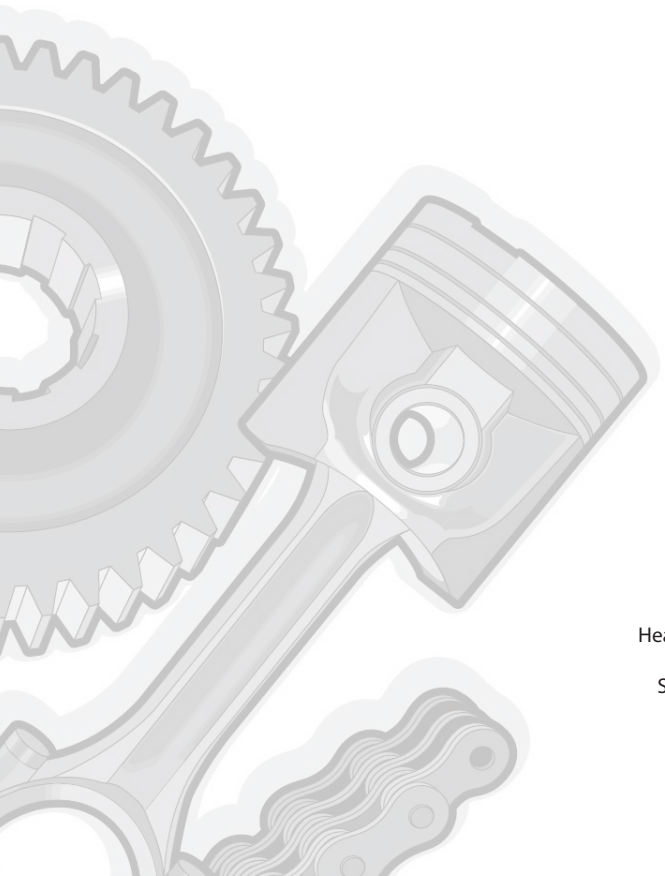
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MANITOU

HANDLING YOUR WORLD

REPAIR MANUAL
MANUEL DE RÉPARATION
REPARATURANLEITUNG
MANUAL DE REPARACIÓN
MANUALE RIPARAZIONE

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547379EN (08/03/2017)

120 AETJL
150 AETJC - AETJ 43
150 AETJC 3D - AETJ 43 3D
150 AETJL
170 AETJL - AETJ 49

REPAIR MANUAL

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DATE OF ISSUE	OBSERVATION
07/01/2005	- 1st ISSUE
12/01/2005	Addition of platforms: 120 AETJL, 150 AETJ COMPACT Change of machine names: 150 AETJ became 150 AETJL, 170 AETJ became AETJL
01/01/2008	Updated: GENERAL CHARACTERISTICS AND SAFETY
04/01/2008	Updated: REAR AXLE - OPERATION IN FREEWHEEL MODE TELESCOPE PADS - REMOVAL HYDRAULIC ELECTRICITY
03/08/2017	Updated: Addition of machines 150 AETJC 3D, AETJ 43, AETJ 43 3D, AETJ 49 GENERAL CHARACTERISTICS AND SAFETY HYDRAULIC ELECTRICITY

MANITOU BF S.A Limited liability company with a Board of Directors.
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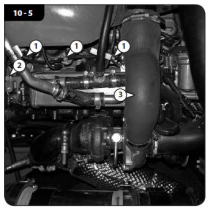
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10.1.1 DÉPOSE INJECTEURS



Pour retirer les quatre injecteurs (1, 10 - 5) :

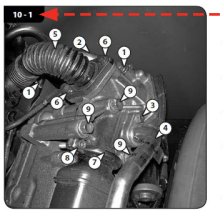
– Effectuer la dépose de la valve EGR (2, 10 - 5) : *(10.1.1 DÉPOSE VALVE EGR, 18)*

– Retirer la durit (3, 10 - 5), clé de 7.

10

10

10.1.1 DÉPOSE VALVE EGR



– Mettre un bac sous le caisson moteur.

– Retirer les vis , 10 - 1) de fixation du tube (2,, 10 - 1).

– Retirer la vis (3, 10 - 1) de fixation du tube (4, 10 - 1).

– Retirer les deux vis (5, 10 - 1) de fixation du tube en accordéon (6, 10 - 1).

– Défaire le collier (7, 10 - 1), désserrer la vis (8, 10 - 1).

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GLOSSARY

AOC Ammonia Oxidation Catalysts: elimination by oxidation of the excess ammonia (NH3) from exhaust gases having undergone selective catalytic reduction (SCR) of nitrogen oxides (NOx), by injection of ammonia.

APC After Power Contact: post-ignition current.

BMEP Bloc Manipulateur ÉlectroProportionnel : Controls the hydraulic movements of: lowering, lifting, tilting and digging by electronic sensors.

CAN Controller Area Network: control communication network for communication between systems (J1939, Open, etc.).

CO Carbon Monoxide: colourless, odourless and highly toxic gas.

CVT Continuous Variable Transmission.

DEF Diesel Exhaust Fluid: aqueous solution consisting of 32,5% urea and 67,5% demineralised water, used to transform 85% of pollutants (NOx) into water vapour (H2O) and harmless nitrogen (N2).

DOC Diesel Oxide Catalyst: part of the exhaust gas filter or a post-treatment device used to reduce polluting emissions (HC and CO).

DSB Double switch Board: smart switch board connected to a LIN network via a wiring harness.

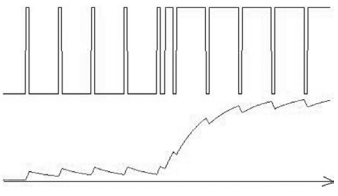
DPF (=FAP) Diesel Particulate Filter (= Filtre À Particule) : device designed to remove diesel particulate matter or soot from the exhaust gas of a diesel engine.

DTC Data Trouble Code: standard fault codes

ECU Electronic Control Unit or Engine Control Unit: machine or engine control computer.

FMI Failure Mode Identifier: fault code & description:
0 – The data is valid but the data is above the normal operational range.
1 – The data is valid but the data is below the normal operational range.
2 – The data is erratic, intermittent, or incorrect.
3 – The voltage is above normal or the voltage is shorted high.
4 – The voltage is below normal or the voltage is shorted low.
5 – The current is below normal or the circuit is open.
6 – The current is above normal or the circuit is grounded.
7 – The mechanical system is not responding properly.
8 – There is an abnormal frequency, an abnormal pulse width, or an abnormal time period.
9 – There has been an abnormal update.
10 – There is an abnormal rate of change.
11 – The failure mode is not identifiable.
12 – The device or the component is damaged.
13 – The device requires calibration.
15 – The signal from the device is high (least severe).

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FMI	16 – The signal from the device is high (moderate severity) . 17 – The signal from the device is low (least severe) . 18 – The signal from the device is low (moderate severity) . 19 – There is an error in the data from the device. 20 – There is an error in the data from the device (high). 21 – There is an error in the data from the device (low). 31 – The device has failed and the engine has shutdown.
HC	Hydrocarbon: organic compound consisting exclusively of carbon (C) and hydrogen (H) atoms.
HS	High Side: power side power supply.
HVAC	Heating, Fan and Air-Conditioning: in-cab heating, ventilation and air-conditioning block.
IHM	Interface Homme Machine : Human-Machine Interface, dashboard screens.
JSM	Joystick Switch & Move: joystick serving to perform all telescope movements, as well as to control machine forward and reverse movements with one hand.
LIN	Local Interconnect Network.
LLMI	Limit Load Moment Indicator: strain gauge ensuring machine stability.
LS	Low Side: ground side power supply.
LSU	Load Sensing Ultra: hydraulic load detection.
NC (=NF)	Normally Closed (= Normalement Fermé) : normally closed contact.
NO	Normally Open: normally open contact.
NOx	Nitrogen Oxide: regulated air pollutants.
PAD	Plug And Diag: machine diagnostic touchscreen tablet.
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 of a fixed-frequency digital electronic signal synthesising intermediate analog signals over a certain duration. 
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.
SPU	Safety Power Unit: machine controller.
USB	Universal Serial Bus.

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GENERAL CHARACTERISTICS AND SAFETY

00.1 GENERAL INSTRUCTIONS AND SAFETY NOTICE

00.1.1 INTRODUCTION

This chapter deals with the general instructions and safety notice during inspection and maintenance work.
Other instructions and warnings are indicated in each chapter concerned.

In order to reduce accident risks, make sure to:

– Follow the instructions in the truck operating and maintenance manual.
  ⇒ This manual should be found in all trucks.
– Please follow all safety instructions.
– Use the appropriate tools for any work to be performed.
– Use original Manitou spare parts.

Any non-compliance increases the risk of accidents occurring which may lead to causing grievous bodily harm and even death.

An efficient, dependable and profitable combination will be formed if the operator follows the safety manual correctly and the machine is serviced properly.

00.1.2 SERVICING POSITION

Before any intervention:

1 - Place the machine on a flat surface and chock the wheels.
2 - Turn off the engine and remove the ignition key.
3 - Let the machine cool down.
4 - Take all the pressure out of the circuits concerned.

00.1.3 EXPLANATION OF SYMBOLS

The symbols shown below are used to warn of potential hazards as well as to provide useful information concerning a procedure.

SYMBOLE	OBSERVATION
DANGER	Indicates an imminent hazardous situation which, if not avoided will result in death or serious injury.
WARNING	Indicates a potentially hazardous situation which, if not avoided, may result in death or serious injury.
CAUTION	Indicates a potentially hazardous situation which, if not avoided, may result in minor injury or damage to property. It is also used to warn users of unsafe practices.
TIP	Indicates a tip to facilitate the performance of a procedure.
PROTECT THE ENVIRONMENT	Indicates a message to draw attention to important information regarding environmental protection.
SPECIFIC TOOLING	Indicates special tools for performing a task.
	"***SEE***": Indicates a cross-reference to a manual.
	"***SEE***": Indicates a cross-reference to a page.
	"***SEE***": Indicates a cross-reference to a picture.
	"***WEIGHT***": Indicates the weight of an item. (E.g.: it helps to anticipate an action linked to a person's health or the choice of lifting equipment)
	"***TIGHTENING TORQUE***": Indicates the value of tightening torque to be applied.
	"***OPTION***": Indicates the presence of an option.

The manufacturer cannot predict all possible risky situations. Consequently, the safety instructions given in the manual are not exhaustive.
At any time, as an operator, you must consider, within reason, the possible risk to yourself, to others or to the lift truck itself when you repair, service or drive it.

Manitou cannot be held responsible for the use of any lifting devices, tools or operating methods other than those specified.

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00.1.4 SERVICING RULES



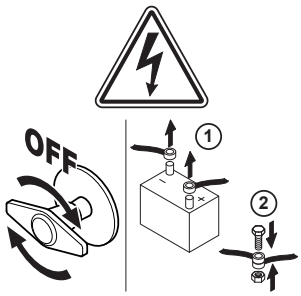
Do not carry out any work on the machine unless you have followed a suitable training course and have the knowledge required for it.

Make sure you have taken into consideration all the indicator plates on the machine and in the instruction manual.



⚠ PRÉCAUTION

Be careful not to burn yourself when touching hot liquids or parts when operations have to be done before the machine has had time to cool down.



⚠ AVERTISSEMENT

Before carrying out any operation on an electrically powered component, activate the battery cut-off.

⚠ PRÉCAUTION

Press the battery switch at least 30 seconds after disconnecting the electrical contact with the ignition key.

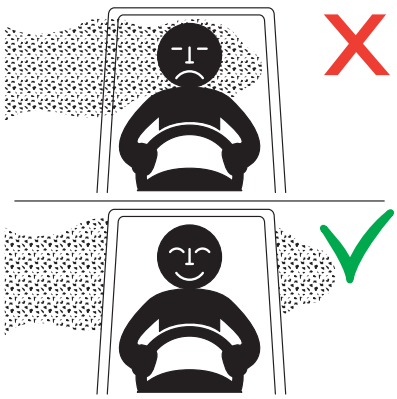


⚠ AVERTISSEMENT

If the telehandler does not have a battery isolating switch, disconnect the battery terminals then gather them.

⚠ PRÉCAUTION

Before carrying out any welding operations, think of disconnecting computers.



⚠ PRÉCAUTION

A machine operating in a contaminated environment should be specifically equipped. Moreover, local safety notices deal with maintenance and repair work on such machines.



⚠ AVERTISSEMENT

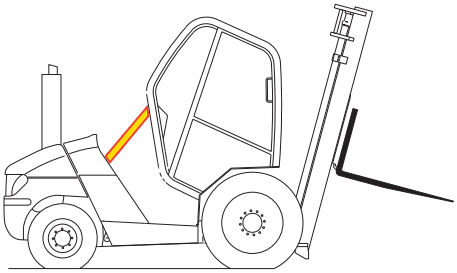
Never step on a part of the machine that has not been designed for it.



⚠ AVERTISSEMENT

Never wear clothes, jewelry or objects that could get caught during work and cause accidents.

Always wear protection glasses, gloves, safety shoes as well as any other protection required for the work to be carried out.





⚠ DANGER

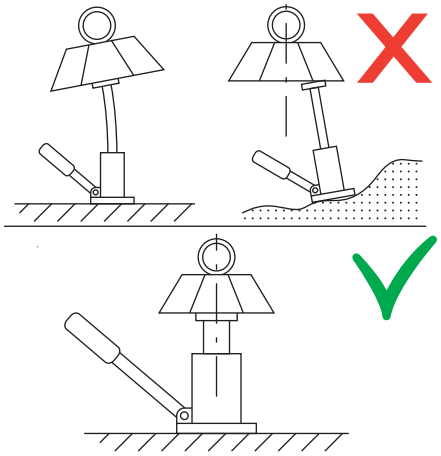
When carrying out maintenance operations near a mobile object, make sure it is securitized.



♻ PROTÉGER L'ENVIRONNEMENT

When changing, or draining oils or fuel, or any other operation with liquids, solids, gases that are harmful to the environment, make sure the necessary precautions are taken to avoid contaminating the environment.

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DANGER

When lifting or shoring a component of the machine, make sure the equipment used is suitable for at least the load for which it is subjected by the component and that it meets the national standards for lifting devices.

When using a jack, make sure it is used on a flat, uniform surface, is sturdy enough to support the load, that its lifting capacity is sufficient and that it is correctly placed and positioned under the machine.



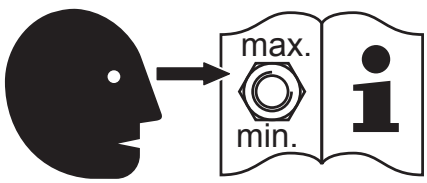
PRÉCAUTION

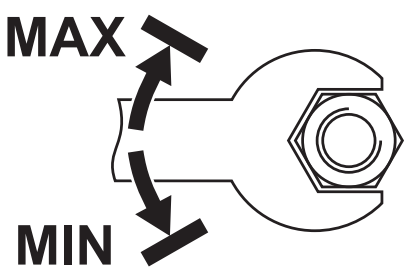
Make sure no object or tool which could cause an accident is left in the machine.



AVERTISSEMENT

Never control any leaks using a hand.





PRÉCAUTION

Never adjust a component to over the maximum capacity indicated by the manufacturer.

00.2 GENERAL CHARACTERISTICS AND SPECIFICATIONS

00.2.1 CHARACTERISTICS

Designation		120 AETJL	150 AETJC	150 AETJC 3D	150 AETJL	170 AETJL	AETJ 43	AETJ 43 3D	AETJ 49
Unladen weight of carriage		5050 kg (11,133 lbs)	6700 kg (14,771 lbs)	6760 kg (14,904 lbs)	5910 kg (13,030 lbs)	6910 kg (15,234 lbs)	7100 kg (15,653 lbs)	7160 kg (15,785 lbs)	7105 kg (15,684 lbs)
Unladen pneumatic load	FRONT	1185 kg (2,613 lbs)	1465 kg (3,230 lbs)	1465 kg (3,230 lbs)	1240 kg (2,734 lbs)	1534 kg (3,389 lbs)	-	-	1555 kg (3,428 lbs)
	REAR	1340 kg (2,954 lbs)	1885 kg (4,156 lbs)	1885 kg (4,156 lbs)	1715 kg (3,781 lbs)	1921 kg (4,325 lbs)	-	-	1992.5 kg (4,393 lbs)
Nominal capacity (2 people)		200 kg (441 lbs)	200 kg (441 lbs)	200 kg (441 lbs)	230 kg (507 lbs)	200 kg (441 lbs)	227 kg (500 lbs)	227 kg (500 lbs)	227 kg (500 lbs)

00.2.2 LUBRICANTS AND FUEL

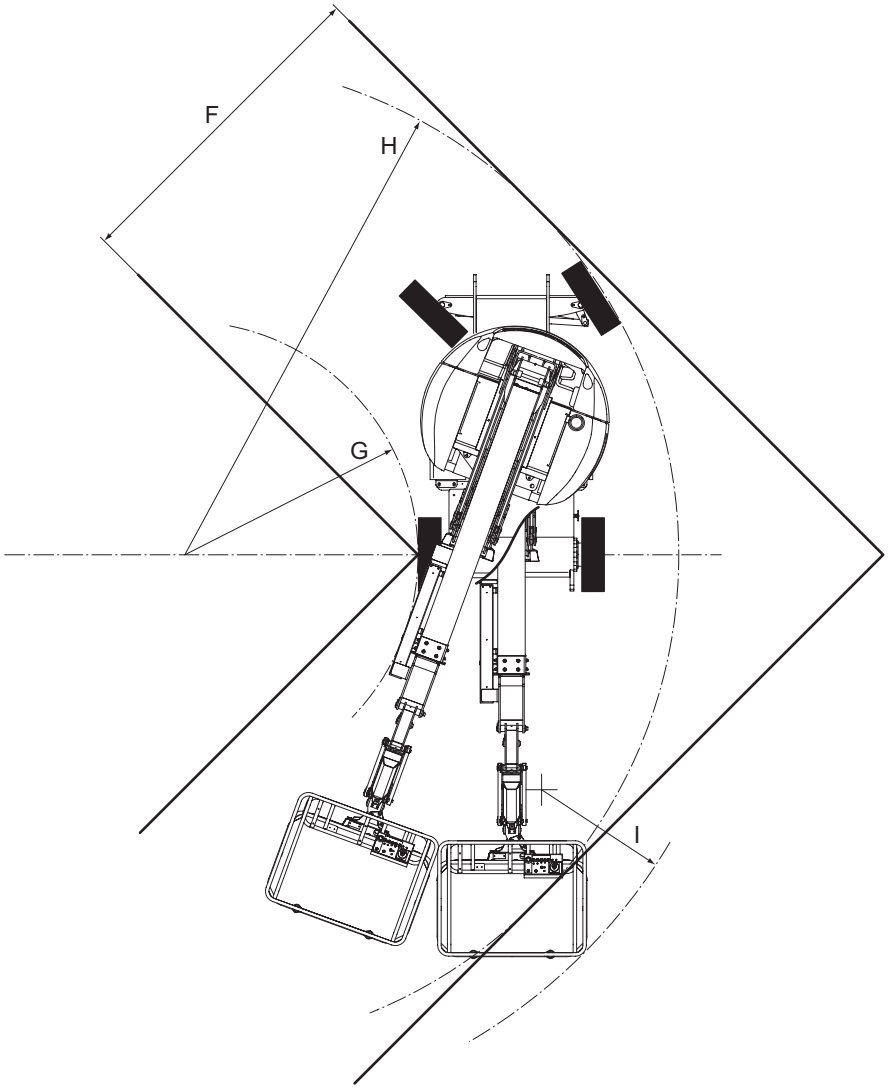
Designation	Type	Quantity
Hydraulic tank	MANITOU ISO VG 46 Hydraulic oil	18 ℓ (4.76 US gallons)
Wheel motor (each) Turret rotation motor	SHELL SPIRAX A90 oil	0.8 ℓ (0.21 US gallons) 1.5 ℓ (0.40 US gallons)
General greasing	SHELL RETINAX HD grease	-
Greasing of turret crown of bearing track	Grease SHELL ALVANIA EP LF 2	-
Lubrication of turret crown gear teeth	SHELL MALLEUS GL 205 oil	-

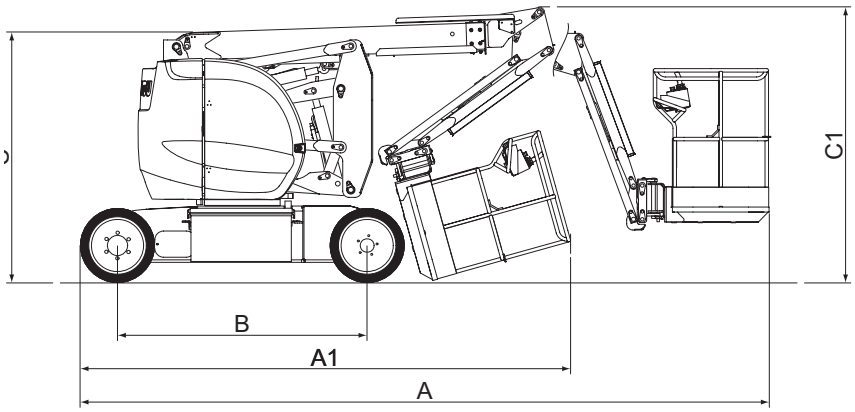
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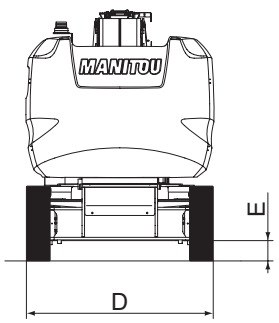
00.2.3 DIMENSIONS

DIMENSIONS 120AETJL

	mm	ft-in
A	5520	18-1.3
A1	3930	12-10.7
B	2000	6-6.7
C	1995	6-6.5
C1	2210	7-3.0
D	1500	4-11.1
E	153	0-6.0
F	2640	8-8.0
G	1870	6-1.6
H	3960	12-11.9
I	4520	14-9.9

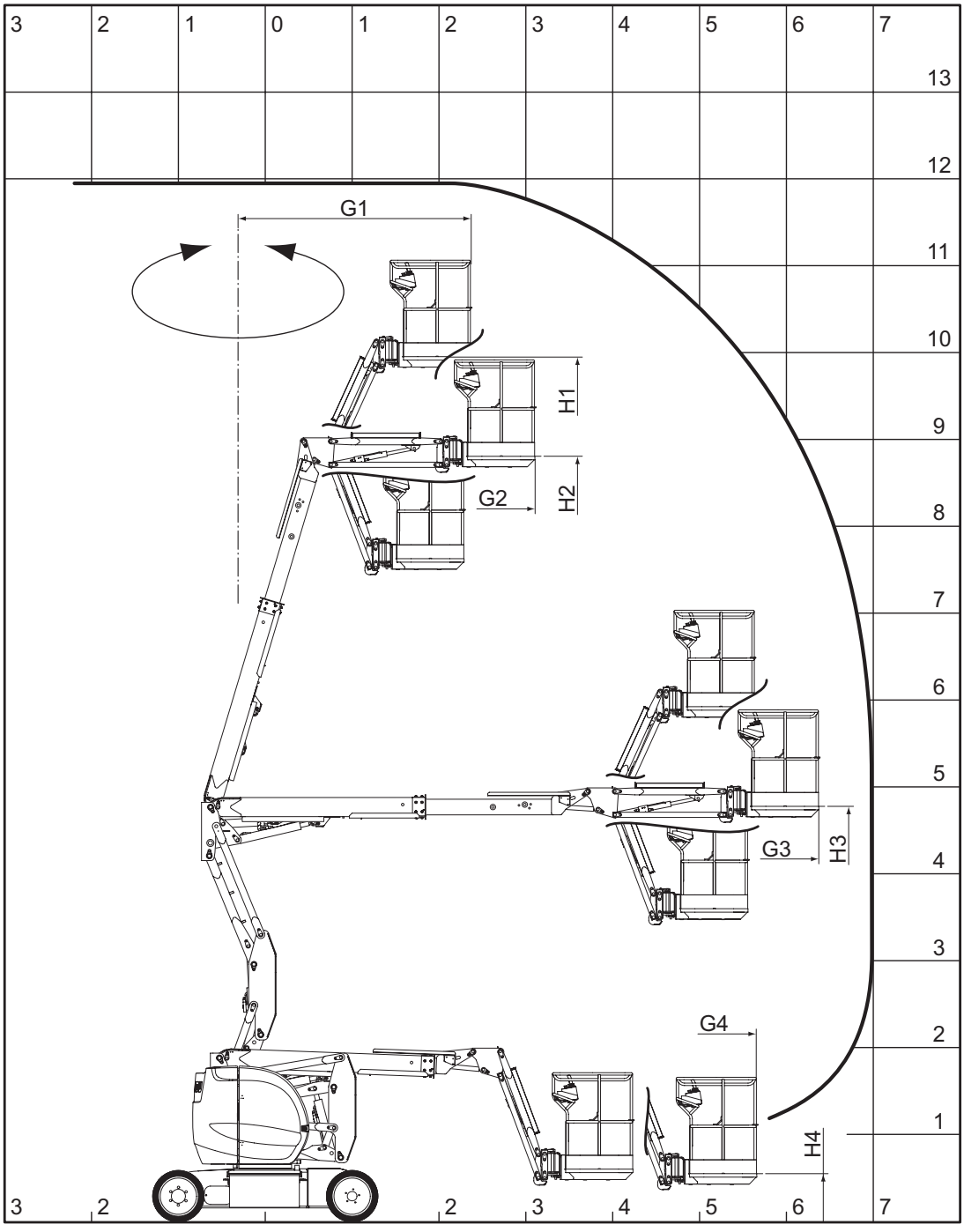






	mm	ft-in
G1	2350	7-8.5
G2	3105	10-2.2
G3	6370	20-10.8
G4	5640	18-6.0

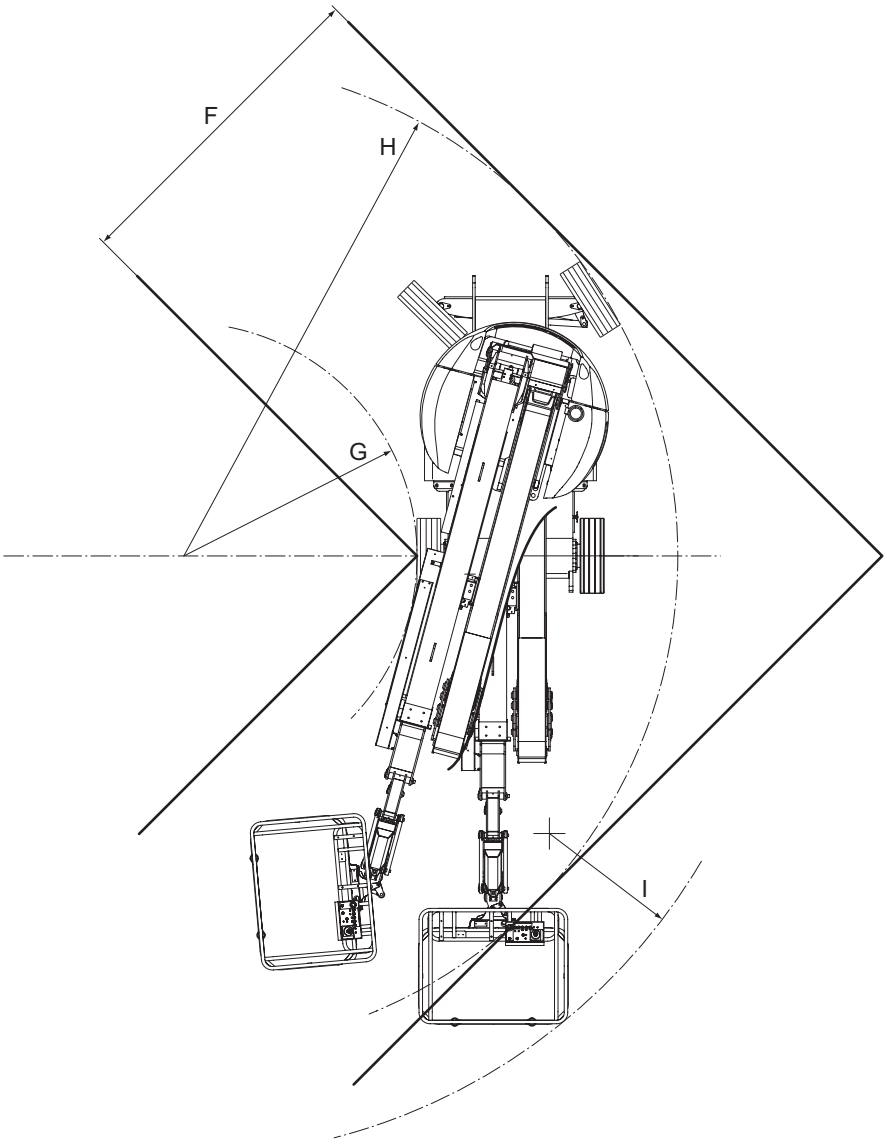
	mm	ft-in
H1	9950	32-7.7
H2	8795	28-10.3
H3	4775	15-8.0
H4	545	1-9.5

