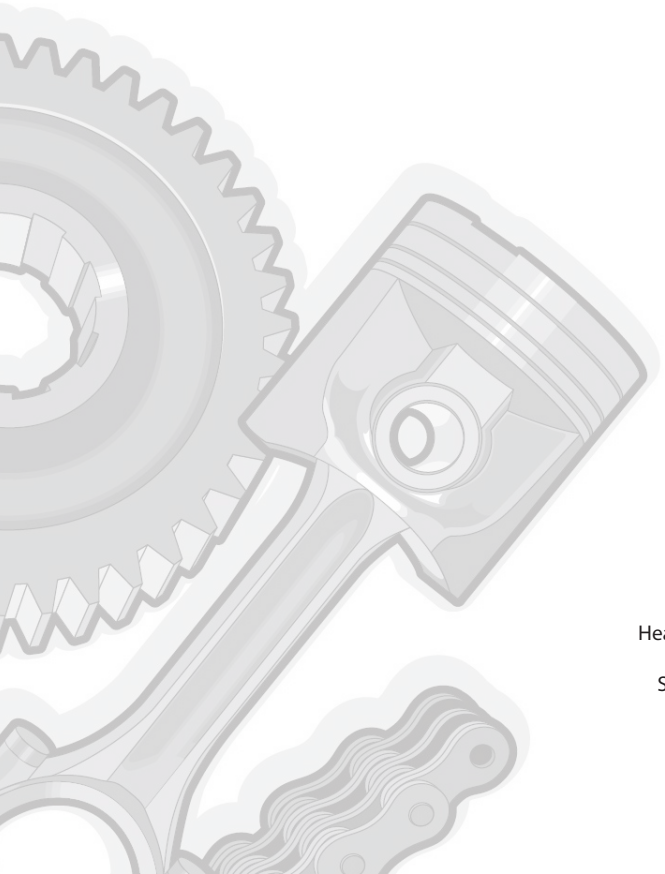
MANITOU

HANDLING YOUR WORLD

REPAIR MANUAL
MANUEL DE RÉPARATION
REPARATURANLEITUNG
MANUAL DE REPARACIÓN
MANUALE RIPARAZIONE



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SERVICING AND REPAIR EQUIPMENT

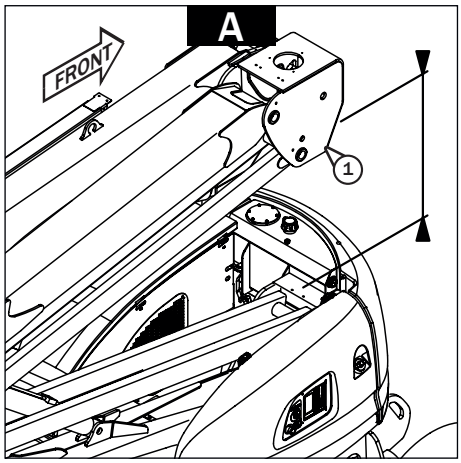
- Tool box.

- MANITOU hydraulic kit: Part no. to be selected from catalogue 647400.

- Male and female plug adapters for plugging hydraulic hoses and couplers.

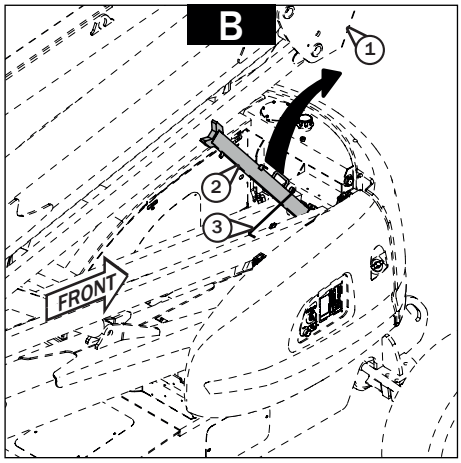
- Calibrator: Part no. according to platform type, see the relevant chapter.

- Multimeter.



PROPORTIONAL ENGINE SPEED BLOCK REMOVAL

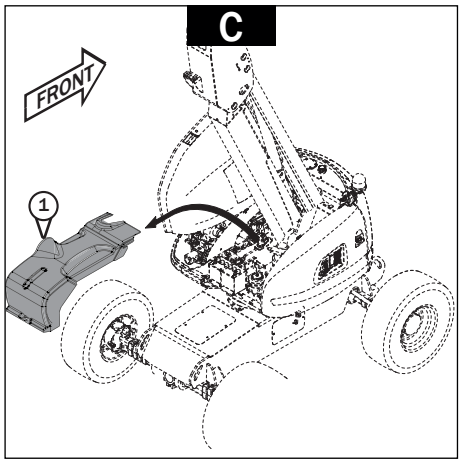
From the base console, raise arms 1/2 until the upper hinge (Fig. A-1) is one metre above the counterweight.



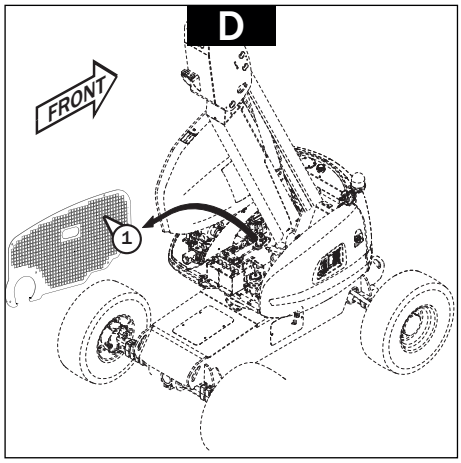
Climb onto the frame, remove the lock nut, manually raise the maintenance support arm (B-2) and place the strut (B-3).

From the base console, lower arms 1-2 until the upper hinge (B-1) comes into contact with the maintenance support arm, then release the controls.

Switch off the engine.

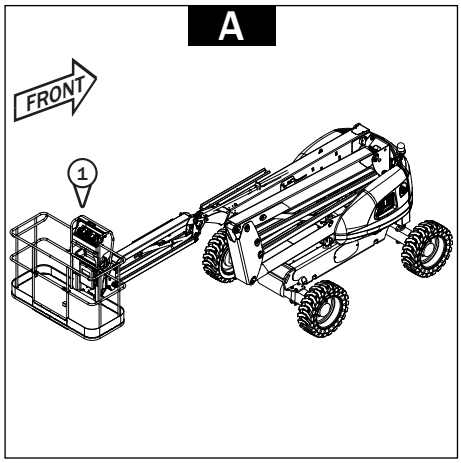


Remove the battery cover (C-1).



Remove the engine inspection cover (D-1).

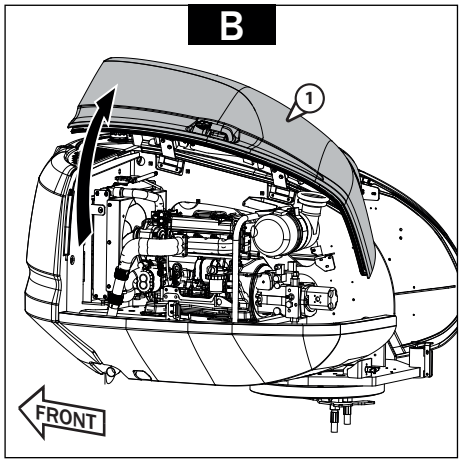
HYDROSTATIC PUMP REMOVAL



Place the basket in the down position (A-1).

Switch off the engine.

Switch off the power to the access platform.

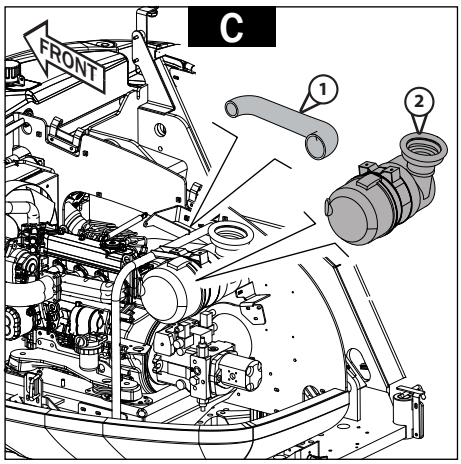


Open the left-hand turret cover panel (B-1), then remove it as follows:

- Remove the cylinder head.

Hold the cover panel ..... 22 kg

- Remove the cover panel hinge fasteners.
- Remove the cover panel.
- Remove the cylinder.

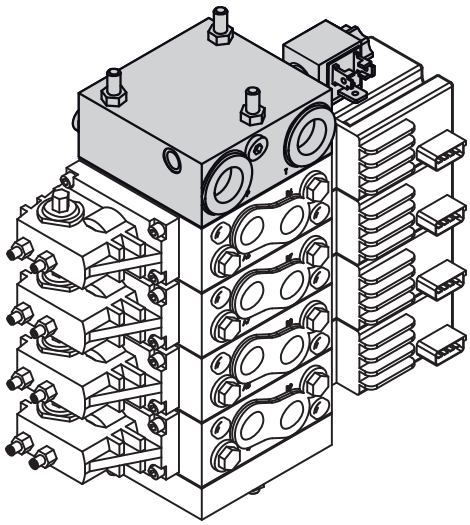


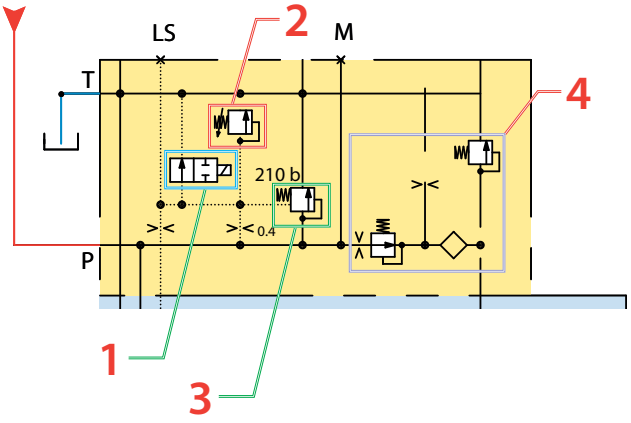
Remove the air intake hose (C-1).

Remove the complete air filter (C-2).

Values present (as an indication)

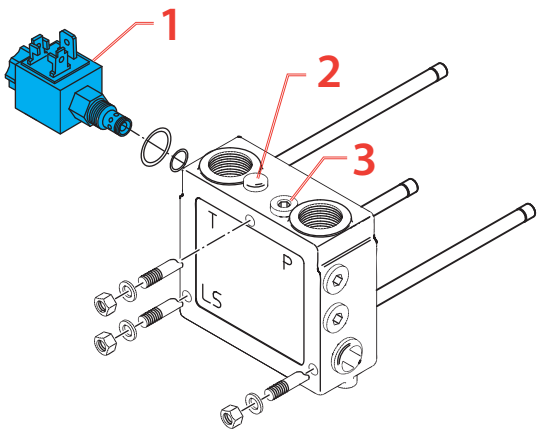
INPUT COMPONENT

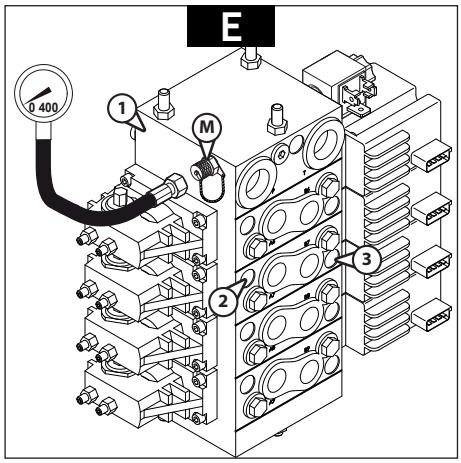




LEGEND :

1 - Safety electro-valve (Cutting off the movements)
2 - Safety electro-valve (Cutting off the movements)
3 - Stand-by pressure restrictor
4 - Pilot pressure reducer and restrictor





TELESCOPE CYLINDER RELIEF VALVES

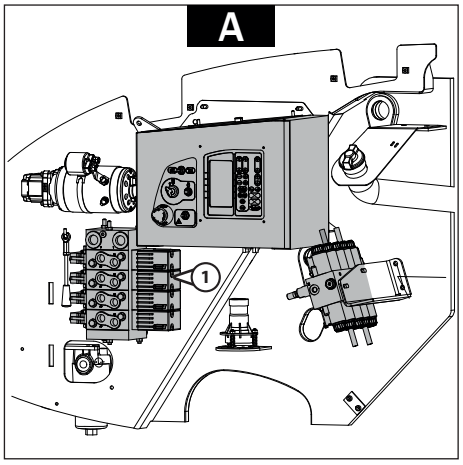
Connect the manometer to the pressure test port (E-M) marked M on the upper block (E-2).

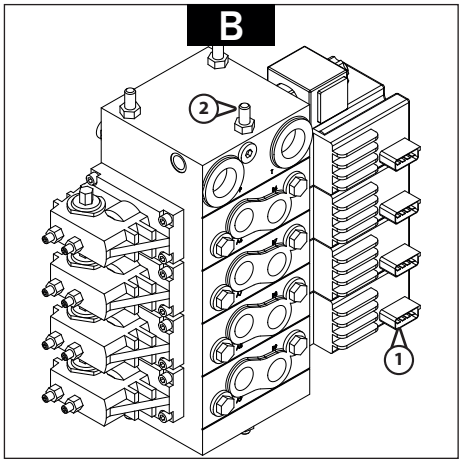
From the base console (A-3), extend/retract the telescope cylinder. Maintain the command when the cylinder is fully extended/ retracted, and check that the manometer displays a pressure of:

"PVP 210 bar" PVG	160 ATJ E3	
- cylinder extension	120 bar	
- cylinder retraction	190 bar	
"PVP 240 bar" PVG	160 ATJ E3	180 ATJ 2 E3
- cylinder extension	130 bar	
- cylinder retraction	220 bar	

If the values displayed are different, remove the caps and adjust using an Allen key:
– the telescope extension relief valve (E-2),
– the telescope retraction relief valve (E-3).

Refit the caps.





REMOVAL OF PROPORTIONAL DISTRIBUTOR ELEMENTS

Switch off the power to the access platform.

Open the right-hand turret cover panel and place the strut.

Locate the proportional distributor (A-1).

Decompress all the hoses connected to the distributor.

Identify and remove the hoses.

Locate the wiring harnesses connected to the control blocks (B-1) and disconnect them.

Remove the fastening screws (B-2) and remove the proportional distributor block.

Remove the element(s) to be changed (various open-end and hexagon socket wrenches).

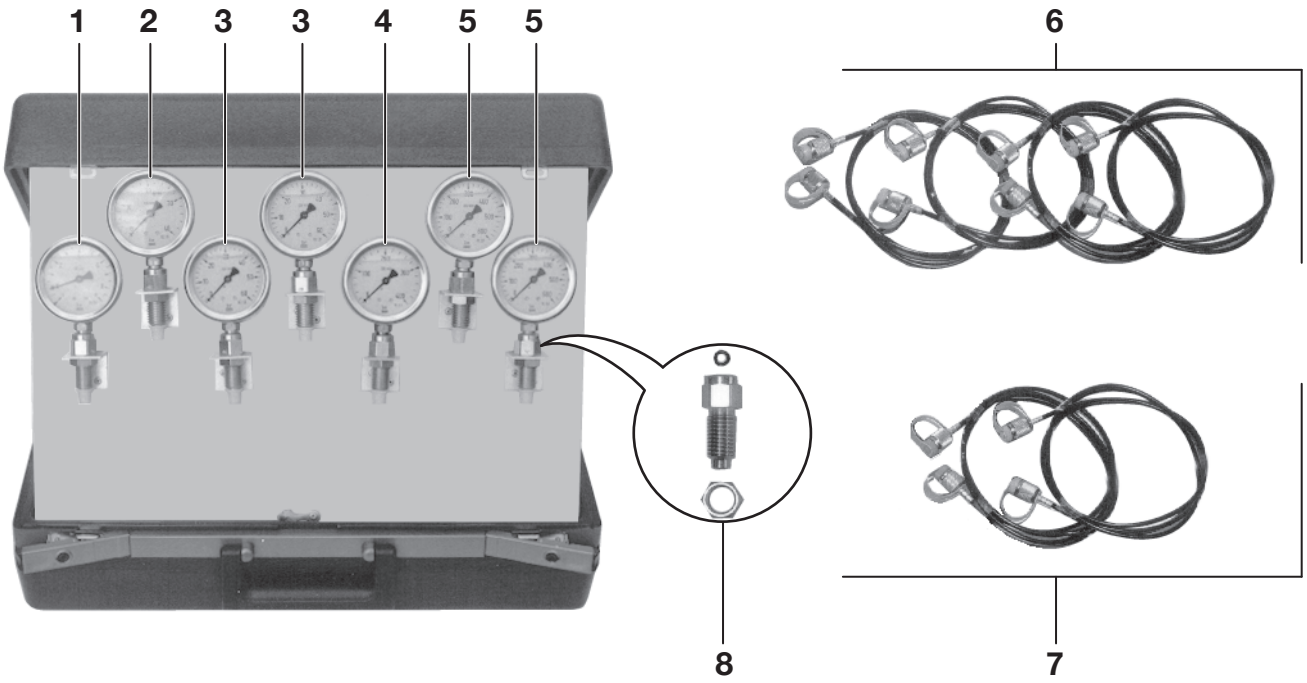
REFITTING

Perform the operations described above in reverse order.

