OPERATORI POSSONO ESSERE SOSTITUITI. USARE SOLO PARTI ORIGINALI CORTEM. TUTTI GLI OPERATORI SONO FORNITI DI CONTATTI A MORSETTO PER IL COLLEGAMENTO DEI CAVI.

PER LE ENTRATE CON CAVO FLESSIBILE O CON TUBO RIGIDO USARE SOLO ACCESSORI CERTIFICATI IN ACCORDO ALLE NORMATIVE EN 60079-0, EN 60079-1, EN 61241-0, EN 61241-1. LA SCELTA DEI TIPI DI ACCESSORI DA USARE PER GLI INGRESSI E' FATTA IN ACCORDO ALLA NORMA EN-60079-14. LA DISTANZA MINIMA TRA GLI INGRESSI E/O TRA GLI ACCESSORI DI COMANDO E SEGNALAZIONE E' STABILITA DA CORTEM IN ACCORDO AL CERTIFICATO CESI 00 ATEX 036U, SOLO CORTEM E' AUTORIZZATA ALLA FORATURA E LAVORAZIONE DELLE CUSTODIE, PERTANTO OGNI LAVORAZIONE FATTA AL DI FUORI DEL CONTROLLO CORTEM E' ILLEGALE.

REPLACING THE OPERATORS
SINCE THE OPERATORS ARE BLOCKED BY THE TOPS OF THE BOXES, IT IS NOT POSSIBLE TO REPLACE THEM AS A WHOLE UNIT. SOME OPERATORS CAN BE REPLACED ONLY IN PARTICULAR CASES UNDER THE SUPERVISION OF CORTEM. USE ONLY ORIGINAL SPARE PARTS CORTEM. ALL THE OPERATORS WILL INCLUDE TERMINAL CONTACTS FOR CONNECTING THE LEADS.

WHEN INSERTING FLEXIBLE LEADS OR STIFF PIPES USE ONLY ACCESSORIES CERTIFIED ACCORDING TO THE STANDARDS EN 60079-0, EN 60079-1, EN 61241-0, EN 61241-1. THE TYPES OF ACCESSORIES USED FOR THESE OPERATIONS ARE CHOSEN ACCORDING TO THE STANDARD EN-60079-14.

THE MINIMUM DISTANCE BETWEEN THE INLETS AND/OR BETWEEN THE CONTROL AND SIGNALLING PARTS IS SET BY CORTEM ACCORDING TO THE CERTIFICATE CESI 00 ATEX 036U. ONLY CORTEM IS AUTHORIZED TO ANY DRILLING OR WORKING ON THE TERMINAL BOXES, THEREFORE ANY WORKING NOT CONTROLLED BY CORTEM IS ILLEGAL.





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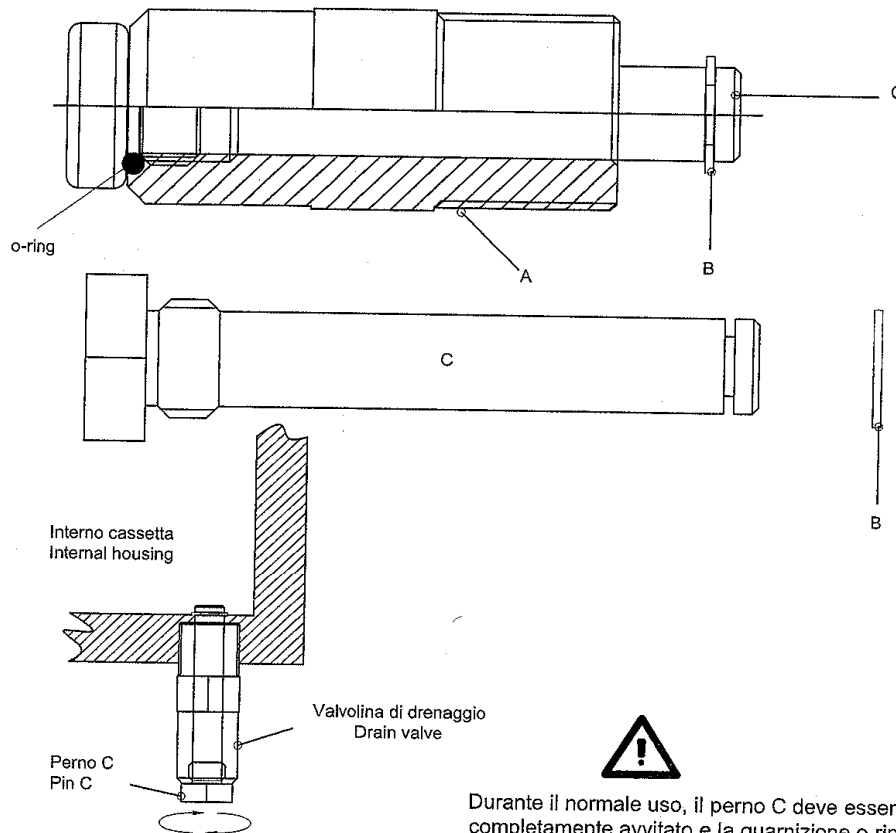
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CUSTODIE SERIE EJB...
ISTRUZIONI DI SICUREZZA, USO E MANUTENZIONE
ENCLOSURES SERIES EJB...
SAFETY, MAINTENANCE AND MOUNTING INSTRUCTIONS

VALVOLA TIPO / Valve type:
ECD-2.. II 2GD Ex d IIC/Ex e II Ex tD A21 IP66



Per procedere con il drenaggio, svitare il perno C.
Terminata l'operazione di drenaggio avvitare il perno facendo attenzione che la guarnizione o-ring sia nella propria sede.
To proceed with drain operation, unscrew the pin C.
When drain operation is finished, screw the pin C, be careful to keep the o-ring gasket on its seat.

Durante il normale uso, il perno C deve essere completamente avvitato e la guarnizione o-ring deve essere nella propria sede, al fine di mantenere il grado di protezione IP.
During the normal use, the pin C must be completely screwed and the o-ring gasket must be on its seat, to maintain the degree of protection.

Per la pulizia della valvolina, si deve smontare la stessa dalla cassetta procedendo successivamente allo smontaggio di tutti i componenti come da schema
1-Smontare la valvolina A dalla cassetta
2-Togliere la rondella elastica B
3-Svitare e sfilare dalla valvolina A il perno C
4-Effettuare la pulizia del componente ECD
5-Rimontare la valvolina ECD procedendo in senso inverso a quanto indicato nei punti precedenti

For the cleaning of the valve you must strip down it from the junction box proceeding subsequently the dismantling of the components as in the scheme
1-Strip down the valve A from the junction box
2-Remove the internal retaining ring B
3-Unscrew and take out from the valve A the pin C
4-Make the cleaning of the component ECD
5-Reassemble the valve ECD proceeding in the opposite direction as indicated in the above mentioned points.



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CUSTODIE SERIE EJB...
ISTRUZIONI DI SICUREZZA, USO E MANUTENZIONE
ENCLOSURES SERIES EJB...
SAFETY, MAINTENANCE AND MOUNTING INSTRUCTIONS

COD.	MAXIMUM OUTPUT DISSIPATED IN WATT WITH AMBIENT TEMPERATURE OF 40° C				MAXIMUM OUTPUT DISSIPATED IN WATT WITH AMBIENT TEMPERATURE OF 55° C			
	CLASS T6 WITHOUT SIGNALLING LAMPS, ONLY SIGNALLING LED ARE ALLOWED	CLASS T5 WITH SIGNALLING LAMPS AND/OR SIGNALLING LED	CLASS T5 WITHOUT SIGNALLING LAMPS, ONLY SIGNALLING LED ARE ALLOWED	CLASS T4 WITHOUT SIGNALLING LAMPS AND SIGNALLING LED	CLASS T6 WITHOUT SIGNALLING LAMPS, ONLY SIGNALLING LED ARE ALLOWED	CLASS T5 WITH SIGNALLING LAMPS AND/OR SIGNALLING LED	CLASS T5 WITHOUT SIGNALLING LAMPS, ONLY SIGNALLING LED ARE ALLOWED	CLASS T4 WITHOUT SIGNALLING LAMPS AND SIGNALLING LED
EJB 1	45	45	65	140	34	34	50	105
EJB 2	60	60	85	190	45	45	65	142
EJB 3	75	75	110	245	56	56	82	184
EJB 3B	55	55	80	180	40	40	60	135
EJB 4	100	100	175	350	75	75	130	262
EJB 4B	75	75	130	260	56	56	100	195
EJB 45	140	140	240	480	105	105	180	360
EJB 45B	120	120	210	430	90	90	160	320
EJB 5	210	210	315	600	160	160	235	450
EJB 5B	170	170	250	480	130	130	190	360
EJB 503	230	230	345	660	176	176	255	495
EJB 55	390	390	595	1140	300	300	445	850
EJB 55B	320	320	470	910	240	240	360	680
EJB 6	600	600	910	1740	460	460	680	1300
EJB 6B	490	490	720	1390	370	370	550	1040
EJB-01	40	40	60	130	30	30	45	95
AQS-1	170	170	250	480	130	130	190	360