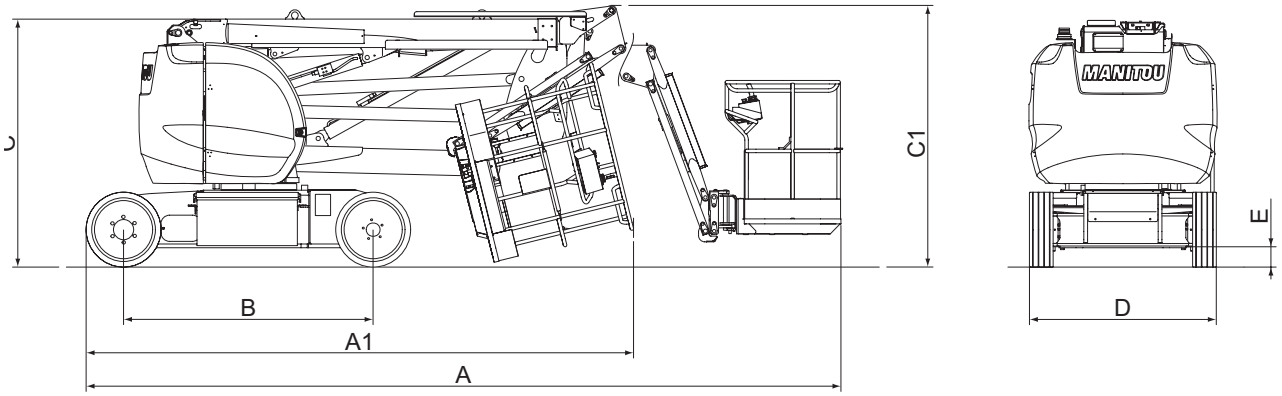


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DIMENSIONS 150AETJC - AETJ 43 - AETJC 43 3D

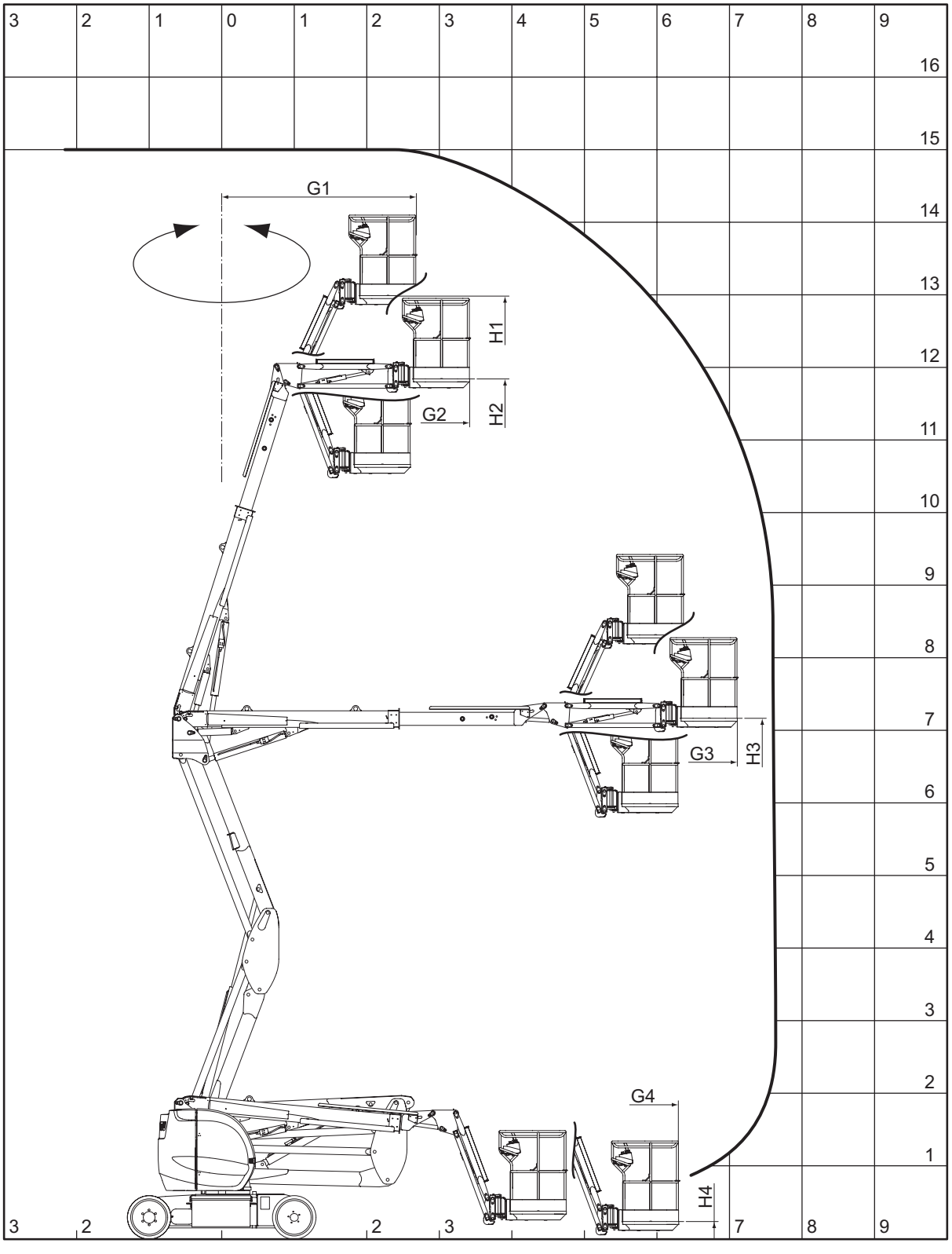
	mm	ft-in
A	6050	19-10.2
A1	4400	14-5.2
B	2000	6-6.7
C	1965	6-5.4
C1	2080	6-9.9
D	1500	4-11.1
E	143	0-5.6
F	2640	8-7.9
G	1870	6-1.6
H	3960	12-11.9
I	4820	15-9.7





	mm	ft-in
G1	2665	8-8.9
G2	3425	11-2.8
G3	7105	23-3.7
G4	6300	20-8.0

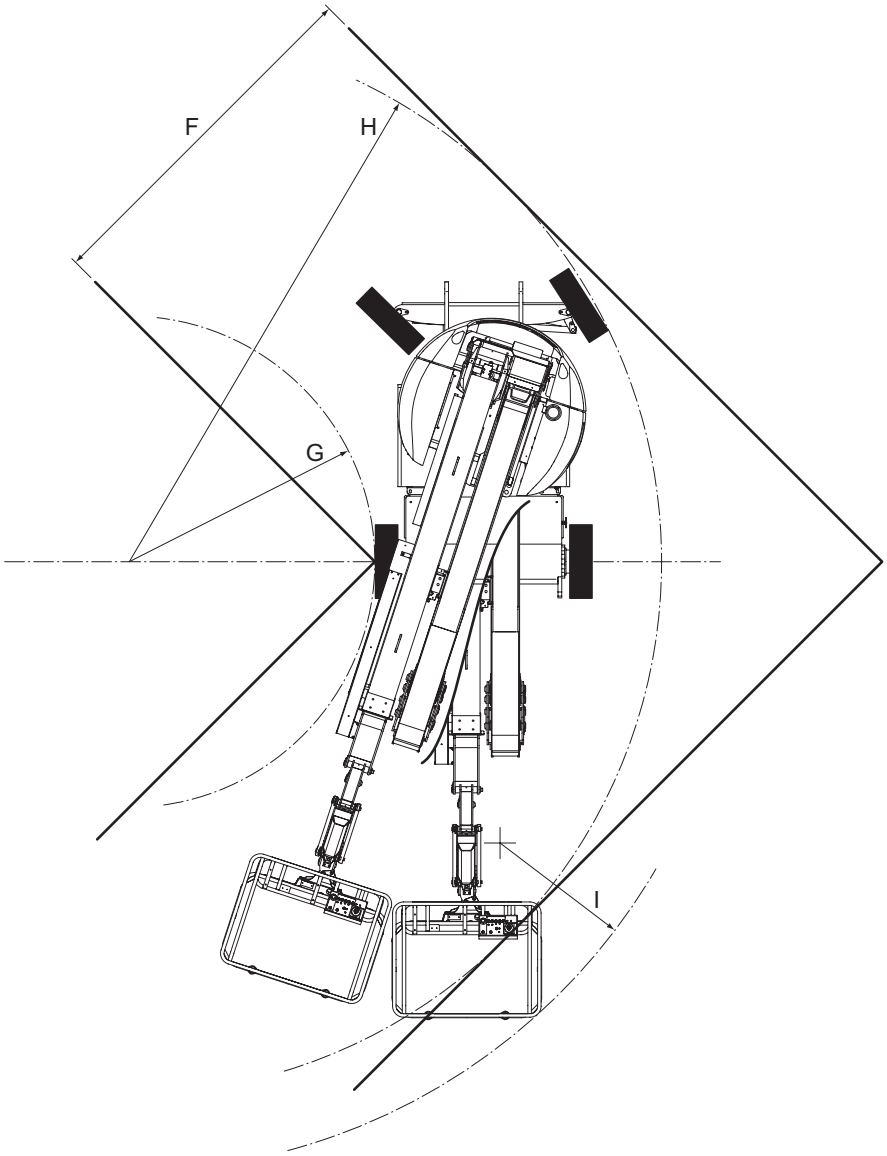
	mm	ft-in
H1	12985	42-7.2
H2	11835	38-9.9
H3	7165	23-6.1
H4	235	0-9.2

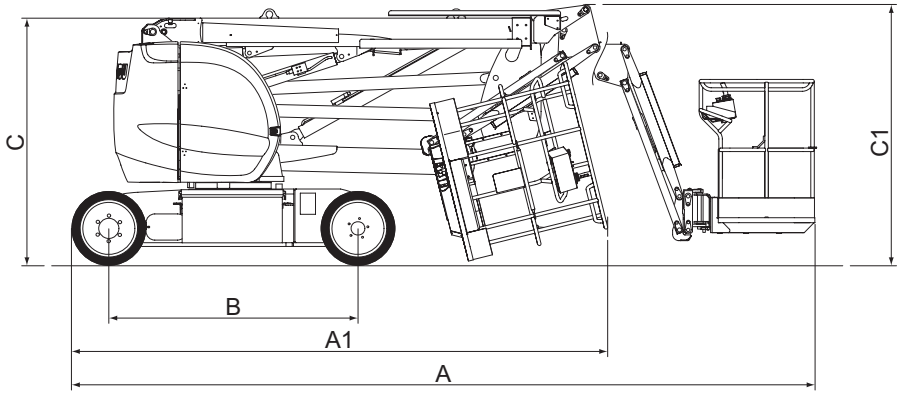


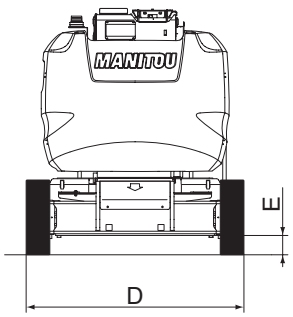
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DIMENSIONS 150AETJL

	mm	ft-in
A	5960	19-6.6
A1	4400	14-5.2
B	2000	6-6.7
C	1970	6-5.5
C1	2080	6-9.9
D	1750	5-8.9
E	143	0-5.6
F	2880	9-5.4
G	1970	6-5.6
H	4270	14-0.1
I	4890	16-0.5

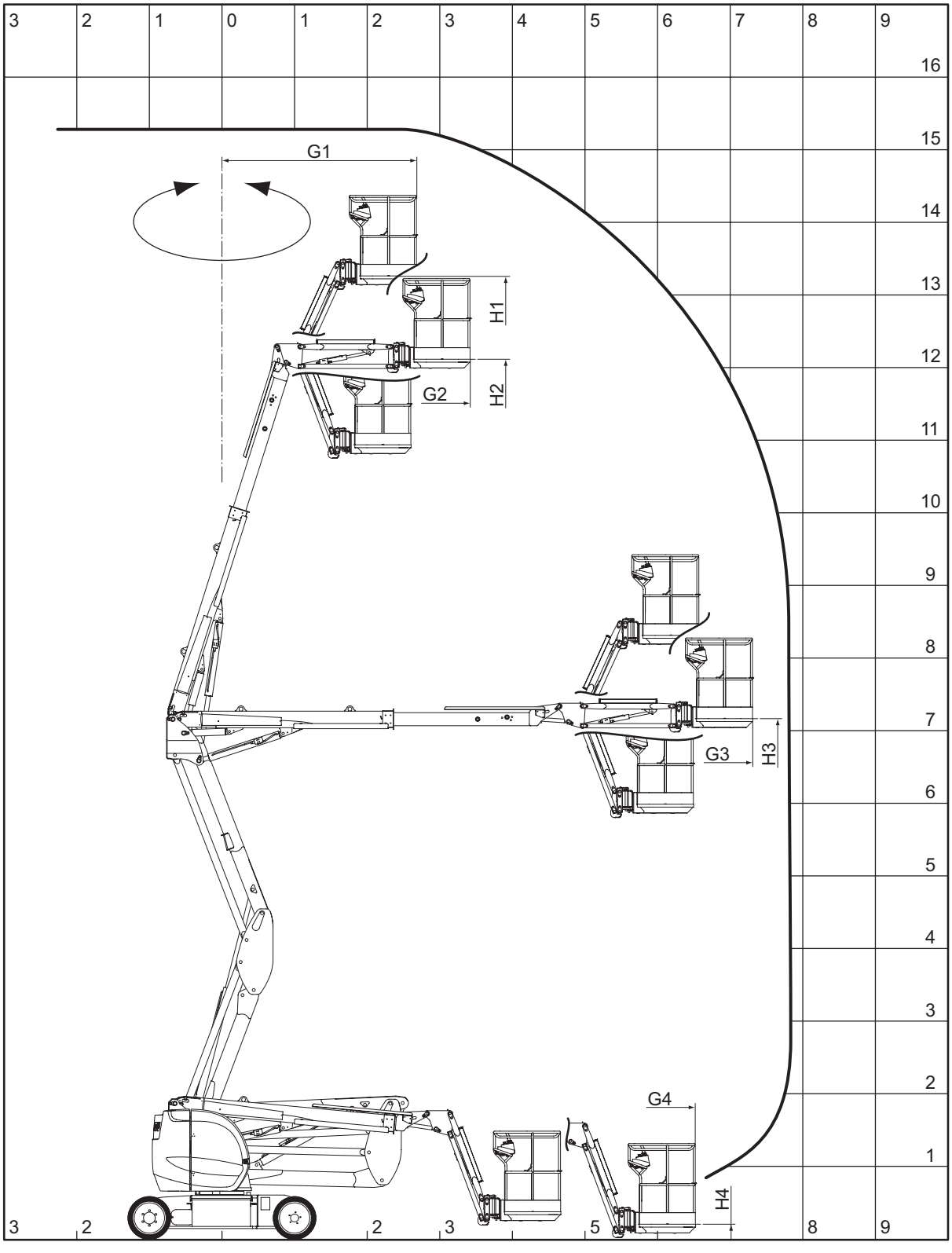






	mm	ft-in
G1	2660	8-8.7
G2	3420	11-2.6
G3	7310	23-11.8
G4	6500	21-3.9

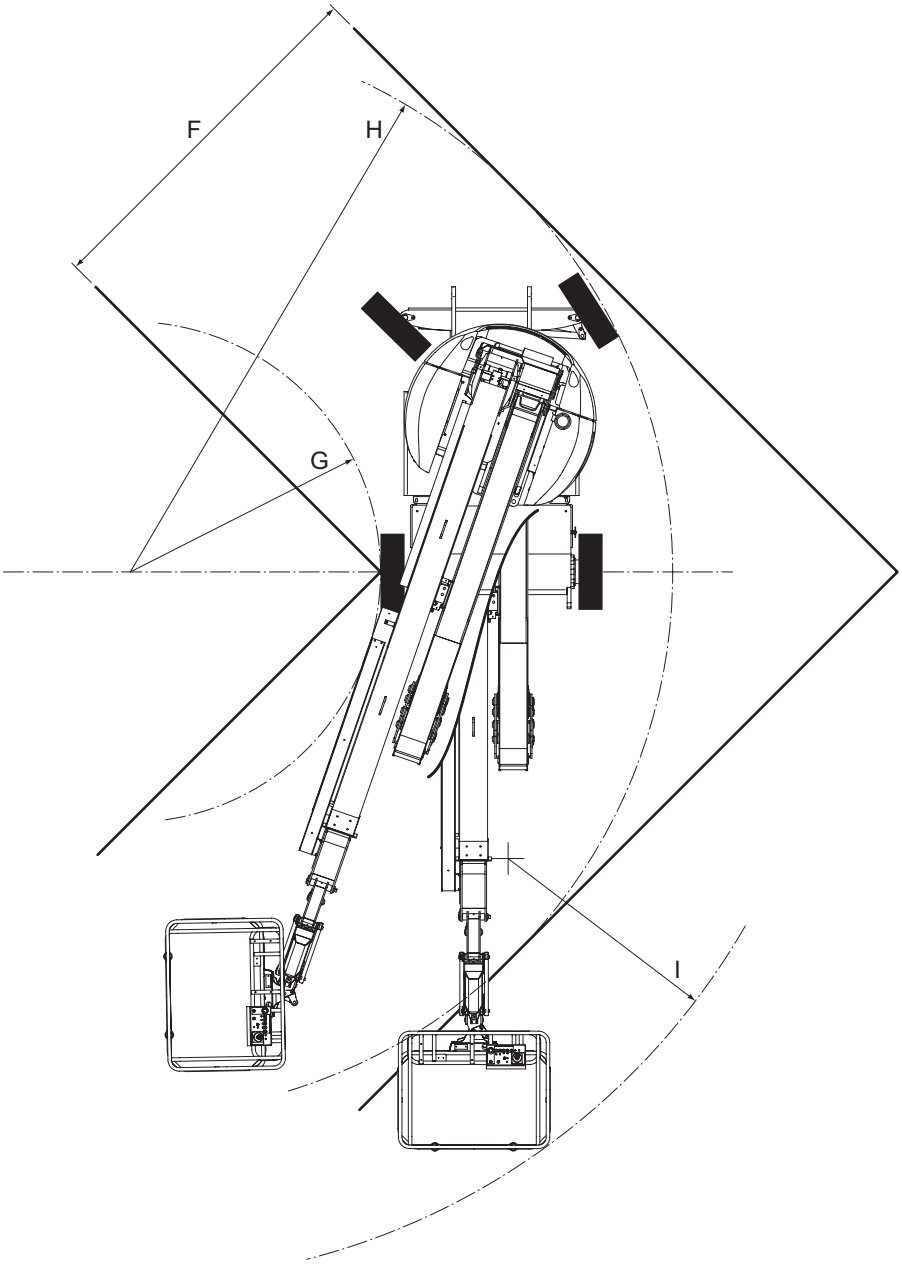
	mm	ft-in
H1	13275	43-6.6
H2	12120	39-9.1
H3	7165	23-6.1
H4	205	0-8.1

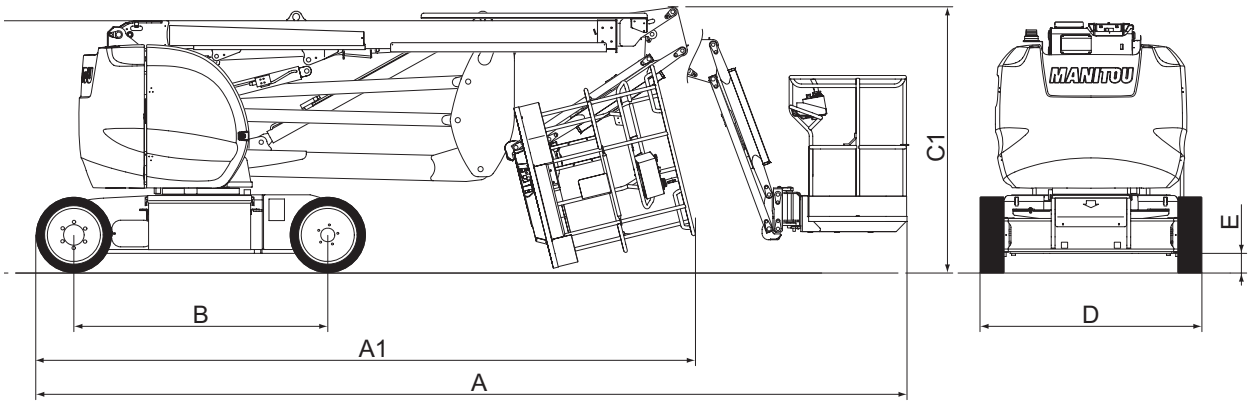


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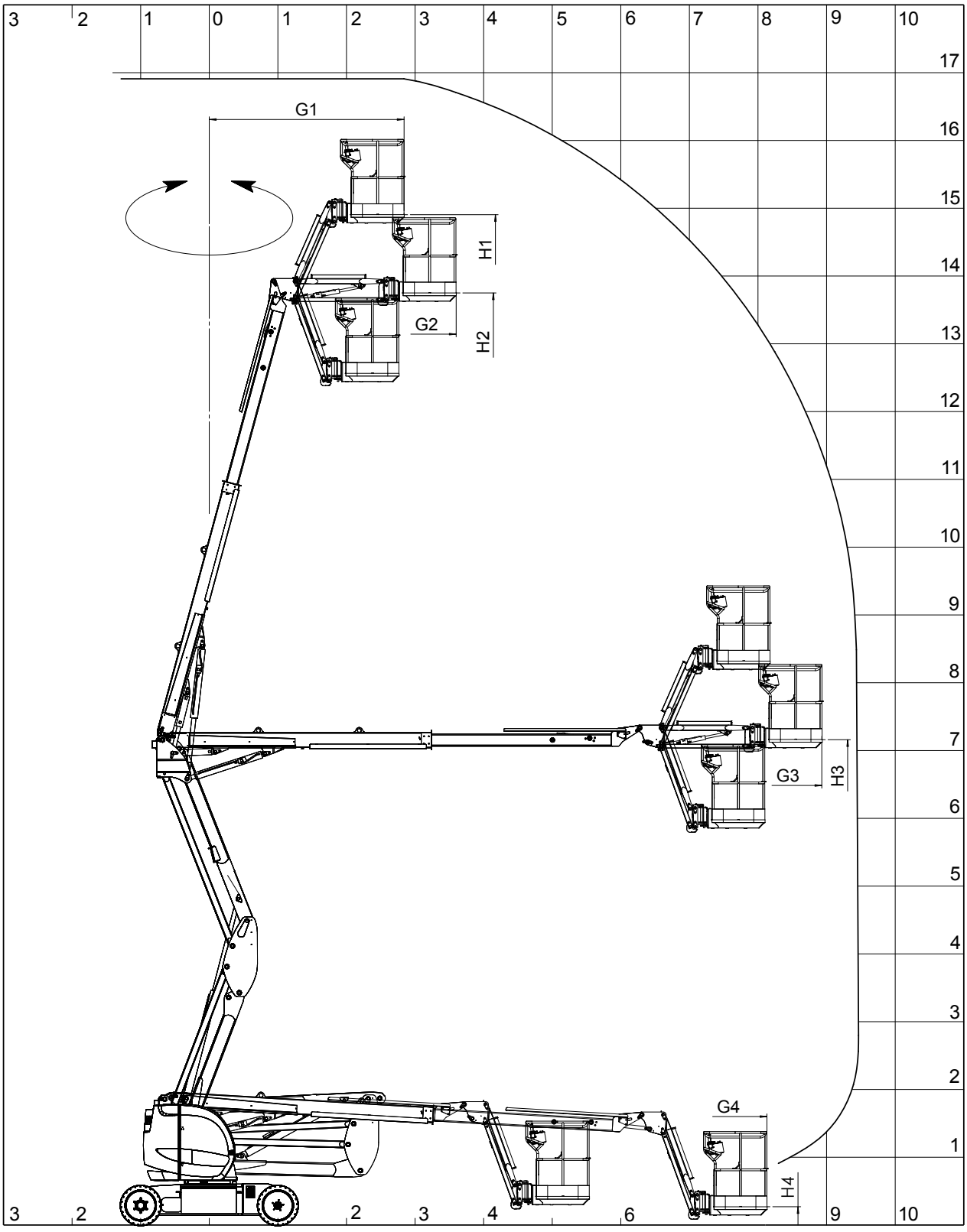
DIMENSIONS 170AETJL - 49 AETJC

	mm	ft-in
A	6840	22-5.3
A1	5120	16-9.6
B	2000	6-6.7
C	1970	6-5.6
C1	2040	6-8.3
D	1750	5-8.9
E	140	0-5.5
F	2890	9-5.8
G	2005	6-6.9
H	4300	14-1.3
I	5600	18-4.5





	mm	ft-in
G1	2840	9-3.8
G2	3600	11-9.7
G3	8930	29-3.6
G4	8130	26-8.1
H1	14905	48-10.8
H2	13750	45-1.3
H3	7160	23-5.9
H4	270	0-10.6



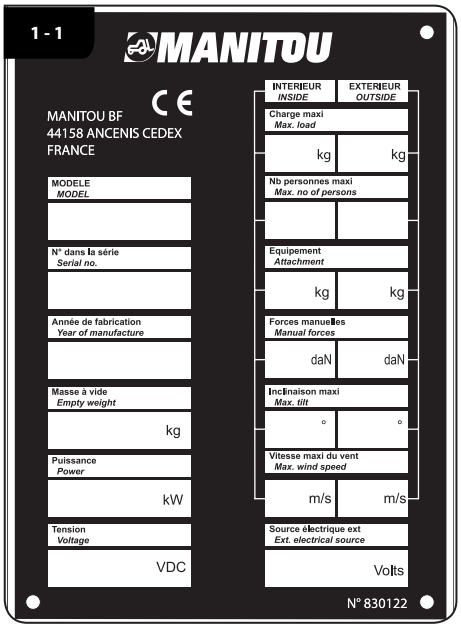
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GENERAL LOCATION

00.2.4 LOCATION OF NAME AND IDENTIFICATION PLATE

As our policy is one of constant improvement of our products, our range of access platforms may undergo certain modifications, without obligation for us to advise our customers.
When you order parts, or when you require any technical information, always specify:
NOTE: For the owner's convenience, it is recommended that a note of these numbers is made in the spaces provided, at the time of the delivery of the access platform.