Check the calibration settings before restarting the machine 70-04-M193EN

BASIC MANOMETER BOX

This kit contains all the necessary elements for the pressure test ports on all Manitou products.

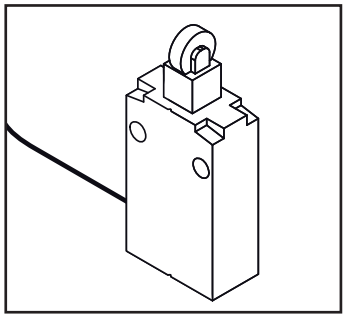


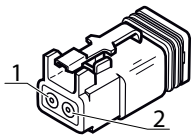
Basic Manometer Set.....549671

Consisting of:

1. 1 Manometer 1/9 bars 549882
2. 1 Manometer 0/40 bars 549883
3. 2 Manometers 0/60 bar 549884
4. 1 Manometer 0/400 bars 549885
5. 2 Manometers 0/600 bar 549886
6. 4 Standard hoses 549887
7. 2 Hoses for Maniscopic 549888
8. 7 Manometer ports 549889

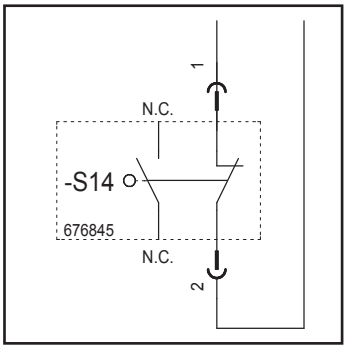
S9 + S14 OVERLOAD SENSOR





PIN	Function
1	Power supply
2	Sensor signal

Corresponding connector



Diagram

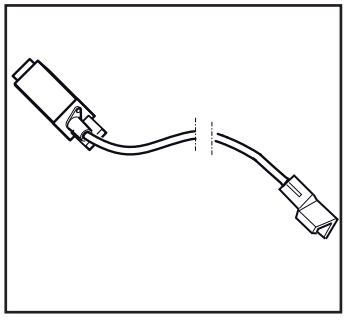
	PIN	Min.	Typical	Max
Supply voltage	1		12 V	
Consumption				

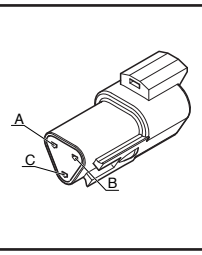
Notes: _____

_____

_____

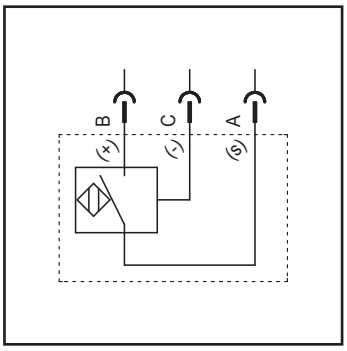
AXLE DETECTOR





PIN	Function
A	Sensor signal
B	Power supply
C	Ground

Corresponding connector



Diagram

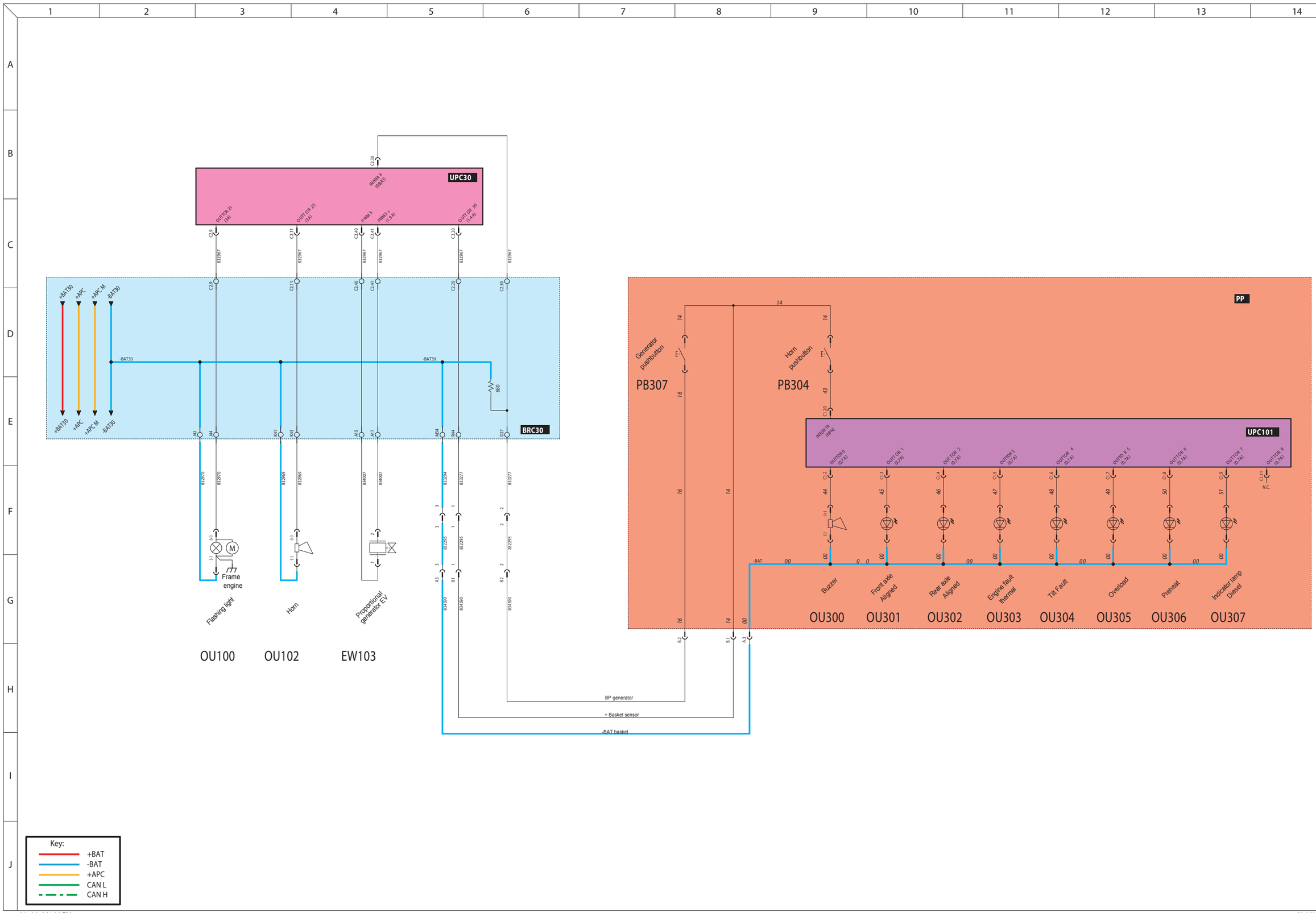
	PIN	Min.	Typical	Max
Supply voltage	B		12 V	
Consumption				

Notes: _____

_____

_____

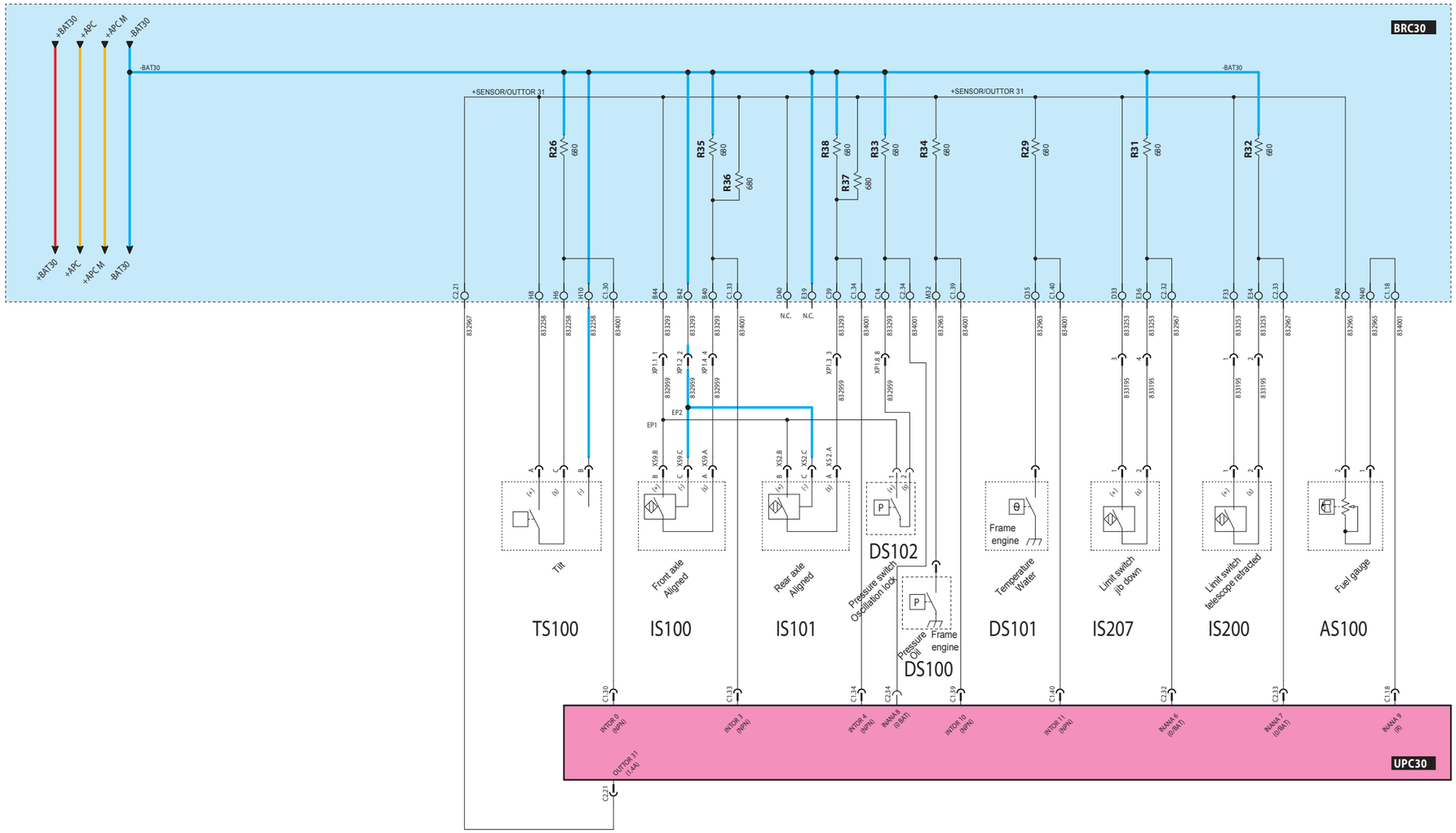
DIAGRAM V1-7 - OPTIONS/ SIGNALING



160 ATJ E3 —>ı 951457
180 ATJ E3 —>ı 951481

DIAGRAM V2 - 6 - SENSORS

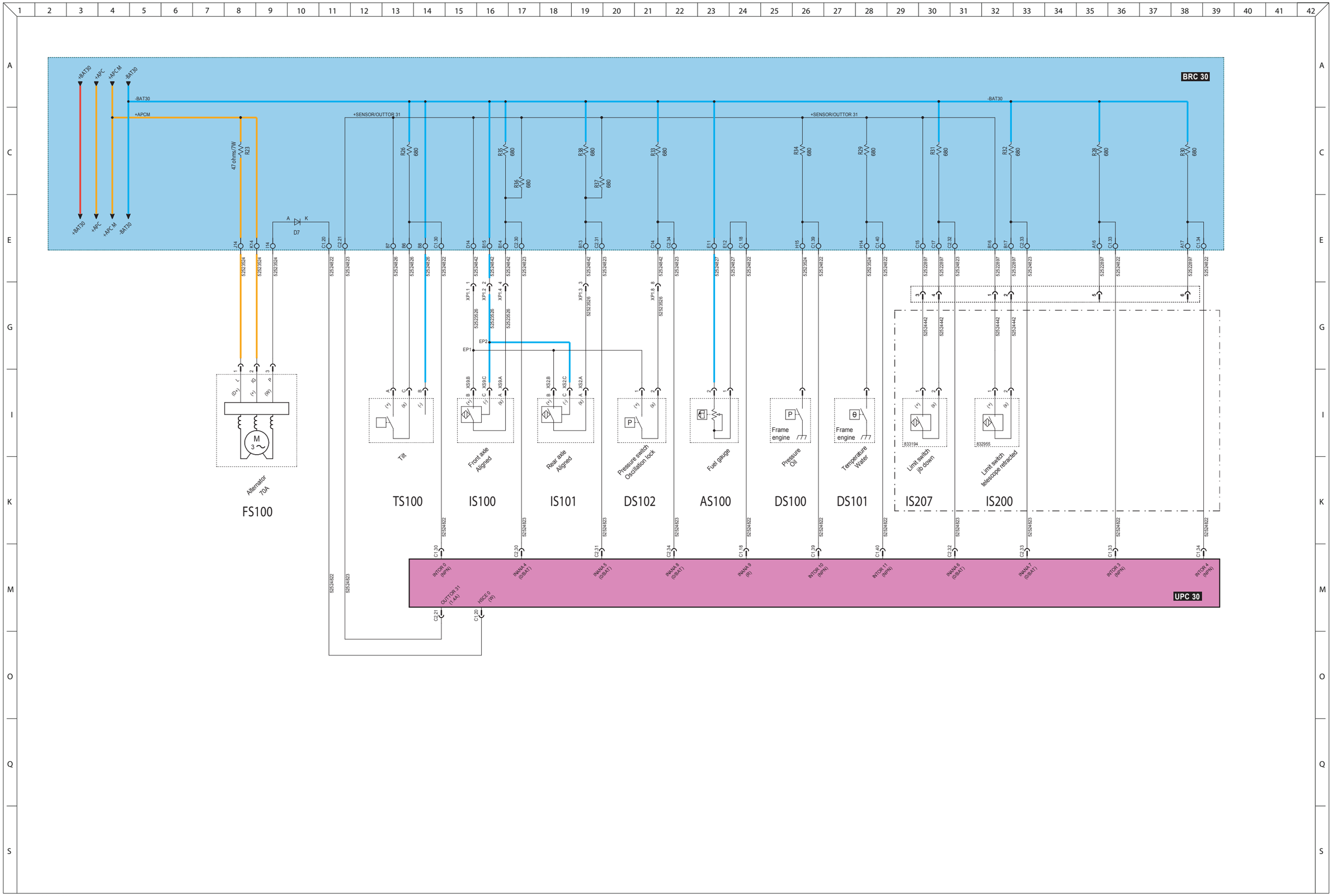
—>ı 951457



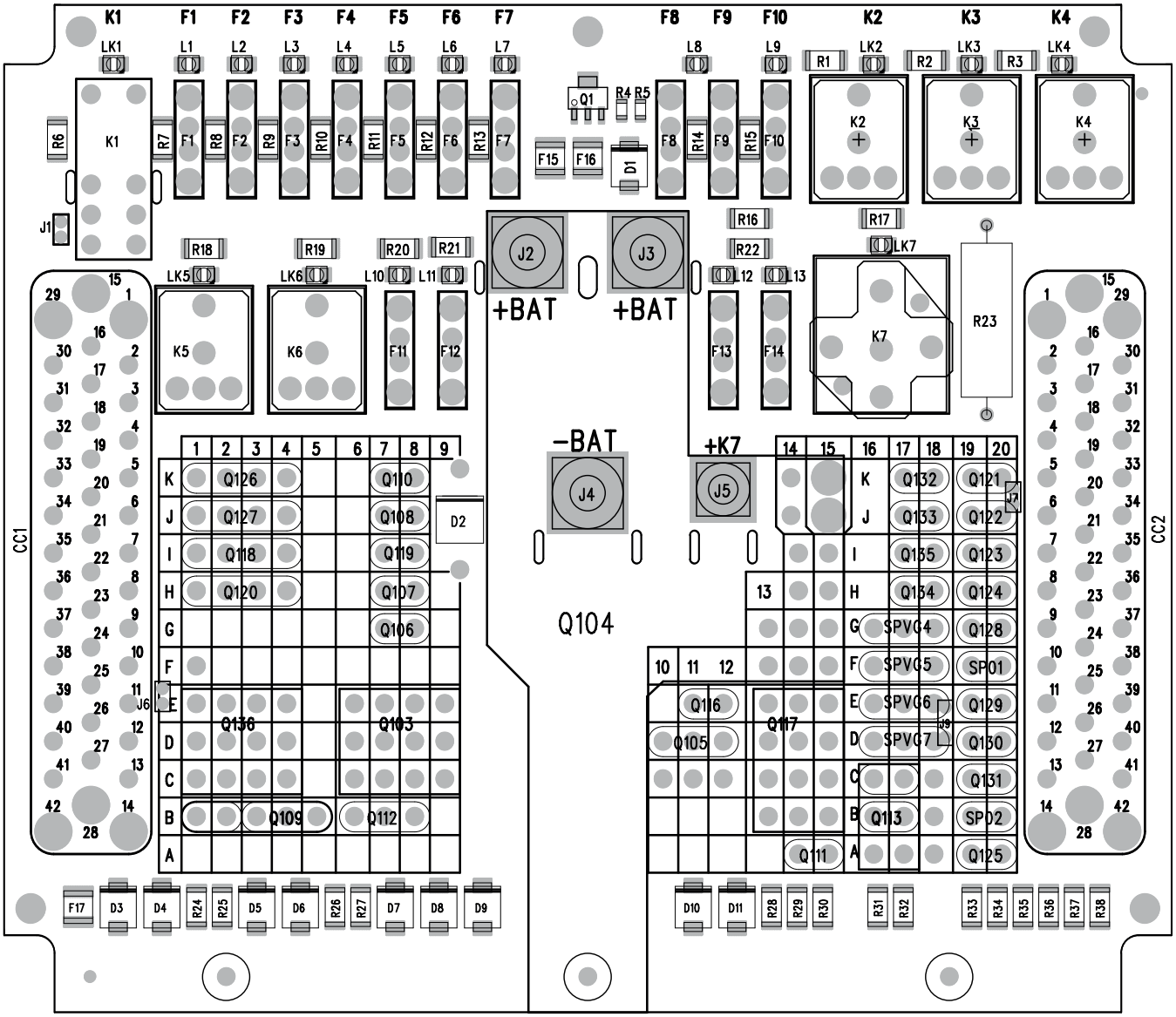
Key:
- +BAT
- -BAT
- +APC
- CAN L
- CAN H