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CESI
Centro Elettrotecnico
Sperimentale Italiano
Giulio Motte SpA

Via R. Rubattino 54
20134 Milano - Italia
Telefono +39 022125.1
Fax +39 0221256440
www.cesi.it

Capitale sociale 8.550.000 €
Integramente versato
Codice fiscale a numero
iscrizione CCIAA 00783560150

Registro Imprese di Milano
Sede legale
N. R.E.A. 428227
P.I. IT00783560150

Schema di certificazione
CESI-ATEX

Il CESI è stato autorizzato
dal governo italiano ad
operare quale organismo di
certificazione di apparecchi
e sistemi destinati a essere
utilizzati in strutture
potenzialmente esplosive
con D.M. 17/03/2004, D.M.
19/01/1990, D.M. 20/7/1998
e D.M. 27/9/2000

CERTIFICATE



EC-TYPE EXAMINATION CERTIFICATE

- [1] **EC-TYPE EXAMINATION CERTIFICATE**
- [2] **Equipment or Protective System intended for use
in potentially explosive atmospheres
Directive: 94/9/EC**
- [3] **EC-Type Examination Certificate number:**

CESI 02 ATEX 081 X
- [4] **Equipment:** Cable glands series FGA and FGAD for armoured cables and series FG, FGF and FGN for non-armoured cables.
- [5] **Manufacturer:** EL.FIT S.p.A.
- [6] **Address:** Via Aquileia 12, Villesse (Gorizia - Italy)
- [7] This equipment or protective system and any acceptable variation thereto is specified in the schedule to this certificate and the documents therein referred to.
- [8] CESI, notified body n. 0722 in accordance with Article 9 of the Council Directive 94/9/EC of 23 March 1994, certifies that this equipment or protective system has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment and protective systems intended for use in potentially explosive atmospheres given in Annex II to the Directive.

The examination and test results are recorded in confidential report n. EX-A2/027978.
- [9] Compliance with the Essential Health and Safety Requirements has been assured by compliance with:

EN 50014:1997+A1..A2 EN 50018:2000+A1 EN 50019:2000 EN 50281-1-1:1998+A1
- [10] If the sign "X" is placed after the certificate number, it indicates that the equipment or protective system is subject to special conditions for safe use specified in the schedule to this certificate.
- [11] This EC-TYPE EXAMINATION CERTIFICATE relates only to the design, examination and tests of the specified equipment or protective system in accordance to the Directive 94/9/EC. Further requirements of the Directive apply to the manufacturing process and supply of this equipment or protective system. These are not covered by this certificate.
- [12] The marking of the equipment or protective system shall include the following:

II 2-GD EEx d IIC EEx e II IP 66/67

This certificate may only be reproduced in its entirety and without any change, schedule included.

Date September 20th, 2002 translation issued on September 20th, 2002

Prepared
Mirko Balaz

Mirko Balaz

Approved
Ulisse Colombo

CESI

CENTRO ELETTROTECNICO Sperimentale ITALIANO
Business Unit Certificazione

Ulisse Colombo

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S.C. CONFIND S.R.L.
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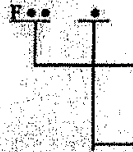
[13]

Schedule

[14] EC-TYPE EXAMINATION CERTIFICATE n. CESI 02 ATEX 081 X

[15] Description of equipment

The cable glands series FGA, FGAD, FG, FGF and FGN are designed for the type of protection flameproof enclosures EEx d IIC and for the type of protection increased safety EEx e II.
The cable glands of the series above-mentioned are also protected against the risk of explosion for the presence of combustible dusts according to the standard EN 50281-1-1.
These cable glands can be used in EEx i intrinsic safety circuits. In this case the cable glands have a part painted in light blue.
The various types of cable glands are identified by a code as follows:



Type of cable gland:

FGA, FGAD: cable glands for armoured cables

FG, FGF, FGN: cable glands for non-armoured cables

Size: 1, 2, 3, 4, 5, 6, 7, 8 (from 1/2" to 3")

The constructional characteristics and the identification of the different types of cable glands are reported in the documents annexed to this certificate.

Degree of protection (EN 60529 - 1991): IP 66/67

Operating temperature range of the cable glands:

- with elastomeric sealing ring of SINCRON IP55/1: - 20 + + 80 °C

- with elastomeric sealing ring of FORPRENE: - 25 + + 100 °C

The cable glands shall be coupled with the enclosures as indicated by the manufacturer in the documents annexed to this certificate in order not to jeopardise the type of protection of the electrical apparatus on which the cable glands are installed.

[16] Report n. EX-A2/027978

Routine tests

The manufacturer shall carry out the routine tests prescribed at clause 24 of the EN 50014 standard.

Descriptive documents (prot. EX-A2/027980)

- n° A4-867 Rev. 0 (3 p.)	dated	03.09.2002
- n° A4-862 Rev. 0	dated	04.09.2002
- n° A4-863 Rev. 0	dated	04.09.2002
- n° A4-864 Rev. 0	dated	02.09.2002
- n° A4-865 Rev. 0	dated	02.09.2002
- n° A4-866L Rev. 0	dated	02.09.2002

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[13]

Schedule

[14] EC-TYPE EXAMINATION CERTIFICATE n. CESI 02 ATEX 081 X

Descriptive documents (follows)

- n° A4-868 Rev. 0	dated	16.09.2002
- n° A4-869 Rev. 0	dated	10.09.2002
- n° A4-870 Rev. 0	dated	07.09.2002
- n° A4-871 Rev. 0	dated	09.09.2002
- n° A4-872 Rev. 0	dated	09.09.2002
- n° A4-873 Rev. 0	dated	09.09.2002
- n° A4-874 Rev. 0	dated	08.09.2002
- n° A4-875 Rev. 0	dated	08.09.2002
- n° A4-876 Rev. 0	dated	07.09.2002
- n° A4-877 Rev. 0	dated	07.09.2002
- n° A4-878 Rev. 0	dated	07.09.2002
- n° A4-880 Rev. 0	dated	08.09.2002
- n° A4-881 Rev. 0	dated	08.09.2002
- n° A4-882 Rev. 0	dated	08.09.2002
- n° A4-883 Rev. 0	dated	07.09.2002
- n° A4-884 Rev. 0	dated	07.09.2002
- n° A4-885 Rev. 0	dated	07.09.2002
- n° A4-886 Rev. 0	dated	07.09.2002
- n° A3-297 Rev. 0	dated	31.08.2002
- n° A3-298 Rev. 0	dated	31.08.2002
- n° A3-299 Rev. 0	dated	31.08.2002
- n° A3-300 Rev. 0	dated	31.08.2002
- n° A3-301 Rev. 0	dated	31.08.2002
- n° A3-302 Rev. 0	dated	02.09.2002
- n° A3-303 Rev. 0	dated	03.09.2002
- n° A3-304 Rev. 0	dated	03.09.2002
- n° A3-305 Rev. 0	dated	03.09.2002
- Safety instructions Annexe A/25 Rev. 0 (9 p.)	dated	16.09.2002
- EC declaration of conformity n° CE010	dated	02.09.2002

One copy of the above mentioned documents is kept in CESI files.

[17] Special conditions for safe use (X)

The clamping of the cables must be made by means of a suitable clamping device.

[18] Essential Health and Safety Requirements

Covered by standards.



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EXTENSION n. 01/05



to EC-Type Examination Certificate CESI 02 ATEX 081X

Equipment: Cable glands series FGA and FGAD for armoured cables and series FG, FGF and FGN for non-armoured cables

Manufacturer: **EL.FIT S.p.A.**

Address: Via Aquileia 12, Villesse (Gorizia), Italy

Admitted variation

- Use new type of sealing ring for the service temperature from -40°C up to +110 °C

Report n. EX-A5/060549

Operating temperature range of cable glands:
With elastomeric sealing ring of SANTOPRENE -40 °C +110 °C.

Descriptive documents (prot. EX-A5/060555)

- Technical note n° A4-867 rev. 1 (3 p.) dated 02.08.2005
- Data sheet Santoprene dated 02.08.2005

One copy of all documents is kept in CESI files.

This extension and annexed descriptive documents must be annexed to the EC-Type Examination Certificate CESI 02ATEX081X.