1 - 1



ACCESS PLATFORM MANUFACTURER'S PLATE

Type:
Serial no.:
Year of manufacture:

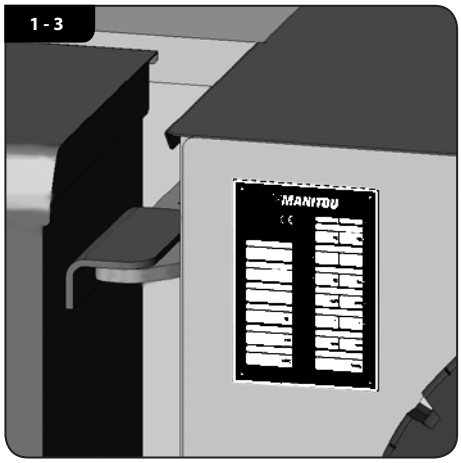
1 - 2



LOCATION OF MANUFACTURER'S PLATE 120 AETJ

The manufacturer's plate is fitted on the inside right panel of the turret.

1 - 3



LOCATION OF MANUFACTURER'S PLATE
150 AETJC - AETJ43 - 150 AETJC 3D - AETJ43 3D
150 AETJL - AETJ49
170 AETJ L

The manufacturer's plate is fitted on the left rear side of the chassis.

00.3 GENERAL CONTROL AND ADJUSTMENT

00.3.1 STANDARD TIGHTENING TORQUES

Standard tightening torques

To be used. unless otherwise indicated in the removal or refit operations.

SCREW / NUT ASSEMBLY

- with hexagon head screws without flanges ou cylinder head hexagon socket screws.
- for dry-fitted zinc-plated fasteners and for torque tools having a ± 20 % class C tightening torque accuracy (equivalent to pneumatic screwdrivers).

1 - NF E 25-030-1 :

Ø x "coarse" pitch	Grade 8.8		Grade 10.9		Ø x "fine" pitch	Grade 8.8		Grade 10.9	
	N.m	lb-in	N.m	lb-in		N.m	lb-in	N.m	lb-in
M6 x 1	8.2	72.57	12.1	107	-	-		-	
M8 x 1.25	20	177	30	265	M8 x 1	22	195	32	283
M10 x 1.5	40	354	59	522	M10 x 1.25 (x 1)	43 (46)	380 (407)	63 (68)	558 (602)
M12 x 1.75	69	611	102	903	M12 x 1.5 (x 1.25)	74 (78)	655 (690)	108 (115)	956
M14 x 2	111	982	163	1443	M14 x 1.5	123	1088	181	1602
M16 x 2	175	1549	256	2266	M16 x 1.5	190	168	279	2470
M18 x 2.5	240	2124	352	3115	M18 x 1.5	279	2469	410	3629
M20 x 2.5	341	3018	501	4434	M20 x 1.5	391	3460	574	5080
M22 x 2.5	470	4160	691	6116	M22 x 1.5	531	4700	780	6903
M24 x 3	588	5204	864	7647	M24 x 2	659	5833	967	8559
M27 x 3	874	7735	1284	11364	M27 x 2	965	8541	1418	12550
M30 x 3.5	1181	10453	1735	15356	M30 x 2	1351	11957	1984	17560
M33 x 3.5	1614	14285	2371	20985	M33 x 2	1821	16117	2674	23667
M36 x 4	2068	18303	3037	26880	-	-		-	

For hexagon screws with flanges (NF E 25-030-1) : Apply an increased torque of +10%.



Where washers are used. the following coefficient is to be applied (FD E 25-502) :

- ***Plate : +0%***
- ***Spring (or Grower) washer without jaws (W) : +10%***
- ***Smooth tapered washer (CL): +5%***
- ***Conical. internal teeth (CDJ-JZC) : +15%.***

2 - With marking :

	4 4T (flange : 4.8T)		5 5T (N.m)		6 6T (flange : 6.8T)		7 7T (N.m)		8 8T (flange : 8.8T)		(flange : 10.9T)		11 (flange : 11.9T)	
Ø x Pitch	N.m	lb-in	N.m	lb-in	N.m	lb-in	N.m	lb-in	N.m	lb-in	N.m	lb-in	N.m	lb-in
M6 x 1	**5.4** (5.5)	**48** (49)	**6.5**	**57.5**	**7.8** (7.5)	**69** (66)	**11**	**97**	**12** (12)	**106** (106)	(15.5)	(137.2)	(17.5)	(155)
M8 x 1.25	**13** (13)	**115** (115)	**16**	**142**	**19** (19)	**168** (168)	**25**	**221**	**29** (29)	**257** (257)	(38)	(336)	(42)	(372)
M10 x 1.25	**25** (27)	**221** (239)	**32**	**283**	**39** (39)	**345** (345)	**52**	**460**	**61** (61)	**540** (540)	(80)	(708)	(89)	(788)
M12 x 1.25	**47** (50)	**416** (443)	**59**	**522**	**72** (71)	**637** (628)	**95**	**841**	**108** (110)	**956** (974)	(145)	(1283)	(160)	(1416)
M14 x 1.5	**75** (78)	**664** (690)	**91**	**805**	**108** (110)	**956** (974)	**147**	**1301**	**172** (175)	**1522** (1549)	(230)	(2036)	(260)	(2301)
M16 x 1.5	**113** (120)	**1000** (1062)	**137**	**1213**	**172** (170)	**1522** (1504)	**226**	**2000**	**265** (270)	**2345** (2390)	(360)	(3186)	(400)	(3540)

use the upper class where spring (or Grower) washers are used.

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00.3.2 METRIC - IMPERIAL UNIT CONVERSION

RULES

-The tolerance has the same unit as the value and is not a percentage :

Example : 120 ± 12 Ω , not ~~120 ± 10 %~~.

-The unit is separated from the value by a space and placed after the tolerance :

Example: 120 Ω ou 120 ± 12 Ω except for angle degrees : 40° ou 40 ± 3°.

-The conversion of some marks is not possible :

Example: thread of a screw : M12x1.75.

-Use decimals to convert precise values :

Example: 190 mm = 7.48 in.

-Write lengths in feet-inches format:

Example: 20 m = 65 ft 7.4 in or in a table 20 (m) = 65-7.4 (ft-in).

CONVERSION COEFFICIENTS:

Metric Unit (S.I)	***Coefficient***		***Imperial Unit US***
° (angle degree)	x 1	=	° (angle degree)
°C (Celsius degree)	x 1.8 + 32	=	°F (Fahrenheit degree)
cv (cheval vapeur)	x 0.9859	=	hp (horsepower)
bar (bar)	x 14.51	=	psi (pound-force/square inch)
g (gram)	x 0.0353	=	oz av (ounce avoirdupois) (oz : lat. onza)
Hz (Hertz)	x 1	=	Hz (Hertz)
kg (kilogram)	x 2.2046	=	lb (pound) (lat . libra)
kg (kilogram)	x 35.274	=	oz av (ounce avoirdupois) (oz : lat. onza)
km/h (kilometer per hour)	x 0.6214	=	mph (miles per hour)
kW (kilowatt)	x 1.34048	=	hp (horsepower)
ℓ (liter)	x 0.2642	=	gal US (US gallon)
ℓ (liter)	x 1.0567	=	qt US (quart US gallon)
m (meter)	x 3.2808	=	ft (foot)
m (meter)	x 39.37	=	in (inch)
min (minute)	x 1	=	min (minute)
mℓ (milliliter)	x 0.0338	=	fl oz (fluid ounce) (fl : fluid, oz : lat. onza)
mm (millimeter)	x 0.03937	=	in (inch)
µm (micrometer)	x 0.03937	=	mil (thousands of an inch)
N (Newton)	x 0.2248	=	lbf (pound-force) (lb : lat. libra, f : force)
N.m (Newton meter)	x 0.7376	=	ft-lb (pound-force-foot) (ft : foot, lb : lat. libra)
N.m (Newton meter)	x 8.8507	=	lb-in (pound-force-inch) (lb : lat. libra, in : inch)
s (second of time)	x 1	=	s (second of time)
rad/s (radian/second)	x 9.5493	=	rpm (revolution per minute)
t (metric ton)	x 2204.62	=	lb (pound) (lat. libra)
tr/min (tour per minute)	x 1	=	rpm (revolution per minute)
Ω (Ohm)	x 1	=	Ω (Ohm)

Other unit conversions	***Coefficient***		
ft (foot)	x 12	=	in (inch)
lb (pound) (lat . libra)	x 16	=	oz av (ounce avoirdupois)
m (meter)	x 1000	=	mm (millimeter)
µm (micrometer)	x 0.001	=	mm (millimeter)
t (metric ton)	x 1000	=	kg (kilogram)
° (angle degree)	x 0.01745	=	rad (radian)

Abbreviation

lat: Latin

gr: Greek

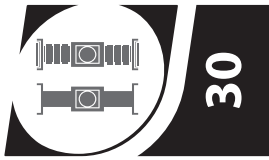
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AXLE

30.1 CHARACTERISTICS AND SPECIFICATIONS

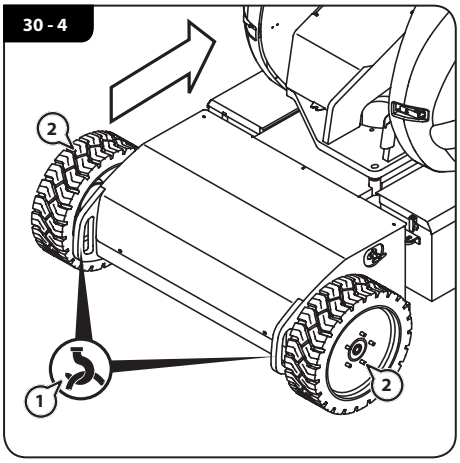
30.1.1 REAR AXLE - OPERATION IN FREEWHEEL MODE

DANGER

In order to operate the access platform in freewheel mode, it should not be subjected to translational constraints resulting from a slope.
When the access platform is in the freewheel mode, it can move freely: fit wedges to immobilize the wheels.

CAUTION

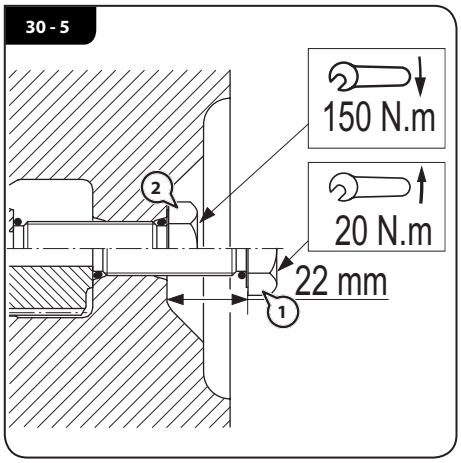
If the access platform needs to be towed, this operation should only be carried out:
- Over short distances.
- Necessarily by a machine that has high braking power in order to hold it steady, and at a slow speed.
- By means of a connecting bar between the two machines.



- IF POSSIBLE, lift the rear of the platform (1, ***030 - 4***).

120 AETJL : ***2680 kg (5908 lbs)***
150 AETJC : ***3770 kg (8311 lbs)***
150 AETJL - 150 AETJC 3D : ***3375 kg (7441 lbs)***
170 AETJL - AETJ49 : ***3842 kg (8470 lbs)***
AETJ43 - AETJ43 3D : ***3775 kg (8322 lbs)***

- Locate the screws (2, ***030 - 4***).



- Unscrew these screws according to the model of your platform, ***030 - 5***) by 22 mm (0.87 in), up to the hard spot and without forcing: **RISK OF BREAKAGE**.
Maximum loosening torque 20 N.m (177 lb-in).
- Set the platform down.
- The machine can now be towed.

RESETTING
- Raise the rear of the platform.
- Turn the wheels from left to right and reset the gears by re-tightening the screws (2, ***030 - 5***):
Maximum tightening torque for rear wheel 150 N.m (1327.6 lb-in)

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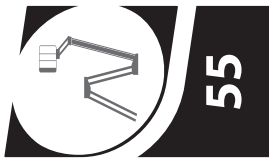
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JIB - BASKET

55.1 JIB - BASKET CONTROLS

55.1.1 CHECK THE CLEARANCE OF THE TELESCOPE

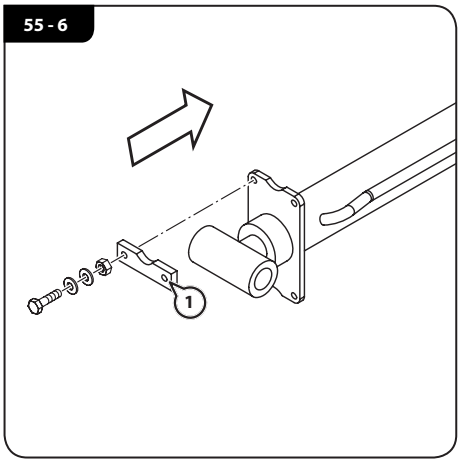
CLEARANCE between moving tube and arm of telescope	
Lateral	0.5 mm (0.02 in)
Upper	0.5 mm (0.02 in)

If necessary, add the adjustment plates if necessary (see parts catalogs).

55.2 JIB - BASKET REMOVAL

55.2.1 REMOVAL OF PADS OF TELESCOPIC CYLINDER

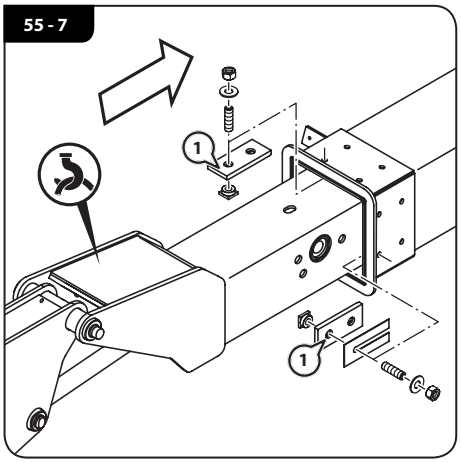
55 - 6



Remove the telescopic cylinder (◁ ***TELESCOPIC CYLINDER - REMOVAL,*** ***63***)
Remove and replace the pads (1, ***055 - 6***) (see parts catalog).

55.2.2 REMOVAL OF REAR PADS OF TELESCOPIC CYLINDER

55 - 7



- Remove the telescopic cylinder (◁ ***TELESCOPIC CYLINDER - REMOVAL,*** ***63***).

- Release the pads (1, ***055 - 7***) by slightly raising the basket.

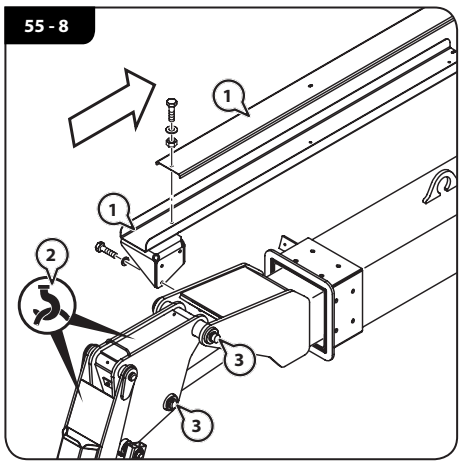
- Remove the pads (1, ***055 - 7***), pay attention to the position and number of adjustment plates.

- Get new pads (see parts catalog)
- Replace the pads and adjustment plates, then check the clearance (◁ ***55.1.1 CHECK THE CLEARANCE OF THE TELESCOPE,*** ***31***).

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55.2.3 REMOVAL OF PADS OF TELESCOPE MOVING TUBE

55 - 8



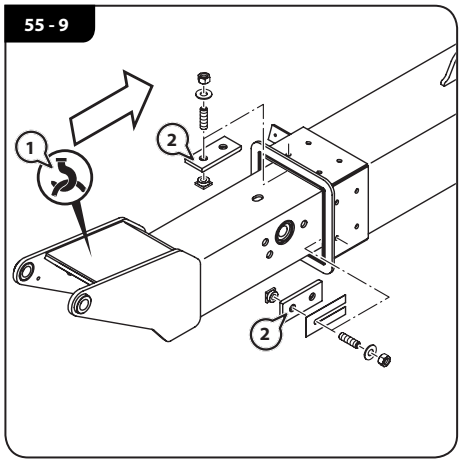
- Remove the telescopic cylinder (◅ ***TELESCOPIC CYLINDER - REMOVAL,*** 🗐 ***63***).

- Remove the flexible guide fasteners on the moving tube (1***, 055 - 8***).

- Sling the basket/jib/hinge assembly (2***, 055 - 8***):
- *without steering actuator (3D - JIB)* **230 kg (507 lbs)**
- *with steering actuator (3D - JIB)* **267 kg (589 lbs)**

- Remove the axles (3***, 055 - 8***) then remove the basket/jib/hinge assembly nearby to avoid damaging the hydraulic hoses and wiring harnesses.

55 - 9

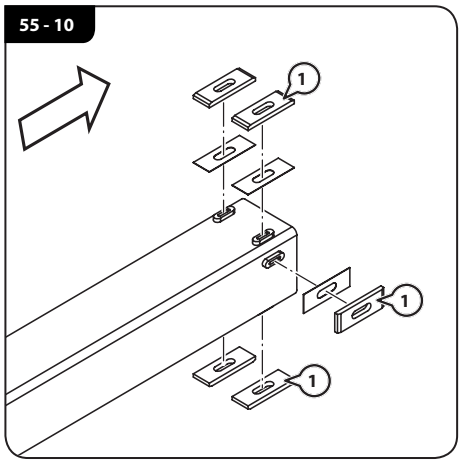


- Release the pads of the telescope jib by gently releasing the moving tube (1***, 055 - 9***).

- Remove the pads (2***, 055 - 9***) of the telescope jib, pay attention to the position and number of adjustment plates.

- Remove the moving tube by allowing it to slide towards the rear:
- *120 AETJL :* ***102 kg (225 lbs)***
- *150 AETJC et 150 AETJL - 150 AETJC 3D - AETJ43 - AETJ43 3D:* ***116 kg (256 lbs)***
- *170 AETJL - AETJ49 :* ***148 kg (326 lbs)***

55 - 10



- Remove the pads (1***, 055 - 10***), pay attention to the position and number of adjustment plates.

- Get new pads (see parts catalog).

- Fit the pads and adjustment plates, then check the clearance (◅ ***55.1.1 CHECK THE CLEARANCE OF THE TELESCOPE,*** 🗐 ***31***).

55

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ARM 1/2 LIFTING CYLINDER - REMOVAL. 61

ARM 3 LIFTING CYLINDER - REMOVAL. 62

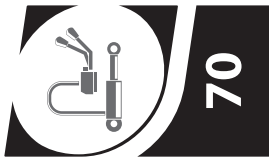
TELESCOPIC CYLINDER - REMOVAL 63

COMPENSATION/TILTING CYLINDER REMOVAL 64

JIB CYLINDER - REMOVAL 66

BASKET ROTATION CYLINDER - REMOVAL. 67

ROTATION CYLINDER (3D - JIB) - REMOVAL 68



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LINKS TO REPAIR MANUALS:

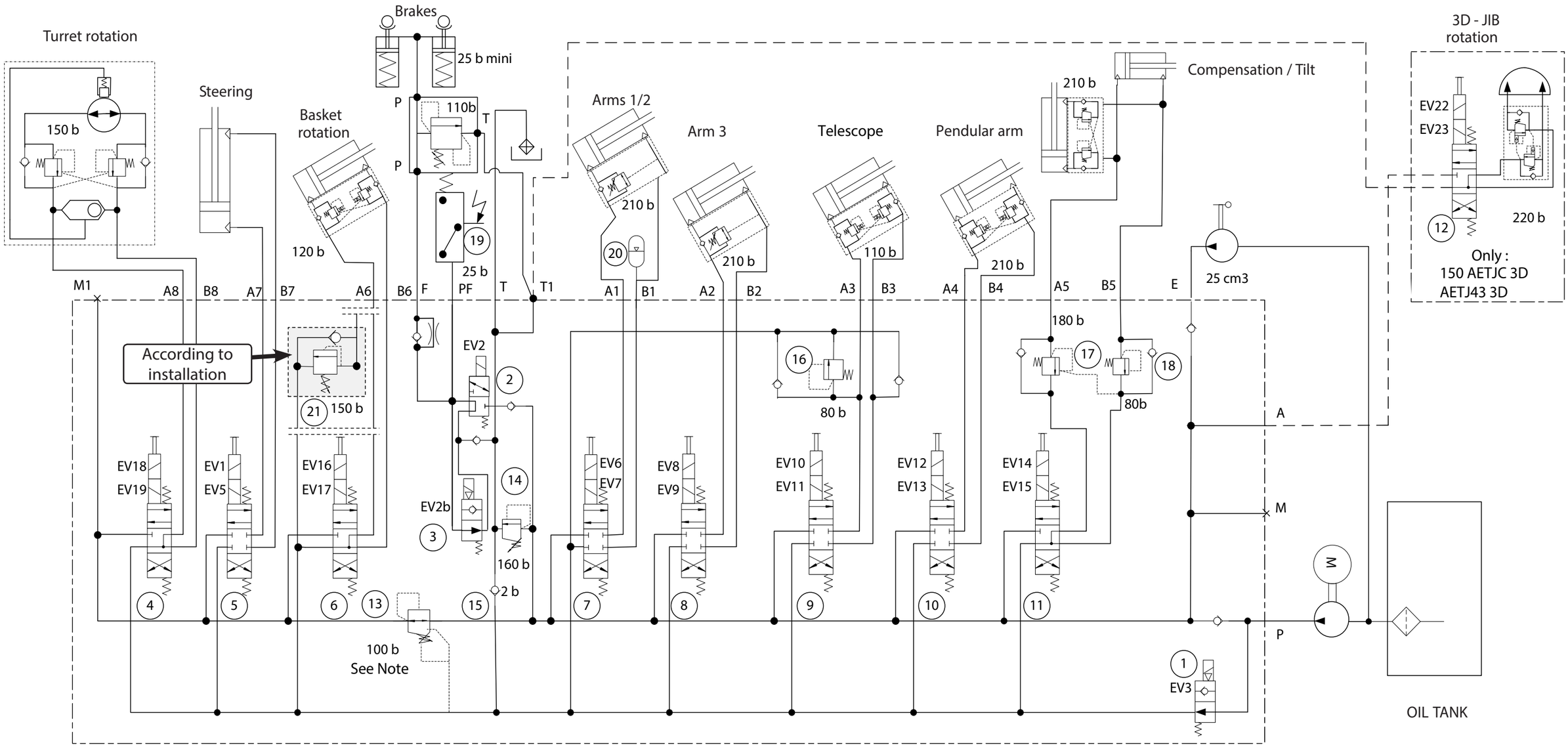
MANUAL REFERENCE NUMBER	DESIGNATION
647 187	ROTARY ACTUATORS HELICAL HYDRAULIC L20 SERIE

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HYDRAULIC

70.1 HYDRAULIC SCHEMATIC DIAGRAMS

70.1.1 679449 - HYDRAULIC DIAGRAM



150 AETJC - 150 AETJC 3D
AETJ 43 - AETJ 43 3D
150 AETJL
170 AETJL - AETJ 49
679449 Index E

https://truckmanualshub.com/

This diagram relates to lifting platforms :
- 150 AETJC - 150 AETJC 3D
- AETJ 43 - AETJ 43 3D
- 150 AETJL
- 170 AETJL - AETJ 49

COMPONANTS OF THE HYDRAULIC LAYOUT

NOTE : Delivery of the block with the adjustment AETJ standard

No.	Function	AETJ Standard Taring
21	Pressure restrictor	150 b
20	Hydro accumulator 75 ml	20 b
19	Pressure controller	25 b
18	Balancing valve	80 b
17	Balancing valve	180 b
16	Pressure reducer	80 b
15	Valve	2 b
14	Main pressure restrictor	160 b
13	Pressure reducer	
12	Rotating JIB (Option)	
11	Compensation / Tilt	
10	Pendular arm	
9	Telescope	
8	Arm 3	
7	Arms 1-2	
6	Basket rotation	
5	Steering	
4	Turret rotation	
3	Brakes	
2	Brakes	
1	Safety valve	

ACTIVATION TABLE FOR THE ELECTRO-VALVES ACCORDING TO THE DESIRED MOVEMENT

Please refer to the hydraulic layout to match the electro-valve numbers and their location on the platform