160 ATJ E3 i—> 951458
180 ATJ E3 i—> 951482

DIAGRAM V3 - 6 - SENSORS



LOCATION OF COMPONENTS ON CARD BRC 306



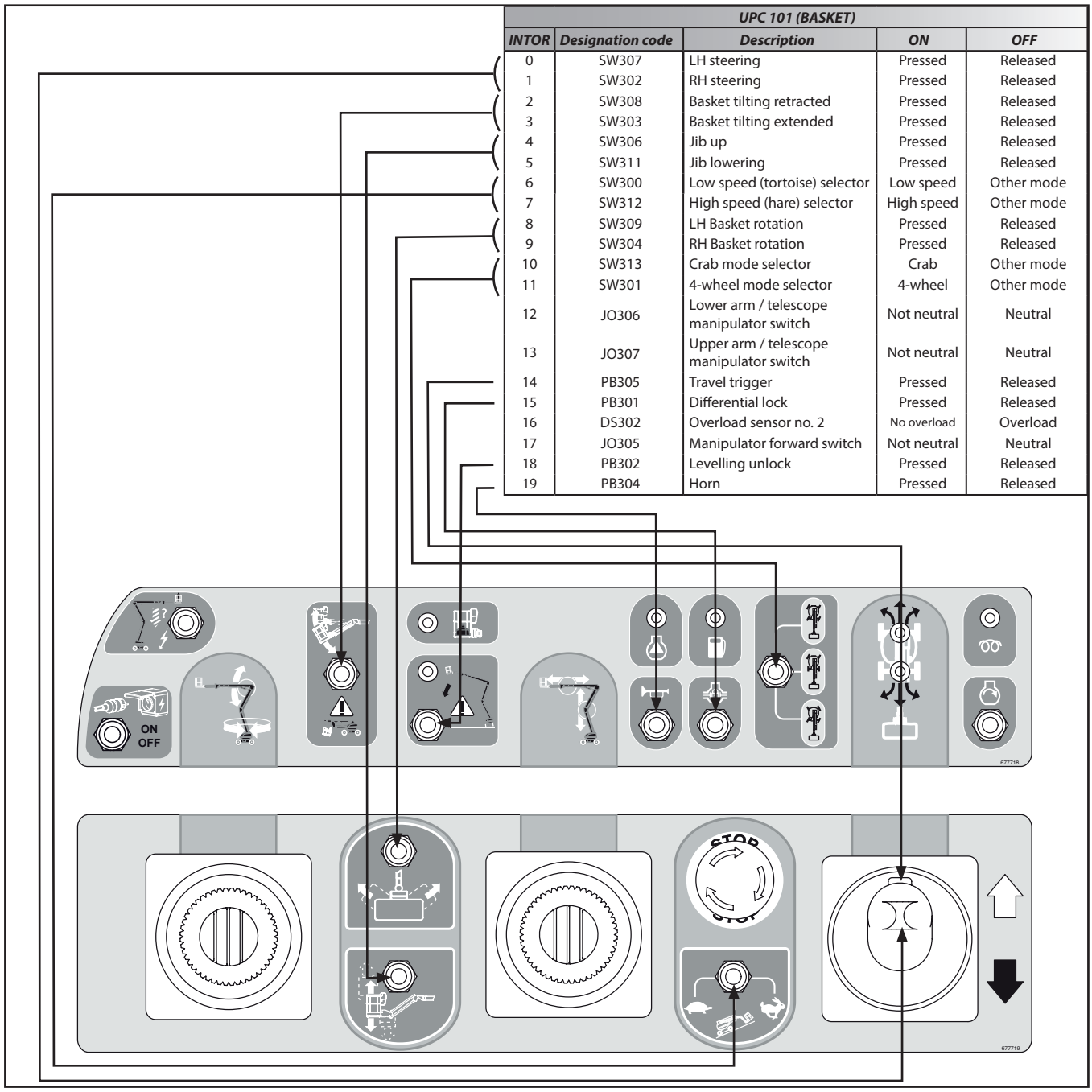
Fuse	Description	Rating
F1	APC+, Starter PB	5A
F2	+BAT, UCP30	30A
F3	+BAT, UCP30	30A
F4	+BAT30, ignition key	10A
F5	+BAT30, basket console	10A
F6	+BAT30, worklight option	10A
F7	+BAT30, CEK20	5A
F8	+BATM, LF8	30A
F9	+BATM, LF7	30A
F10	+BATM, LF9	30A
F11	-BAT30, UPC30	10A
F12	-BAT30, Ground	30A
F13	-BAT30, Ground	30A
F14	+APCM, +APC, LF13	5A

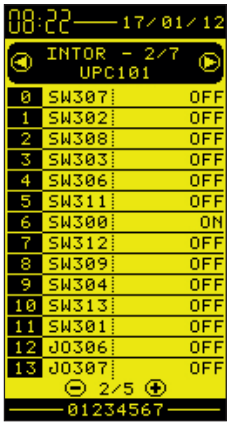
Relay	Description
K1	Overload safety
K2	Start-up control
K3	Engine stop
K4	Engine immobilizer
K5	-
K6	-
K7	Preheat

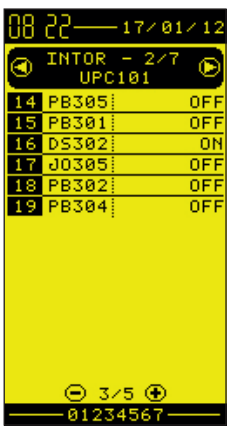
APC+ = +12V after contact.
It powers:

- the input sensors (front and rear axle alignment, telescope, arm down, overload, tilt).

UPC 101 (BASKET)				
INTOR	Designation code	Description	ON	OFF
0	SW307	LH steering	Pressed	Released
1	SW302	RH steering	Pressed	Released
2	SW308	Basket tilting retracted	Pressed	Released
3	SW303	Basket tilting extended	Pressed	Released
4	SW306	Jib up	Pressed	Released
5	SW311	Jib lowering	Pressed	Released
6	SW300	Low speed (tortoise) selector	Low speed	Other mode
7	SW312	High speed (hare) selector	High speed	Other mode
8	SW309	LH Basket rotation	Pressed	Released
9	SW304	RH Basket rotation	Pressed	Released
10	SW313	Crab mode selector	Crab	Other mode
11	SW301	4-wheel mode selector	4-wheel	Other mode
12	JO306	Lower arm / telescope manipulator switch	Not neutral	Neutral
13	JO307	Upper arm / telescope manipulator switch	Not neutral	Neutral
14	PB305	Travel trigger	Pressed	Released
15	PB301	Differential lock	Pressed	Released
16	DS302	Overload sensor no. 2	No overload	Overload
17	JO305	Manipulator forward switch	Not neutral	Neutral
18	PB302	Levelling unlock	Pressed	Released
19	PB304	Horn	Pressed	Released

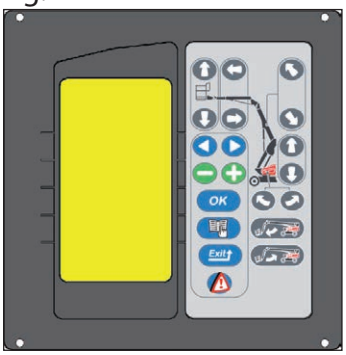






GENERATOR PROGRAM MODIFICATION

Fig. A



STEP 1: ENTER THE DEALER CODE

Switch on the access platform.

From the base console (Fig. A):

Press , the page (Fig. B) will appear. Next, select the icon using the keys then confirm by pressing OK.

The page shown in (Fig. C) will appear. Enter the rolling code with the keys, then confirm with OK.

The menu page (Fig. D) will now display the icon, giving access to certain other additional menus.

Fig. B

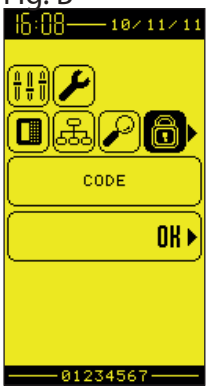


Fig. C

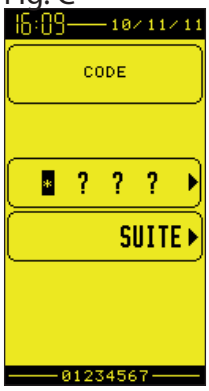


Fig. D

STEP 2: GENERATOR PRESET

Select the icon using the keys, then select "Generator calibration" (Fig. E) using the keys, then press OK.

Lower the value to 26 using the keys. (Fig. F), then press OK.

Fig. E

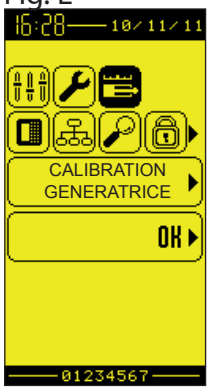
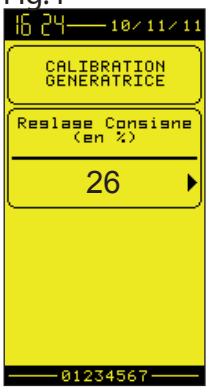


Fig. F



STEP 3: GENERATOR SETTING

Switch on the engine. Activate the generator by means of the starter switch D (Fig. G) on the basket console.

Using a multimeter E (Fig. H), check the (no load) voltage at the terminals of the two generator sockets: the voltage reading should be between 240-250 V (in the case of a 3,5 kW - 5 kW 230 V generator) or 115-125 V (in the case of a 3,5 kW 110 V generator).

It there is no 230V supply at the terminals of the socket, modify the program parameters.

Fig. G

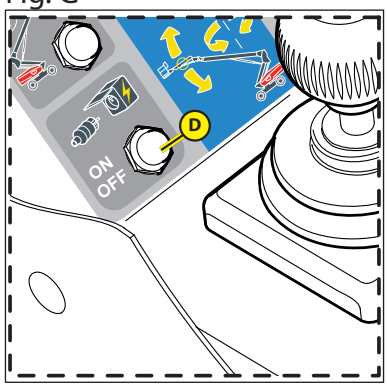
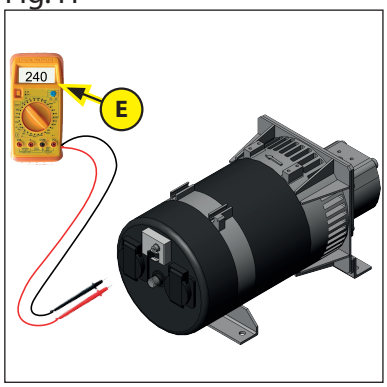


Fig. H

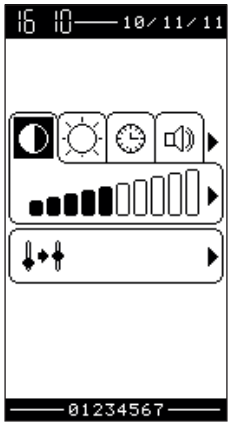


SCREEN GROUP			
Sub-group	**Number**	**Description**	**Value**
BASKET ROTATION MANAGEMENT	0	Max LH Rotation Speed (%)	8
	1	LH Rotation Acceleration Ramp (%)	10
	2	LH Rotation Deceleration Ramp (%)	10
	3	Max RH Rotation Speed (%)	8
	4	RH Rotation Acceleration Ramp (%)	10
	5	RH Rotation Deceleration Ramp (%)	10
STEERING MANAGEMENT	0	Max RH Steering Speed (%)	90
	1	RH Steering Acceleration Ramp (%)	0
	2	RH Steering Deceleration Ramp (%)	4
	3	Max LH Steering Speed (%)	90
	4	LH Steering Acceleration Ramp (%)	0
	5	LH Steering Acceleration Ramp (%)	4
	6	Wheel alignment time delay (s)	5.0
	7	Wheel alignment Clig time delay (s)	0.2
GENERATOR	0	Maximum speed generator (%)	60
	1	Acceleration ramp generator (%)	20
	2	Deceleration ramp generator (%)	20
	3	Generator restart time delay after movements (s)	4.0
	4	Generator startup speed time delay OK (s)	1.0
SAFETY MANAGEMENT	0	CAN fault safety deactivate	0
	1	Power supply fault safety deactivated	0
	2	Non-compatible safety deactivated	0
	3	PVG fault safety deactivated	0
	4	Travel pump PWM safety deactivated	1
	5	Engine acceleration PWM safety deactivated	1
	6	Generator PWM safety deactivate	1
	7	Platform movement authorization by-pass	0
	8	General movement authorization by-pass	0
	9	Engine started general movement authorization by-pass	0
	10	Dead Man jammed fault bypass	0
	11	Deactivate anti start-up short circuit test not OK	0
	12	Start-up short circuit test safety deactivate	0
	13	Start-up short circuit test duration (s)	0.2
	14	PVPX control time delay before stoppage (s)	1.0
	15	Very low fuel level unlocking time (s)	2.0
BASKET TILT MANAGEMENT	0	Max Rising Speed (%)	25
	1	Rising Acceleration Ramp (%)	10
	2	Rising Deceleration Ramp (%)	10
	3	Max Lowering Speed (%)	10
	4	Lowering Acceleration Ramp (%)	10
	5	Lowering Deceleration Ramp (%)	10

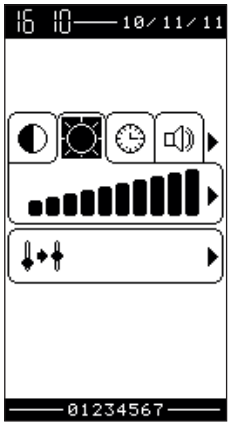
Screen Menu

Screen Settings Sub-Menu

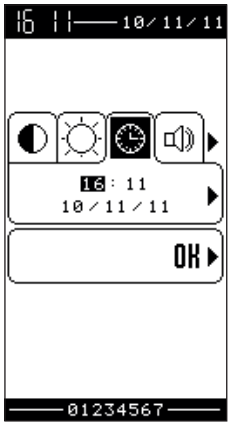
The Screen Settings page serves to adjust the contrast, brightness and the time and date settings, as well as to turn off the sound of the keys.



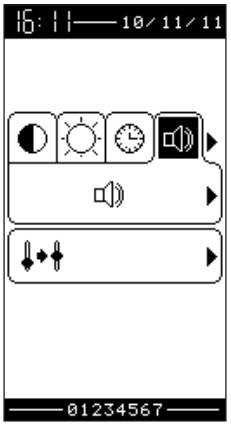
Contrast adjustment



Brightness adjustment



Time/date adjustment



Disable key beep

The keyboard ◀ and ▶ keys are used to navigate between settings.

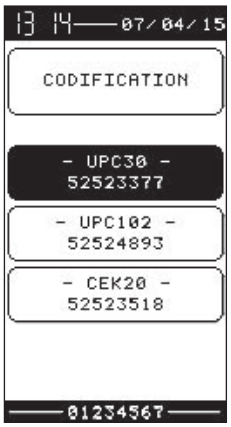
The keyboard ⊕ and ⊖ keys are used to change the setting.

⚙ + OK = Restore default factory settings (factory set).

Codification menu

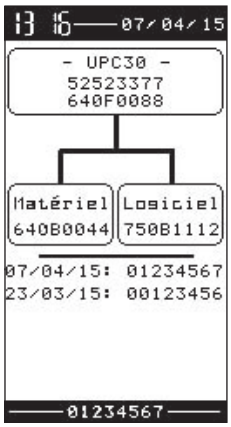
Codification sub-menu

This sub-menu displays all the system's product codes.



System code display

OK key: show details



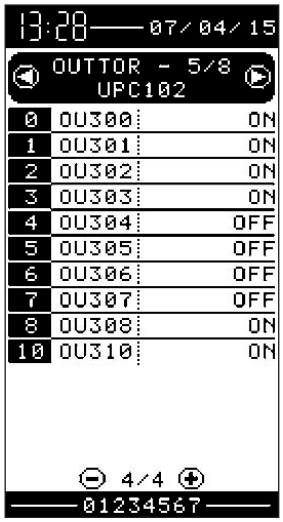
Details of machine codes and numbers

Machine selection sub-menu (dealer)

This sub-menu can be used to select the machine on which the system is installed.