This document may only be reproduced in its entirety and without any change.

date 22nd December, 2005 - translation issued on 22nd December, 2005

prepared CERT - M. Balaz *Balaz*

approved CERT - U. Colombo

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Business Unit Certificazioni
Via Zappalabile

[Signature]

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Prot A5/060554

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CESI
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Fax +39 0221255440
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Capitale sociale 8 550 000 Euro
Interamente versato
Codice fiscale e numero
iscrizione CCIAA 00793580150

Registro Imprese di Milano
Sezione Ordinaria
N. R.E.A. 429222
P.I. IT00793580150



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CESI

EXTENSION n. 02/07



to EC-Type Examination Certificate CESI 02ATEX 081X

Equipment: Cable glands with elastomeric sealing ring of SANTOPRENE
for armoured cables series: FGA, FGAD and for unarmoured cables series: FG, FGF, FGN.

Manufacturer: EL.FIT S.p.A.


Address: Via Aquileia 12, Villesse (GO)

Admitted variation

- Upgrade to EN 60079-0 (2006), EN 60079-1 (2004), EN 60079-7 (2003), EN 61241-0 (2006), EN 61241-1 (2004) Standards.
- Upgrade of nameplate

Equipments identification

The equipments shall include the following markings:

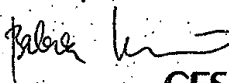
 II 2GD Ex d IIC, Ex e II, Ex tD A21 IP66/67

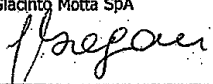
This extension and annexed descriptive documents must be annexed to the EC-Type Examination Certificate CESI 02ATEX081X.

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date 09/05/2007 - translation issued the 09/05/2007

prepared Sergio Mezzetti 

verified Mirko Balaz 

approved Fiorenzo Bregani 

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Giacinto Motta SpA

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an - Ho...
High Flexib...
Computer Cab...
Commuter Cab...
Einzeladern...
Single cores...
halogen-free...
Kopialkabel...
Flechtbandkabel...
Flat Cables...
Installation Cab...
Telephone Cab...
Erdkabel...
Gummikabel...
Rubber Cab...
Schiffskabel...
Sonderleitun...
Spiralkabel...
Kabelzubehö...
Kabelaccesso...
Werkzeuge...
Normleitun...
VDE - UL - CSA - BS...
Approved Control Cab...
@MA - SEMKO - N...
Stauleitun...
A Cables - Cont...
hochflexible Leitun...
Kabel - Comp...
Cables - r...
der

HELUKABEL® GmbH • P.O. BOX 1164 • 71278 Hemmingen • Germany

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BLVD. LACUL TEI NR. 25 et. 1
020372 BUKAREST
RUMÄNIEN

HELUKABEL® GmbH
Dieselstraße 8 - 12
71282 Hemmingen/Stuttgart
Germany

Phone +49 (71 50) 92 09-133
Fax +49 (71 50) 92 09-724

www.helukabel.de

From: Horst Kappler
e-mail: kappler@helukabel.de
Our sign: kp/best-079
Date: 16.03.2010

**Certificate of compliance with the order 2.1 according to EN 10 204
OZ-BL-CY**

We confirm that the above mentioned screened special PVC cable with blue outer jacket for hazardous areas to hazard type -i- for intrinsically safe installation, marking as per DIN VDE 0165 part 1, DIN EN 60079-14 and IEC 60079-14 section 12.2.2.6 produced and tested to DIN VDE 0472/0473.

- **Temperature range**
 - flexing - 5°C to + 80°C
 - fixed installation - 40°C to + 80°C
- **Nominal voltage** U₀/U 300/500 V

Test

- PVC self-extinguishing and flame retardant according to VDE 0482-332-1-2/
DIN EN 60332-1-2/IEC 60332-1 (equivalent DIN VDE 0472 part 804 test method B).

The materials used in manufacture are cadmium-free and contain no silicone and free from substances harmful to the wetting properties of lacquers.

CE = The product is conformed with the EC Low-Voltage Directive 2006/95/EG.

HELUKABEL® GmbH

I. W. Horst Kappler
Technical Manager

Horst Kappler
Technical Support

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Verkaufsbüro & Lager Chemnitz
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Tel. 0 37 221 60 88-0 • Fax 0 37 221 60 86-20

Verkaufsbüro Nord
Menneler Weg 12 • 25568 Rathwisch/HH
Tel. 0 45 28601-082 • Fax 0 45 281 901-206

Verkaufsbüro Rhein-Ruhr
Am Handwerkerhof 2-4 • D-47269 Dabburg
Tel. 02031 73 995-0 • Fax 02 03 73 995-10

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Geschäftsführer Holmut Luksch • Sitz der Gesellschaft Hemmingen • Amtsgericht Stuttgart HRB 201352 • Ust-Ident-Nr. DE 148021824
Volksbank Ludwigsburg (BLZ 604 901 50) 45 003 009 • S.W.I.F.T.GENO DE5G • IBAN-Nr. DE 39 6049 0150 0045 0030 09
BW Bank, Ludwigsburg (BLZ 604 300 80) 8 326 232 900 • S.W.I.F.T.BWBK DE 6 S HOF • IBAN-Nr. DE 59 6043 0060 8326 2329 00
Commerzbank AG, Böblingen (BLZ 600 400 71) 8 307 522 • Deutsche Bank Leonberg (BLZ 600700 70) 987 618 000 • Kreissparkasse Böblingen (BLZ 603 501 30) 8 676 073



S.C. CONFIND S.R.L.
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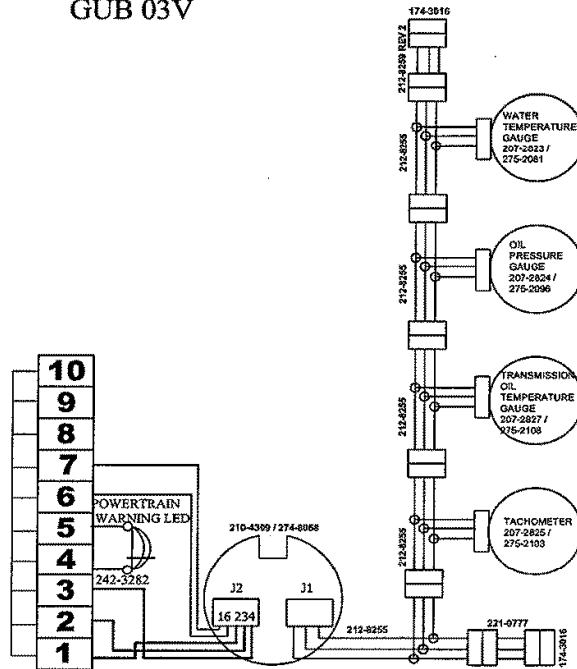
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GUB 03V



Proiectat		Ing.Stoica Tudu	Material:	110-151803.01
Desenat		Ing.I.Nicolae		
Verificat		Ing.R.Laza	Masa neta:	Nr. inventar:
Contr. STAS		Ing.I.Nicolae		
Aprobat		Ing.R.Laza	Scara:	MODULE DISPLAY ENGINE PARAMETERS
AMPLO-S.A. PLOIESTI			Data:	Beneficiar:S.C.CONFIND SRL



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CESI

1036

EXTENSION n. 01/02



to EC-Type Examination Certificate CESI 01 ATEX 025 U

Equipment: Signal and control operators series M-0...

Manufacturer: COR.TEM S.p.A.

Address: Via Aquileia 10, Villesse, Gorizia (Italy)

Admitted variation

- constructional modification: degree of protection IP 66

Report n. EX-A2/020640

Descriptive documents (prot. EX-A2/020641)

- n. A4-4243 Rev. 0 dated 12.03.2002
- n. A2-4137 Rev. 1 dated 12.03.2002

One copy of all documents is kept in CESI files.

This extension and annexed descriptive documents must be annexed to the EC-Type Examination Certificate CESI 01 ATEX 025 U.

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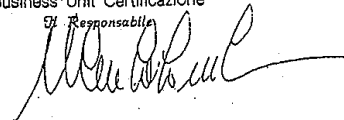
date 26th June 2002 - translation issued on 26th June 2002

prepared CERT - M. Balaz 

approved CERT - U. Colombo

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Business Unit Certificazione

Il Responsabile



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Prot. A2/020644
Keywords

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13010R 24080T 48010M 54250O 66540E



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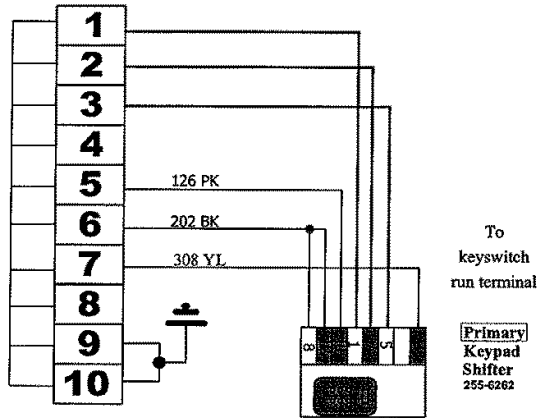
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Proiectat	Ing. Tudor Stoica	Material:	302-2964.00
Desenat	Ing. I. Nicolae		
Verificat	Ing. R. Laza		
Contr. STAS	Ing. I. Nicolae	Masa neta:	Inlocuieste des. nr.
Aprobat	Ing. R. Laza		Nr. inventar:
AMPLO-S.A. PLOIESTI		Scara:	MODULE CHANGE GEARS
		Data:	Beneficiar: S.C. CONFIND SRL