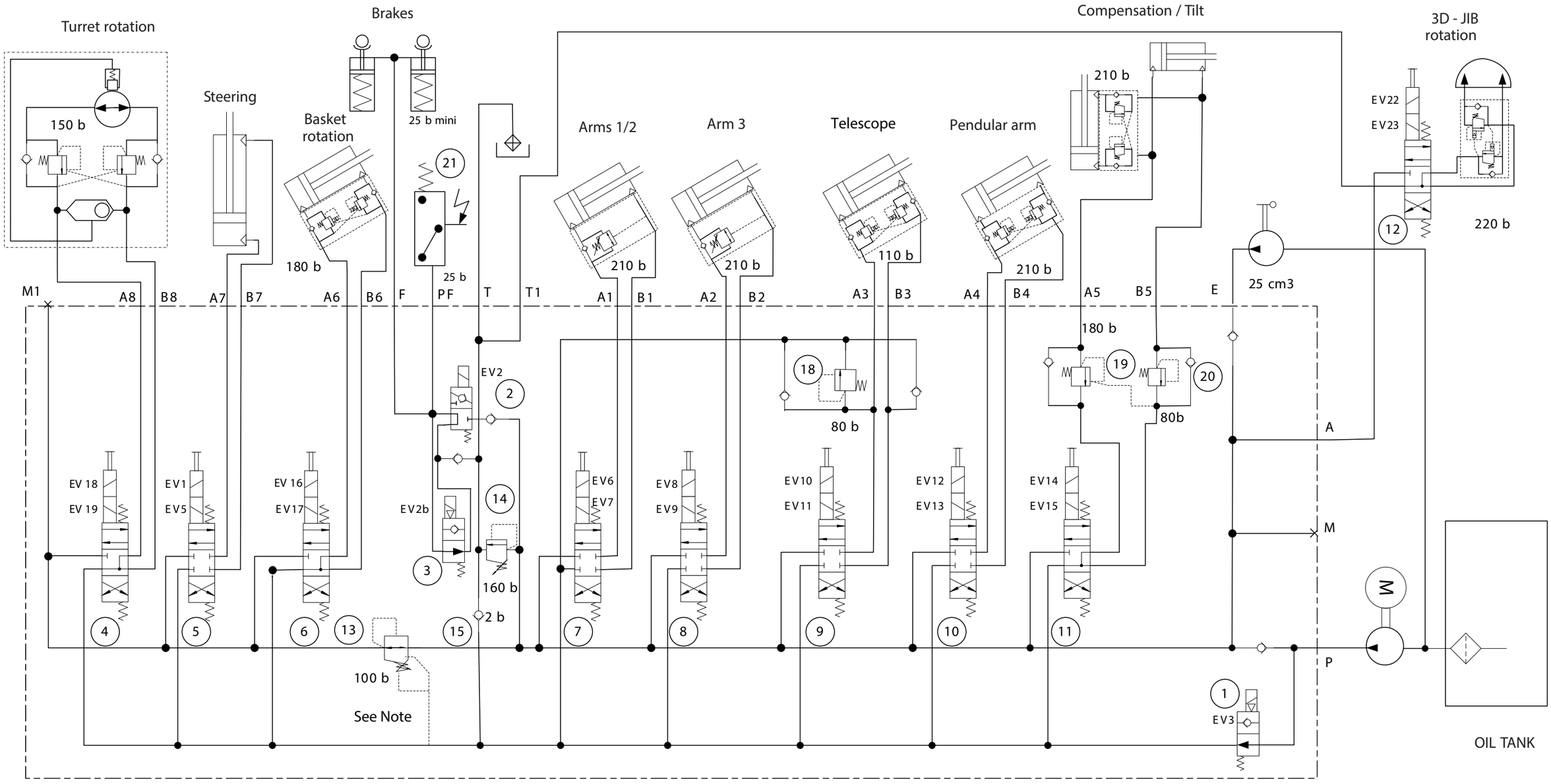
E : Excited

			1	2	3	4		5		6		7		8		9		10		11		12	
			ev3	ev2	ev2b	ev18	ev19	ev1	ev5	ev16	ev17	ev6	ev7	ev8	ev9	ev10	ev11	ev12	ev13	ev14	ev15	ev22	ev23
Transport Position	Stop																						
	Stop + steering		E					E or E															
	translation		E	E	E																		
	translation + steering		E	E	E			E or E															
Work Position	Stop																						
	Stop + steering		E					E or E															
	translation		E	E	E																		
	translation + steering		E	E	E			E or E															
	Turret Rotation	Right	E			E																	
		Left	E				E																
	Basket Rotation	Right	E							E													
		Left	E								E												
	Raising 1-2	Raising	E									E											
		Lowering	E										E										
	Raising 3	Raising	E											E									
		Lowering	E												E								
	Telescope	Extended	E													E							
		Retracted	E														E						
	Pendular arm	Raising	E															E					
		Lowering	E																E				
	Tilt	Boost	E																	E			
		Tilt	E																		E		
	Jib Rotation (option)	Right	E																			E	
		Left	E																				E

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70.1.2 685268 - HYDRAULIC DIAGRAM



120 AETJL
685268
Indice A

685268 Index A

70

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This diagram relates to lifting platforms :
- 150 AETJC - 150 AETJC 3D
- AETJ 43 - AETJ 43 3D
- 150 AETJL
- 170 AETJL - AETJ 49

COMPONANTS OF THE HYDRAULIC LAYOUT

NOTE : Delivery of the block with the adjustment AETJ standard

No.	Function	AETJ Standard Taring
21	Pressure restrictor	25 b
20	Balancing valve	80 b
19	Balancing valve	180 b
18	Pressure restictor	80 b
16	Pressure restictor	150 b
15	Shutter Valve	2 b
14	Main pressure restrictor	160 b
13	Pressure reducer	150 b
12	Rotating JIB (Option)	
11	Compensation / Tilt	
10	Pendular arm	
9	Telescope	
8	Arm 3	
7	Arms 1-2	
6	Basket rotation	
5	Steering	
4	Turret rotation	
3	Brakes	
2	Brakes	
1	Safety valve	

ACTIVATION TABLE FOR THE ELECTRO-VALVES ACCORDING TO THE DESIRED MOVEMENT

Please refer to the hydraulic layout to match the electro-valve numbers and their location on the platform

E : Excited

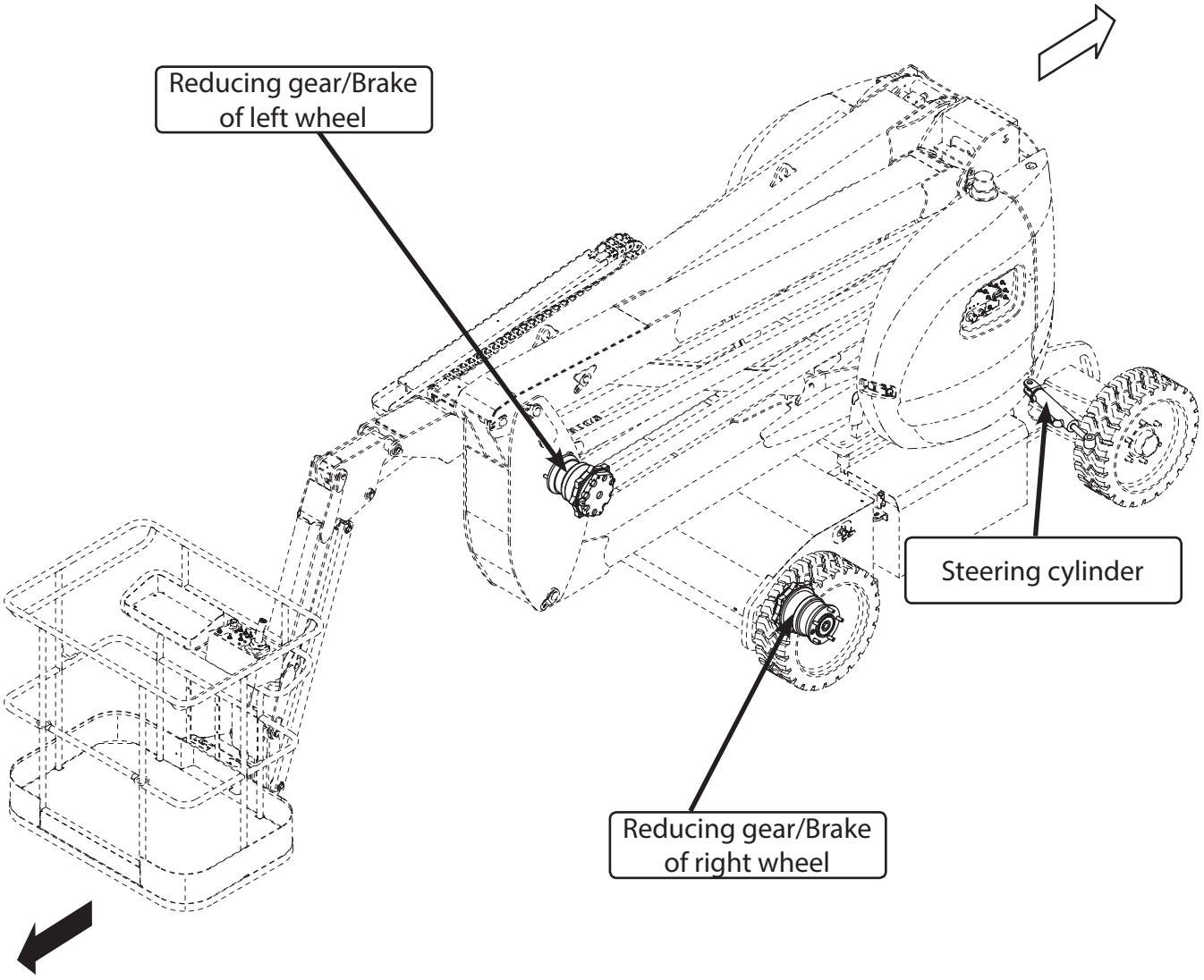
			1	2	3	4		5		6		7		8		9		10		11		12	
			ev3	ev2	ev2b	ev18	ev19	ev1	ev5	ev16	ev17	ev6	ev7	ev8	ev9	ev10	ev11	ev12	ev13	ev14	ev15	ev22	ev23
Transport Position	Stop																						
	Stop + steering		E					E or E															
	translation		E	E	E																		
	translation + steering		E	E	E			E or E															
Work Position	Stop																						
	Stop + steering		E					E or E															
	translation		E	E	E																		
	translation + steering		E	E	E			E or E															
	Turret Rotation	Right	E			E																	
		Left	E				E																
	Basket Rotation	Right	E							E													
		Left	E								E												
	Raising 1-2	Raising	E									E											
		Lowering	E										E										
	Raising 3	Raising	E											E									
		Lowering	E												E								
	Telescope	Extended	E													E							
		Retracted	E														E						
	Pendular arm	Raising	E															E					
		Lowering	E																E				
	Tilt	Boost	E																	E			
		Tilt	E																		E		
	Jib Rotation (option)	Right	E																			E	
		Left	E																				E

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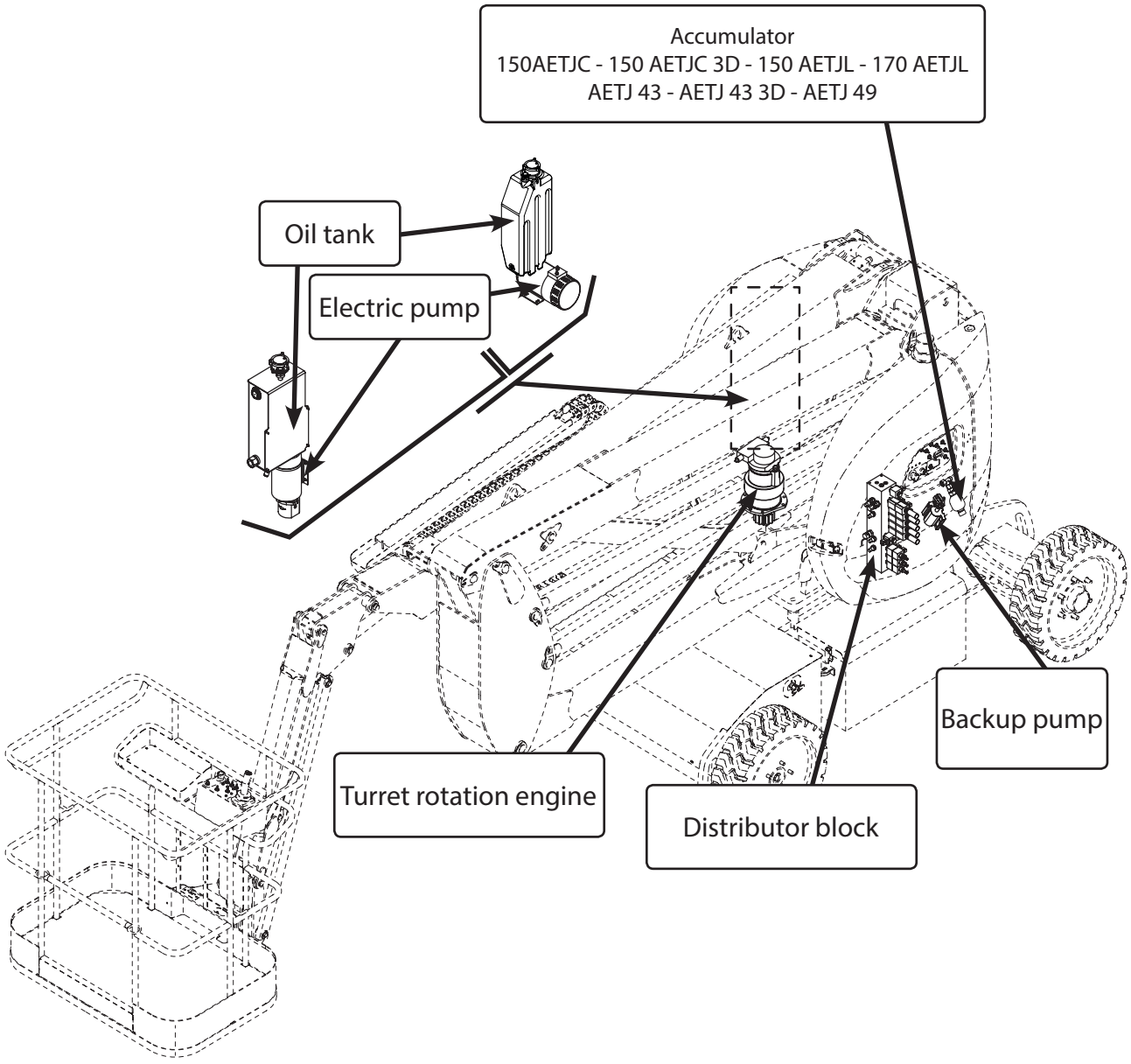
70.2 HYDRAULIC COMPONENTS LOCATION

70.2.1 HYDRAULIC COMPONENTS OF THE CHASSIS - LOCATION



https://truckmanualshub.com/

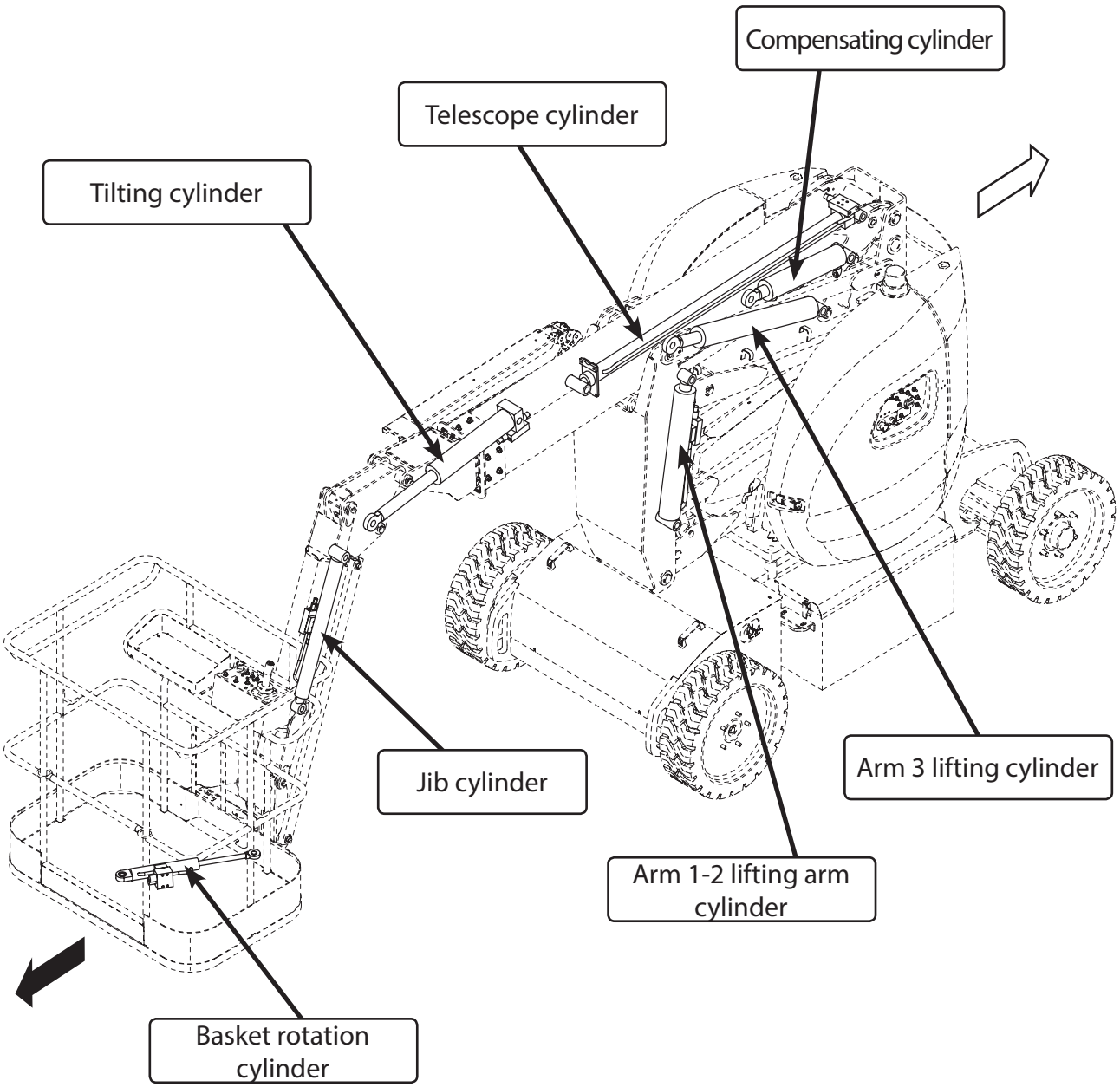
70.2.2 HYDRAULIC COMPONENTS OF THE TURRET - LOCATION



https://truckmanualshub.com/

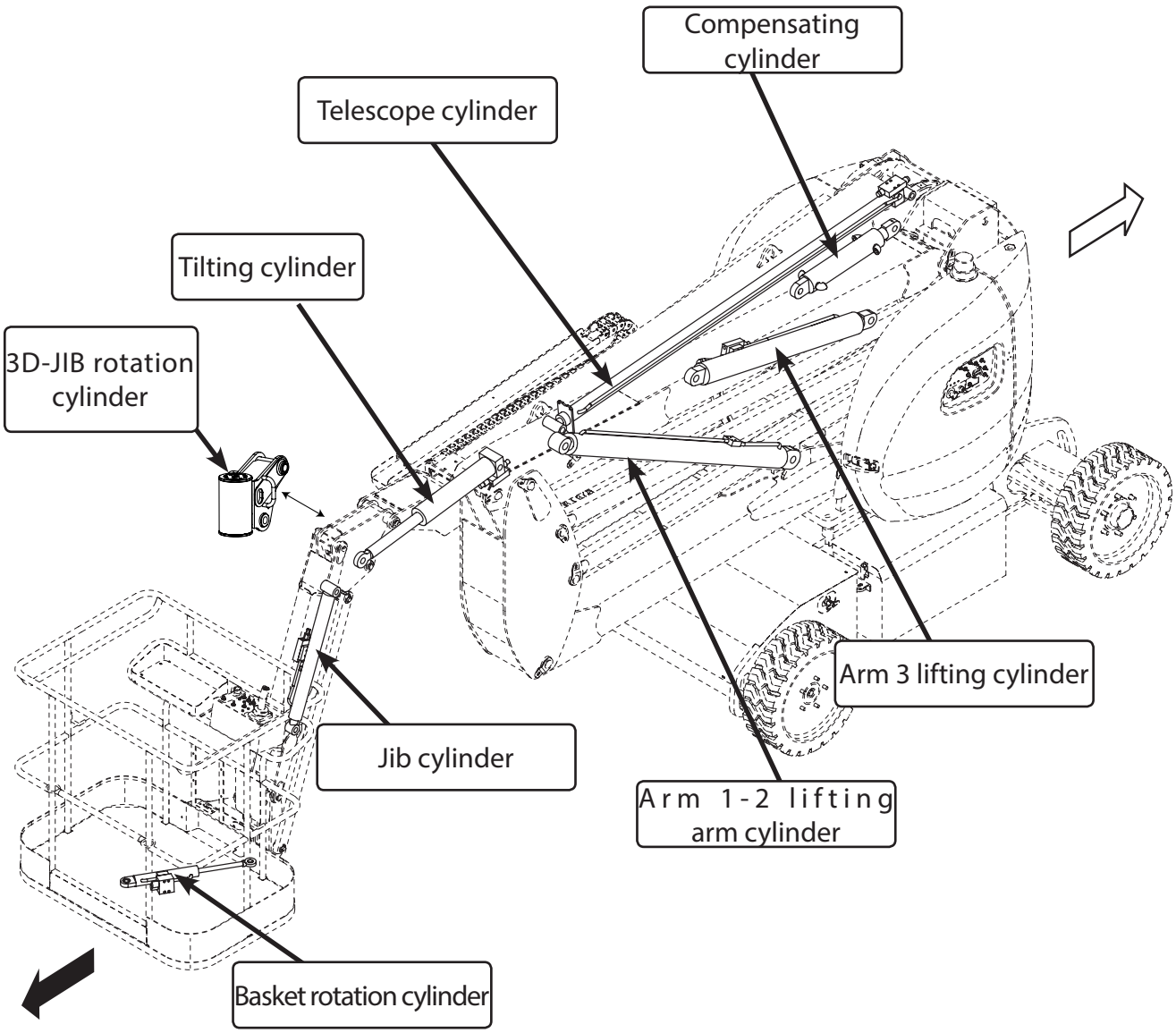
70.2.3 HYDRAULIC COMPONENTS OF THE JIB - LOCATION

- 120 AETJL :



https://truckmanualshub.com/

- 150 AETJC, 150 AETJC 3D, 150 AETJL, 170 AETJL, AETJ43, AETJ43 3D, AETJ 49 :



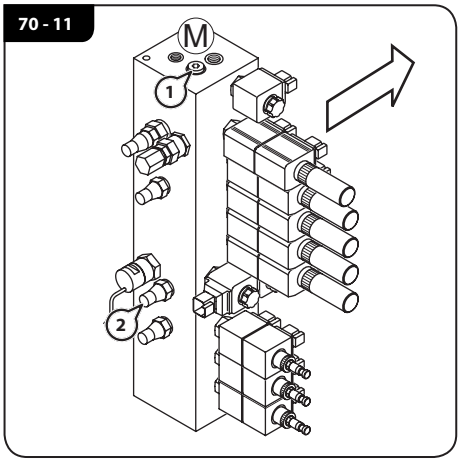
70.3 HYDRAULIC CONTROL AND ADJUSTMENT

⚠ CAUTION

In this chapter, unless specifically indicated, in order to view the setting pressure values and choose the appropriate pressure gauge, refer to the hydraulic diagrams (◁ ***70.1.1 679449 - HYDRAULIC DIAGRAM, 5 35***))***37***+ (◁ ***70.1.2 685268 - HYDRAULIC DIAGRAM,*** ***39***)***41***

70.3.1 MAIN CIRCUIT - PRESSURE SETTING

70 - 11



Setting the main pressure relief valve (14,📷 ***70.1.1***), (14,, ***070.1.2***)

- On the distributor, connect a pressure gauge to M (1, ***070 - 11***).

- Switch on the access platform.

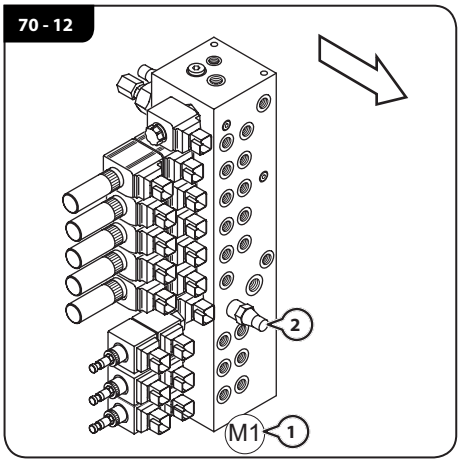
- Control the lowering of arms 1/2 and maintain the control when the cylinder reaches the stop.

- Check that the pressure gauge displays the pressure recommended in the hydraulic diagram.

- As required, adjust the setting of the main relief valve (2, ***070 - 11***).

70.3.2 STEERING, BASKET/TURRET ROTATION CIRCUIT - PRESSURE SETTING

70 - 12



Setting the pressure relief valve (13,📷 ***70.1.1***), (13,📷 ***70.1.2***)

- On the distributor, connect a pressure gauge to M1 (1, ***070 - 12***).

- Switch on the access platform.

- Control the steering to one side and maintain the control when the cylinder reaches the stop.

- Check that the pressure gauge displays the pressure recommended in the hydraulic diagram.

- As required, adjust the setting of the pressure reducer (2, ***070 - 12***)

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70.3.3 BRAKE RELEASE CIRCUIT - PRESSURE SETTING

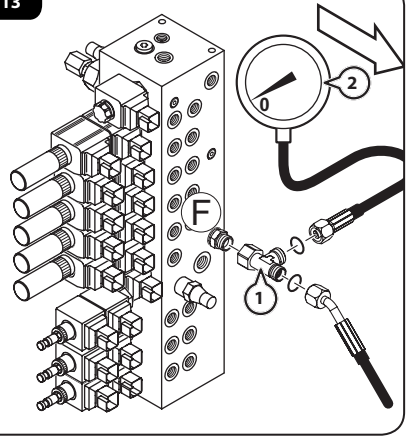
⚠ CAUTION

Procedure to be performed by two people.

Use a pressure gauge with a capacity of 0 - 250 bar (0-3625.94 psi).

The pressure switch is adjusted only by TIGHTENING the adjustment screw.

70 - 13



PRESSURE SWITCH ADJUSTMENT

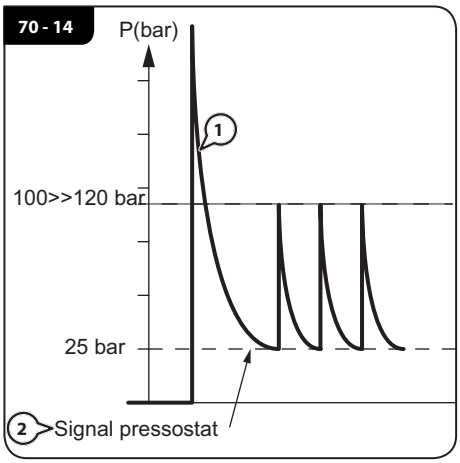
(17,📷 ***70.1.1***),(19,📷 ***70.1.2***)

- Place a Tee connector on the bypass at outlet F (1, ***070 - 13***) and connect the pressure gauge (2, ***070 - 13***)

.

- Switch on the access platform.

70 - 14



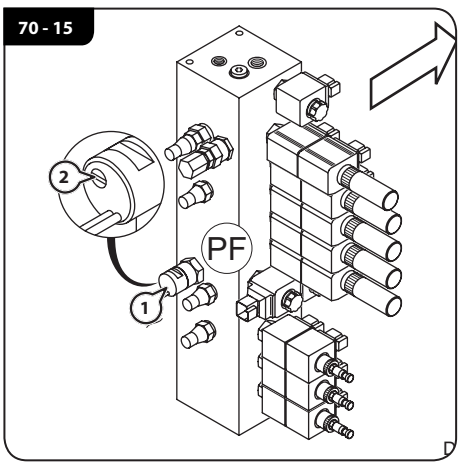
- Control the travel and check that the displayed pressure follows the curve (1, ***070 - 14***):

If the pressure switch (2, ***070 - 15***) trips BELOW the threshold (2, ***070 - 14***), then, with the platform stationary, adjust the threshold by TIGHTENING the adjustment screw (2, ***070 - 15***).

- If the pressure switch (1, ***070 - 15***) trips ABOVE the threshold (2, ***070 - 14***), unscrew the adjustment screw by a few turns (2, ***070 - 15***), then adjust it by TIGHTENING.

- Repeat the travel test.