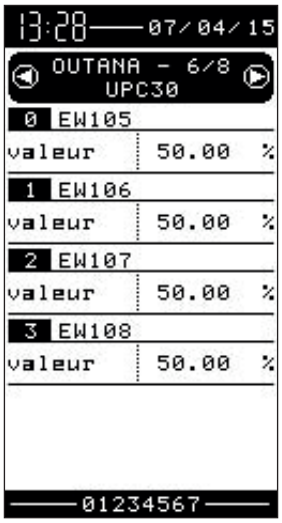
Selection modification

Confirmation after selection



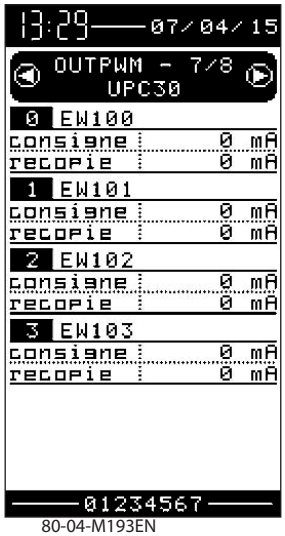
Description	*ON*	*OFF*
Basket buzzer	Active	Inactive
Front axle aligned indicator lamp	Lit	Unlit
Rear axle aligned indicator lamp	Lit	Unlit
Engine fault indicator lamp	Lit	Unlit
Levelling fault indicator lamp	Lit	Unlit
Overload indicator lamp	Lit	Unlit
Preheating indicator lamp	Lit	Unlit
Fuel indicator lamp	Lit	Unlit
Overload safety	No overload	Overload
Basket components power supply	Active	Inactive

OUTANA



Description		*Value*		
Lower jib PVG	Status	Lifting	Neutral	Lowering
	Value	25%	50%	75%
Telescope PVG	Status	Removals	Neutral	Retracted
	Value	25%	50%	75%
Upper arm PVG	Status	Lifting	Neutral	Lowering
	Value	25%	50%	75%
Auxiliary PVG	Status	Activated	Neutral	Activated
	Value	25%	50%	25%

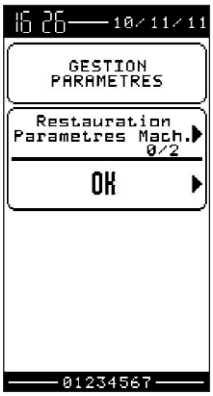
OUTPWM

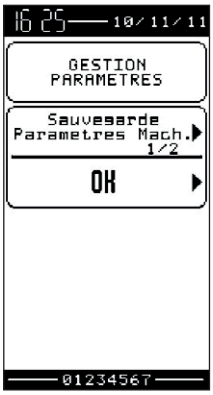


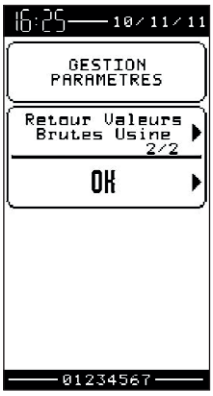
Description		*Value*		
Forward gear electrovalve	Status	Forward Gear	Neutral	Reverse Gear
	Set point	Up to 1200 mA	0 mA	0 mA
	Copy	Up to 1200 mA	0 mA	0 mA
Reverse gear electrovalve	Status	Forward	neutral	Reverse Gear
	Set point	0 mA	0 mA	Up to 1200 mA
	Copy	0 mA	0 mA	Up to 1200 mA
Engine accelerator valve	Status	Min. rpm	Max. rpm	
	Set point	0 mA	700 mA	
	Copy	0 mA	700 mA	
Generator valve	Status	Generator active	Generator off	
	Set point	*	0 mA	
	Copy	*	0 mA	

*: According to the "generator setting" parameter adjustment (300 mA to 1700 mA).

Parameter Management Sub-Menu







This sub-menu can be used to manage the machine parameters:
- Restore machine parameters
- Save machine parameters
- Return to default parameters

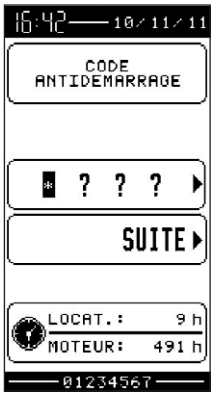
Save machine parameters

Confirm with and

5 Engine immobiliser option

This page is accessible if the "Engine immobiliser code" option is activated

Request for engine immobiliser code



When switching on, if the time since the last switching off of the system is exceeded (greater than 60 min and up to 180 min), the system automatically displays the code request page.
To authorise the general operation of the platform (engine start-up and platform movements) the engine immobiliser code must be entered.
If an incorrect code is entered the code is requested again and the incorrect code is memorised.

Default code (Factory setting): 0000

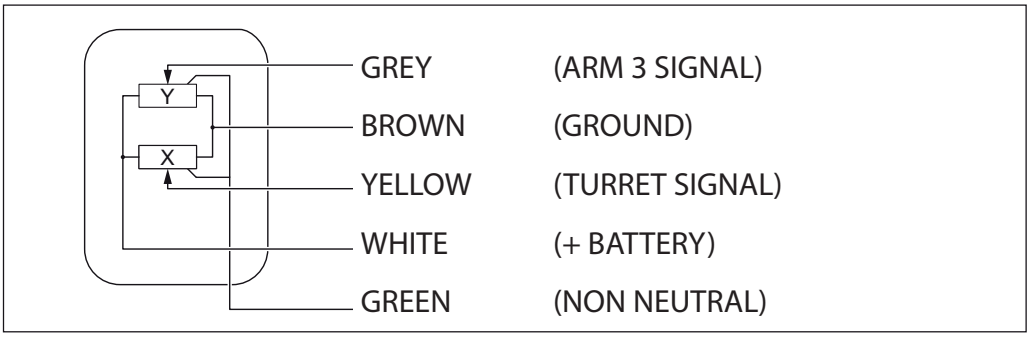
SCREEN GROUP			
Sub-group	**Number**	**Description**	**Value (Min/Max)**
JIB 3 MANAGEMENT	23	Tel retracted Lifting Correction 160/180 (%)	8 (0/50)
	24	Tel retracted Lifting Correction ATJ+ (%)	22 (0/50)
	25	Tel retracted Lifting Correction 200 (%)	22 (0/50)
	26	Tel retracted Lowering Correction 160/180 (%)	5 (0/50)
	27	Tel retracted Lowering Correction ATJ+ (%)	12 (0/50)
	28	Tel retracted Lowering Correction 200 (%)	12 (0/50)
	29	Jib 3 down stop time-out stop (s)	1.0 (0.0/10.0)
	30	Down stop 200 maximum speed (%)	8 (1/30)
	31	Down stop 200 deceleration range (%)	20 (0/100)
	32	Down stop 200 time-out stop (s)	4.0 (0.0/10.0)
TELESCOPE MANAGEMENT	0	Max Extension Speed 160/180 (%)	46 (31/61)
	1	Max Extension Speed ATJ+ (%)	67 (52/82)
	2	Max Extension Speed 200 (%)	50 (35/65)
	3	Extension Acceleration Range (%)	25 (0/100)
	4	Extension Deceleration Range (%)	10 (0/100)
	5	Max Retraction Speed 160/180 (%)	38 (23/53)
	6	Max Retraction Speed ATJ+ (%)	39 (24/54)
	7	Max Retraction Speed 200 (%)	41 (26/56)
	8	Retraction Acceleration Ramp (%)	35 (0/100)
	9	Retraction Deceleration Ramp (%)	14 (0/100)
	10	Max Extension Speed Base Cont Reduction (%)	-5 (-20/0)
	11	Max Retraction Speed Base Cont Reduction (%)	-5 (-20/0)
TELESCOPE STOP	0	Stop 160/180 maximum speed (%)	12 (1/30)
	1	Stop 160/180 deceleration range (%)	8 (0/100)
	2	Stop 160/180 time-out stop (s)	1.5 (0.0/10.0)
	3	Stop 200/ATJ+ maximum speed (%)	10 (1/60)
	4	Stop 200/ATJ+ deceleration range (%)	0 (0/100)
	5	Stop 200/ATJ+ time-out stop (s)	2.0 (0.0/10.0)
JIB MANAGEMENT	0	Max Lifting Speed 160/180 (%)	35 (20/50)
	1	Lifting Acceleration Range 160/180 (%)	20 (0/100)
	2	Lifting Deceleration Range 160/180 (%)	10 (0/100)
	3	Max Lowering Speed 160/180 (%)	18 (5/33)
	4	Lowering Acceleration Range 160/180 (%)	48 (0/100)
	5	Lowering Deceleration Range 160/180 (%)	20 (0/100)
	6	ATJ+ Max Lifting Speed (%)	68 (53/83)
	7	Lifting Acceleration Range ATJ+ (%)	30 (0/100)
	8	Lifting Deceleration Range ATJ+ (%)	8 (0/100)
	9	ATJ+ Max Lowering Speed (%)	30 (15/45)
	10	Lowering Acceleration Range ATJ+ (%)	60 (0/100)
	11	Lowering Deceleration Range ATJ+ (%)	11 (0/100)
	12	Max Lifting Speed 200 (%)	35 (20/50)
	13	Lifting Acceleration Range 200 (%)	20 (0/100)
	14	Lifting Deceleration Range 200 (%)	10 (0/100)
	15	Max Lowering Speed 200 (%)	15 (5/30)
	16	Lowering Acceleration Range 200 (%)	48 (0/100)
	17	Lowering Deceleration Range 200 (%)	20 (0/100)
TURNTABLE MANAGEMENT	0	Max Rotation Speed 160 (%)	25 (10/40)
	1	Max Rotation Speed 180 (%)	21 (6/36)
	2	Rotation Acceleration Range 160/180 (%)	63 (0/100)
	3	Rotation Deceleration Range 160/180 (%)	30 (0/100)
	4	Max Rotation Speed ATJ+ (%)	26 (11/41)
	5	Rotation Acceleration Range ATJ+ (%)	80 (0/100)
	6	Rotation Deceleration Range ATJ+ (%)	30 (0/100)
	7	Max Rotation Speed 200 (%)	23 (8/38)
	8	Rotation Acceleration Range 200 (%)	63 (0/100)
	9	Rotation Deceleration Range 200 (%)	40 (0/100)
	10	Base Control Reduction Max Speed (%)	0 (-20/0)
	11	Max Speed 160/180 telescope retracted correction (%)	7 (0/50)
	12	Max. Speed telescope retracted correction ATJ + (%)	12 (0/50)
	13	Max Speed telescope retracted correction 200 (%)	6 (0/50)

TEST WITH A VOLTMETER

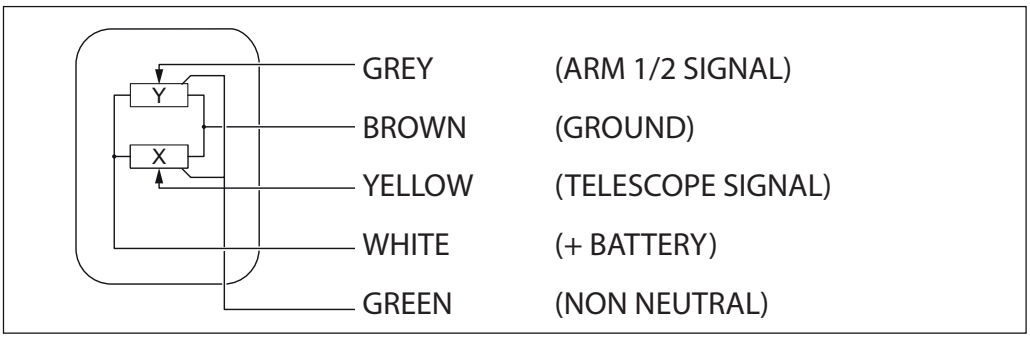
Climb into the basket of the access platform with a voltmeter.

Open the front of the basket console, then locate the wires connected to the joysticks.

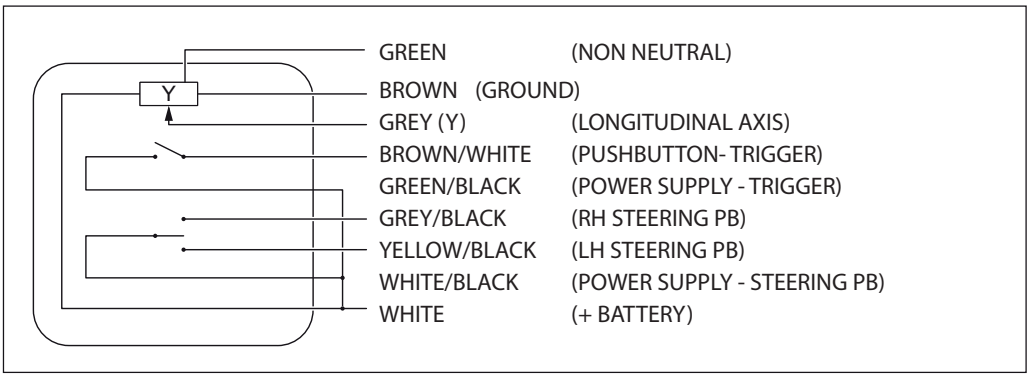
- Joystick (A-1) turret rotation and arm 3:



- Joystick (A-2) telescope and arm 1/2:

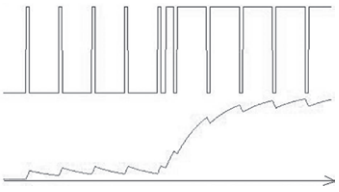


- Travel and steering joystick (A-3):



- Take voltage measurements using the pins of the voltmeter, placing them in contact with the clips crimped to each coloured wire at the connector.

Codification	Name of Warning or fault
JO-304-A	Arm 3 manip short circuit
JO-304-B	Basket non neutral arm 3 movement
JO-304-C	Arm 3 movement joystick open circuit fault
JO-304-D	Arm 3 movement joystick short circuit fault
JO-305-A	Joystick forward switch short circuit
JO-306-A	Arm 1/2 telescopic boom joystick switch short circuit
JO-307-A	Arm 3 turret manip switch short circuit
MA-001-L	OIL CHANGE maintenance not carried out
MA-002-L	OIL FILTER maintenance not carried out
MA-003-L	AIR FILTER maintenance not carried out
MA-004-L	DIESEL FILTER maintenance not carried out
MA-005-L	HYDRAULIC FILTER maintenance not carried out
MA-006-L	HYDROSTATIC FILTER maintenance not carried out
MA-007-L	LUBRICATION maintenance not carried out
MA-008-L	MECHANICAL INSPECTION maintenance not carried out
PB-101-B	Base non neutral basket tilt movement
PB-102-B	Base non neutral turret rotation movement
PB-103-B	Base non neutral arm 1/2 movement
PB-104-B	Base non neutral telescopic boom movement
PB-106-B	Base non neutral jib movement
PB-107-B	Base non neutral arm 3 movement
PB-301-A	Basket differential lock short circuit
PB-301-B	Basket non neutral differential lock
PB-302-A	Levelling release short circuit
PB-302-B	Basket non neutral levelling release
PB-302-U	Levelling release PB blocked
PB-303-A	Basket backup pump short circuit
PB-303-U	Backup pump PB blocked
PB-304-A	Basket horn PB short circuit
PB-305-A	Trigger short circuit
PB-305-U	Trigger jammed
PB-306-A	Dead man reread short circuit
PB-306-U	Basket dead man jammed
PB-307-A	Basket Generator PB short circuit
PB-307-B	Basket non neutral generator
PB-310-U	T° safety bypass blocked
PB-311-A	Safe Man System rearming short circuit
PB-311-U	Safe Man System rearming blocked
SW-100-A	Base dead man selector short circuit
SW-100-U	Base panel dead man jammed
SW-101-A	Engine rpm override short circuit
SW-300-A	Basket slow speed (tortoise) short circuit
SW-300-A	Basket fast speed (hare) mode short circuit
SW-300-D	Travel speed mode short circuit
SW-301-A	Basket crab steering short circuit
SW-301-A	Basket 4-wheel steering short circuit
SW-301-D	Steering mode short circuit
SW-302-A	Basket LH steering short circuit
SW-302-A	Basket RH steering short circuit
SW-302-B	Basket non neutral steering movement
SW-302-D	LH/RH steering short circuit
SW-303-A	Basket tilt up short circuit
SW-303-A	Basket tilt down short circuit
SW-303-B	Basket non neutral basket tilt movement
SW-303-D	Basket control panel basket tilt control short circuit
SW-304-A	LH Basket Rotation Short Circuit
SW-304-A	RH Basket Rotation Short Circuit
SW-304-B	Basket Non Neutral Basket Rotation Movement
SW-304-D	Basket control panel basket rotation control short circuit
SW-306-A	Basket jib up short circuit
SW-306-A	Basket jib down short circuit

LS	Low Side: ground side power supply.
LSU	Load Sensing Ultra: hydraulic load detection.
m	Metre: unit of measurement for length. It is one of the basic International System (SI) units.
min.	minute : unit of measurement for time derived from the second (1 min = 60 s).
NC	⩤ NF.
NF = NC	Normalement Fermé (= Normally Closed): normally closed contact.
NO	Normally Open: normally open contact.
NOx	Nitrogen Oxide: regulated air pollutants.
PAD	Plug And Diag: MANITOU machine diagnostics software.
PS/PS+	Power Shift: semi-automatic gear box. Power Shift +: automatic gear box from 3rd gear and higher.
PWM	Pulse Width Modulation: modulation of the pulse width (MLI) of a fixed-frequency digital electronic signal synthesising intermediate analogue signals over a certain duration. 
s	Second: unit of measurement for time. It is one of the basic International System (SI) units.
SAHR	Spring Applied Hydraulically Released: method of blocking the parking brake (negative brake).
SCR	Selective Catalytic Reduction: reduction of nitrogen oxides (NOx) emitted by internal combustion engines.
SPN	Suspect Parameter Number: identifies the component concerned by the fault.
SPU	Safety Power Unit: machine controller.
USB	Universal Serial Bus.
V	Volt: unit of electromotive force and potential difference (or voltage).