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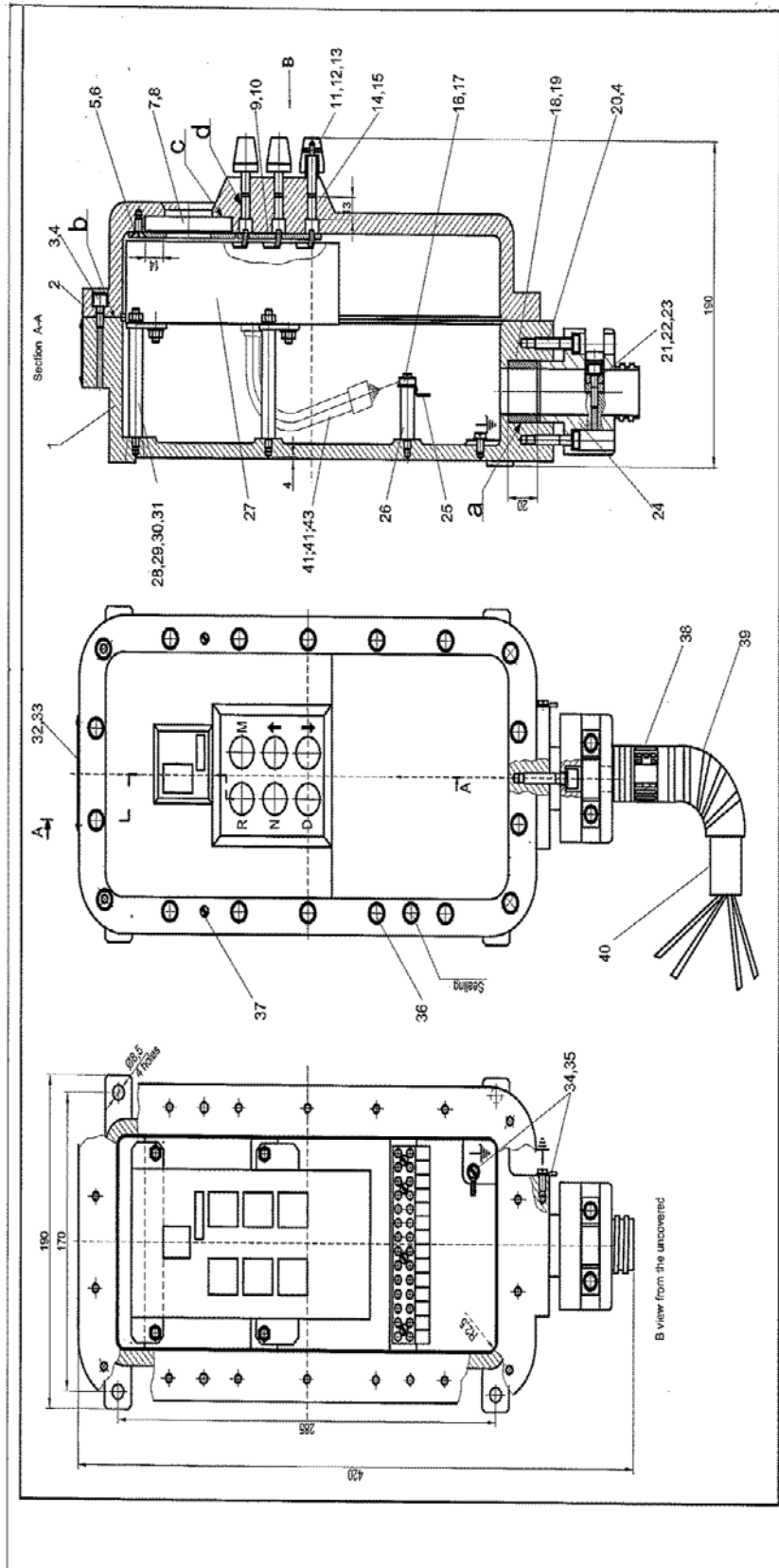
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Pos.	Denunzia	Nr. Desen,STAS	Material	Obs.	Massa
37	Bolt M6	302-2964.37	W1.4301		
38	Seal		sealing waqx		
39	Thimble Ø6 x2,5mm 2				
40	Screw M5X10	SR EN ISO 1207-1968			
41	Rivet Ø2X10	STAS 9229-30			
42	Label	302-2964.32			
43	Grower washer M16	SR 7666-2-1994			
44	Nut M5	SR ISO 4032-2002			
45	Support	302-2964.29 A			
46	Spacer	302-2964.28 A			
47	Shifter				
48	Spacer	302-2964.26			
49	Terminals support	302-2964.25			
50	Cables glade	302-2964.24 B			
51	Firing strap	302-2964.23			
52	Grower washer M16	SR 7666-2-1994			
53	Screw M5X20	STAS 5144-80			
54	Screw M5X30	SR ISO 4762-1993			
55	Washer Ø54,5xØ27x2				
56	Bush	302-2964.18			
57	Screw M2,5X16	SR EN 1207-1968			
58	Terminal block 14 pol	Cod 2065929			
59	Ring Ø3,15XØ1,8	Cod 56218665			
60	Axle	302-2964.14.00			
61	Spring	302-2964.13			
62	Threaded rivet M3X12	SR EN 24766-2003			
63	Bulbon	302-2964.11			
64	Screw M4X12	SR EN 1207-1968			
65	Button guide	302-2964.09 A			
66	Washing glass steel	302-2964.08			
67	Washing glass	302-2964.07			
68	Bezei glass	302-2964.06			
69	Screw M5X12	STAS 2571-90			
70	Grower washer M16	SR 7666-2-1994			
71	Screw M5X20	SR ISO 4762-1993			
72	Cover	302-2964.02			
73	Body	302-2964.01			
74	Denunzia	Nr. Desen,STAS	Material	Obs.	Massa
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SC AMPLO SA

B-dul Petrolului 10
PLOIESTI_cod postal 100521
Nr. Registrul Comertului: J29/13/1991
CUI: RO 1359038
Capital social: 6 657 272 Lei

Tel: 0244 573641
Fax: 0244 571506
E-mail:marketing@amplo.ro
www.amplo.ro



Certificat
ISO 9001 : 2008

BULETIN DE VERIFICARE

NR. 326 / 15.11.2010

1. Echipamentul verificat: MODUL SELECTOR TREPTE DE VITEZA

Seria: 048/2010;

Tip: STV-01;

Caracteristici tehnice:

- grad normal de protectie: IP65;
- tipul protectiei antiexplozive: II2G ExdIIBT6
- tensiune alimentare: 24Vcc, +10%, -15%;
- temperatura de functionare: -29°C.....+40°C;
- dimensiuni de gabarit: 430x200x200 mm;
- masa: 10 kg;

2. Aparatura utilizata: termometru etalon seria: 5391, domeniul de masurare: 0°÷51°C din trusa seria: 40699/CE-nr.PH-632-127T/2010.

3. Rezultatul verificarii:

S-a efectuat verificarea temperaturii maxime pe suprafata modului alimentand modulul la tensiunea de 24 Vc.c. si dupa 2h de functionare s-a masurat temperatura in punctul cel mai cald.

Valoarea masurata: 38°C;

Valoarea impusa: max. 85°C;

Temperatura mediului ambiant: 21,5°C

CORESPUNDE

AMPLO
PH - 111N/2010

4. Declaratie executant:

- Verificarile efectuate nu au fost sub presiuni de orice natura;
- Buletinul de verificare nu poate fi multiplicat fara aprobarea laboratorului emitent;
- Buletinul de verificare va fi inclus in documentatia tehnica pentru certificarea Ex a aparatului.