70 - 15

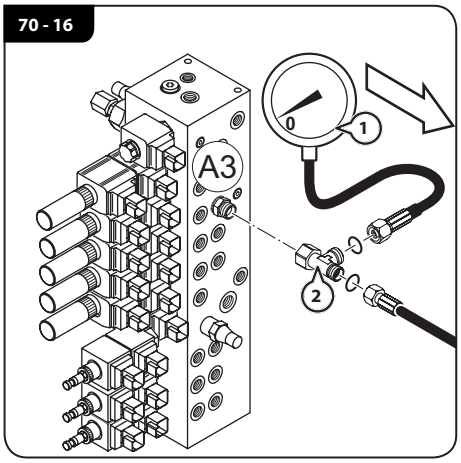


NOTE: For the electrical aspects (6, 5 48)

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70.3.4 TELESCOPIC CIRCUIT - PRESSURE SETTING

70 - 16



PRESSURE REDUCER SETTING

(16, 📷 ***70.1.1***), (18, 📷 ***70.1.2***)

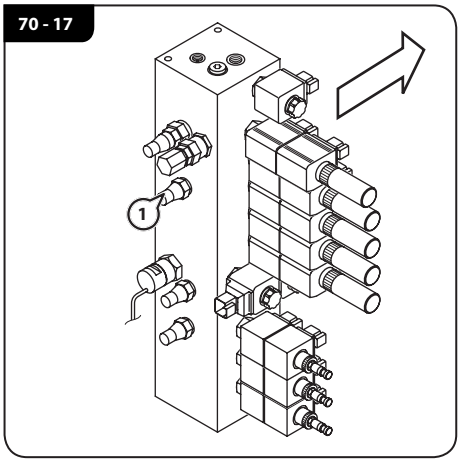
- Decompress the telescopic line (distributor) (◁ ***70.3.10 DISTRIBUTOR - REMOVAL,*** 🗐 ***57***)

- Place a Tee connector on the by-pass at outlet A3 (1***, 070 - 16***) and connect the pressure gauge (2***, 070 - 16***).

- Switch on the access platform.

- Move the telescope extension and keep it moving under it reaches its full extent.

70 - 17



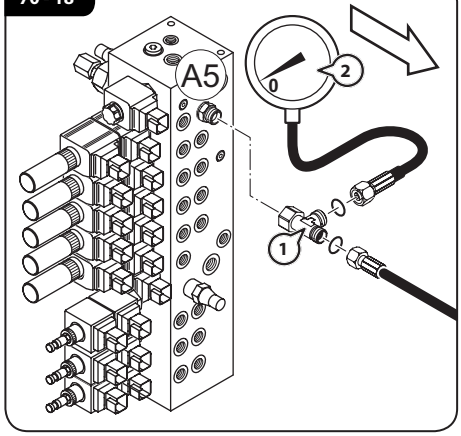
- Check that the pressure gauge displays the pressure recommended in the hydraulic diagram.

- As required, adjust the setting of the pressure reducer (1***, 070 - 17***).

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70.3.5 COMPENSATION/TILTING CIRCUIT - PRESSURE SETTING

70 - 18



DECOMPRESSION OF THE CIRCUIT

- Decompression of the compensation/ tilting circuit (◁ ***COMPENSATION/TILTING CYLINDER REMOVAL,*** 🗐 ***64***)

- Switch off the power to the access platform.

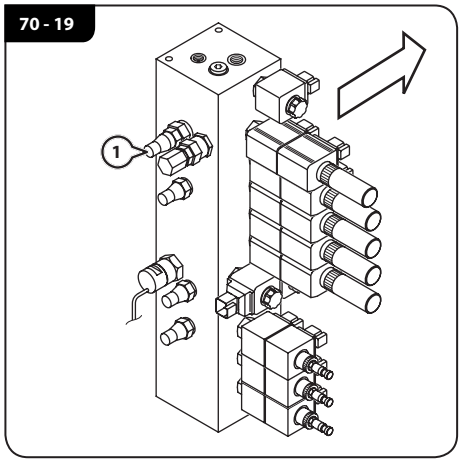
VALVE A ADJUSTMENT

(17,📷 ***70.1.1***), (19,📷 ***70.1.2***)

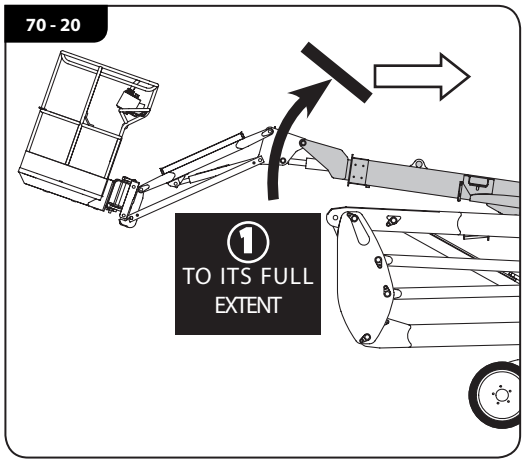
- Place a Tee connector on the by-pass at outlet A5 (1***, 070 - 18***) and connect the pressure gauge (2***, 070 - 18***).

- Switch on the access platform.

70 - 19

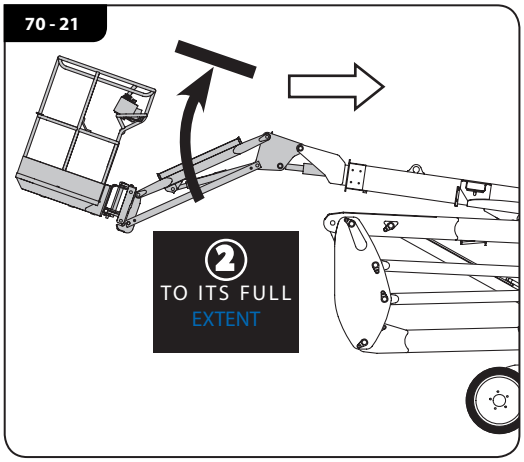


70 - 20

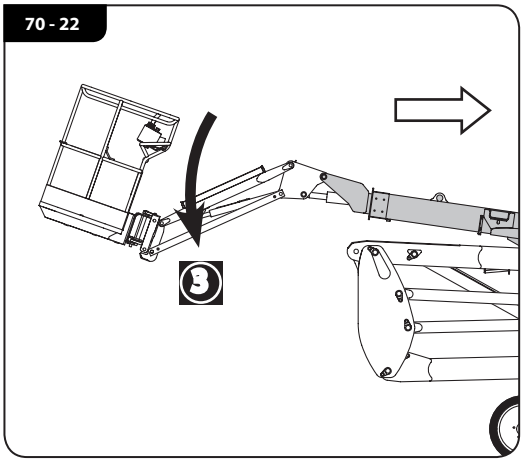


- Follow steps (1***, 070 - 20***), (2***, 070 - 21***) and (3***, 070 - 22***): the verification of the setting of valve A (1***, 070 - 19***) and its adjustment are to be carried out during movement 3.

70 - 21

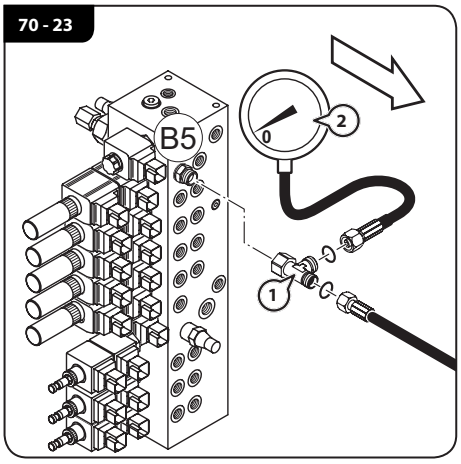


70 - 22



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70 - 23



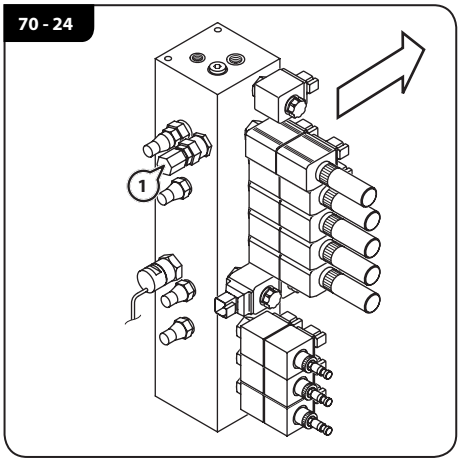
VALVE B ADJUSTMENT

(18,📷 ***70.1.1***), (19,📷 ***70.1.2***)

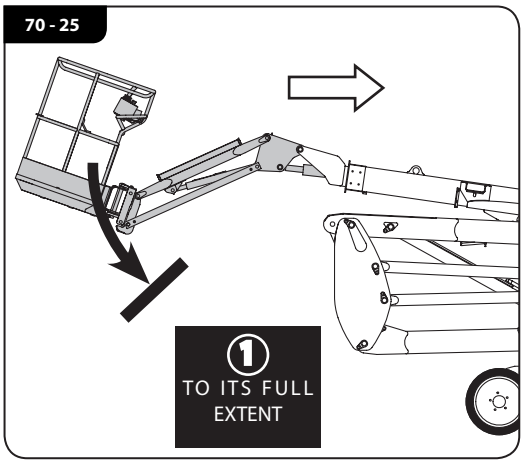
- Place a Tee connector on the by-pass at outlet B5 (1***, 070 - 23***) and connect the pressure gauge (1***, 070 - 23***)).

- Switch on the access platform.

70 - 24

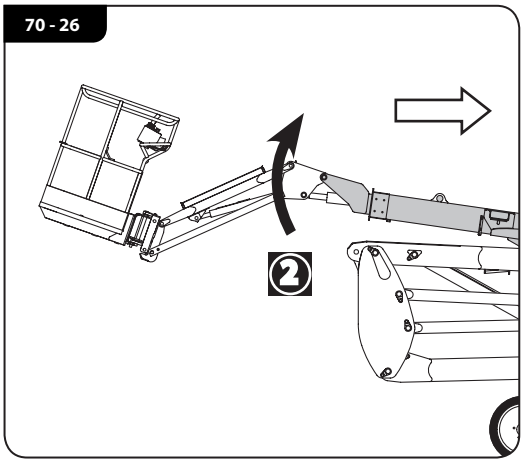


70 - 25



- Follow steps (1***, 070 - 25***) and (2***, 070 - 26***): the verification of the setting of valve A (1***, 070 - 24***) and its adjustment are to be carried out during movement 2.

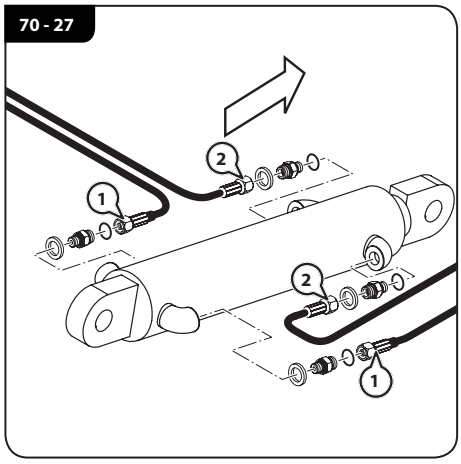
70 - 26



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70.3.6 COMPENSATION/TILTING CIRCUIT - PROBLEM SOLVING

70 - 27



- If the basket does not remain in position and drops under gravity when the access platform is not in operation, perform the following test procedure.

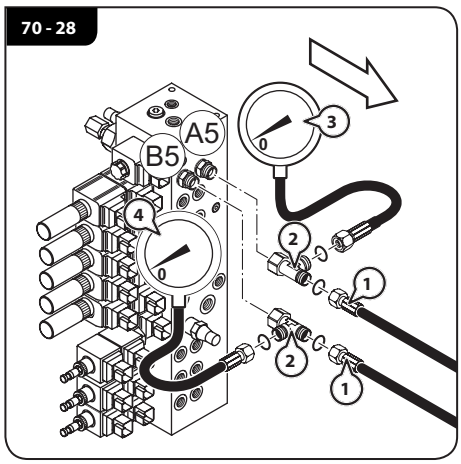
TEST PROCEDURE

- Decompression of the compensation/tilting circuit (◁ ***70.3.11 CYLINDERS - REMOVAL,*** ***60***)

- Switch off the power to the access platform.

- Take a drain pan and place it under the compensating cylinder.

70 - 28



- Identify the hoses connected to the compensating cylinder lower chamber (1, ***070 - 27***) and remove them.

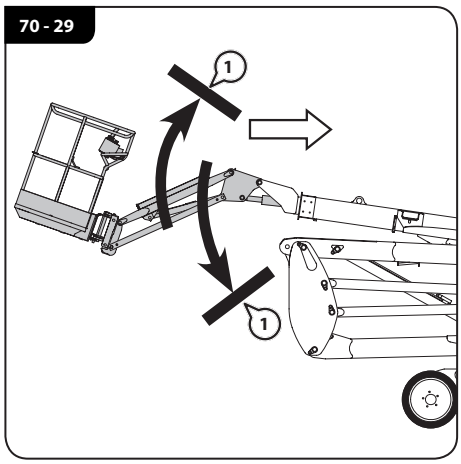
- Take a straight coupler and connect the hoses from the lower chamber.

- Perform the same procedure for the hoses for the upper chamber (2, ***070 - 27***).

- Remove the hoses (1, ***070 - 28***) connected at A5 and B5 from the distributor block.

- Insert tee couplings between the distributor block and the hoses (2, ***070 - 28***).

70 - 29



- Take a 0 - 200 bar (0-2900.75 psi) manometer (3, ***070 - 28***) and connect it to the left-hand tee coupling: outlet A5.

- Take a 0 - 100 bar (0-1450.38 psi) manometer (4, ***070 - 28***) and connect it to the right-hand tee coupling: outlet B5.

- Switch on the access platform.

- Tilt the basket and jib to their maximum extent (1, ***070 - 29***) several times from the base control panel to pressurize the hydraulic circuit.

- Place the basket in the horizontal position.

- Switch off the power to the access platform.

- Note the pressure readings displayed by the two manometers.

- Check that the basket does not drop.

NOTE: This procedure may take a long time (several hours).

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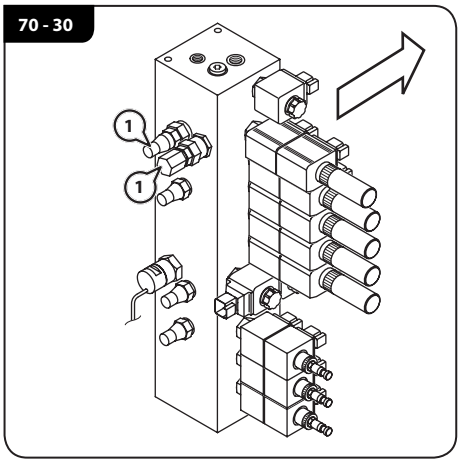
ANALYSIS OF RESULTS

- THE BASKET REMAINS IN POSITION AND THE HYDRAULIC PRESSURE HAS NOT DROPPED: the cylinder or the seals of the compensating cylinder are faulty.

- Remove the compensation cylinder
(◅ ***70.3.11 CYLINDERS - REMOVAL,*** ***60***)

- Remove the cylinder and check the condition of the seals. Change the seals if required (see parts catalog)

70 - 30



- Check the condition of the cylinder barrel. Replace the cylinder if it has scratch marks or traces of rust or pollution (see parts catalog)

- THE BASKET REMAINS IN POSITION AND THE HYDRAULIC PRESSURE HAS DROPPED IN ONE OR BOTH HYDRAULIC LINE(S): there is a problem with the seal or the settings of one or both valves of the distributor block.

- Decompression of the compensation/tilting circuit (◅ ***70.3.11 CYLINDERS - REMOVAL,*** ***60***)

- Remove the valve(s) (1***, 070 - 30***)and check the appearance of the seals. Change the valves if the seals are defective (see parts catalog)

- Refit the valves then check their adjustment.....
(◅ ***70.3.5 COMPENSATION/TILTING CIRCUIT - PRESSURE SETTING,*** ***50***)

- THE BASKET DROPS, THE PRESSURE ON BOTH MANOMETERS TENDS TO BALANCE (+/- 10 BAR (145.1 psi)) OR THE PRESSURE REMAINS CONSTANT IN LINE A5 AND FALLS IN LINE B5.

- Decompression of the compensation/tilting circuit (◅ ***70.3.11 CYLINDERS - REMOVAL,*** ***60***)

- Remove the tilting cylinder (◅ ***70.3.11 CYLINDERS - REMOVAL,*** ***60***)

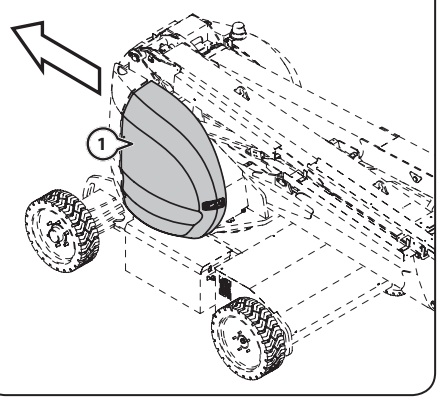
- Remove the cylinder and check the condition of the seals. Change the seals if required (see parts catalog)

- Check the condition of the cylinder barrel. Replace the cylinder if it has scratch marks or traces of rust or pollution (see parts catalog)

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70.3.7 TURRET ROTATION MOTOR - REMOVAL

70 - 31

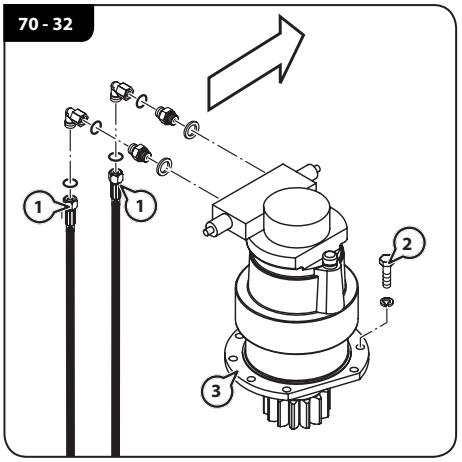


- Open the right-hand turret cover.

- Decompress the turret rotation line (distributor) (◁ ***70.3.10 DISTRIBUTOR - REMOVAL,*** ***57***)

- Open the left-hand turret cover (1, ***070 - 31***).

70 - 32



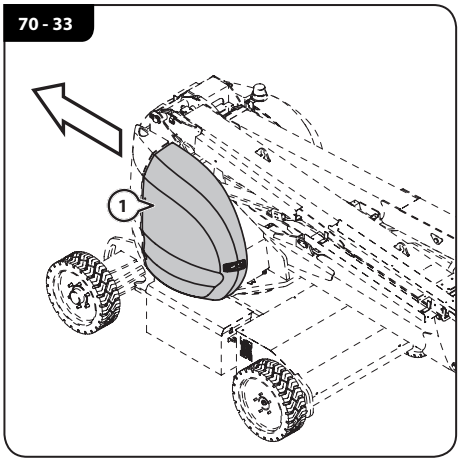
- Remove and plug the two hoses (1, ***070 - 32***).

- Remove the motor attachments (2, ***070 - 32***).

- Remove the steering motor (3, ***070 - 32***)
36kg (80 lbs)

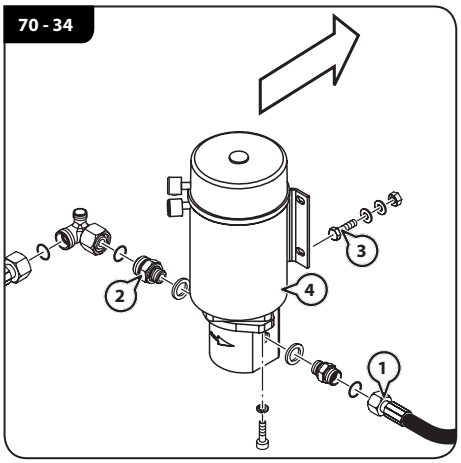
70.3.8 ELECTRIC PUMP - REMOVAL

70 - 33



- Open the left-hand turret cover (1, ***070 - 33***).

70 - 34



Following fitting (see figure, ***070 - 34***), (see figure, ***070 - 35***):

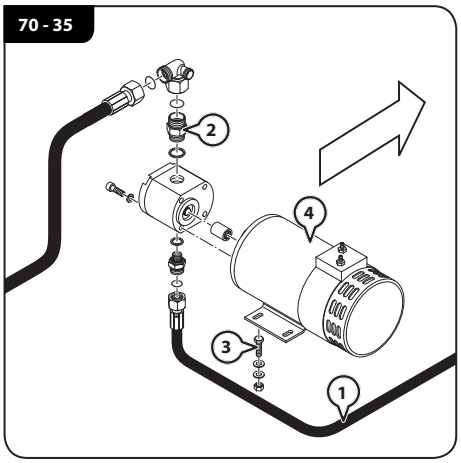
- Remove and plug the hose (1, ***070 - 34***), (1, ***070 - 35***).

- Remove and plug the connector (2, ***070 - 34***), (2, ***070 - 35***).

- Remove the attachments (3, ***070 - 34***), (3, ***070 - 35***) and remove the electric pump (4, ***070 - 34***), (4, ***070 - 35***)

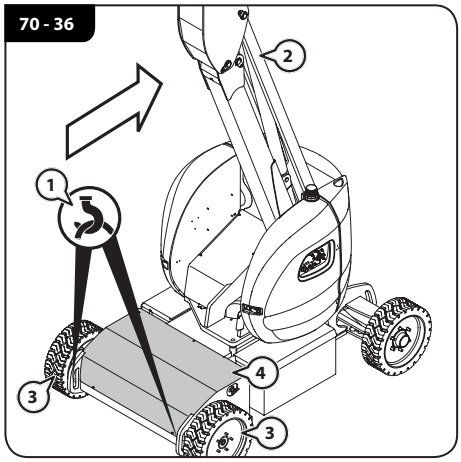
25 kg (55 lbs)

70 - 35



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70.3.9 REDUCING GEARS/WHEEL BRAKES - REMOVAL



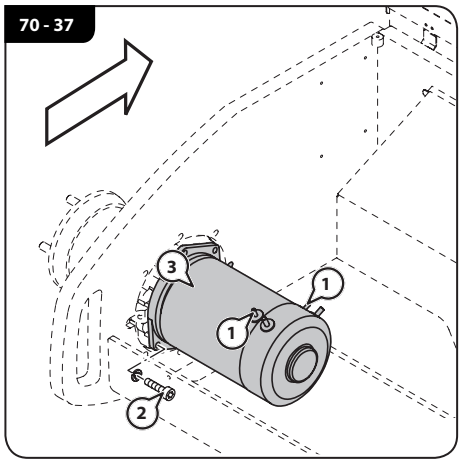
- Raise the rear of the access platform and place blocks under the frame (1, ***070 - 36***):

120 AETJL : ***2680 kg (5908 lbs)***
150 AETJC : ***3770 kg (8311 lbs)***
150 AETJL - 150 AETJC 3D : ***3375 kg (7440 lbs)***
170 AETJL - AETJ49 : ***3842 kg (8470 lbs)***
AETJ43 - AETJ43 3D : ***3775 kg (8323 lbs)***

- Raise arm 1/2 by 3m (118.11 in) (2, ***070 - 36***).

- Remove the fasteners from the rear wheels (3, ***070 - 32***) and remove the wheels.

53 kg (117 lbs)



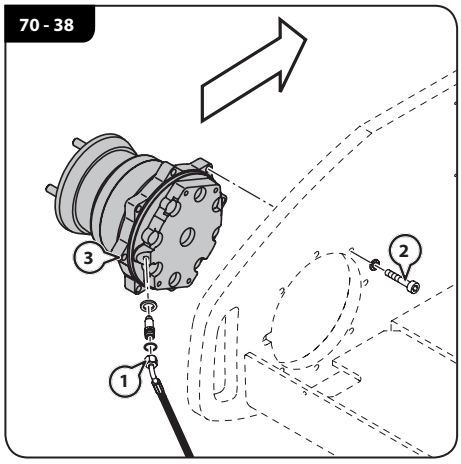
- Remove the cover (4, ***070 - 36***).

- Mark and then remove the electric cables connected to the motors (1, ***070 - 37***).

- Remove the fasteners from one of the motors (2, ***070 - 37***) and remove this motor (B-3).

27 kg (60 lbs)

- Repeat the same procedure on the second engine.



- Remove and plug the hoses (1, ***070 - 38***).

- Remove the fasteners from one of the reducing gears/brakes (2, ***070 - 38***) and remove this assembly (3, ***070 - 38***).

50 kg (110 lbs)

- Repeat the same procedure on the second engine.

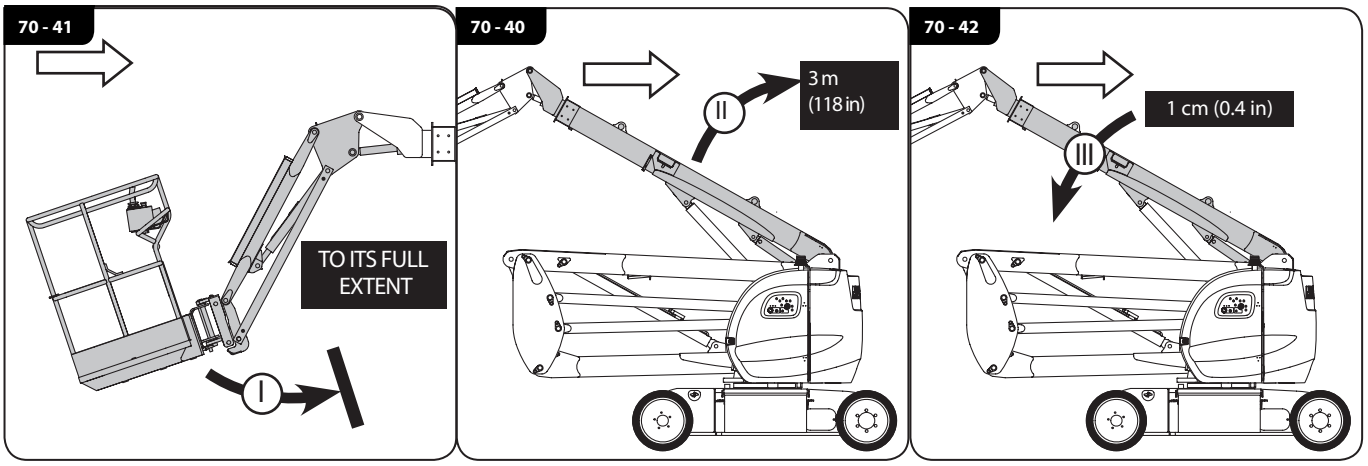
REFIT

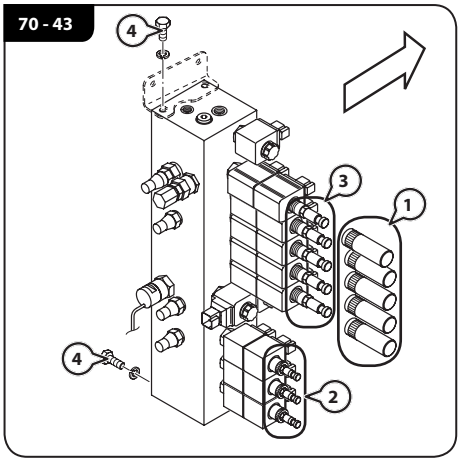
Wheel nut maximum tightening torque **220 N.m** *(1947.2 lb-in).*

70.3.10 DISTRIBUTOR - REMOVAL

⚠ WARNING

The hoses connected to the compensation/tilting cylinders are under pressure EVEN WHEN STOPPED.
*Before carrying out work to remove the distributor, these hoses must be decompressed by following the steps (**I, 070 - 41**), (**II, 070 - 40**) and (**III, 070 - 42**) because this line cannot be decompressed from the distributor.*





- Open the right-hand turret cover.