HYDRAULICS

Certain hydraulic lines ARE UNDER VERY HIGH PRESSURE, even when the platform is not operating. In order to avoid any accidents:

- Follow the hydraulic line decompression procedure before servicing or repairing one of their components.

Certain cylinders are fitted with valves that are used to secure the platform the moment the movements are stopped, by maintaining hydraulic pressure in the chambers of the cylinder. As a result, a chambers of a cylinder that has been removed might be under VERY HIGH PRESSURE (in excess of 100 bar, in particular in the case of the tilt compensation circuit). You should:

- Perform the operations for decompressing the cylinder to be removed.
- Eliminate any pressure from the chambers of a cylinder before it is removed.

Prior to working on a hydraulic component, clean the area immediately around it, provide containers or rags to recover any fluid leakage during removal. Also provide caps and covers to plug openings and prevent the contamination of the circuit.

Covers, hatches, seals and filters are provided to ensure the purity of the hydraulic fluid and prevent contamination of the circuit. These parts therefore require to be periodically:

- Checked for damage.
- Kept clean.

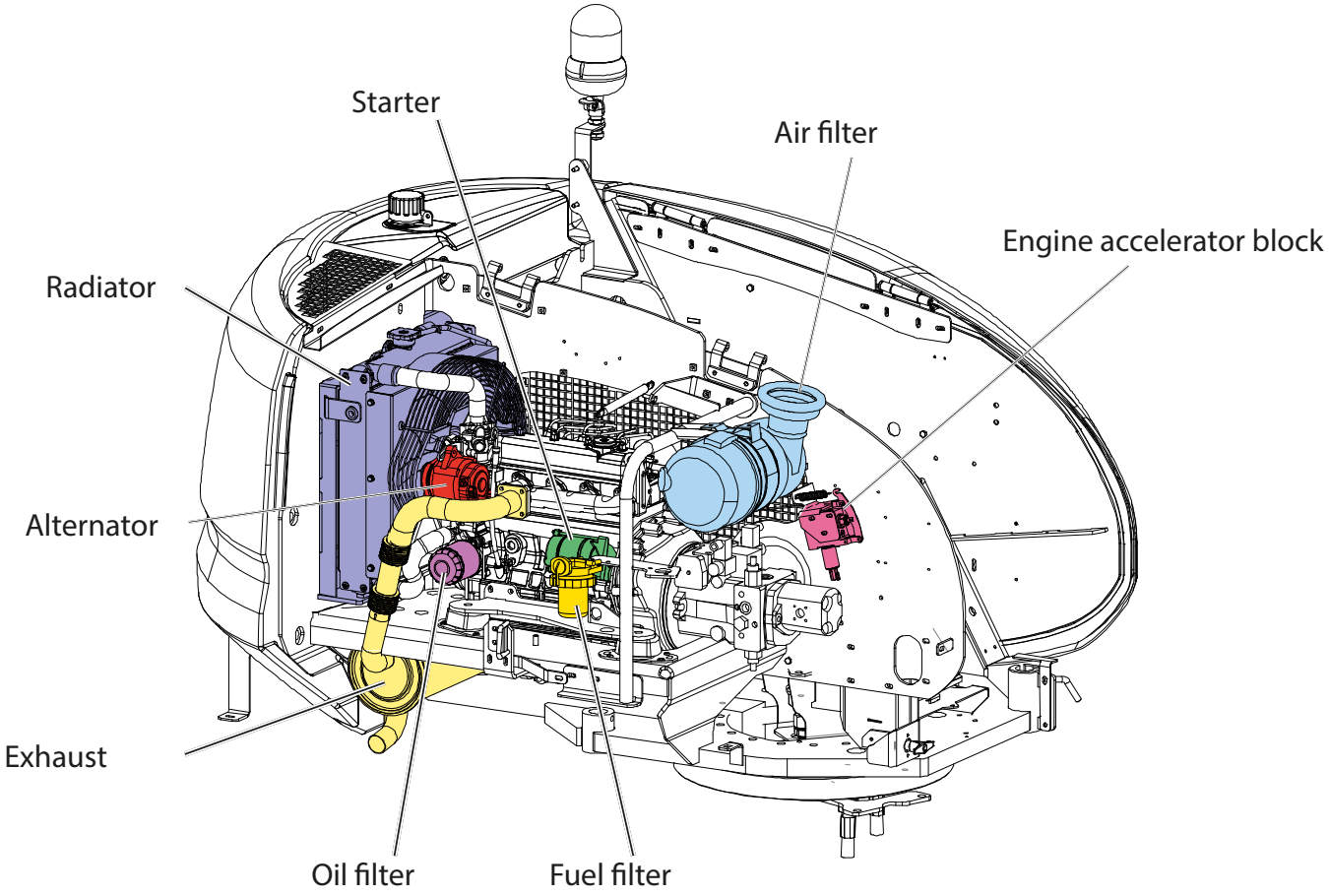
A cloudy fluid indicates a high moisture content, which will lead to oxidation / corrosion of the circuit's metal components: drain and clean the whole of the circuit, then refill with fresh hydraulic fluid.

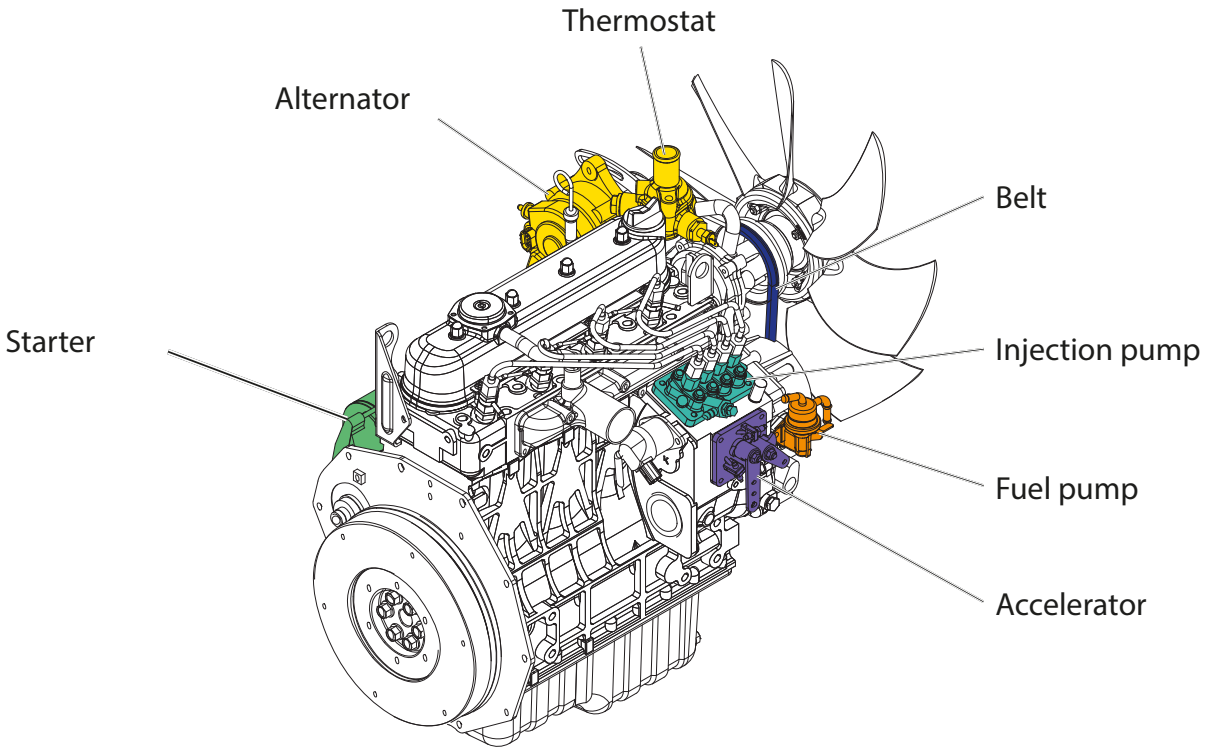
Should the circuit prove to be contaminated with foreign matter (metal, rubber, etc.), drain and clean the whole of the circuit then fill with fresh hydraulic fluid.

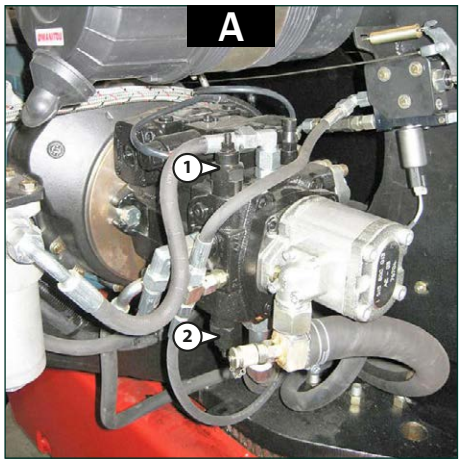
It is not recommended to mix hydraulic fluids of different types or makes insofar that they cannot be guaranteed to be of similar composition or viscosity.

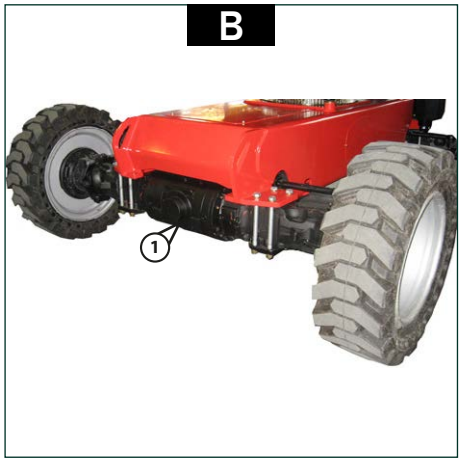
Refer to Chapter 3 - *MAINTENANCE of the OPERATOR'S MANUAL* to select the appropriate oil for the use of the platform.

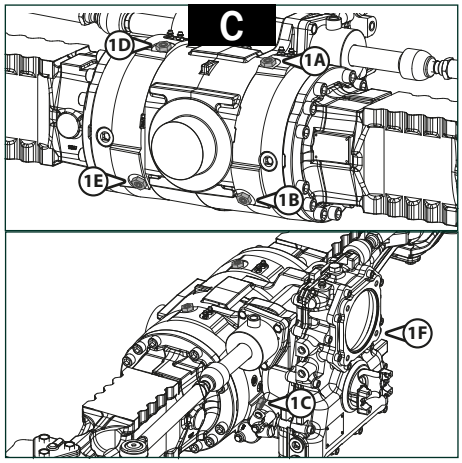
ENGINE


Starter
Air filter
Engine accelerator block
Radiator
Alternator
Exhaust
Oil filter
Fuel filter


Thermostat
Alternator
Belt
Starter
Injection pump
Fuel pump
Accelerator







PLACING IN FREEWHEEL MODE

160 ATJ EURO 3 & 180 ATJ 2 EURO 3

If the platform is to be towed, follow the instructions below.

The access platform must be towed:
- Only over short distances,
- By a machine with a high braking power to hold it,
- By means of a connecting bar between the two machines.

1 - Chocking the platform.

2 - Hydrostatic clutch

Warning, before performing this operation, take the necessary precautions as the machine will no longer have any brakes.

Open the engine hood.
Screw the hydrostatic pump HP relief valves (A-1 and A-2) up to the hard spot + 1 and a half turns (13 mm wrench and 6 mm Allen key).

3 - Rear axle mechanical clutch

Unscrew the six plugs (C-1) located on the read drive axle (B-1).

Tighten the HSHC screws (C-1) to their mechanical stop in the pre-defined order: tighten screw 1A by a quarter turn, then tighten screw 1B by a quarter turn, then screw 1C by a quarter turn, then screw 1A by a quarter turn and so on up to the mechanical stop). Repeat the operation for screws 1D - 1E - 1F.

Do not over-tighten the screws past the mechanical stop point. Failure to comply with this gradual, alternating tightening procedure may damage the axle.

Caution, after this operation, do not forget to take off the mechanical brake release.

4 - Axle clutch

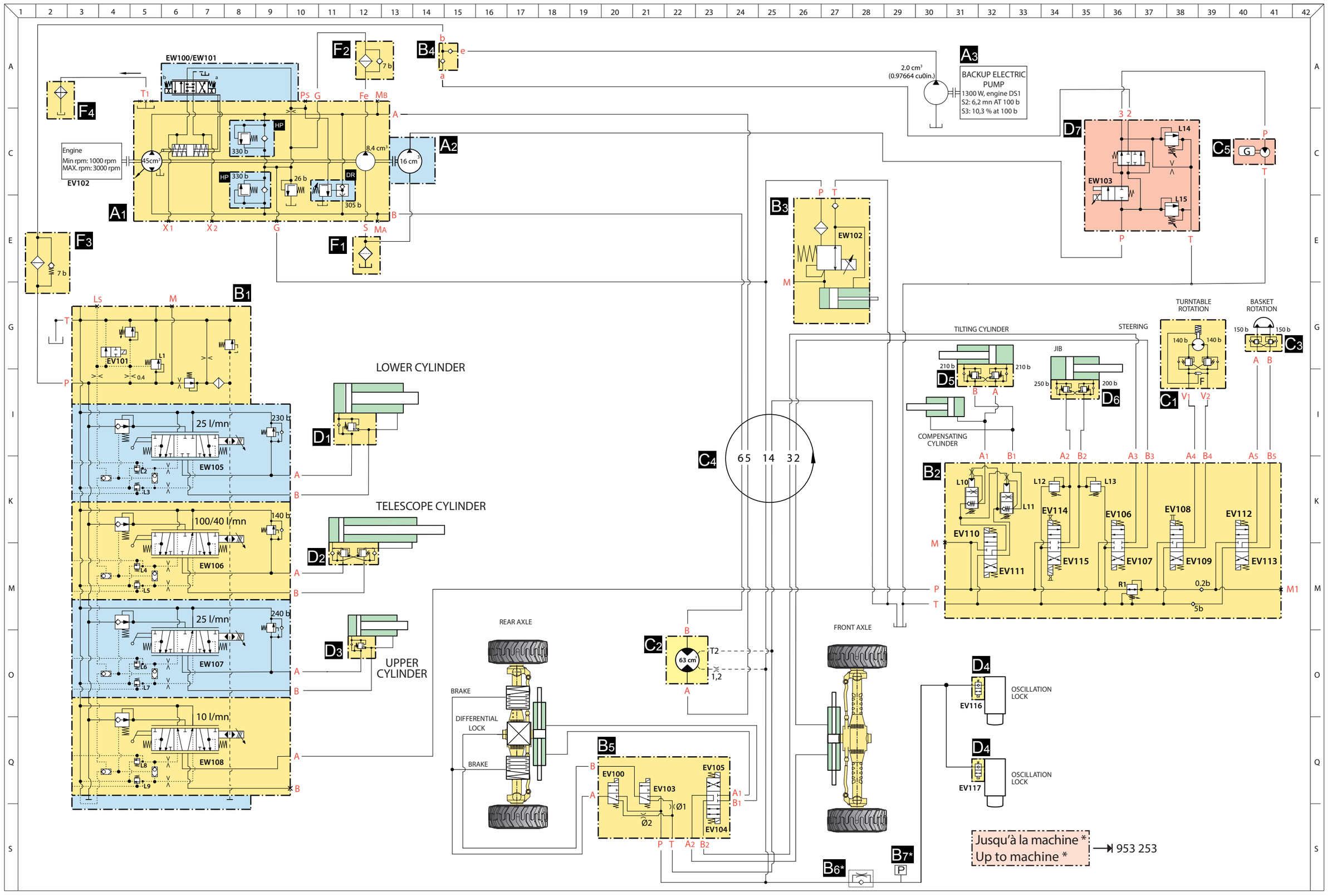
Unscrew the screws (C-1) in the pre-defined order: loosen screw 1A by a quarter turn, then loosen screw 1B by a quarter turn, then screw 1C by a quarter turn, then screw 1A by a quarter turn (and so on). Repeat the operation for screws 1D - 1E - 1F.