Numele si prenumele		Funcția	Semnatura
Intocmit	Stenta Gheorghe	Coord. lab. metrologie	
Verificat	Ing. Stoica Tudor	Sef Departament Calitate	



S.C. CONFIND S.R.L.
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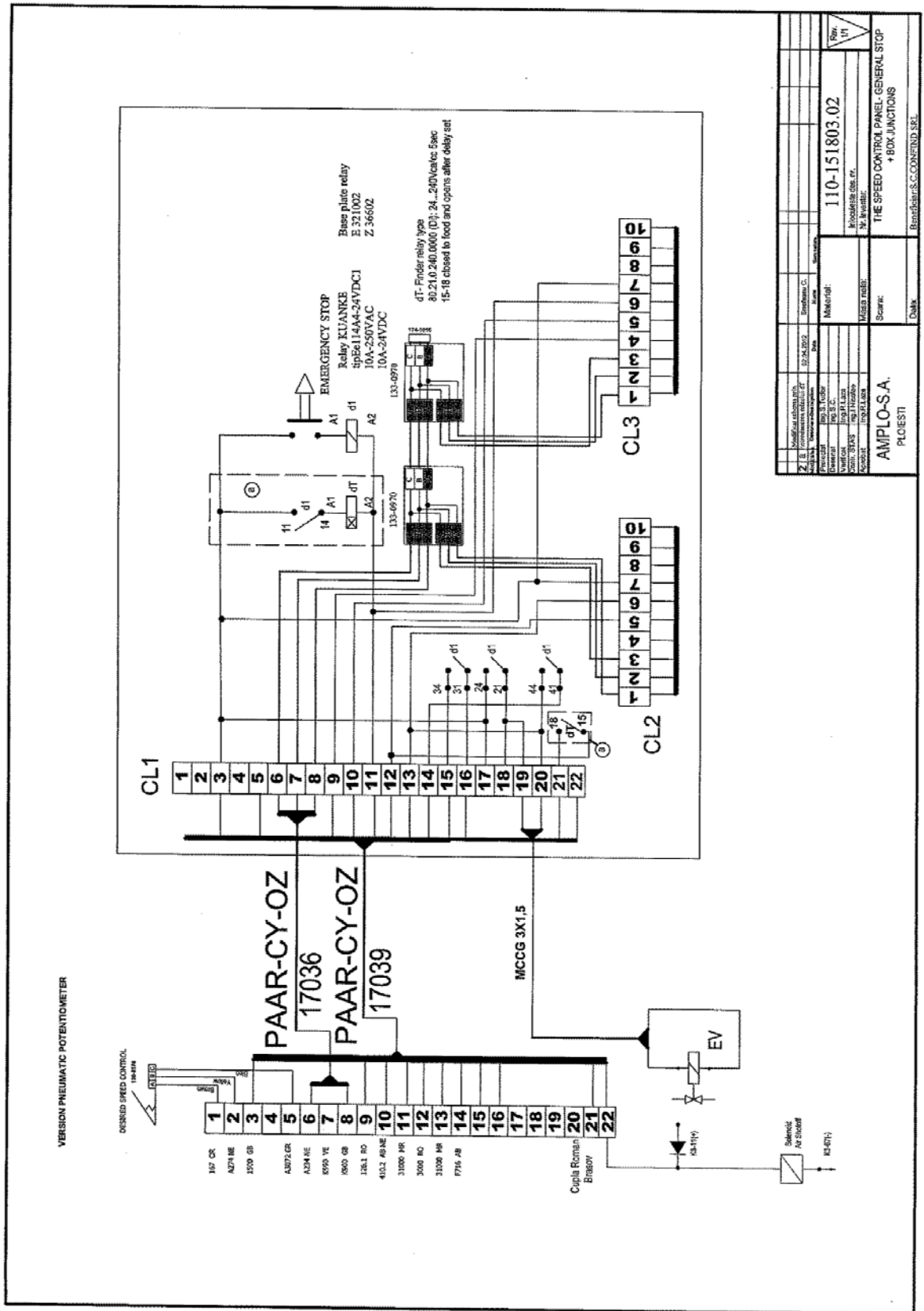
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12. OPERATION MANUAL FOR 37.300 VFA CHASSIS

This manual was elaborated to help you with the knowledge, operation and maintenance of the vehicle.

We recommend keeping it at hand and following the indications regarding the operation and maintenance of your vehicle, thus ensuring a reliable operation, durable and economical.

Recommendations

Always use:

- Clean fuel and the prescribed quality;
- Oils, greases and special fluids corresponding with the manufacturer's requirements;

Avoid making any changes to your vehicle by a technical staff, unauthorized by the manufacturing company, namely S.C. ROMAN S.A., otherwise the vehicle loses the right to warranty.

Do not load the vehicle more than the maximum prescribed charge / load.

For any defect or deficiency contact the service workshops authorized by S.C. ROMAN S.A.

If the replacement of some damaged or worn parts is necessary, then use only original spare parts from the vehicle manufacturer, namely S.C. ROMAN S.A.

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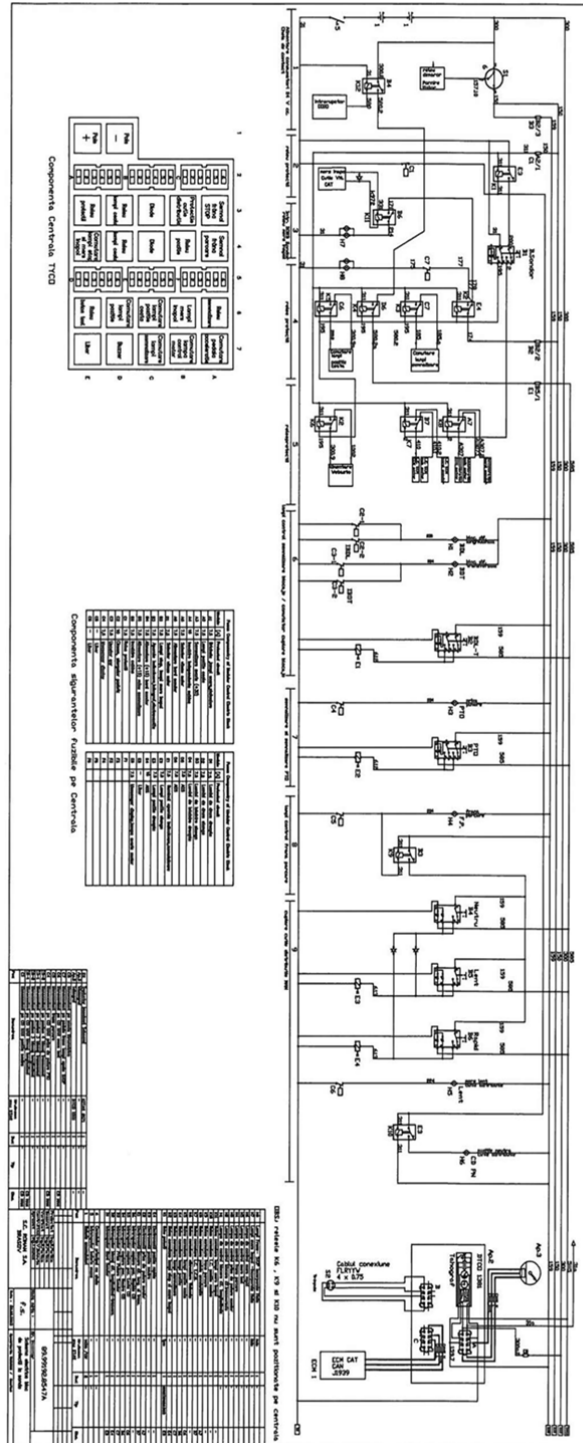
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12.1 ELECTRICAL WIRE LINE FOR THE CARRIER