- Remove the manual indexed control protections (1, ***070 - 43***).

- Decompress the hydraulic lines:

- Pull, push the 3 non-indexed controls (2, ***070 - 43***) and allow them to return to their equilibrium position.

- Pull, push the 5 indexed controls (3, ***070 - 43***) and return them to their center position.

- Replace the manual indexed control protections (1, ***070 - 43***).

- Remove and plug the hoses connected to the distributor.

- Identify the wiring harnesses connected to the solenoids and disconnect them.

- Remove the distributor fasteners (4, ***070 - 43***) and remove the distributor.

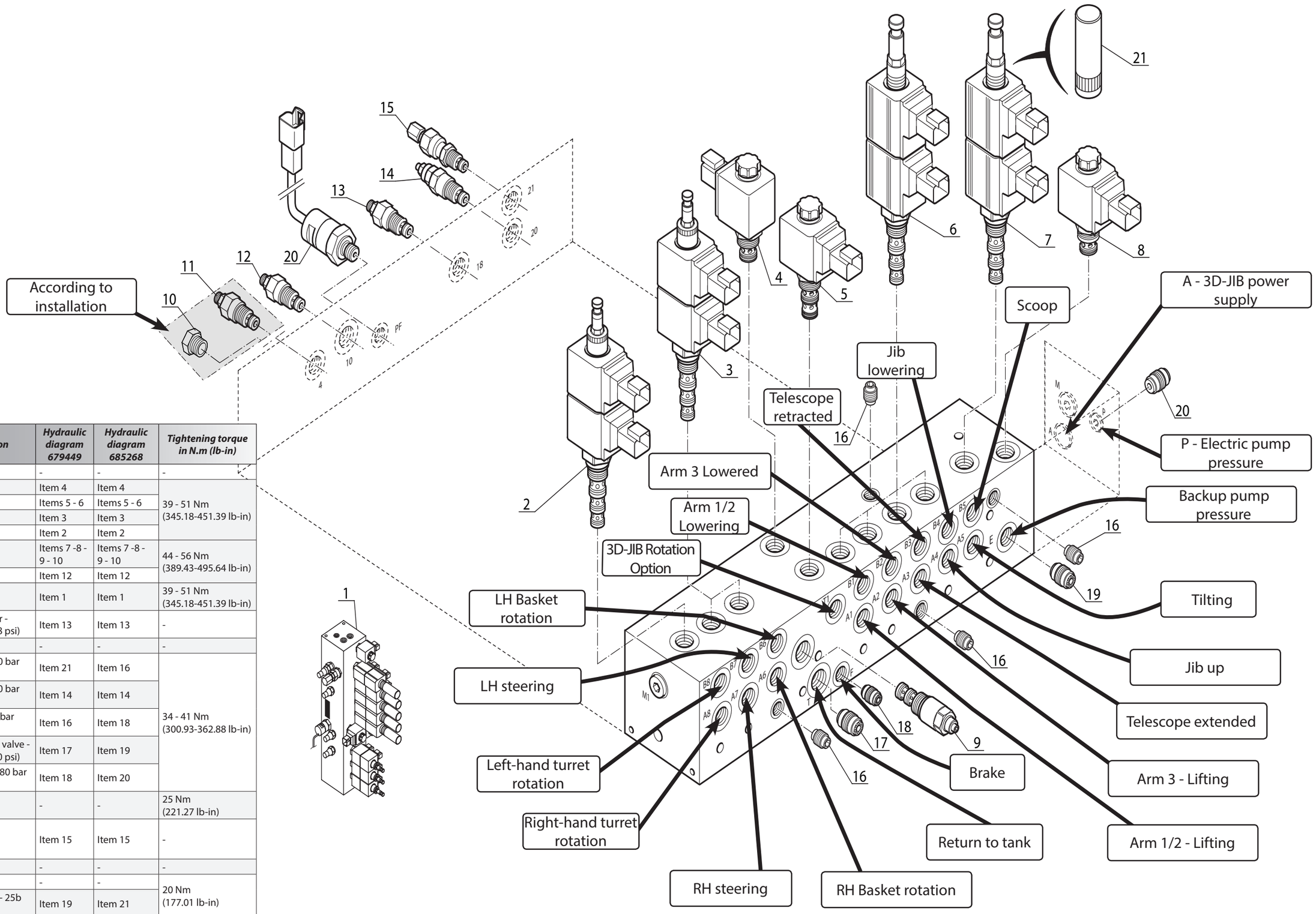
25 kg (55 lbs)

REFIT

- Purge the compensation/tilting circuit (◁ ***COMPENSATION/TILTING CYLINDER REMOVAL,*** ***64***)

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DISTRIBUTOR - DETAILS

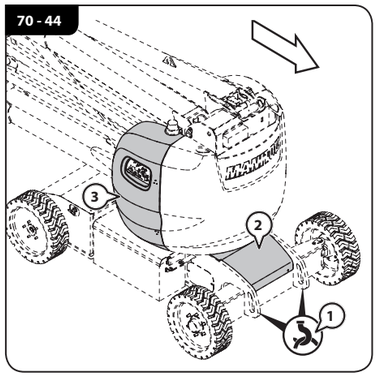


Item	Designation	Hydraulic diagram 679449	Hydraulic diagram 685268	Tightening torque in N.m (lb-in)
1	Distributor	-	-	-
2	Electrovalve	Item 4	Item 4	39 - 51 Nm (345.18-451.39 lb-in)
3	Electrovalve	Items 5 - 6	Items 5 - 6	
4	Electrovalve	Item 3	Item 3	
5	Electrovalve	Item 2	Item 2	
6	Electrovalve	Items 7 -8 - 9 - 10	Items 7 -8 - 9 - 10	44 - 56 Nm (389.43-495.64 lb-in)
7	Electrovalve	Item 12	Item 12	
8	Electrovalve	Item 1	Item 1	39 - 51 Nm (345.18-451.39 lb-in)
9	Pressure reducer - 100 bar (1450.38 psi)	Item 13	Item 13	-
10	Plug	-	-	-
11	Relief valve - 150 bar (2176.50 psi)	Item 21	Item 16	34 - 41 Nm (300.93-362.88 lb-in)
12	Relief valve - 160 bar (2321.60 psi)	Item 14	Item 14	
13	Relief valve - 80 bar (1160.80 psi)	Item 16	Item 18	
14	Counterbalance valve - 180 bar (2611.80 psi)	Item 17	Item 19	
15	Overload valve: 80 bar (1160.80 psi)	Item 18	Item 20	
16	Valve	-	-	25 Nm (221.27 lb-in)
17	Check valve - 2 bar (29.02 psi)	Item 15	Item 15	-
18	Valve	-	-	-
19	Electrovalve	-	-	20 Nm (177.01 lb-in)
20	Pressure switch - 25b (362.75 psi)	Item 19	Item 21	
21	Protector	-	-	-

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70.3.11 CYLINDERS - REMOVAL

STEERING CYLINDER - REMOVAL



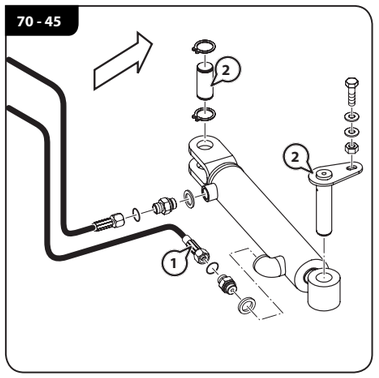
- Raise the front (1, ***070 - 44***) of the access platform and place blocks under the frame:

- *120 AETJL :* ***2400 kg (5291 lbs)***
- *150 AETJC :* ***3000 kg (6614 lbs)***
- *150 AETJL - 150 AETJC 3D :* ***2550 kg (5622 lbs)***
- *170 AETJL - AETJ49 :* ***3100 kg (6834 lbs)***
- *AETJ 43 - AETJ43 3D :* ***3775 kg (8322 lbs)***

- Remove the front cover (2, ***070 - 44***).

- Open the right-hand turret cover (3, ***070 - 44***).

- Decompress the steering line (distributor) (◁ ***70.3.10 DISTRIBUTOR - REMOVAL,*** ***57***)



- Remove and plug the hoses connected to the steering cylinder (1, ***070 - 45***).

- Remove the pivot pins from the steering cylinder (2, ***070 - 45***) and remove the cylinder.

REFIT

- Carry out the removal operations in reverse order, leaving the access platform on supports.

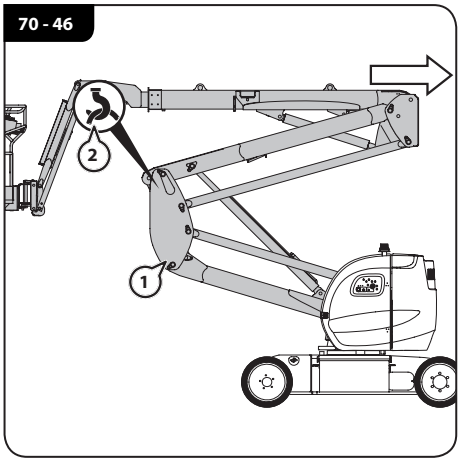
- Drain the steering circuit:

- Control the steering until it reaches its mechanical stop on both sides, simultaneously repeating the operation several times.

- Remove the supports from under the front axle and carry out steering tests while stationary, and then when moving.

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ARM 1/2 LIFTING CYLINDER - REMOVAL



- Raise arm 1/2 so that the intermediate hinge (1, ***070 - 46***) is raised 1m (39.37 in).

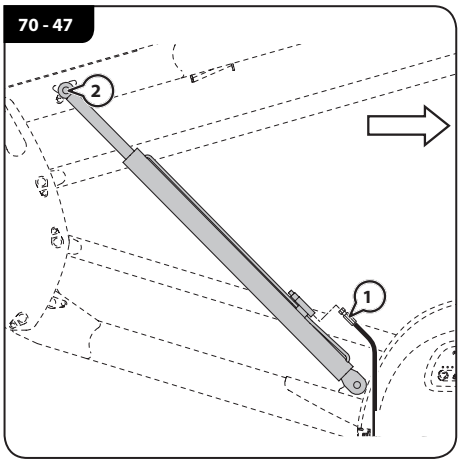
- Switch off the power supply.

- Secure the intermediate hinge with a hoist and a sling (2, ***070 - 46***):

- 120 AETJL: ***1100 kg (2425 lbs)***
- 150 AETJC - 150 AETJL - AETJ43 - AETJ 43 3D : ***1600 kg (3527 lbs)***
- 170 AETJL - AETJ 49: ***1700 kg (3748 lbs)***

- Open the right-hand turret cover.

- Decompress the arm 1/2 lifting line (distributor) (◁ ***70.3.10 DISTRIBUTOR - REMOVAL,*** ***57***)



- Remove and plug the hoses connected to the cylinder (1, ***070 - 47***).

- Remove the pivot pins from the cylinder, starting with the cylinder head pin (2, ***070 - 47***) and remove the cylinder:
- 120 AETJL : ***25 kg (55 lbs)***
- 150 AETJC - 150 AETJL - 150 AETJC 3D - 150 AETJL - AETJ43 - AETJ 43 3D - 170 AETJL - AETJ 49: ***70 kg (154 lbs)***

NOTE: Before attempting to disassemble the removed cylinder (◁ ***VALVE BLOCKS AND VALVES - REMOVAL,*** ***69***)

REFIT

- Carry out the removal operations in reverse order, leaving the intermediate hinge supported by a strap.

- Slowly lower the intermediate hinge until the arms find their equilibrium position.

- Remove the strap.

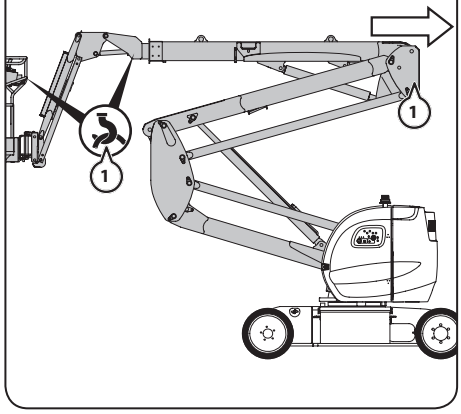
- Lower arms 1/2 to the transport position.

- Raise arms 1/2 to their maximum extent and repeat these operations several times.

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ARM 3 LIFTING CYLINDER - REMOVAL

70 - 48



- Raise the arm 1/2 so that the upper hinge (1, ***070 - 48***) is raised by 1m (39.37 in).

- Switch off the power supply.

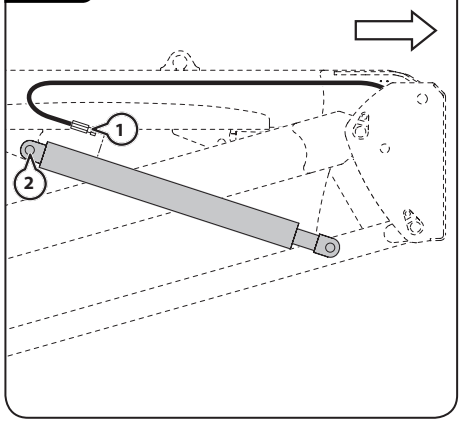
- Secure the basket and arm 3 with a hoist (2, ***070 - 48***) and a sling (stabilize with a support):

- 120 AETJL : ***580 kg (1279 lbs)***
- 150 AETJC - 150 AETJL - 150 AETJC 3D - AETJ 43 - AETJ 43 3D: ***650 kg (1433 lbs)***
- 170 AETJL - AETJ 49 : ***900 kg (1984 lbs)***

- Open the right-hand turret cover.

- Decompress the lifting line of arm 3 (distributor) (◅ ***70.3.10 DISTRIBUTOR - REMOVAL,*** ***57***)

70 - 49



- Remove and plug the hoses connected to the cylinder (1, ***070 - 49***).

- Remove the pivot pins from the cylinder, starting with the cylinder foot pivot pin (2, ***070 - 49***) and remove the cylinder:

- 120 AETJL : ***30 kg (66 lbs)***
- 150 AETJC - 150 AETJL - 150 AETJC 3D - 150 AETJL - AETJ43 - AETJ 43 3D - 170 AETJL - AETJ 49: ***50 kg (111 lbs)***

NOTE: Before attempting to disassemble the removed cylinder (◅ ***VALVE BLOCKS AND VALVES - REMOVAL,*** ***69***)

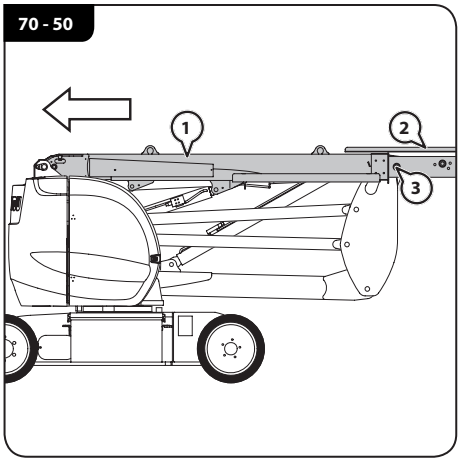
REFIT

- Lower arm 3 to the transport position.

- Raise arm 3 to its maximum extent and repeat these operations several times

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TELESCOPIC CYLINDER - REMOVAL



- Raise arm 3 to the horizontal position (1, ***070 - 50***).

- Move the telescope extension (2, ***070 - 50***) by 1 m (39.37 in).

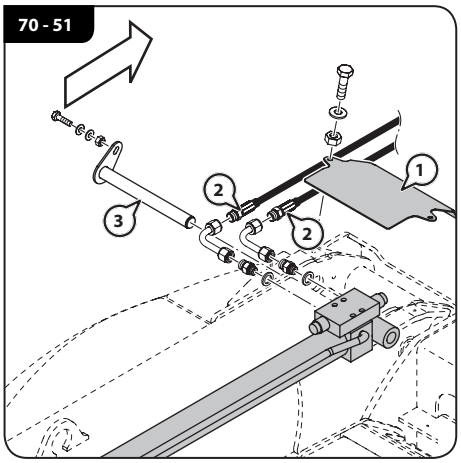
- Remove the cylinder head pivot pin (3, ***070 - 50***).

- Retract the telescope.

- Switch off the power supply.

- Open the right-hand turret cover.

- Decompress the telescopic line (distributor) (◅ ***70.3.10 DISTRIBUTOR - REMOVAL,*** ❐ ***57***)



- Remove the telescope base cover (1, ***070 - 51***).

- Remove and plug the hoses connected to the cylinder (2, ***070 - 51***).

- Remove the cylinder foot pivot pin (3, ***070 - 51***) and remove the telescope cylinder:
  - *120 AETJL :* ***34 kg (75 lbs)***
  - *150 AETJC - 150 AETJC 3D - AETJ 43 - AETJ 43 3D :* ***39 kg (86 lbs)***
  - *150 AETJL :* ***42 kg (93 lbs)***
  - *170 AETJL - AETJ 49 :* ***55 kg (121 lbs)***

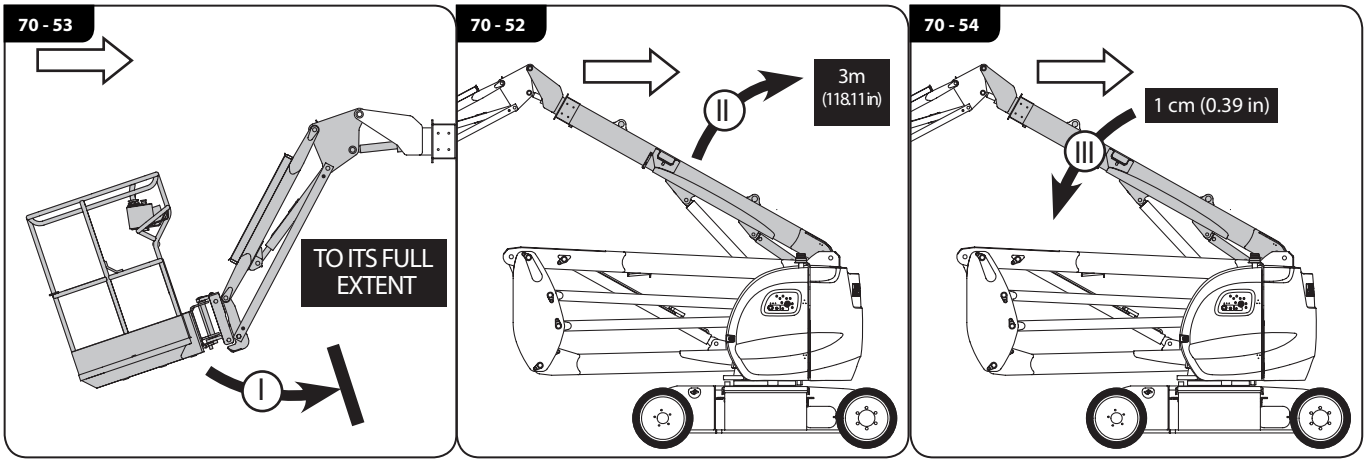
NOTE: Before attempting to disassemble the removed cylinder (◅ ***VALVE BLOCKS AND VALVES - REMOVAL,*** ❐ ***69***)

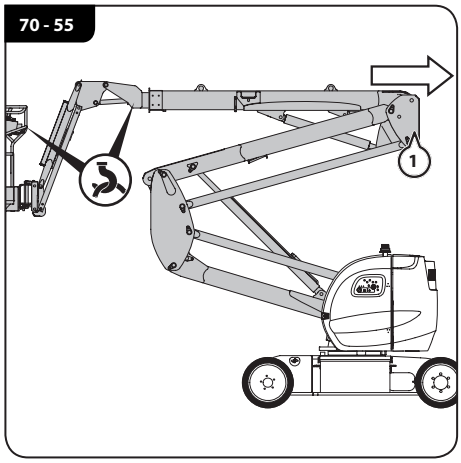
https://truckmanualshub.com/

COMPENSATION/TILTING CYLINDER REMOVAL

⚠ WARNING

The hose connected to the compensation/tilting cylinders are pressurized **EVEN WHEN STOPPED**. Before carrying out work to remove the cylinders, these hoses must be decompressed by following the steps (**I, *070 - 53***), (**II, *070 - 52***) and (**III, *070 - 54***) because this line cannot be decompressed from the distributor.





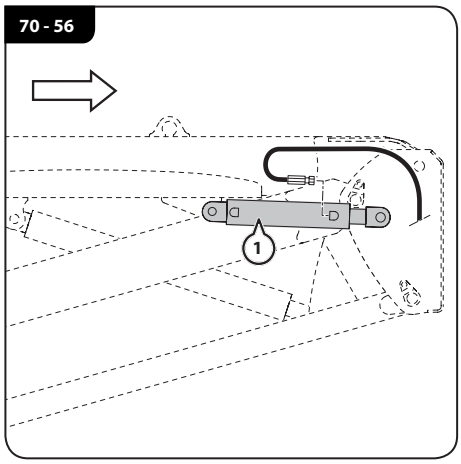
Compensating cylinder

- Raise arm 1/2 so that the intermediate hinge (1, ***070 - 55***) is raised 1m (39.37 in).

- Switch off the power supply.

- Secure the basket/jib assembly with a hoist and a sling:
  - *without rotation cylinder (3D - JIB):* ***230 kg (507 lbs)***
  - *with rotation cylinder (3D - JIB):* ***267 kg (589 lbs)***

- Open the right-hand turret cover.



- Remove the cylinder pivot pins (1, ***070 - 56***) and remove the cylinder from the arms while leaving it connected to the hoses:
  - *- 120 AETJL :* ***18 kg (40 lbs)***
  - *- 150 AETJC - 150 AETJL - 170 AETJL :* ***20 kg (44 lbs)***

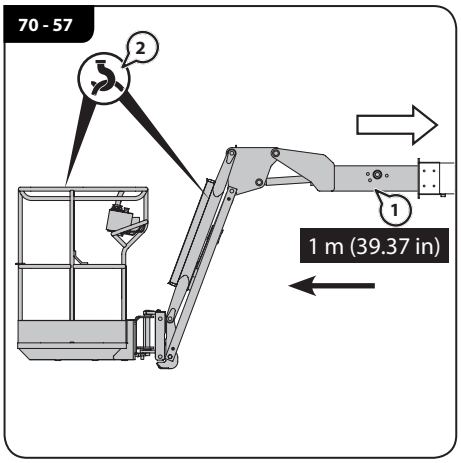
- Remove and plug the hoses connected to the cylinder and remove the cylinder.

NOTE: This cylinder has no valves.

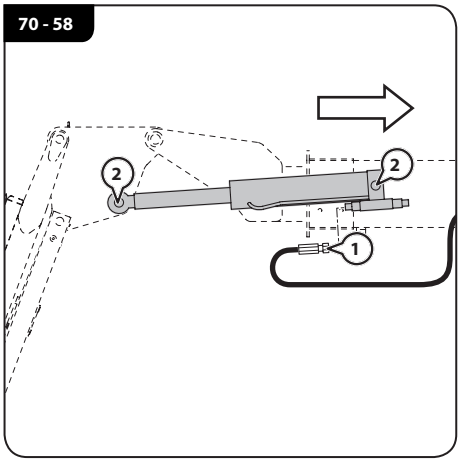
REFIT

- Follow the removal operations in reverse order.
- Purge the compensation/tilting circuit by repeating steps **I** to **VII** several times (**I** & **II**, ***070 - 59***), (**III** & **IV**, ***070 - 62***), (**V** & **VI**, ***070 - 61***), (**VII**, ***070 - 60***).

70 - 57



70 - 58



Tilting cylinder

- Move the telescope extension by 1m (1, ***070 - 57***).
- Switch off the power supply.
- Secure the basket/jib assembly with a hoist and a sling (2, ***070 - 57***):
  - *without rotation cylinder (3D - JIB):* ***230 kg (507 lbs)***
  - *with rotation cylinder (3D - JIB):* ***267 kg (589 lbs)***
- Place the assembly on a stable surface.

- Remove the cylinder pivot pins (2, ***070 - 58***) and remove the cylinder from the arms while leaving it connected to the hoses.
  - ***22 kg (49 lbs)***

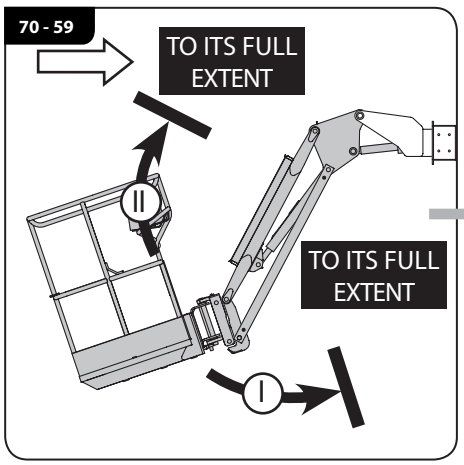
- Remove and plug the hoses connected to the cylinder (1, ***070 - 58***) and remove the cylinder.

NOTE: Before attempting to disassemble the removed cylinder (◁ ***VALVE BLOCKS AND VALVES - REMOVAL,*** ❐ ***69***)

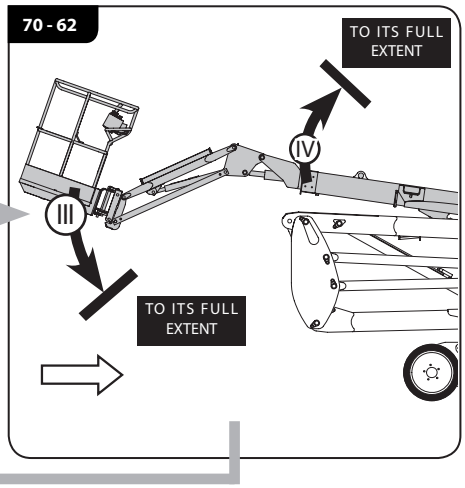
REFIT

- Follow the removal operations in reverse order.
- Purge the compensation/tilting circuit by repeating steps **I** to **VII** several times (**I** & **II**, ***070 - 59***), (**III** & **IV**, ***070 - 62***), (**V** & **VI**, ***070 - 61***), (**VII**, ***070 - 60***).