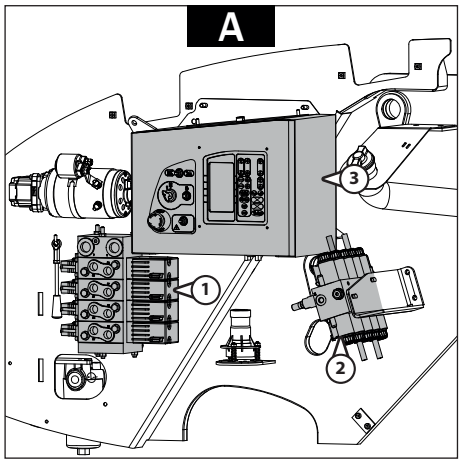
5 - Hydrostatic clutch

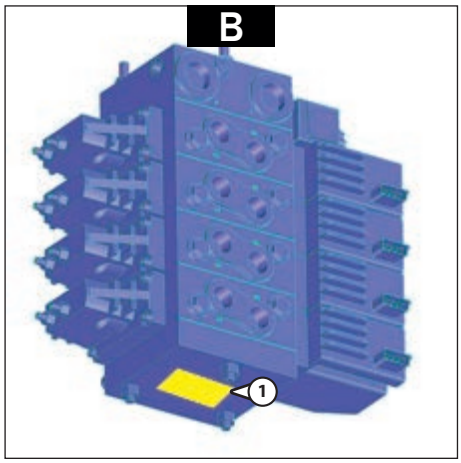
Unscrew the HP relief valves item 1 (A-1) of the hydrostatic pump to their maximum extent and retighten by a quarter turn.

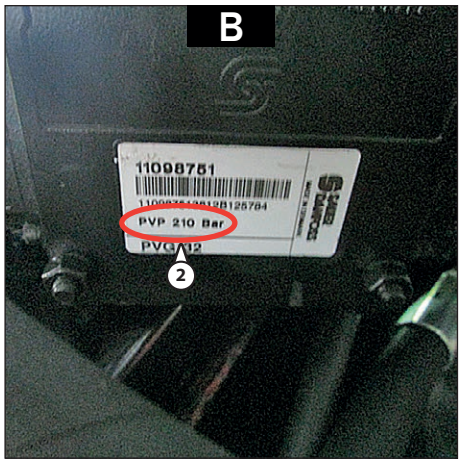
À partir de la machine From machine	160 ATJ E3 180 ATJ2 E3	→ 926 255

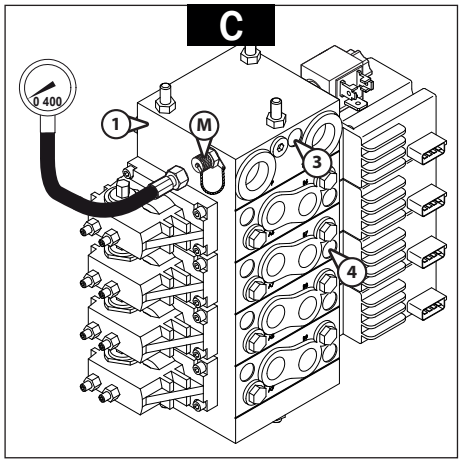
HYDRAULIC SCHEMATIC DIAGRAM - 160 ATJ E3 / 180 ATJ2 E3











In order to carry out the calibration operations described in this chapter, you require two hydraulic manometers as follows:

1 manometer 0 - 400 bars

1 manometer 0 - 100 bars

Open the right-hand turret cover panel and place the strut.

Locate the proportional distributor (A-1) and the distributor block (A-2).

Switch on the access platform. The adjustments are made with an oil temperature ≥ 30°.

Switch on the engine.

PROPORTIONAL DISTRIBUTOR IDENTIFICATION

Look under the PVG 32 and identify it (B-1 and B-2) in order to perform the correct calibration in accordance with the following procedures.

Two possible distinctions:

- **"PVP 210 bar"**
- **"PVP 240 bar"**

PROPORTIONAL DISTRIBUTOR CALIBRATION

INLET PLATE RELIEF VALVE

Connect the manometer to the pressure test port (C-M) marked M on the upper block (C-1).

Disconnect the telescope retraction sensor connector.
◁ ***70-03-M.193***

Remove the protective cap (C-4) then, by means of an Allen key, over-calibrate the telescope retraction relief valve (stage no. 2) by half a turn in the clockwise direction.

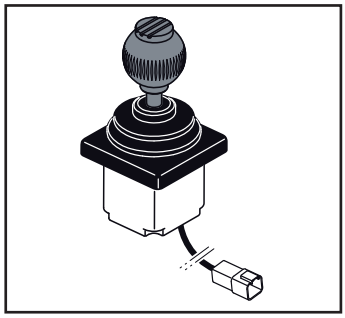
From the base console, activate the "telescope retraction" function.

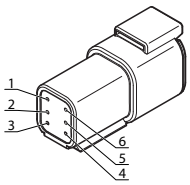
Check the pressure according to the PVG model and correct the pressure of the pressure relief valve (C-3) on the upper block if necessary.

- **For a "PVP 210 bar" PVG = 210 bar.**
- **For a "PVP 210 bar" PVG = 240 bar.**

Turn the telescope relief valve (C-4) a half-turn anti-clockwise, then refit the caps.

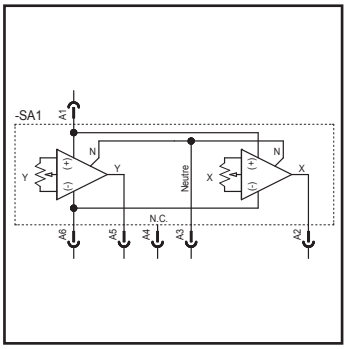
SA1 + SA2 JOYSTICK





PIN	Function
A1	Joystick power supply
A2	Joystick signal X
A3	Not neutral
A4	N. C.
A5	Joystick signal Y
A6	Ground

Corresponding connector



Diagram

	PIN	Min.	Typical	Max
Supply voltage	A1		12 V	
Consumption				

Notes: _____

_____

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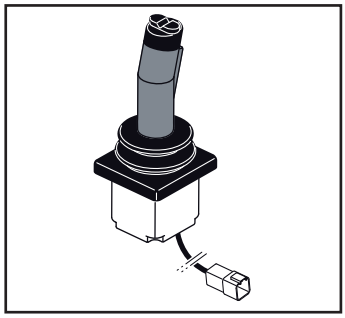
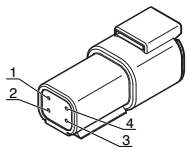
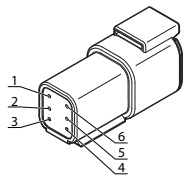
SA3 JOYSTICK

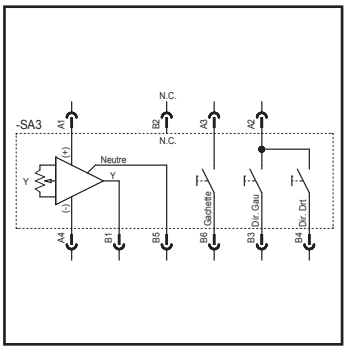






PIN	Function
A1	Joystick power supply
A2	L/R pushbutton power supply
A3	Trigger power supply
A4	Ground
B1	Joystick signal Y
B2	N. C.
B3	BP left-hand NO
B4	BP right-hand NO
B5	Not neutral
B6	Trigger NO

Corresponding connector



Diagram

	PIN	Min.	Typical	Max
Supply voltage	A3		12 V	
Consumption				

Notes: _____

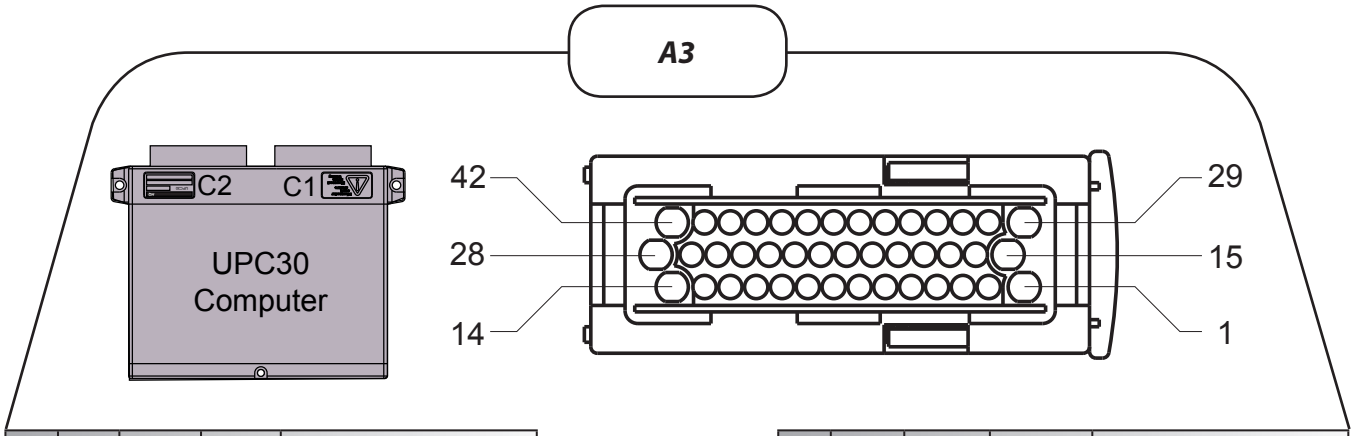
_____

_____

UPC 30 COMPUTER INPUTS/OUTPUTS

Key:
APC: Power supply after contact
+BAT: Fixed power supply
GND: Ground

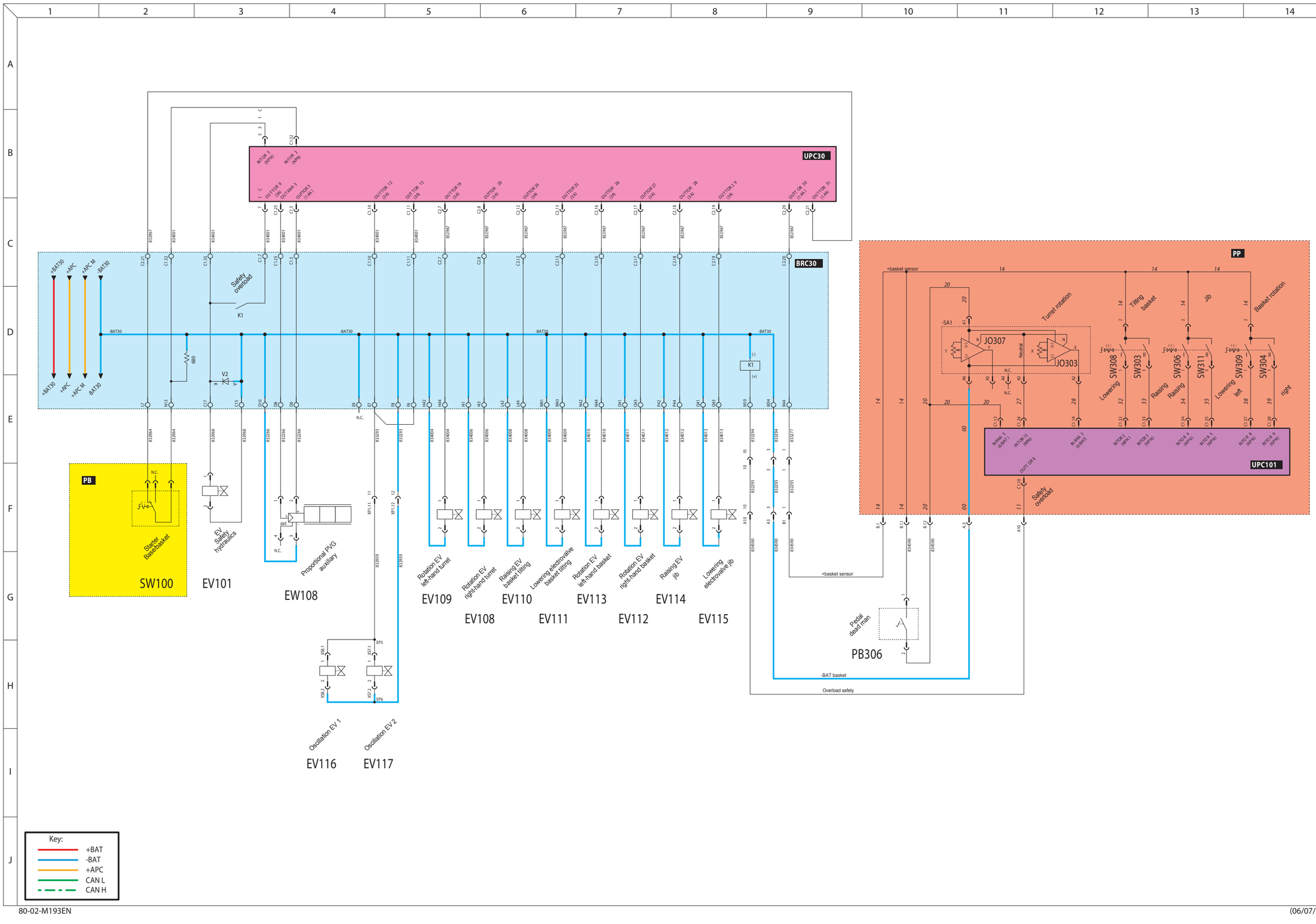
NO: Normally Open
NC: Normally Closed
S.P.U.: Safety Power Unit



	Pin	Wire	Section (mm2)	Function
C1	1	Red	1,5	BAT+ / Permanent +12V DC
	2	White	0,75	OUTTOR 0 / Arm 1/2 PVG power supply
	3	White	0,75	OUTTOR 1 / Telescope PVG power supply
	4	White	0,75	OUTTOR 2 / Arm 1 lifting PVG power supply
	5	White	0,75	OUTTOR 3 / Auxiliary PVG power supply
	6	White	0,75	OUTTOR 8 / Anti-start safety
	7	White	0,75	OUTTOR 9 / PVPX hydraulic safety
	8	White	0,75	OUTTOR 10 / Engine shutdown
	9	White	0,75	OUTTOR 11 / Brake EV
	10	White	0,75	OUTTOR 12 / Oscillation EV 1
	11	White	0,75	OUTTOR 13 / Oscillation EV 2
	12	White	0,75	PWM 0 - / (-) Forward travel pump
	13	White	0,75	PWM 0 + / (+) Forward travel pump
	14	Brown	1,5	APC+ / +12V DC
	15	Red	1,5	BAT+ / +12V DC
	16	White	0,75	INANA 0 (0/BAT)
	17	White	0,75	INANA 1 (0/BAT)
	18	White	0,75	INANA 2 (0/BAT)
	19	White	0,75	INANA 3 (0/BAT)
	20	White	0,75	HSCE 0 / Engine speed
	21	White	0,75	HSCE1 (INTOR 12) / Forced max. engine rpm
	22	White	0,75	OUTANA 0 / Arm 1/2 PVG control
	23	White	0,75	OUTANA 1 / Telescope PVG control
	24	White	0,75	OUTANA 2 / Arm 3 lifting PVG control
	25	White	0,75	OUTANA 3 / Auxiliary PVG control
	26	White	0,75	PWM 1- / (-) Reverse travel pump
	27	White	0,75	PWM 1+ / (+) Reverse travel pump
	28	Blue	1,5	BAT- / Ground
	29	Red	1,5	BAT+ / +12V DC
	30	White	0,75	INTOR 0 / Levelling
	31	White	0,75	INTOR 1 / Backup pump
	32	White	0,75	INTOR 2 / Base/Base dead man selector
	33	White	0,75	INTOR 3 / Front axle aligned
	34	White	0,75	INTOR 4 / Rear axle aligned
	35	White	0,75	INTOR 5 / PVPX command reread
	36	White	0,75	INTOR 6 / Brake EV command reread
	37	White	0,75	INTOR 8 / Overload no. 1
	38	White	0,75	INTOR 9 / Battery charge
	39	White	0,75	INTOR 10 / Oil pressure
	40	White	0,75	INTOR 11 / Water temperature
	41	White	0,75	INTOR 7 / Engine shutdown command reread
	42	Blue	1,5	BAT- / Ground