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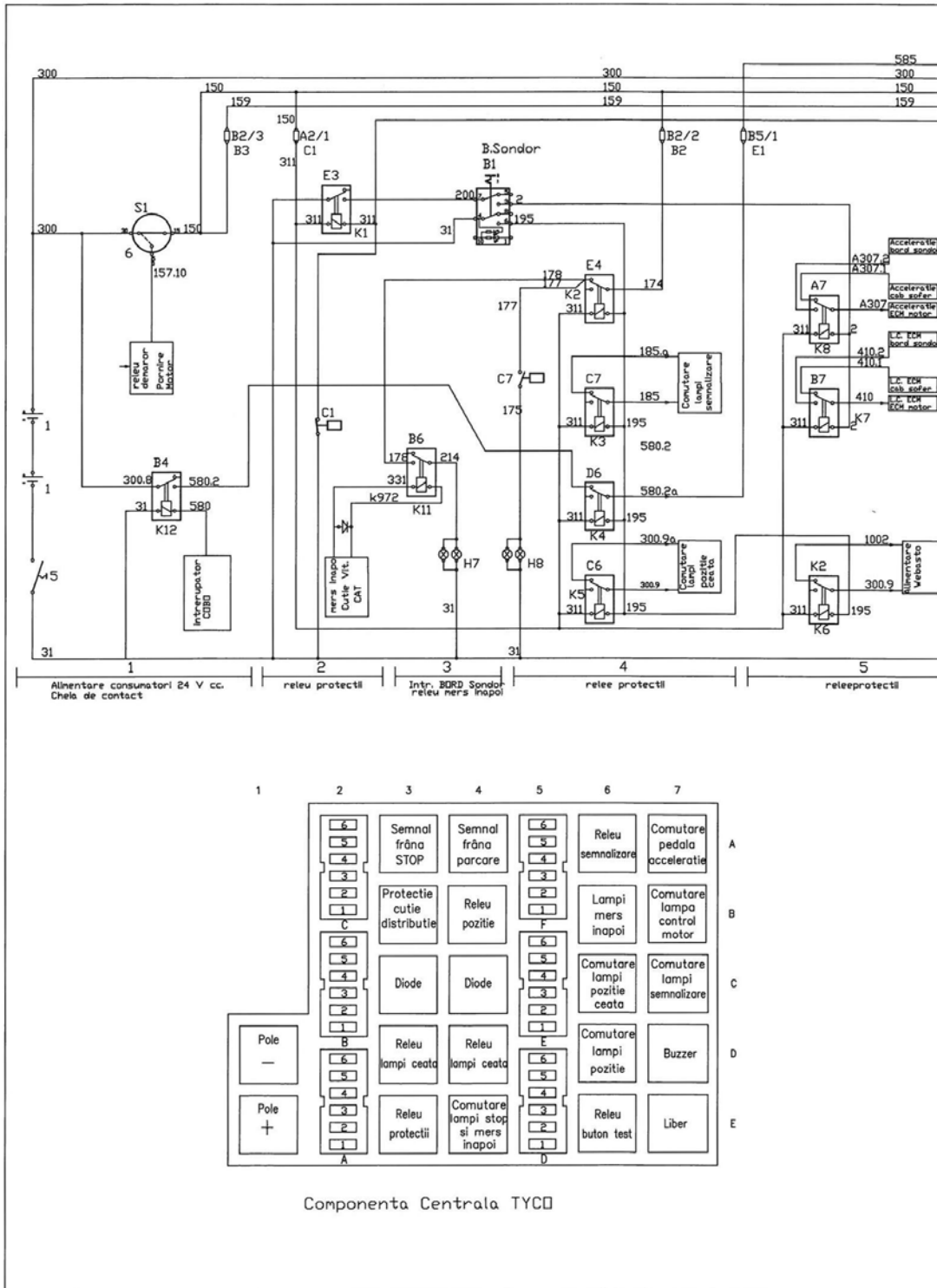
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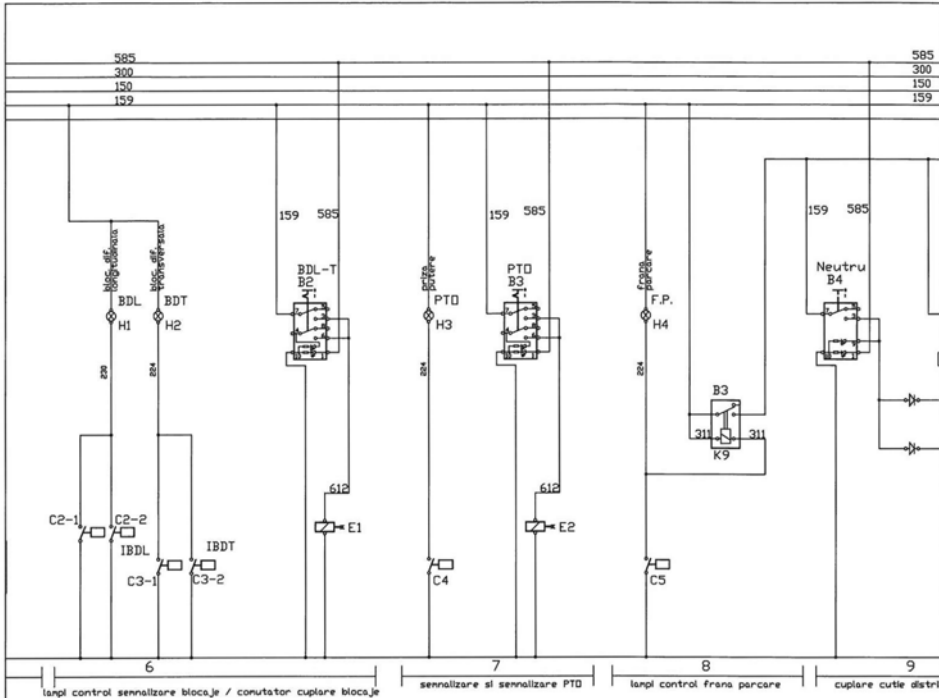
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lanpi control semnalizare blocaje / conutator cuplare blocaje | semnalizare si semnalizare PTD | lanpi control frana parcarea | cuplare cutie distr

Fuses Componenty of Modular Central Electric Block	
Module	[A] Protected circuit
A1	7.5 Bricbeta_lampi scara,plafoniere
A2	7.5 Lampi pozitie ceata
A3	7.5 Semnalizare avarie (+30)
A4	15 Incalzire independenta cabina
A5	7.5 Selector vitezze sofer
A6	7.5 Alimentare bord sonder
B1	7.5 Selector vitezze sofer
B2	7.5 Lampi stop, lampi mers inapoi
B3	7.5 Aparate indicatoare,tahograf,electroventile
B4	7.5 Alimentare (+15) bord sonder
B5	7.5 Alimentare (+15) releu semnalizare
B6	7.5 Incalzire cabina
C1	7.5 Releu protectii
C2	10 Claxon, stergator parbriz
C3	7.5 Usucator aer
C4	7.5 Messenger display
C5	- Liber
C6	- Liber

Fuses Componenty of Modular Central Electric Block	
Module	[A] Protected circuit
D1	7.5 Lumini de drum dreapta
D2	7.5 Lumini de drum stanga
D3	7.5 Lumini de intalnire stanga
D4	7.5 Lumini de intalnire dreapta
D5	7.5 ABS
D6	7.5 ABS
E1	7.5 Iluminat aparate indicatoare,comutatoare
E2	7.5 Lampi pozitie stanga
E3	7.5 Lampi pozitie dreapta
E4	15 ABS
E5	- Liber
E6	7.5 Messenger display,lampa avarie motor
F1	
F2	
F3	
F4	
F5	
F6	

Componenta sigurantelor fuzibile pe Centrala



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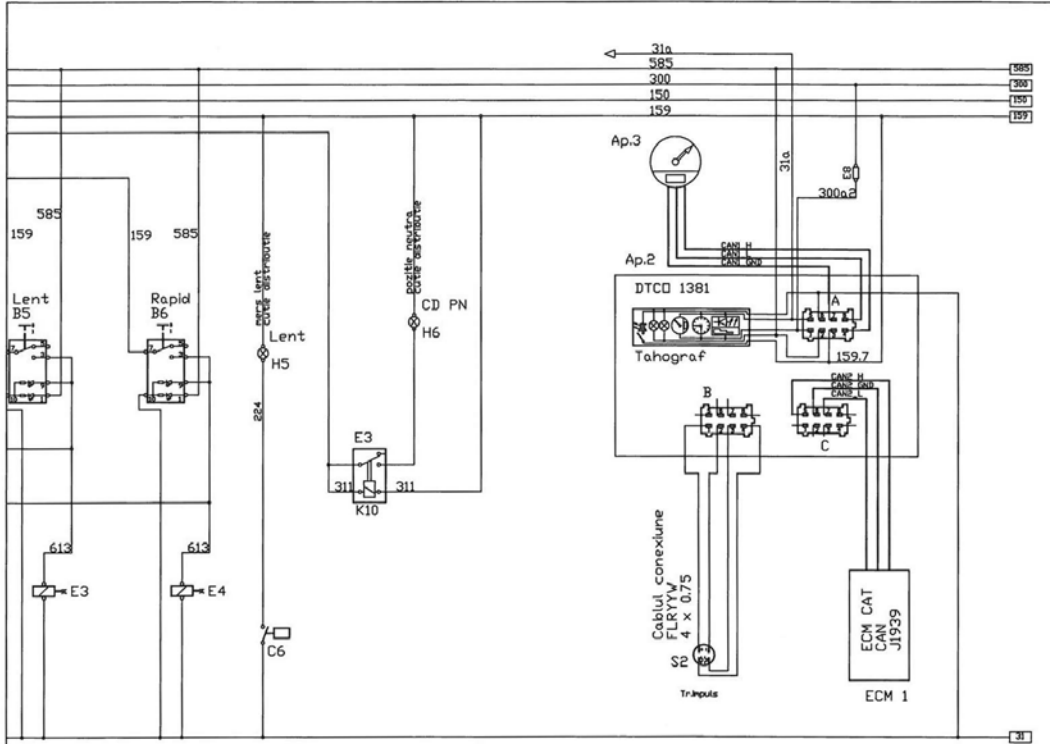
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urte MAN