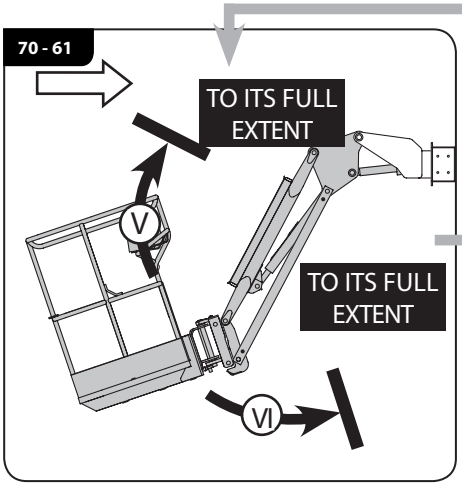
70 - 59



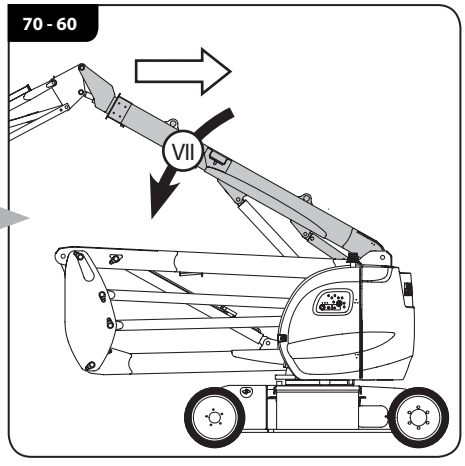
70 - 62



70 - 61



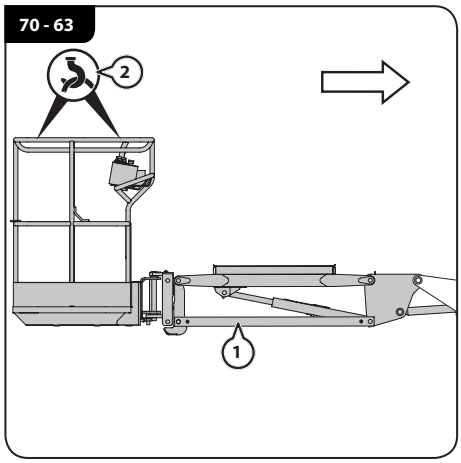
70 - 60



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JIB CYLINDER - REMOVAL

70 - 63



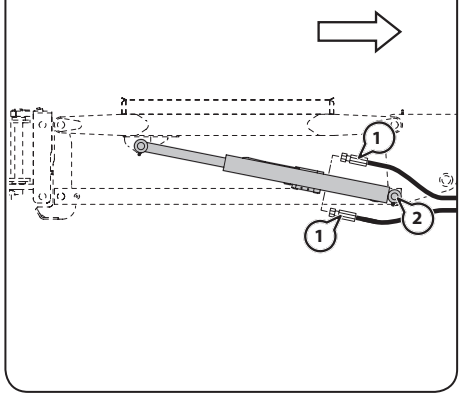
- Lift the jib (1, ***070 - 63***) to the horizontal position.

- Switch off the power supply.

- Secure the basket with a hoist and a sling (2, ***070 - 63***)
  - ***170 kg (375 lbs)***

- Place the assembly on a stable surface.

70 - 64



- Open the right-hand turret cover.

- Decompress the jib lifting line (◁ ***70.3.10 DISTRIBUTOR - REMOVAL,*** ***57***)

- Remove and plug the hoses connected to the cylinder (1, ***070 - 64***).

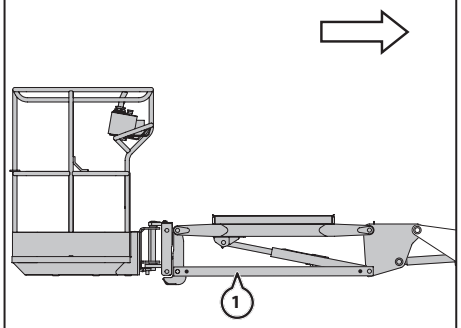
- Remove the pivot pins from the cylinder, starting with the cylinder foot pivot pin (2, ***070 - 64***) and remove the cylinder:
  - ***15 kg (33 lbs)***

NOTE: Before attempting to disassemble the removed cylinder (◁ ***VALVE BLOCKS AND VALVES - REMOVAL,*** ***69***)

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BASKET ROTATION CYLINDER - REMOVAL

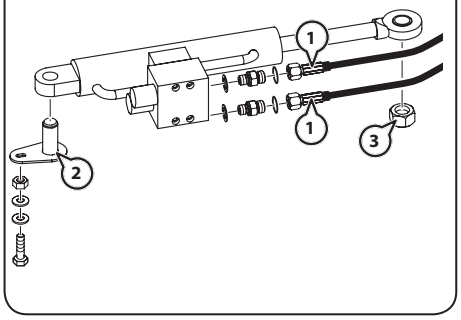
70 - 65



- Lift the jib (1, ***070 - 65***) to the horizontal position.

- Switch off the power supply.

70 - 66



- Open the right-hand turret cover.

- Decompress the basket rotation line (◅ ***70.3.10 DISTRIBUTOR - REMOVAL,*** ***57***)

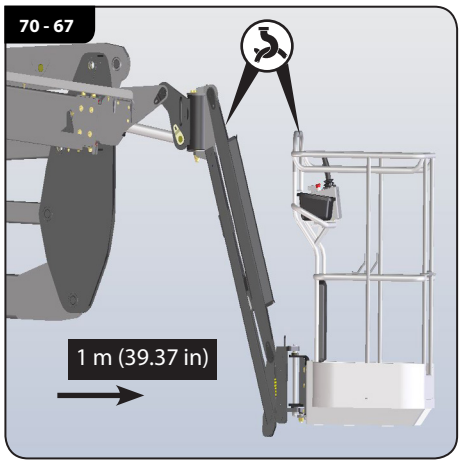
- Remove and plug the hoses connected to the cylinder (1, ***070 - 49***).

- Remove the cylinder foot pivot pin (2, ***070 - 66***) and the nut of the cylinder head pin (3, ***070 - 66***) and remove the cylinder.

NOTE: Before attempting to disassemble the removed cylinder (◅ ***VALVE BLOCKS AND VALVES - REMOVAL,*** ***69***)

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ROTATION CYLINDER (3D - JIB) - REMOVAL



- Decompression of the tilting cylinder circuit (◅ ***COMPENSATION/ TILTING CYLINDER REMOVAL,*** 🗍 ***64***).

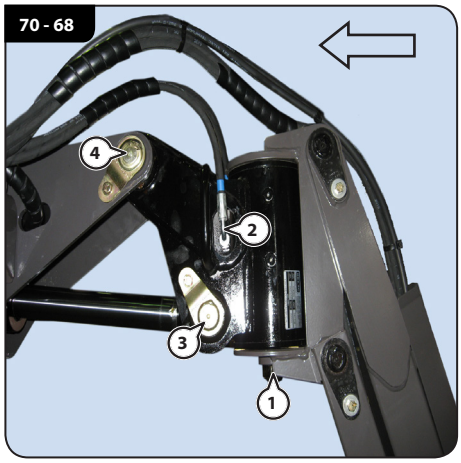
- Move the telescope extension by 1 m (39.37 in)

- Switch off the power supply.

- Open the right-hand turret cover.

- Decompress:
⇒ the jib lifting line
⇒ the 3D rotation cylinder line.

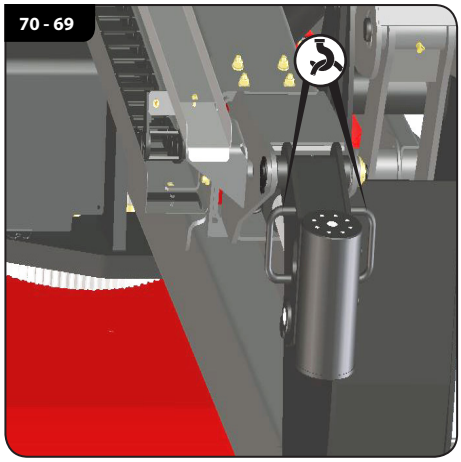
- Secure the basket/jib assembly with a hoist and a sling (see figure, ***070 - 67***).
- ***267 kg*** *(589 lbs).*



- Remove and plug the hoses from the 3D rotation cylinder (2, ***070 - 68***).

- Remove the basket/jib assembly (1, ***070 - 67***), if necessary remove the harnesses and the hoses of the jib cylinder (◅ ***JIB CYLINDER - REMOVAL,*** 🗍 ***66***).

- Remove the 3D rotation cylinder pivot pin (1, ***070 - 68***).



- Secure the 3D rotation cylinder assembly with a hoist and a sling (see figure, ***070 - 69***).
- ***37 kg (82 lbs)***

- Démonter l'axe d'articulation du vérin d'inclinaison (3, ***070 - 68***), et l'axe d'articulation du bras (4, ***070 - 68***).

Remove the 3D rotation cylinder.

REFIT

- Follow the removal operations in reverse order.

- Purge the compensation/tilting circuit by repeating steps **I** to **VII** several times (**I** & **II**, ***070 - 59***), (**III** & **IV**, ***070 - 62***), (**V** & **VI**, ***070 - 61***), (**VII**, ***070 - 60***).

- Purge the 3D rotation cylinder, if it rebounds excessively after being connected. Perform at least 5 rotations to its maximum extent.

VALVE BLOCKS AND VALVES - REMOVAL

⚠ WARNING

A cylinder fitted with valves may have chambers with VERY HIGH PRESSURES, higher than 100 bars (1450.38 psi) (tilting cylinder or cylinder with rod fully retracted or extended) even after being removed. The pressures in the chambers should be released before disassembly.

⚠ CAUTION

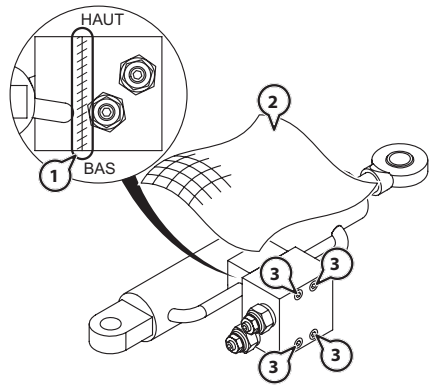
Ideally, this procedure should only be carried out on cylinders whose ROD is at MID-STROKE.
In order to work under optimum safety conditions, the operator must wear protective goggles, rubber gloves, and carry a rubber sheet

Removal of a fitted valve block

⚠ WARNING

*In order to avoid pressurized oil leaks, the operator should position the cylinder with the contact face (1**, 070 - 70**) between the valve block and the cylinder, vertically, and then position a rubber sheet over this face (2**, 070 - 70**).*

70 - 70



- Secure the cylinder body in a vise.

- Loosen the fixing screws of the block (3**, 070 - 70**) one after another, by a MAXIMUM of 1/4 turn for each screw.

- Unscrew the screws by 1/4 turn **WITH A SPANNER** until the pressure has been released.

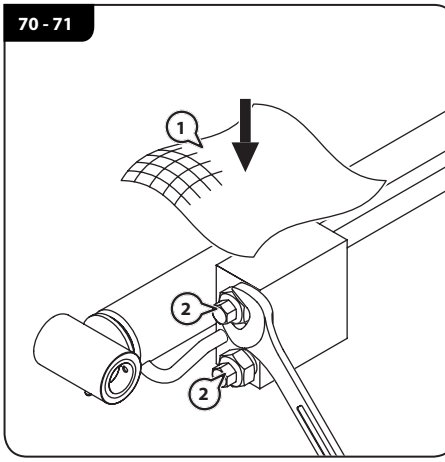
Removal of a valve

- Secure the cylinder body in a vice

⚠ WARNING

*In order to avoid pressurized oil leaks, the operator should position a rubber sheet (1**, 070 - 71**) over the valve seat after positioning its wrench*

70 - 71



Loosen the valves (2**, 070 - 71**) in turn: MAXIMUM 1/4 of a turn per valve.

- Unscrew the valves by 1/4 turn **WITH A SPANNER** until the pressure has been released.

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ELECTRICITY

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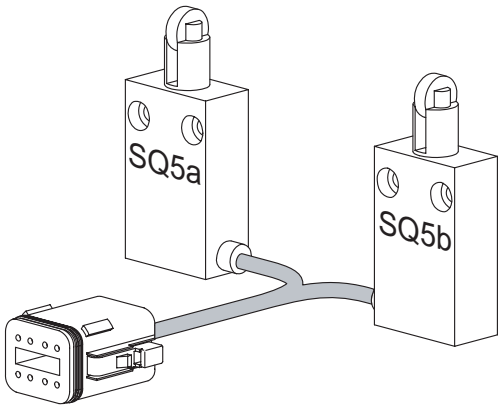
ELECTRICITY

80.1 ELECTRICAL SCHEMATIC DIAGRAMS

⚠ WARNING

Diagram 1st VERSION

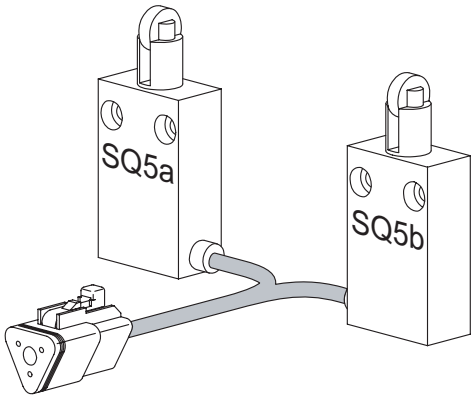
Access platform fitted with an overload sensor harness comprising:
a Deutsch connector with..... 8-way



⚠ WARNING

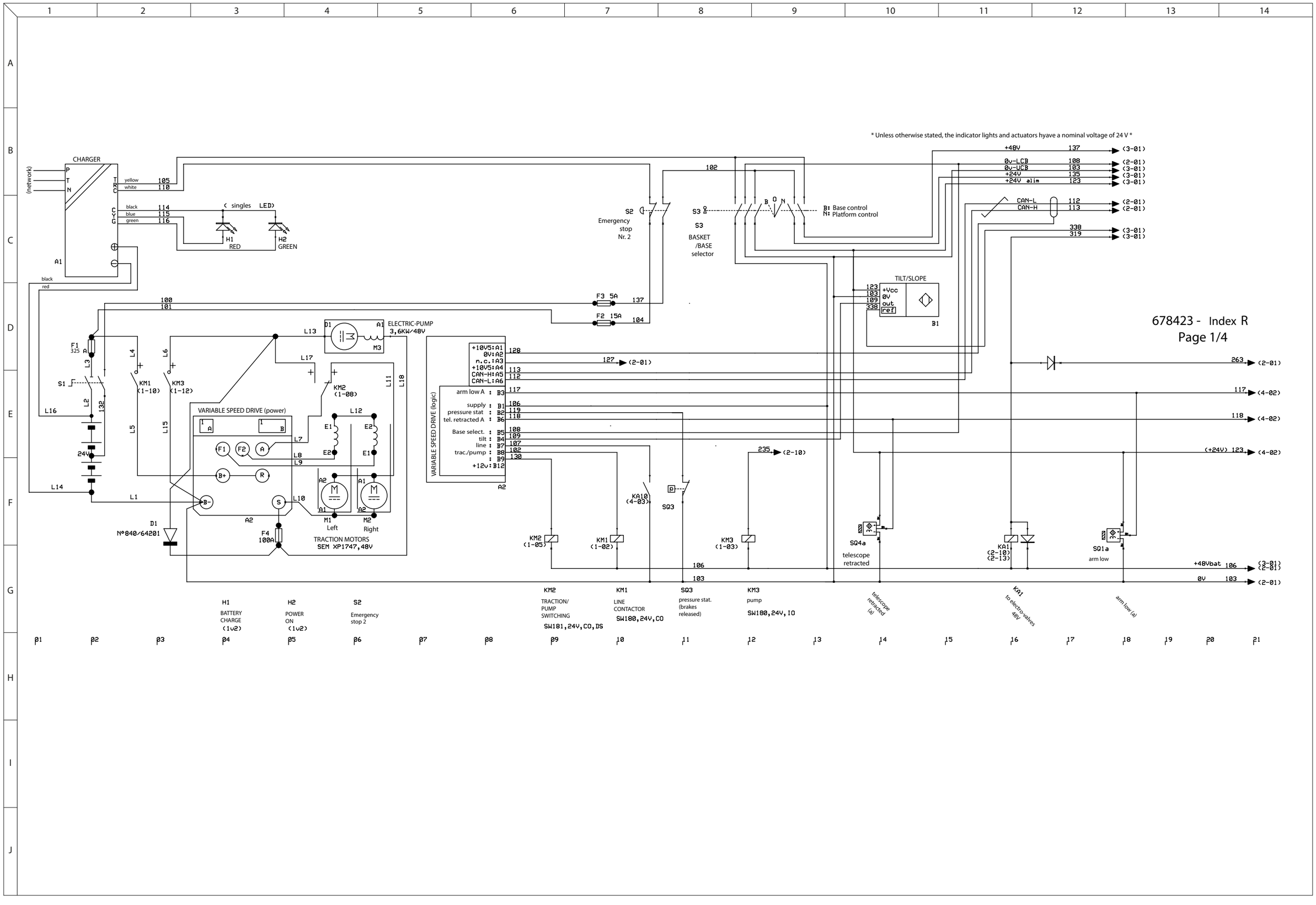
Diagram 2nd VERSION

Access platform fitted with an overload sensor harness comprising:
a Deutsch connector with..... 3-way