	Pin	Wire	Section (mm2)	Function
C2	1	Red	1,5	BAT+ / Permanent +12V DC
	2	White	0,75	OUTTOR 14 / Differential lock EV
	3	White	0,75	OUTTOR 15 / Crab EV
	4	White	0,75	OUTTOR 16 / 4-wheel EV
	5	White	0,75	OUTTOR 17 / LH steering EV
	6	White	0,75	OUTTOR 18 / RH steering EV
	7	White	0,75	OUTTOR 19 / Turret LH rotation EV
	8	White	0,75	OUTTOR 20 / Turret RH rotation EV
	9	White	0,75	OUTTOR 21 / Rotating beacon light
	10	White	0,75	OUTTOR 22 / Preheat
	11	White	0,75	OUTTOR 23 / Horn
	12	White	0,75	OUTTOR 24 / Basket tilt up EV
	13	White	0,75	OUTTOR 25 / Basket tilt down EV
	14	Brown	1,5	APC+ / +12V DC
	15	Red	1,5	BAT+ / +12V DC
	16	White	0,75	OUTTOR 26 / Basket LH rotation EV
	17	White	0,75	OUTTOR 27 / Basket RH rotation EV
	18	White	0,75	OUTTOR 28 / Jib tilt up EV
	19	White	0,75	OUTTOR 29 / Jib tilt down EV
	20	White	0,75	OUTTOR 30 / Basket sensor power supply
	21	White	0,75	OUTTOR 31 / Sensor power supply
	22	White	0,75	OUTANA 4
	23	White	0,75	OUTANA 5
	24	White	0,75	OUTANA 6
	25	White	0,75	OUTANA 7
	26	White	0,75	PWM 2- / (-) Engine accelerator
	27	White	0,75	PWM 2+ / (+) Engine accelerator
	28	Blue	1,5	BAT- / Ground
	29	Red	1,5	BAT+ / +12V DC
	30	White	0,75	INANA 4 (0/BAT) / Generator PB
	31	White	0,75	INANA 5 (0/BAT)
	32	White	0,75	INANA 6 (0/BAT) / Arm down end of travel
	33	White	0,75	INANA 7 (0/BAT) / Telescope retracted end of travel
	34	White	0,75	INANA 8 (0/BAT)
	35	White	0,75	INANA 9 (resistive) / Fuel gauge
	36	White	0,75	OUTTOR 4
	37	White	0,75	OUTTOR 5
	38	White	0,75	OUTTOR 6
	39	White	0,75	OUTTOR 7
	40	White	0,75	PWM 3- / - Proportional generator
	41	White	0,75	PWM 3+ / + Proportional generator
	42	Blue	1,5	BAT- / Ground

DIAGRAM V1-5 - ON-OFF HYDRAULIC MOVEMENTS



160 ATJ E3 —>I 951457
180 ATJ E3 —>I 951481

DIAGRAM V2 - 4 - PROPORTIONAL HYDRAULIC MOVEMENTS

—>I 951457

UPC30

BRC30

PP

PB

UPC 101

SW101 SW100

EV101 EW102 EW105 EW106 EW107 EW108

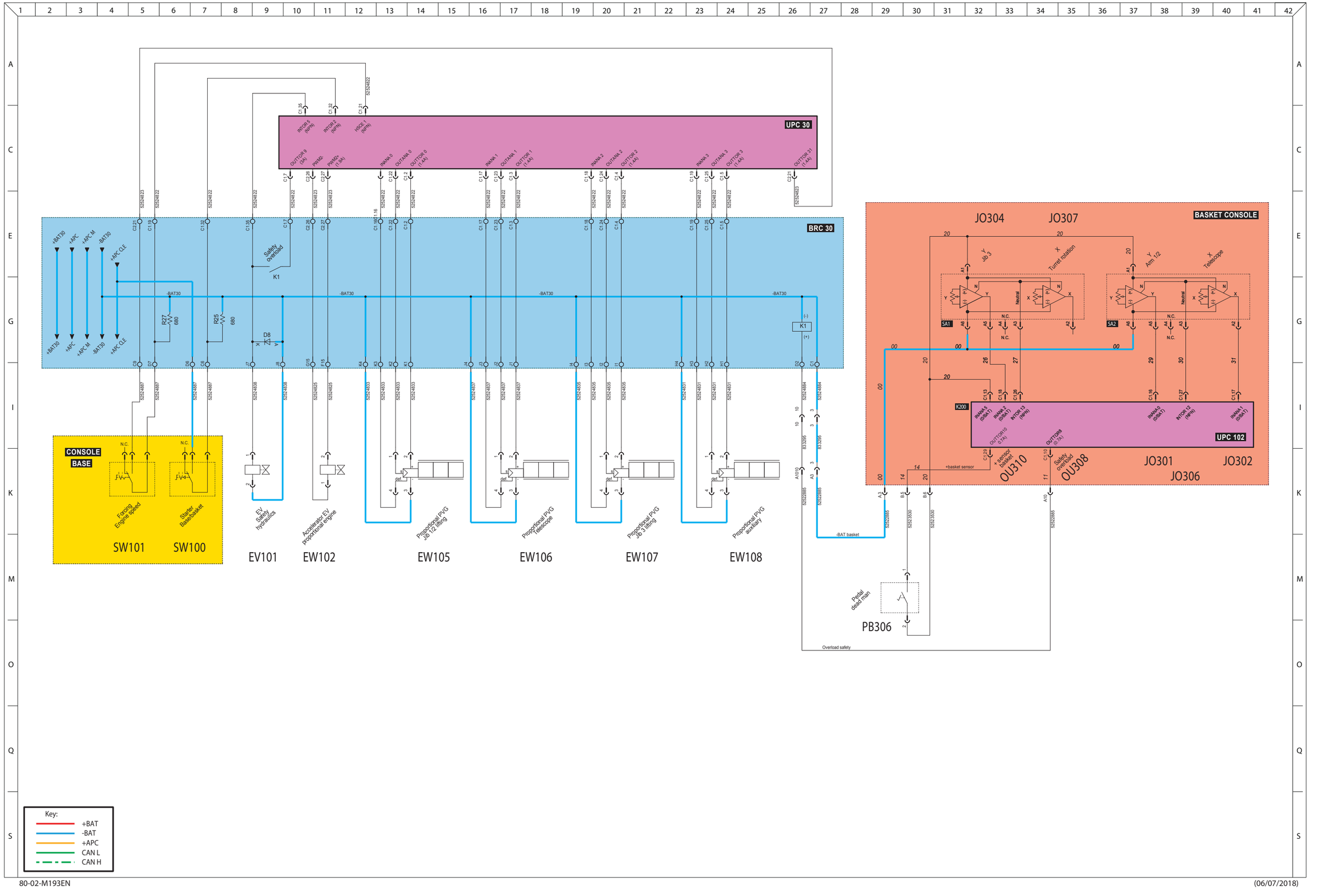
PB306

Note 1: 52501719 (180ATJ2E3) 52504026 (160ATJE3)

Key: +BAT, -BAT, +APC, CAN L, CAN H

160 ATJ E3 i—> 951458
180 ATJ E3 i—> 951482

DIAGRAM V3 - 4 - PROPORTIONAL HYDRAULIC MOVEMENTS

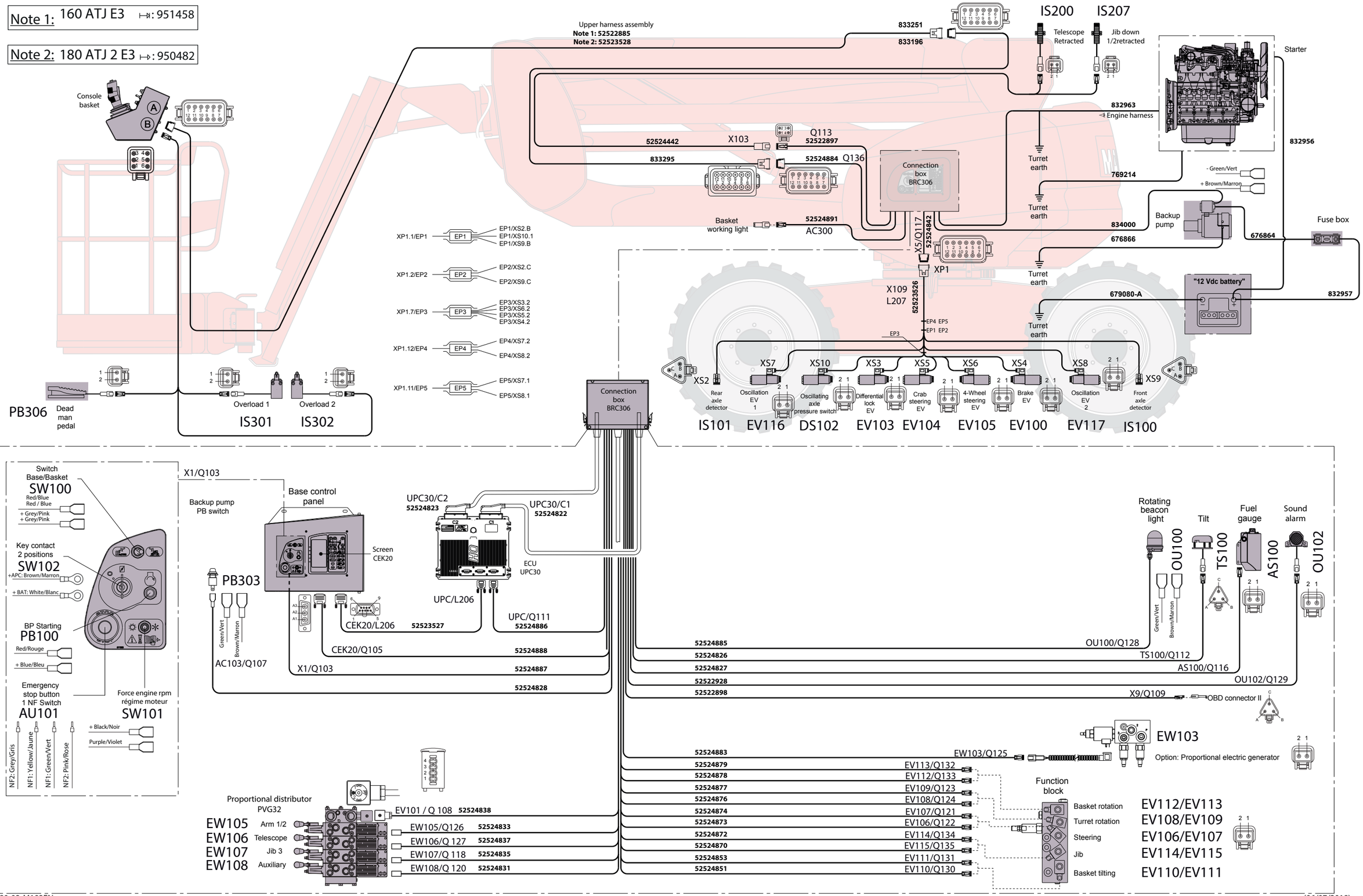


160 ATJ E3 ⟼ 951458
180 ATJ E3 ⟼ 951482

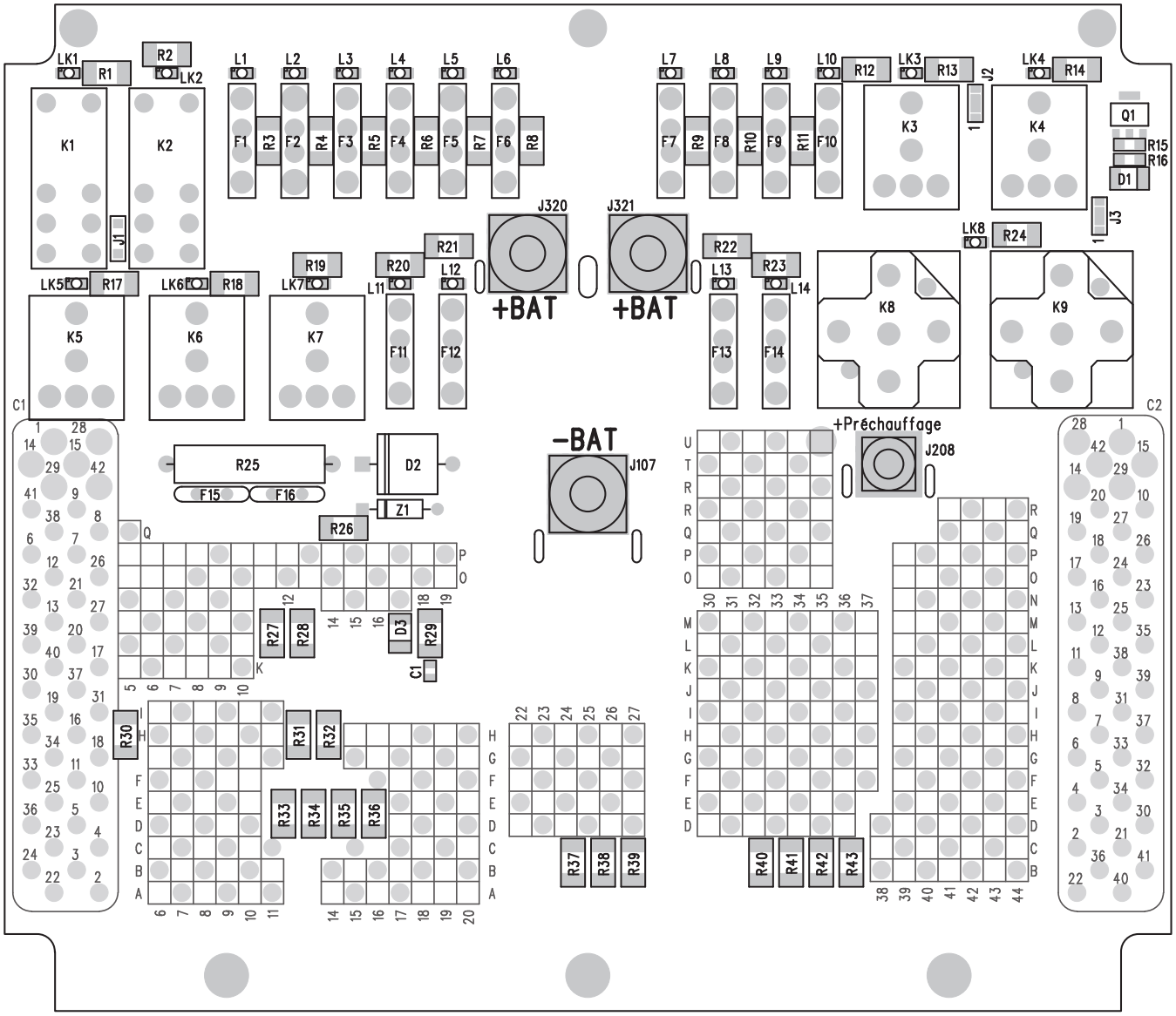
WIRING HARNESS OVERVIEW (from no. 951458)

Note 1: 160 ATJ E3 ⟼: 951458

Note 2: 180 ATJ 2 E3 ⟼: 950482



LOCATION OF COMPONENTS ON CARD BRC 30



Fuse	Description	Rating
F1	APC+, Starter PB	5A
F2	+BAT, UCP30	30A
F3	+BAT, UCP30	30A
F4	Backup pump PB switch, BAT+	10A
F5	BAT+, CEK 20	5A
F6	Ignition key BAT+	10A
F7	Preheating plug	30A
F8	Preheating plug	30A
F9	Start-up control	30A
F10	+APC, CEK20	5A
F11	Ground, UPC30	10A
F12	Ground	30A
F13	Ground	30A
F14	Ground, CEK20, basket console	5A

Relay	Description
K1	Overload safety
K3	Start-up control
K4	Anti-start
K5	Base emergency stop button
K6	Base emergency stop button
K7	Engine stop
K8	Preheat
K9	Preheat (only 160 ATJ E3)

APC+ = +12V after contact.

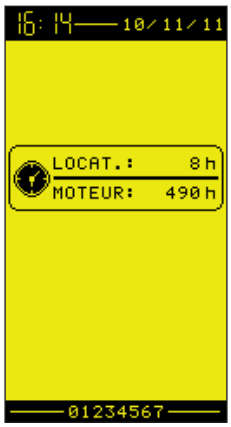
It powers:

- the input sensors (front and rear axle alignment, telescope, arm down, overload, tilt).

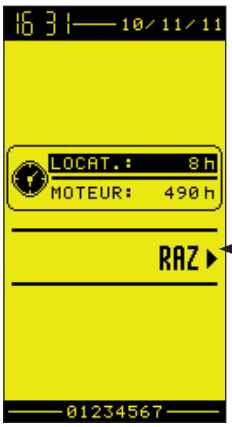
Diagnostic menu

Hour Counter Sub-Menu

This sub-menu displays the number of hours the engine has run since the access platform was put into service or since the last reset by the dealer ("LOCAT.").



User level

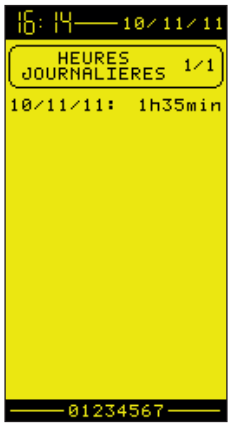


Resetting hours

Dealer level

Daily Hours Sub-Menu

This sub-menu displays the number of hours the engine has run each day since the last time the counters were reset.



User level

Resetting hours

Manufacturer level

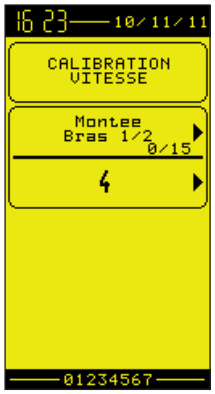
Input/Output Display Sub-Menu

This sub-menu displays the system's various inputs and outputs.

7 types of inputs/outputs can be displayed:

1 - Power supplies
2 - INTOR (On/Off inputs)
3 - INANA (Analogue inputs)
4 - HSCE (High Speed Counter Encoder)
5 - OUTTOR (On/Off outputs)
6 - OUTANA (Analogue outputs)
7 - OUTPWM (current outputs)

Speed calibration sub-menu

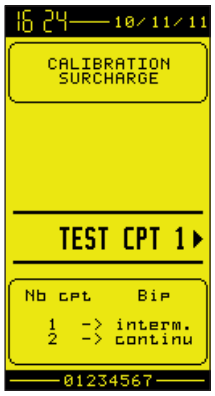


This sub-menu can be used to calibrate the main access platform movement speeds.