OBS.: releele K6 , K9 si K10 nu sunt pozitionate pe centrula

Denunțarea	Tip	Număr	Observații	Tip	Obs.
H8	Lampa Frana- STOP incorporata Hello	1			
H7	Lampi mers inapoi -incorporate Hello	1			
H6	Lampa de control mers rapid	1			
H5	Lampa de control mers lent	1			
H4	Lampa de control frana parcare	1			
H3	Lampa de control priza de putere sondor	1			
H2	Lampa de control blocare dif.transversala	1			
H1	Lampa de control blocare dif. longitudinala	1			
K13	Relieu comutare lampi mers inapoi	1			
K10	Relieu comutare L.C. pozitie neutra	1			
K9	Relieu comutare frana parcare	1			
K8	Relieu comutare pedala acceleratie	1		A7	
K7	Relieu comutare L.C. E.C.M.	1		B7	
K6	Relieu comutare alimentare Webasto	1			
K5	Relieu comutare lampi pozitie ceata	1		C6	
K4	Relieu comutare lampi pozitie	1		D6	
K3	Relieu comutare lampi semnalizare	1		C7	
K2	Relieu comutare lampi stop si mers inapoi	1		E4	
K1	Relieu protectia	1	89259026303	E3	
E4	Electroventil pozitie rapida	1			
E3	Electroventil pozitie neutra	1			
E2	Electroventil priza de putere sondor	1		A7	
E1	Electroventil blocare dif. long. si trans.	1		B7	
B6	Intreupator cuplere poz. Rapida CD	1			
B5	Intreupator cuplere poz. Lentu CD	1		C6	
B4	Intreupator cuplere poz. Neutra CD	1		D6	
B3	Intreupator Priza Putere Sondor	1		C7	
B2	Intreupator blocaj dif. longitudinal-transvers.	1		E4	
B1	Intreupator Bord Sondor	1		E3	
6	Comutator principal cu cheia	1			
5	Intreupator baterie masa	1			
1	Baterie acumulatori	2	143b /12V		

Denunțarea	Tip	Număr	Observații	Tip	Obs.
S2	Tranductor Impulsuri Tahograf	1	KITAS B171		
Ap.3	Vitezograf	1			
Ap.2	Tahograf	1	DTCO 1381		Poz
CB	Monocontact pe sonda litrometrica	1			
C7	Monocontact pe pedala frana lampi spote STOP	1			
C6	Monocontact pe CD MAN mers lent	1		CD MAN	
C5	Monocontact frana parcare	1			
C4	Monocontact pe CD MAN priza de putere PTD	1		CD MAN	
C3-2	Monocontact pe puntea 4 blocaj transversal	1			
C3-1	Monocontact pe puntea 3 blocaj transversal	1			
C2-2	Monocontact pe puntea 3 blocaj longitudinal	1			
C2-1	Monocontact pe CD MAN blocaj longitudinal	1		CD MAN	
C1	Monocontact pe CD MAN pozitie neutra	1		CD MAN	

Proiectat	Ing.R.Pistita
Desenat	Ing.P.Pistita
Verificat	Ing.R.Pistita
Contr.STAS	Ing.V.Bilevici
Aprobat	Ing.T.Sandor

Masa nrta : Nr. Inventar

S.C. ROMAN S.A. f.s. Schema electrica bloc de protectia la sonda

BRASOV

Acta : 20.08.2013 Specificatie 903.0001 / Confind

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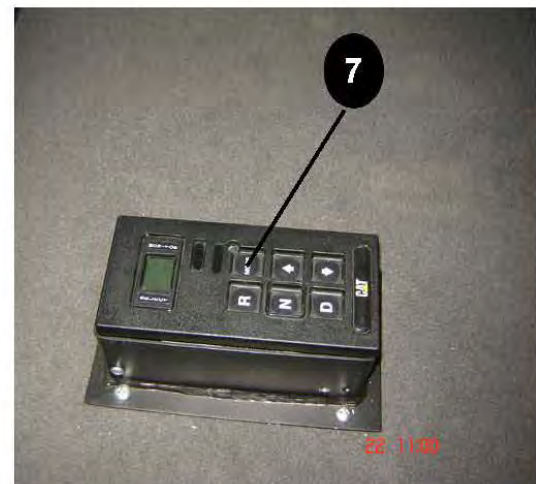
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12.2. APPARATA INSIDE DRIVER CABIN



Driver's compartment

1. Dashboard
2. Tell-tale lights
3. Trigger switches
4. Lighter
5. Main switch with key
6. Cabin heating – ventilation
7. Gear shifts control
8. Air-conditioning switch
9. Handbrake





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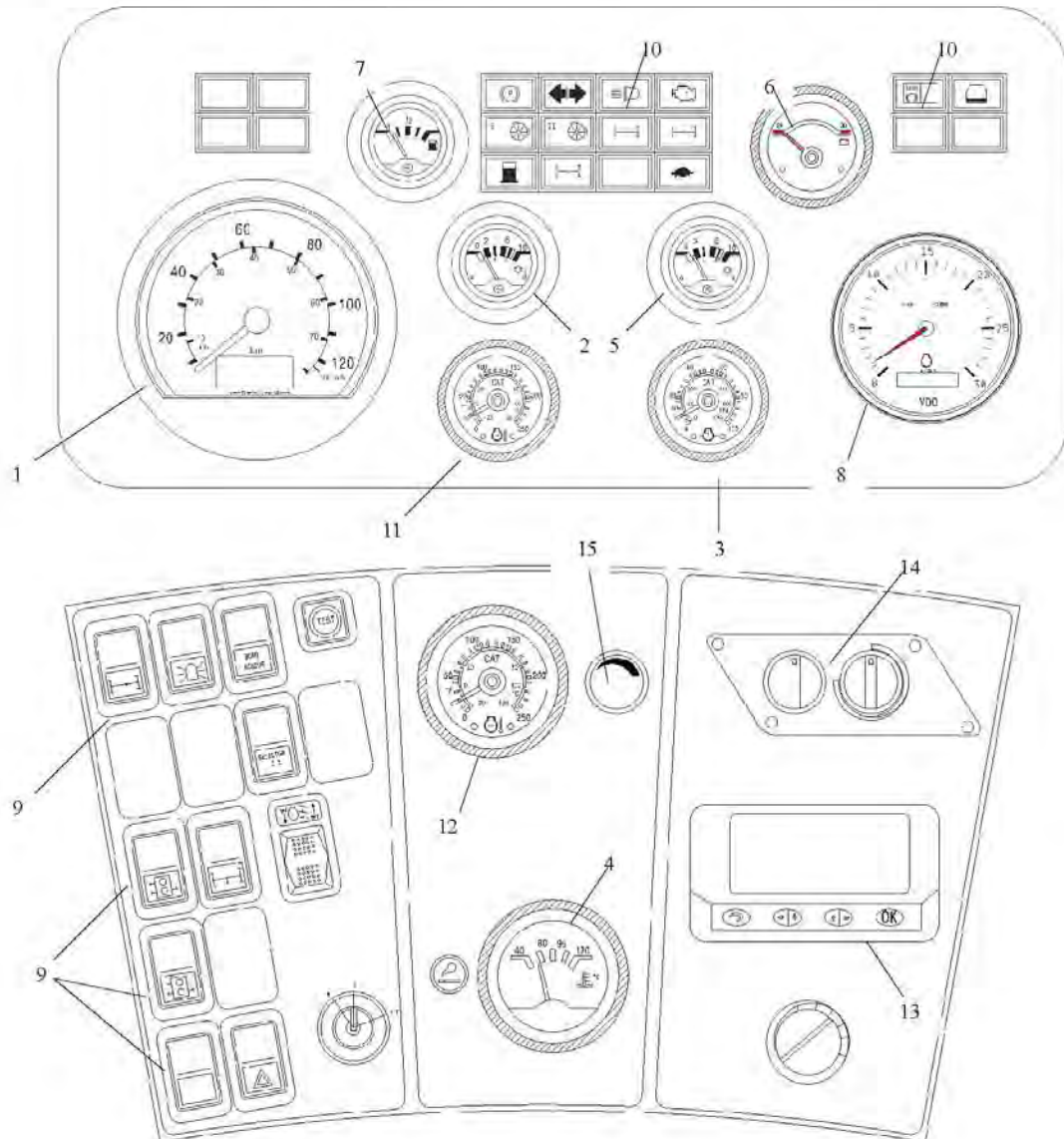
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Switchboard

- | | |
|--|--------------------------------------|
| 1. Electronic speedometer VDO SIEMENS | 9. Trigger switches |
| 2. Air pressure indicator for brake circuit I | 10. Tell-tale lights |
| 3. Engine oil pressure indicator | 11. Engine oil temperature indicator |
| 4. Temperature indicator for distributor gear | 12. Gearbox oil pressure indicator |
| 5. Air pressure indicator for brake circuit II | 13. Heater control |
| 6. Battery loading indicator | 14. Display "Messenger" |
| 7. Fuel level indicator | 15. Potentiometer lighting |
| 8. Electronic revmeter VDO SIEMENS | |