← Movement selection

← Setting adjustment

Strain gauge Calibration sub-menu

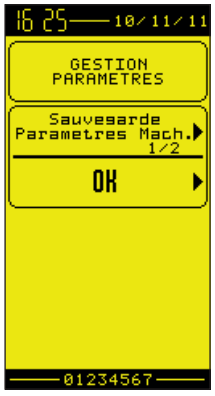


This sub-menu can be used to calibrate the overload sensors.
Use the OK key to toggle between the two strain gauges.

Activation of calibration:
Press on one then both strain gauge.

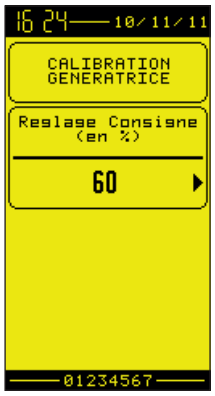
Calibration result:
The basket buzzer indicates the result of the calibration.
- intermittent beep = only 1 sensor is activated
- continuous beep = both sensors are activated

Parameter Management Sub-Menu



This sub-menu can be used to manage the machine parameters:
- Restore machine parameters
- Save machine parameters
- Return to default parameters

Generator calibration sub-menu

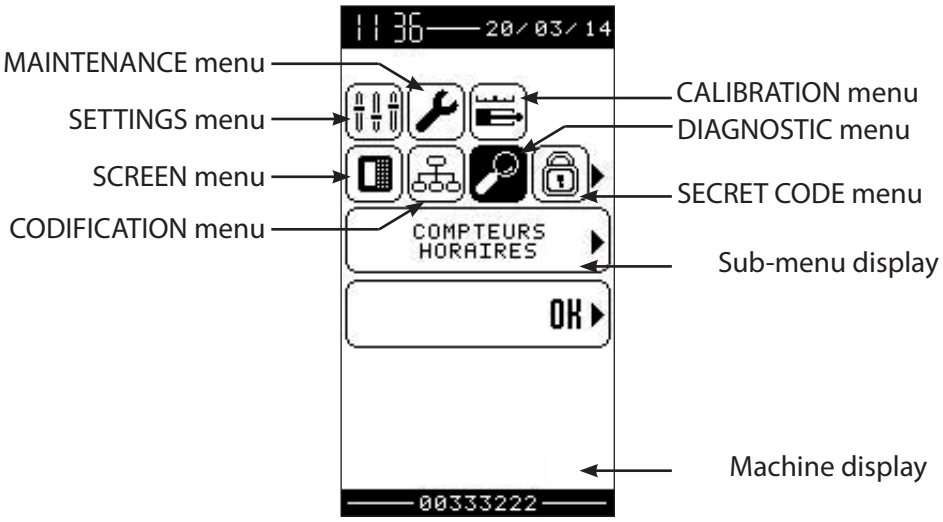


This sub-menu can be used to calibrate the generator.
(See below for the generator adjustment procedure.)

SCREEN GROUP			
Sub-group	**Number**	**Description**	**Value**
REXROTH TRAVEL	0	Working mode maximum forward speed (%)	25
	1	Working mode forward acceleration ramp (%)	35
	2	Working mode forward deceleration ramp (%)	25
	3	Working mode maximum reverse speed (%)	24
	4	Working mode reverse acceleration ramp (%)	35
	5	Working mode reverse deceleration ramp (%)	25
	6	Slow (tortoise) transport mode maximum forward speed (%)	63
	7	Slow (tortoise) transport mode forward acceleration ramp (%)	15
	8	Slow (tortoise) transport mode forward deceleration ramp (%)	10
	9	Slow (tortoise) transport mode maximum reverse speed (%)	63
	10	Slow (tortoise) transport mode reverse acceleration ramp (%)	15
	11	Slow (tortoise) transport mode reverse deceleration ramp (%)	10
	12	Fast (hare) transport mode maximum forward speed (%)	100
	13	Fast (hare) transport mode forward acceleration ramp (%)	20
	14	Fast (hare) transport mode forward deceleration ramp (%)	8
	15	Fast (hare) transport mode maximum reverse speed (%)	100
	16	Fast (hare) transport mode reverse acceleration ramp (%)	20
	17	Fast (hare) transport mode reverse deceleration ramp (%)	8
	18	Ramp transport mode maximum forward speed (%)	50
	19	Ramp transport mode forward acceleration ramp (%)	15
	20	Ramp transport mode forward deceleration ramp (%)	10
	21	Ramp transport mode maximum reverse speed (%)	50
	22	Ramp transport mode reverse acceleration ramp (%)	15
	23	Ramp transport mode reverse deceleration ramp (%)	10
	24	Curve type travel	0
	25	Activation mode anti-stall	2
ANTI-STALL	0	Anti-stall engine filter	5
	1	Anti-stall activation threshold (rpm)	250
	2	Anti-stall high P-gain	1000
	3	Anti-stall high I-gain	800
	4	Anti-stall low P-gain	1000
	5	Anti-stall low I-gain	600
	6	Engine set point ramp increment (rpm)	20
	7	Engine set point ramp decrement (rpm)	60
JIB 1/2 MANAGEMENT	0	Max Rising Speed (%)	53
	1	Rising Acceleration Ramp (%)	25
	2	Rising Deceleration Ramp (%)	12
	3	Max Lowering Speed (%)	45
	4	Lowering Acceleration Ramp (%)	35
	5	Lowering Deceleration Ramp (%)	14
	6	Max Rising Speed Base Cont Reduction (%)	-10
	7	Max Lowering Speed Base Cont Reduction (%)	-5
	8	Jib12 down stop time-out stop (s)	1.0

4 Menu pages

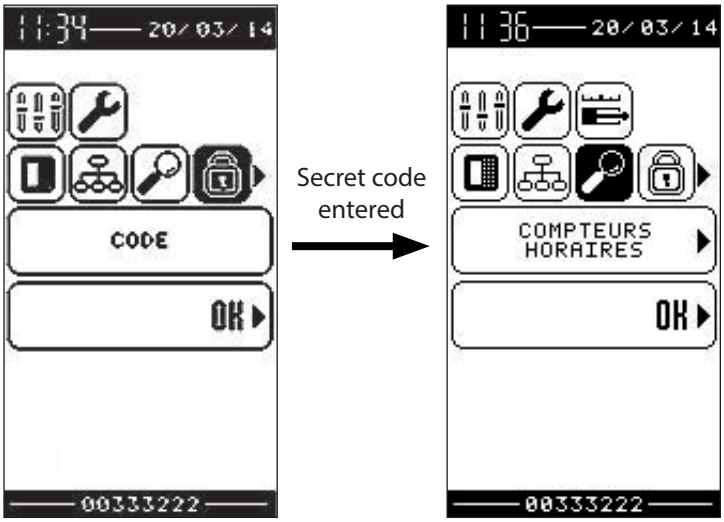
Presentation

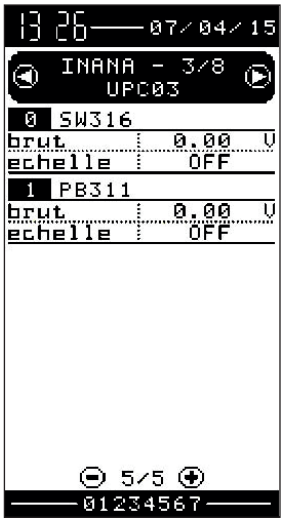


Comment: the CALIBRATION menu is only displayed at higher access levels than user level (requires a secret code to be entered, see next paragraph).

Menu access levels

Access level	*Code*	*Commentary*
USER	-	Access limited to the first 6 menus.
READ	1000	Calibration menu displayed. Allows information (hours, faults, parameters) to be read but not changed.
DEALER/HIRER	0241	Allows validation of maintenance operations and resetting rental time. Allows the saving, reminder or resetting of a complete set of parameters. Allows modification of the parameters of some sub-groups.
MANUFACTURER	****	Allows forcing of maintenance, rental and engine hours. Allows machine number change. Allows deletion of fault, maintenance and daily hours logs. Larger number of modifiable parameter sub-groups.

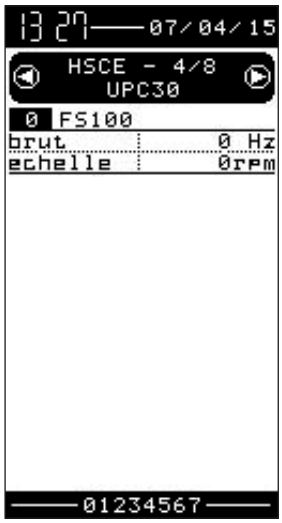




SMS option

Description		*Value*	
Sensitive edge	Status	Not pressed	Pressed
	Gross	5V	12V
	Scale	OFF	ON
Reset button	Status	Not pressed	Pressed
	Gross	0V	12V
	Scale	OFF	ON

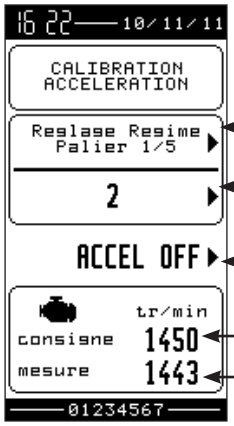
HSCE



Description		*Value*	
Engine speed	Status	Min. rpm	Forced speed
	Gross	200 Hz	320 Hz
	Scale	1050 rpm	1800 rpm

Calibration Menu

Engine Accelerator Calibration Sub-Menu



This sub-menu can be used to calibrate the engine accelerator.

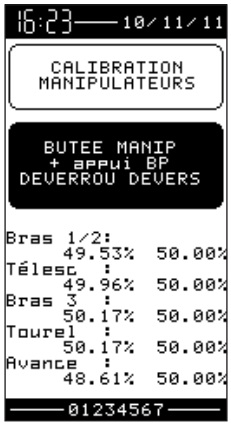
- Setting selection
- Setting adjustment
- Enable/disable acceleration mode
- Set point engine rpm
- Measured engine rpm

Engine speed calibration:

10 - ENGINE CONTROL AND ADJUSTMENT - ADJUSTMENT OF ENGINE SPEED UNIT

Joystick calibration sub-menu

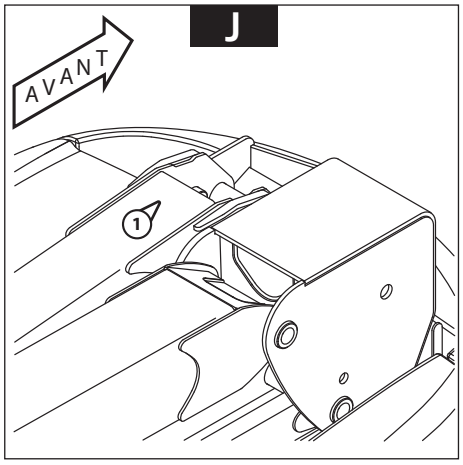
This sub-menu can be used to calibrate each control panel joystick.

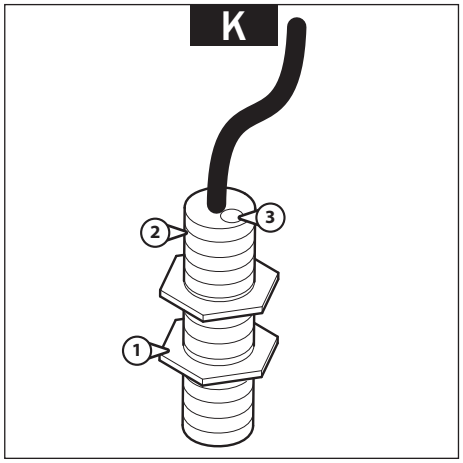


Activation of calibration:
Push the joystick to its stop, with the Dead man pedal depressed (and the trigger pressed for travel).
Confirm the position by pressing the Unlock Levelling button on the control panel.

Calibration result:
The basket buzzer indicates the result of the calibration.
- 1 beep = calibration OK
- 2 beeps = calibration not OK

SCREEN GROUP			
Sub-group	**Number**	**Description**	**Value (Min/Max)**
TRAVEL ADJUSTMENTS	17	Work Maximum reverse speed 200 (%)	32 (17/47)
	18	Work reverse acceleration range 200 (%)	35 (0/100)
	19	Work reverse deceleration range 200 (%)	25 (0/100)
	20	Tortoise Maximum forward speed 160 (%)	63 (48/78)
	21	Tortoise Maximum forward speed 180 (%)	55 (40/70)
	22	Tortoise forward acceleration range 160/180 (%)	15 (0/100)
	23	Tortoise forward deceleration range 160/180 (%)	10 (0/100)
	24	Tortoise Maximum reverse speed 160 (%)	63 (48/78)
	25	Tortoise Maximum reverse speed 180 (%)	55 (40/70)
	26	Tortoise reverse acceleration range 160/180 (%)	15 (0/100)
	27	Tortoise reverse deceleration range 160/180 (%)	10 (0/100)
	28	Tortoise ATJ + Maximum forward speed (%)	65 (50/80)
	29	Tortoise ATJ + forward acceleration range (%)	25 (0/100)
	30	Tortoise ATJ + forward deceleration range (%)	12 (0/100)
	31	Tortoise ATJ + Maximum reverse speed (%)	65 (50/80)
	32	Tortoise ATJ + reverse acceleration range (%)	25 (0/100)
	33	Tortoise ATJ + reverse deceleration range (%)	12 (0/100)
	34	Tortoise Maximum forward speed 200 (%)	72 (57/87)
	35	Tortoise forward acceleration range 200 (%)	20 (0/100)
	36	Tortoise forward deceleration range 200 (%)	10 (0/100)
	37	Tortoise Maximum reverse speed 200 (%)	72 (57/87)
	38	Tortoise reverse acceleration range 200 (%)	20 (0/100)
	39	Tortoise reverse deceleration range 200 (%)	10 (0/100)
	40	Maximum forward speed range 160 (%)	50 (35/65)
	41	Maximum forward speed range 180 (%)	43 (28/58)
	42	Forward acceleration range 160/180 ramp (%)	15 (0/100)
	43	Forward deceleration range 160/180 ramp (%)	10 (0/100)
	44	Maximum reverse speed range 160 (%)	50 (35/65)
	45	Maximum reverse speed range 180 (%)	43 (28/58)
	46	Reverse acceleration range 160/180 ramp (%)	15 (0/100)
	47	Reverse deceleration range 160/180 ramp (%)	10 (0/100)
	48	Range ATJ + Maximum forward speed (%)	56 (41/71)
	49	Range ATJ + forward acceleration range (%)	25 (0/100)
	50	Range ATJ + forward deceleration range (%)	13 (0/100)
	51	Range ATJ + Maximum reverse speed (%)	56 (41/71)
	52	Range ATJ + reverse acceleration range (%)	25 (0/100)
	53	Range ATJ + reverse deceleration range (%)	13 (0/100)
	54	Maximum forward speed range 200 (%)	63 (48/78)
	55	Forward acceleration range 200 ramp (%)	25 (0/100)
	56	Forward deceleration range 200 ramp (%)	10 (0/100)
	57	Maximum reverse speed range 200 (%)	63 (48/78)
	58	Forward acceleration range 200 ramp (%)	25 (0/100)
	59	Forward deceleration range 200 ramp (%)	10 (0/100)
	60	Hare Maximum forward speed 160/180 (%)	100 (85/100)
	61	Hare Forward acceleration range 160/180 (%)	20 (0/100)
	62	Hare Forward deceleration range 160/180 (%)	8 (0/100)
	63	Hare Maximum reverse speed 160/180 (%)	100 (85/100)
	64	Hare Reverse acceleration range 160/180 (%)	20 (0/100)
	65	Hare Reverse deceleration range 160/180 (%)	8 (0/100)
	66	Hare ATJ + Maximum forward speed (%)	100 (85/100)
	67	Hare ATJ + forward acceleration range (%)	33 (0/100)
	68	Hare ATJ + forward deceleration range (%)	8 (0/100)
	69	Hare ATJ + Maximum reverse speed (%)	100 (85/100)
	70	Hare ATJ + reverse acceleration range (%)	33 (0/100)
	71	Hare ATJ + reverse deceleration range (%)	8 (0/100)
	72	Hare Maximum forward speed 200 (%)	100 (85/100)
	73	Hare Forward acceleration range 200 (%)	25 (0/100)
	74	Hare Forward deceleration range 200 (%)	8 (0/100)
	75	Hare Maximum reverse speed 200 (%)	100 (85/100)
	76	Hare Reverse acceleration range 200 (%)	25 (0/100)





TELESCOPE RETRACTED SENSOR ADJUSTMENT

Place the arm in the down position, retract the telescope and operate the control.

Switch off the engine but leave the power to the platform switched on.

Locate the telescope retracted sensor housing at the base of arm 3 (J-1) ..... ◁ ***80-03-M193EN***

Remove the protective casing from the sensor.

Unscrew the lock nuts (J-1).

Screw or unscrew the sensors (K-2) until the LED (K-3), located next to the power supply wire, switches from red to green (the clearance remaining between the support and the sensor is approximately 3 mm).

Re-tighten the lock nuts.

Refit the cap.