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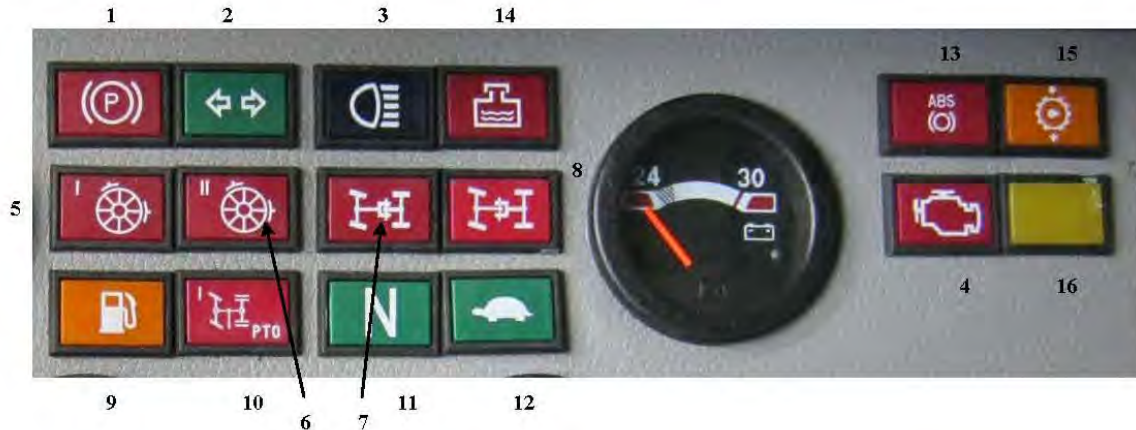
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Date:
August, 2013

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Tell-tale lights




- | | | | |
|----|-------------------------------------|-----|---|
| 1. | L.C. parking brake | 10. | L.C. PTO |
| 2. | L.C. vehicle turn signaling | 11. | Distributor gear neutral position |
| 3. | L.C. high beam | 12. | L.C. distributor gear slow run |
| 4. | L.C. engine damage | 13. | ABS tell-tale light |
| 5. | L.C. circuit pressure - tank I | 14. | L.C. cooling agent level |
| 6. | L.C. circuit pressure - tank II | 15. | L.C. transfer case oil pressure |
| 7. | L.C. transversal differential lock | 16. | L.C. functioning of transfer case fans- |
| 8. | L.C. longitudinal differential lock | | |
| 9. | L.C. minimum level of fuel | | |

Comutatoare basculante

1. Differential locking
2. PTO coupling / decoupling
3. Intrerupator bord sonder
4. Test button
5. Transfer case gear switch - fast / slow coupling
6. Transfer case switch - slow / fast coupling
7. Selector II Switch
8. Rear fog parking light switch
9. Manual fan coupling of transfer case gear
10. Shutter
11. Beacon switch
12. transfer case switch for coupling in neutral position
15. Hazard signaling



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12.3.CABIN TILTING SYSTEM

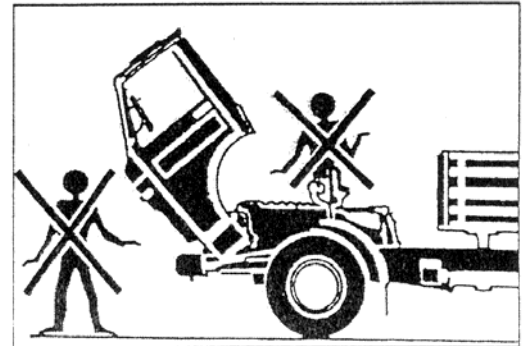
WARNING !

Do not tilt the cabin when the wheels deflect (turned).

Before tilting the cabin put the gears in neutral position.

During cabin tilting it's forbidden to stand or work in front of the cabin.

When descending the cabin it's forbidden to stand or work under the cabin (on and gearbox).



WARNING !

During driving the vehicle the hydraulic cylinder valve (4) must be fully opened and the lever (3) must be in II position, to right (cabin lowering).

Otherwise, the cabin suspension is cancelled.

It is not admitted to settle the lever (3) in an intermediary position but only in II position or where appropriate in I position.



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No	Name	Deliver code	Code	Manufacturer	Obs.	No	Name	Deliver code	Code	Manufacturer	Obs.
1	Air dryer			WABCO							
2	Pressure reducer			WABCO							
						27	One chamber cylinder			WABCO	
5	4 circuits valve			WABCO		28	Double cylinder			WABCO	
						29	One chamber cylinder			WABCO	
9	Service brake valve			WABCO							
10	Parking brake valve			WABCO							
						39	Air tank			ROMAN	
						40	Air tank			ROMAN	
						41	Air tank			ROMAN	
						42	Purge valve			WABCO	
20	Braking power regulator			WABCO		44	Coupling control pn			WABCO	
				WABCO		45	Coupling control pn			WABCO	
22	Relay			WABCO		46	ABS modulator			WABCO	
23	Relay			WABCO		48	Closing valve			WABCO	
24	Fast drain valve			WABCO		49	2 way valve			WABCO	

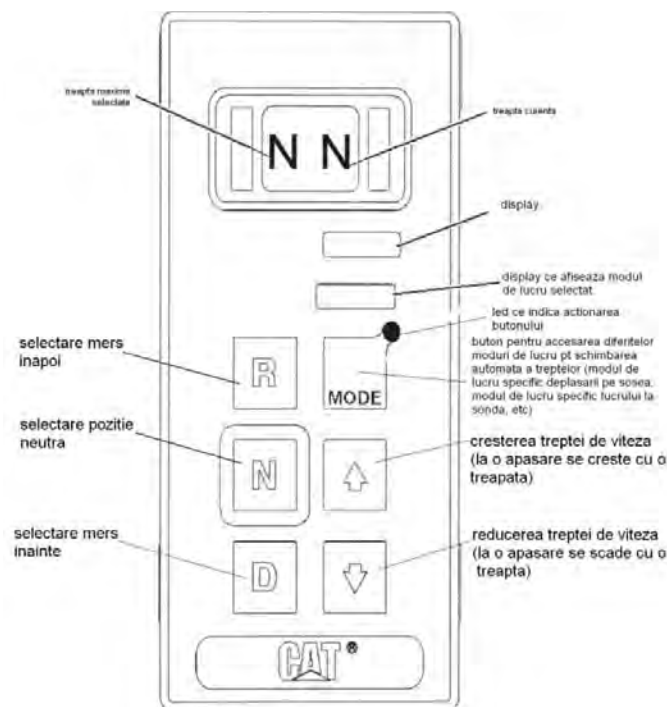
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BEWARE!

- Do not weld on the vehicle with the ABS electronic unit connected! To protect it, disengage the general contact and remove the plugs from the electronic unit (ECU).
- Do not weld on the vehicle before disengaging the engine EDC electronic unit plug and the electronic relays of the vehicle electric plant.
- ABS components get out of warranty in case of wrong execution of works on the vehicle – that might affect their operation – or in case of a faulty mass cable usage (imperfect);
- ABS pressure modulators (ABS solenoid valves) cannot be repaired because they are high-precision devices and highly sensitive;
- It is forbidden to disengage and engage the electronic unit plugs without disconnecting the general contact;
- The localization and remedy of a system failure enters only in the competence of an authorized service unit;
- Connecting a wiring to more ABS pressure modulators determines the lighting of ABS warning light. In the same time, any wiring with fewer ABS pressure modulators than the number set for the system determines the lighting of ABS warning light because the lack of these components is seen as a failure.
- Failures that can lead to the supply of ABS pressure modulator spools (transistor failure, external battery short-circuits) are identified within 10 milliseconds and the corresponding diagonal is switched off. Open circuit or short-circuit conditions without any active ABS controls are identified within 10 seconds determining the selective decoupling of wheels.



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Translator's note

Treapta maxima selectata = maximum gear selected

Selectare mers inapoi = reverse running / back running

Selectare pozitie neutral = neutral position

Selectare mers inainte = ahead running

Treapta curenta = current gear

Display = display

Display ce afiseaza modul de lucru selectat = display illustrating chosen working manner

Led ce indica actionarea butonului = Light indicating button actuation

Buton pentru accesarea diferitelor moduri de lucru pt. schimbarea automata a treptelor (modul de lucru specific deplasarii pe sosea, modul de lucru specific lucrului la sonda, etc.) = button to acces different types of working manners for automatic gearshift (road traveling working manner, specific probe working manner etc.)

Cresterea treptei de viteza (la o apasare se creste cu o treapta) = Increasing speed (at one push it increases with a gear)

Reducerea treptei de viteza (la o apasare se scade cu o treapta) = decreasing of speed (at one push it decreases with a gear)

The driver has the possibility to decrease the current active gear, while driving, (engine brake) by pressing down arrow (at one push it descends with a gear) until the desired gear. Automatic gear will make the decrease of gears until the desired one is reached.

BEWARE!

If you leave the vehicle parked with the engine running, it can move and can injure you or other persons.

If you must leave the engine running, don't get out of the vehicle before performing the following:

- Engage the transmission in "N" position (neutral);
- Engage the parking brake (safety) and check its effectiveness;
- Lock the wheels to prevent the movement of the vehicle.

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