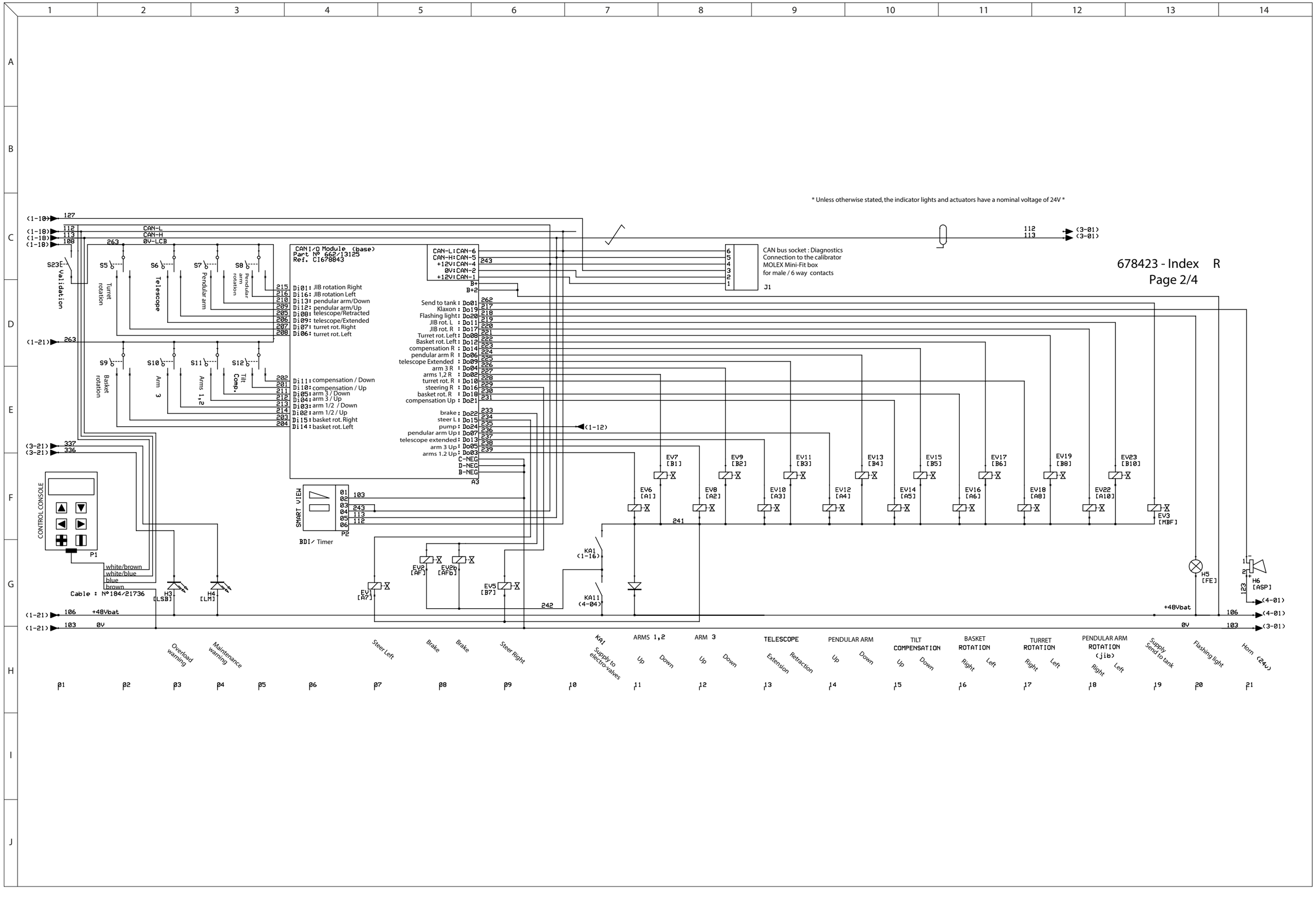
https://truckmanualshub.com/

80.1.1 SCHEMATIC DIAGRAM - POWER PART - 1ST VERSION

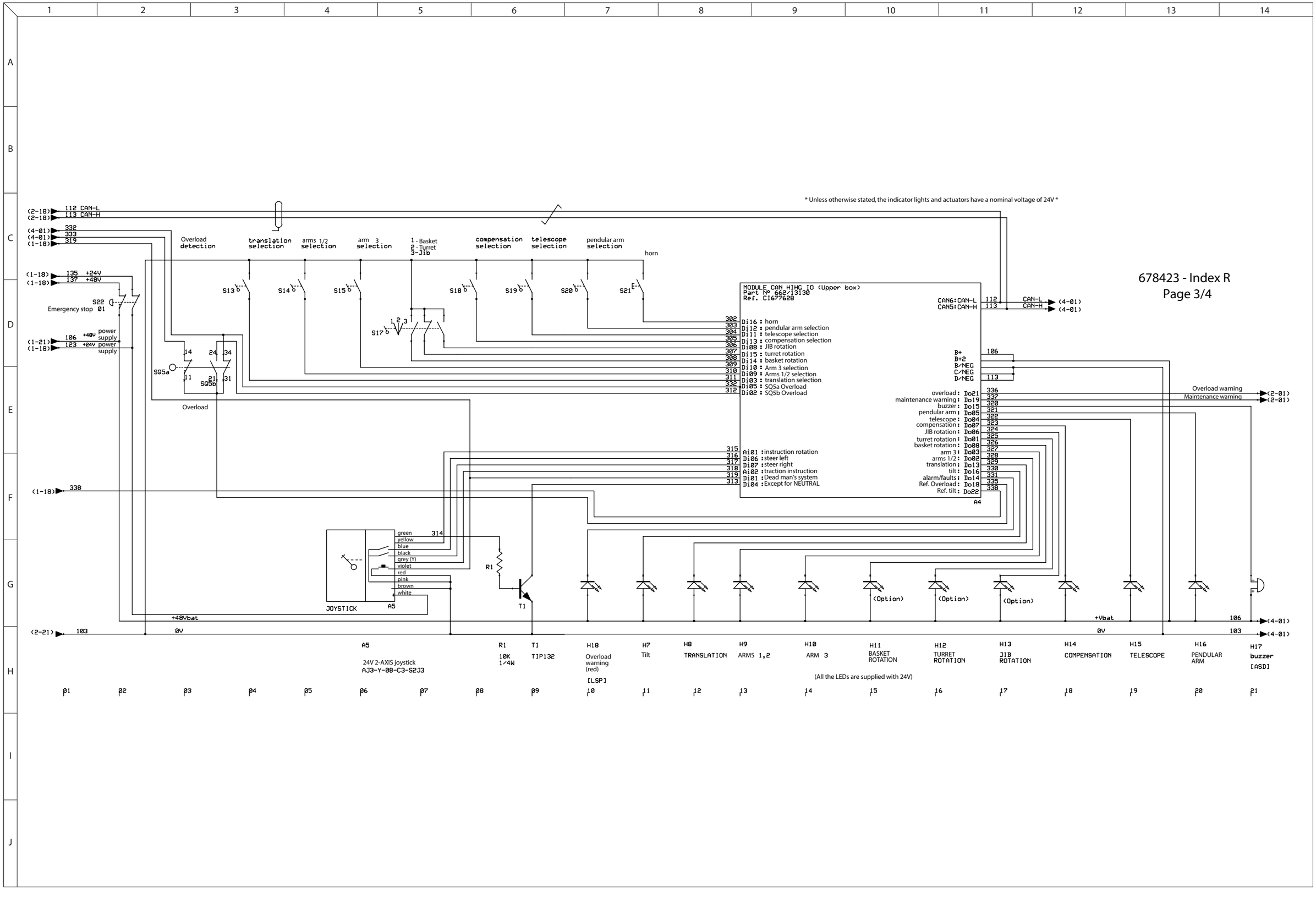


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80.1.2 SCHEMATIC DIAGRAM - BASE CONTROL PART - 1ST VERSION

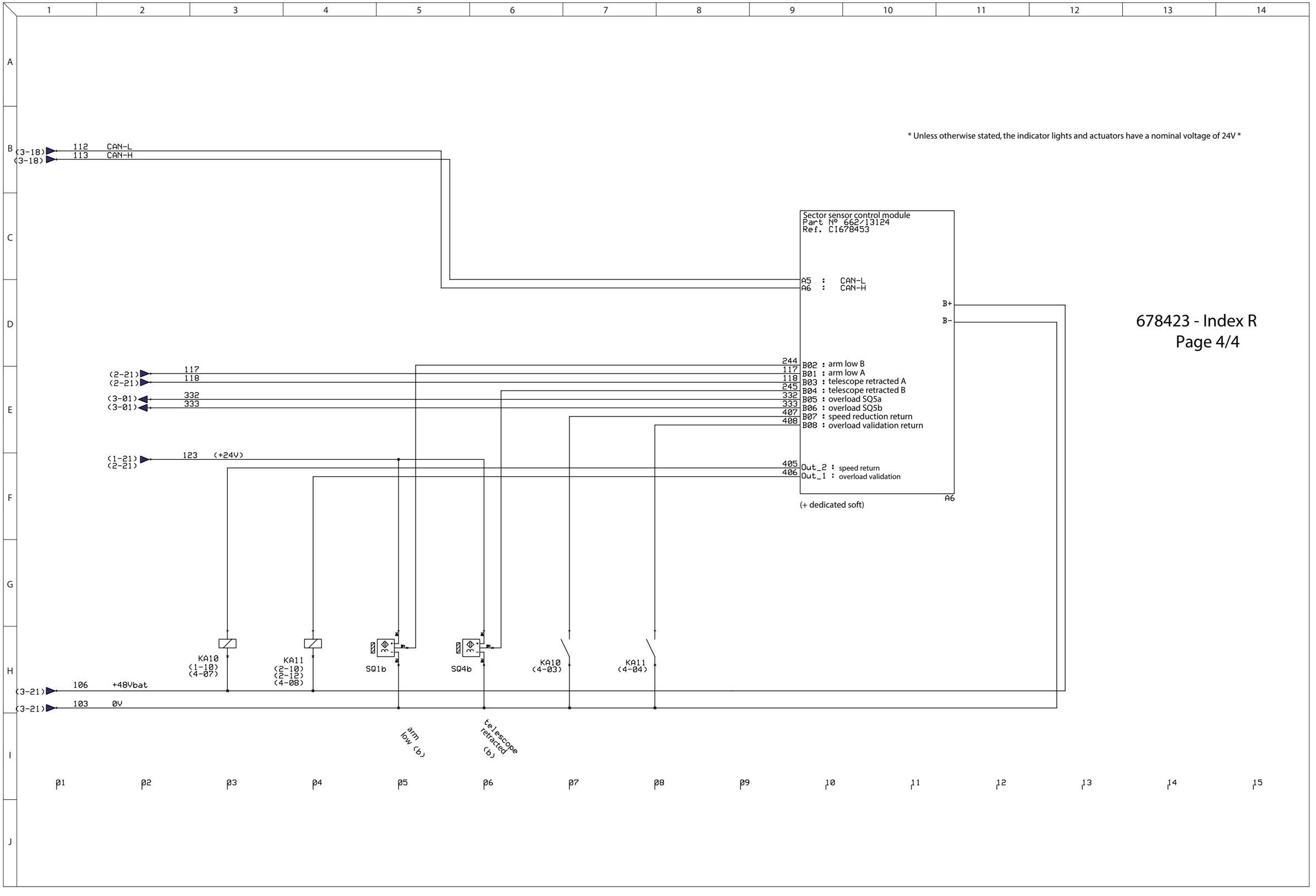


80.1.3 SCHEMATIC DIAGRAM - BASKET CONTROL PART - 1ST VERSION



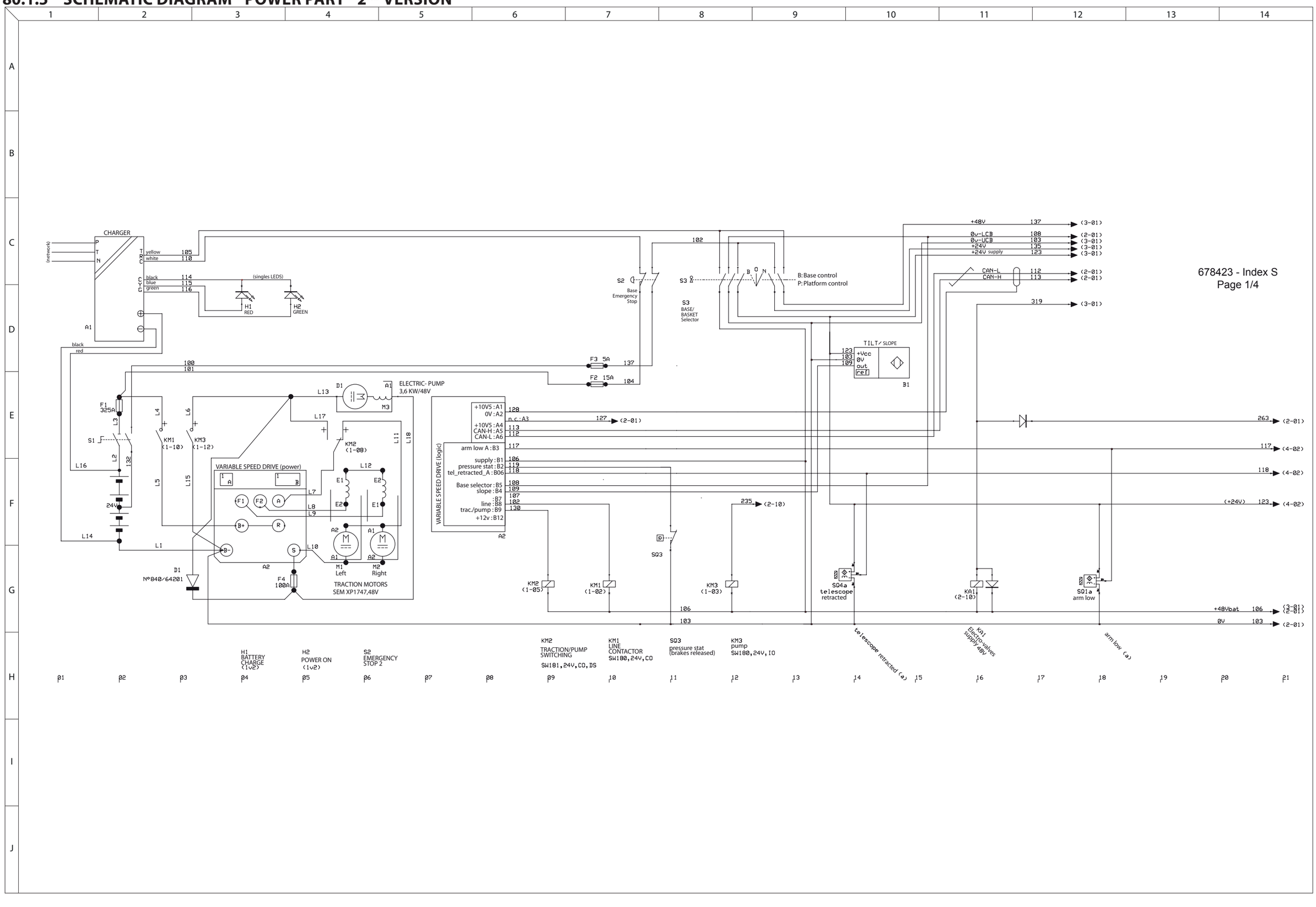
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80.1.4 SCHEMATIC DIAGRAM - SAFETY CONTROL UNIT PART - 1ST VERSION



80

80.1.5 SCHEMATIC DIAGRAM - POWER PART - 2ND VERSION

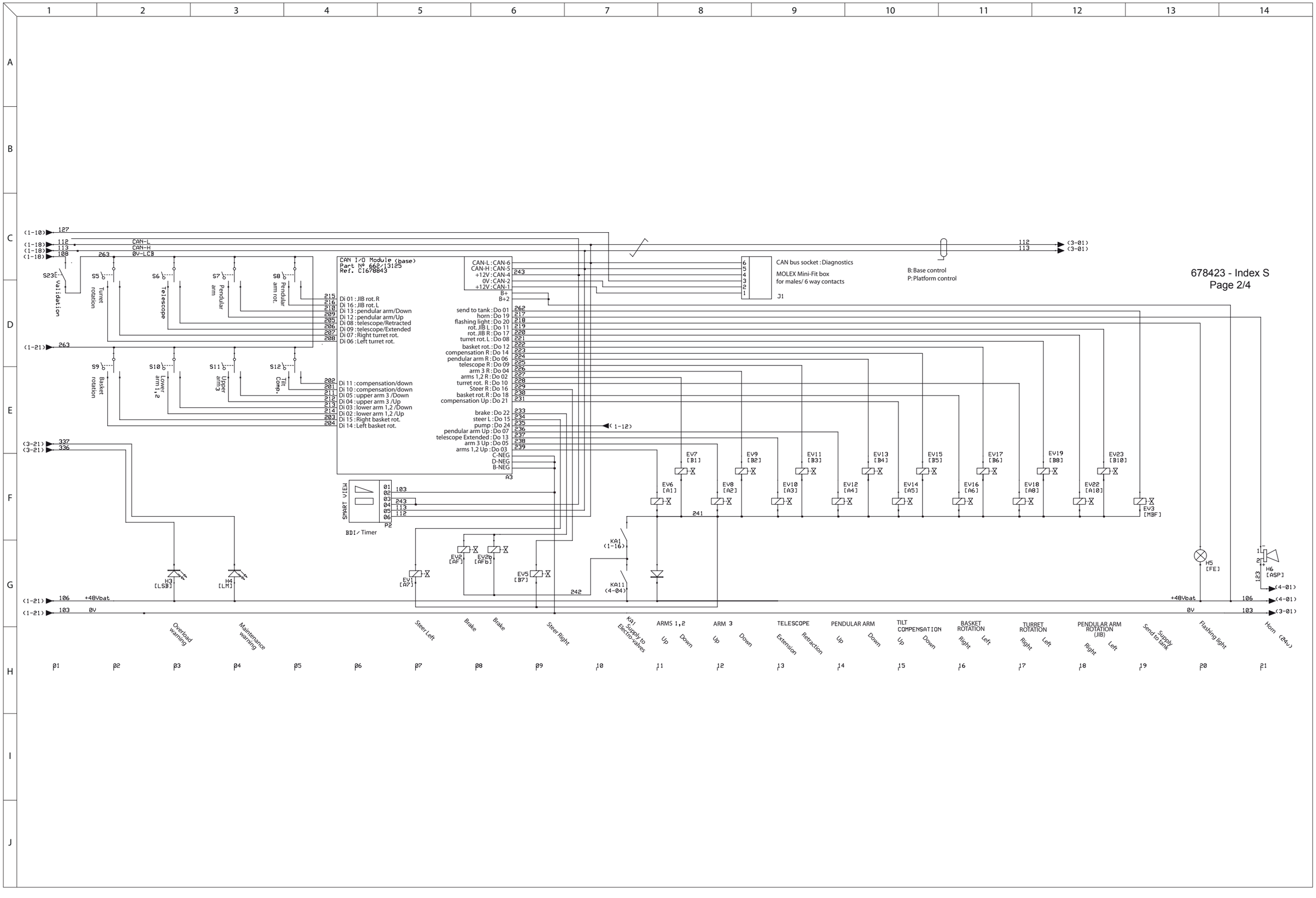


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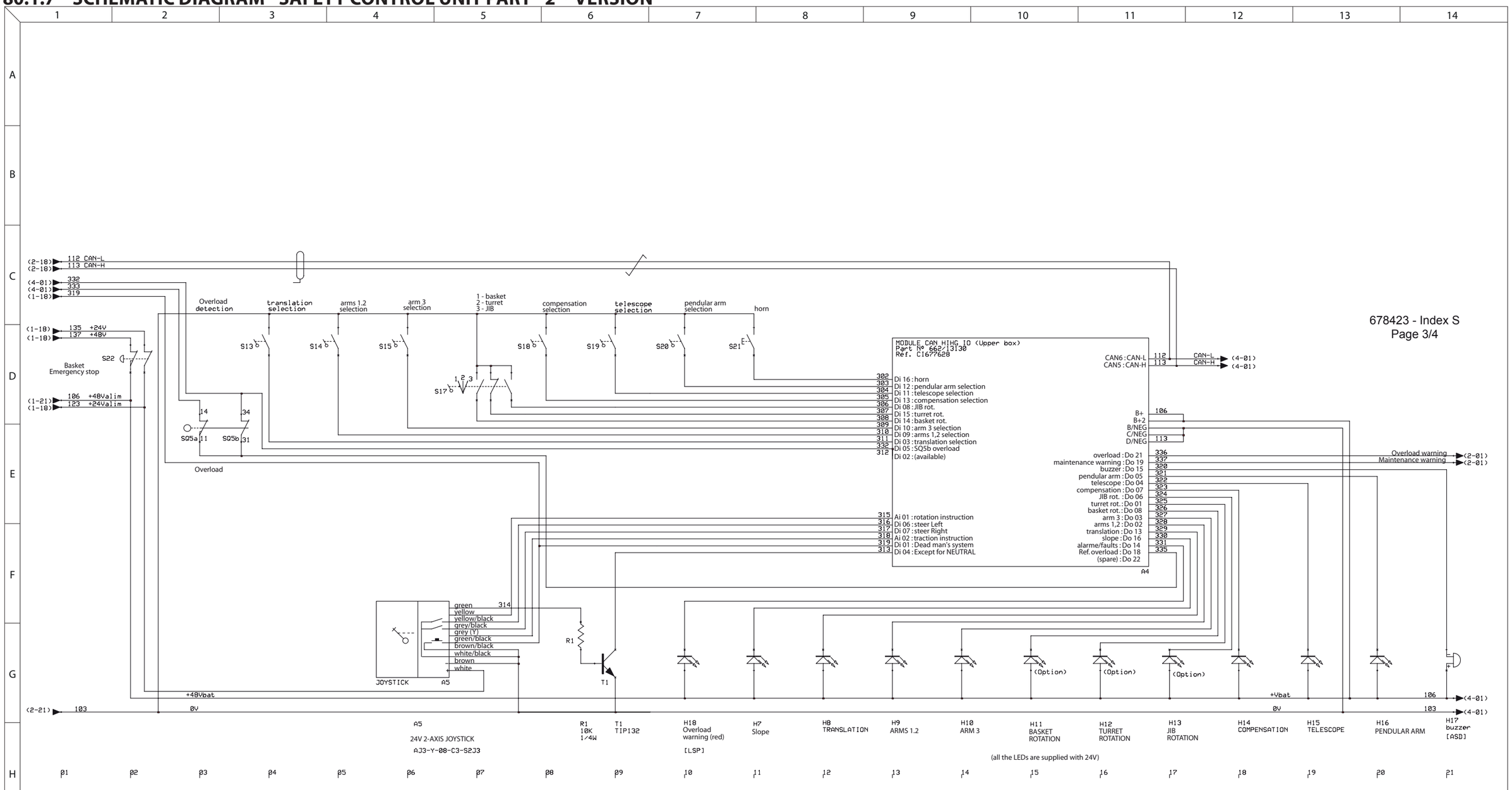
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80.1.6 SCHEMATIC DIAGRAM - BASKET CONTROL PART - 2ND VERSION

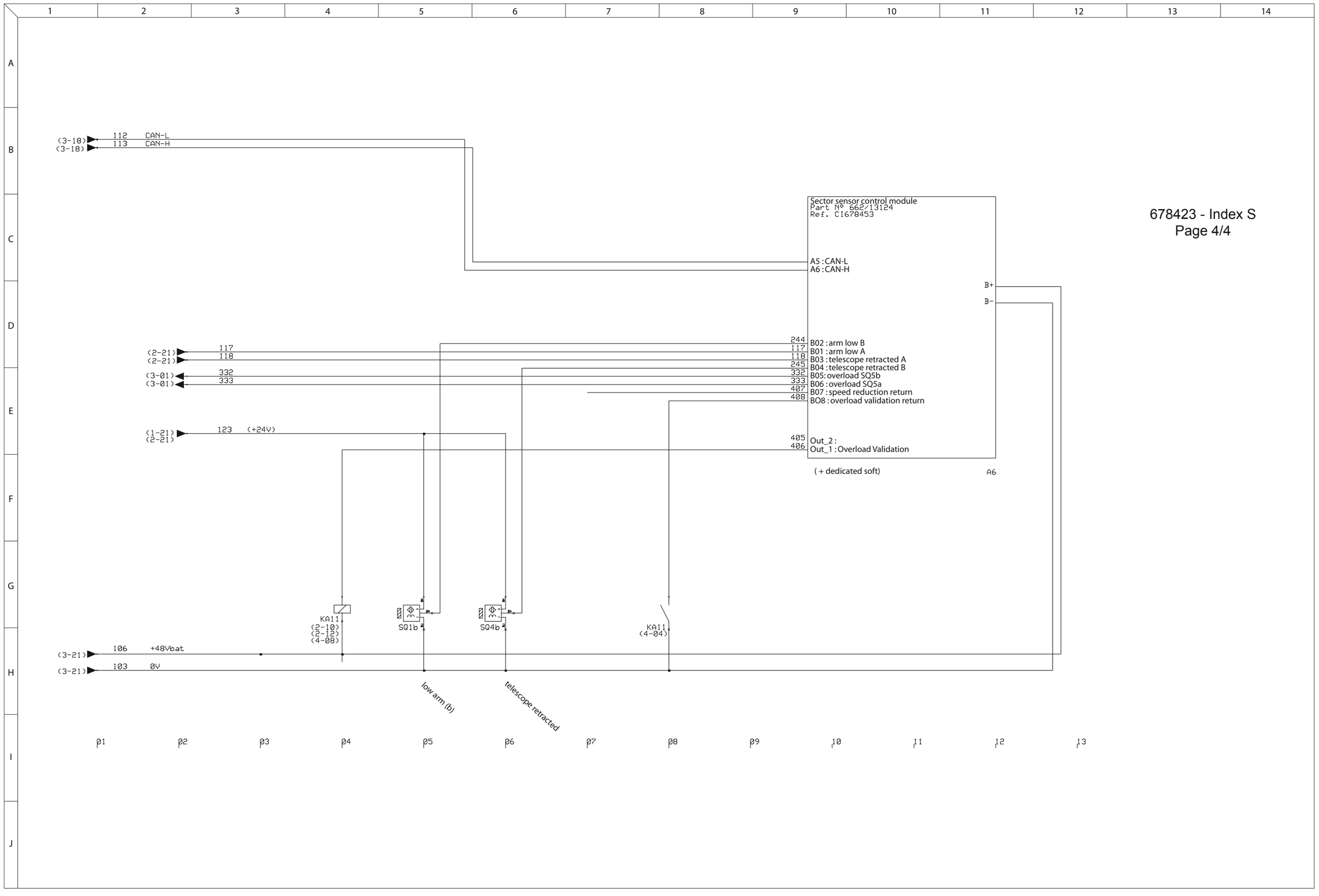


80.1.7 SCHEMATIC DIAGRAM - SAFETY CONTROL UNIT PART - 2ND VERSION



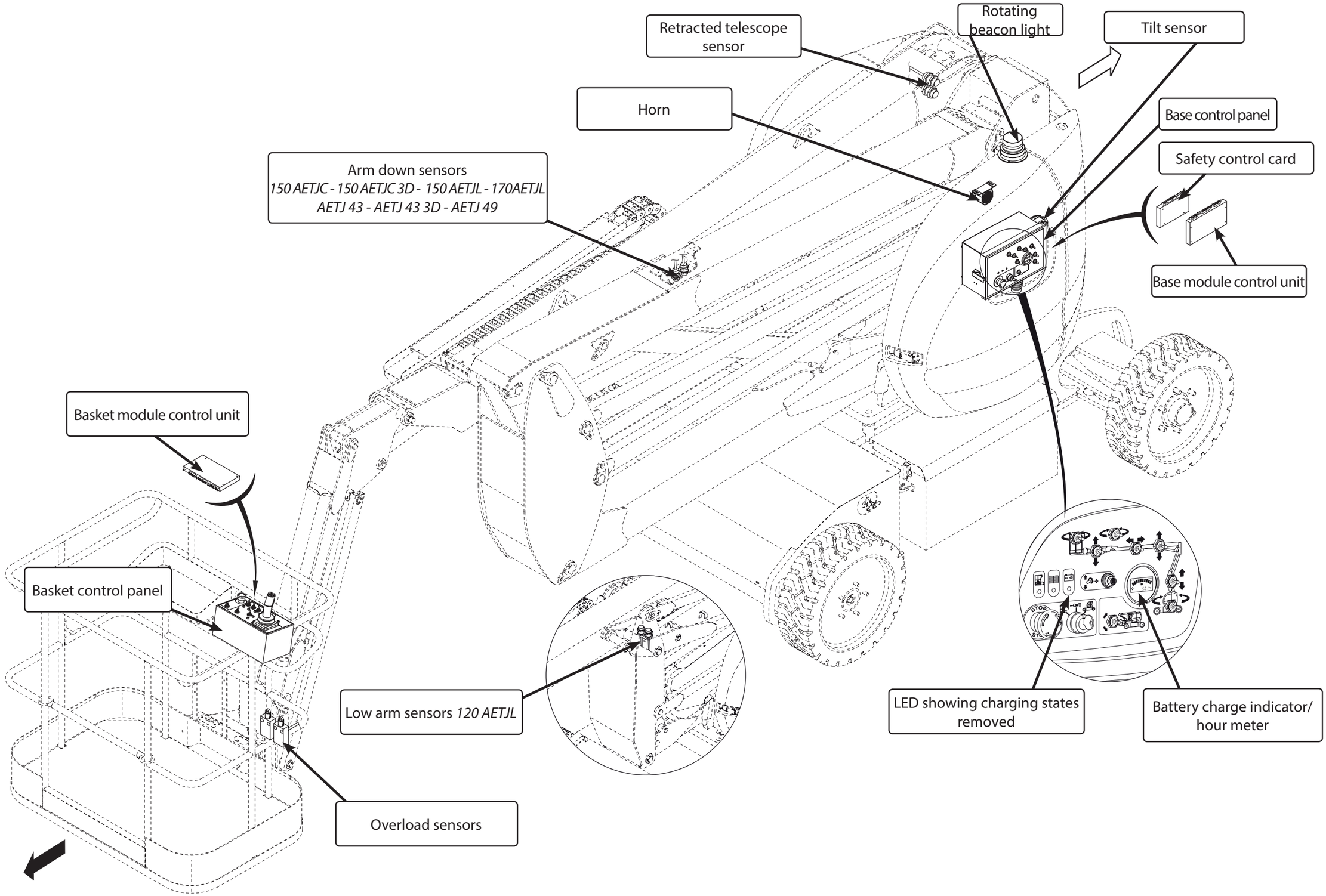
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80.1.8 SCHEMATIC DIAGRAM - SAFETY CONTROL UNIT PART - 2ND VERSION



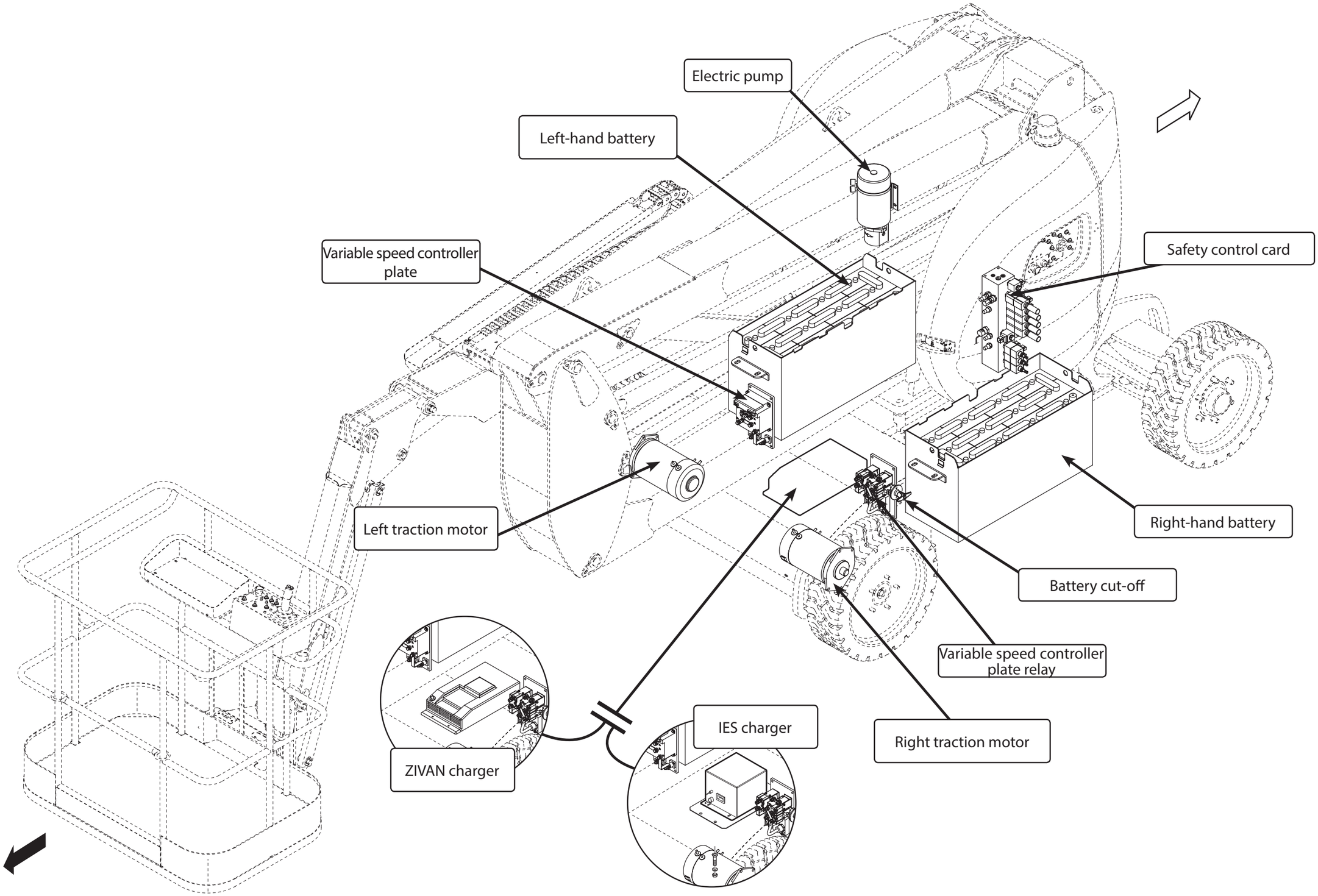
80.2 ELECTRICAL COMPONENTS LOCATION

80.2.1 ELECTRICAL CONTROL COMPONENTS - LOCATION



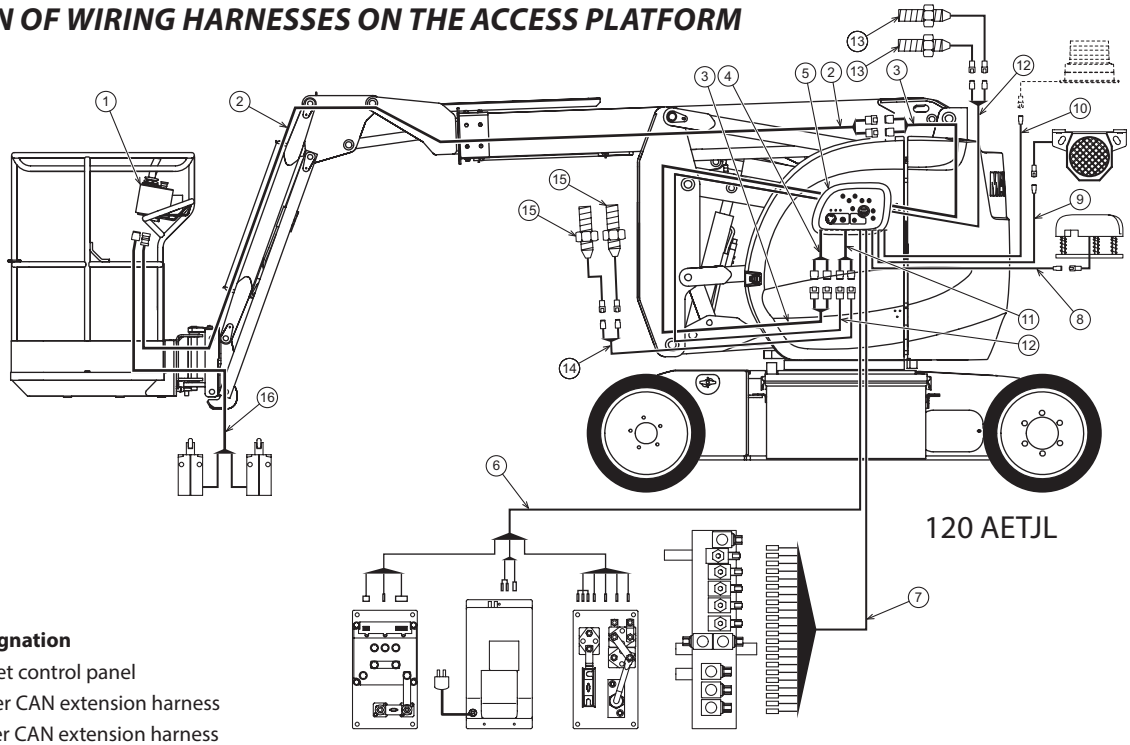
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80.2.2 ELECTRICAL POWER COMPONENTS - LOCATION

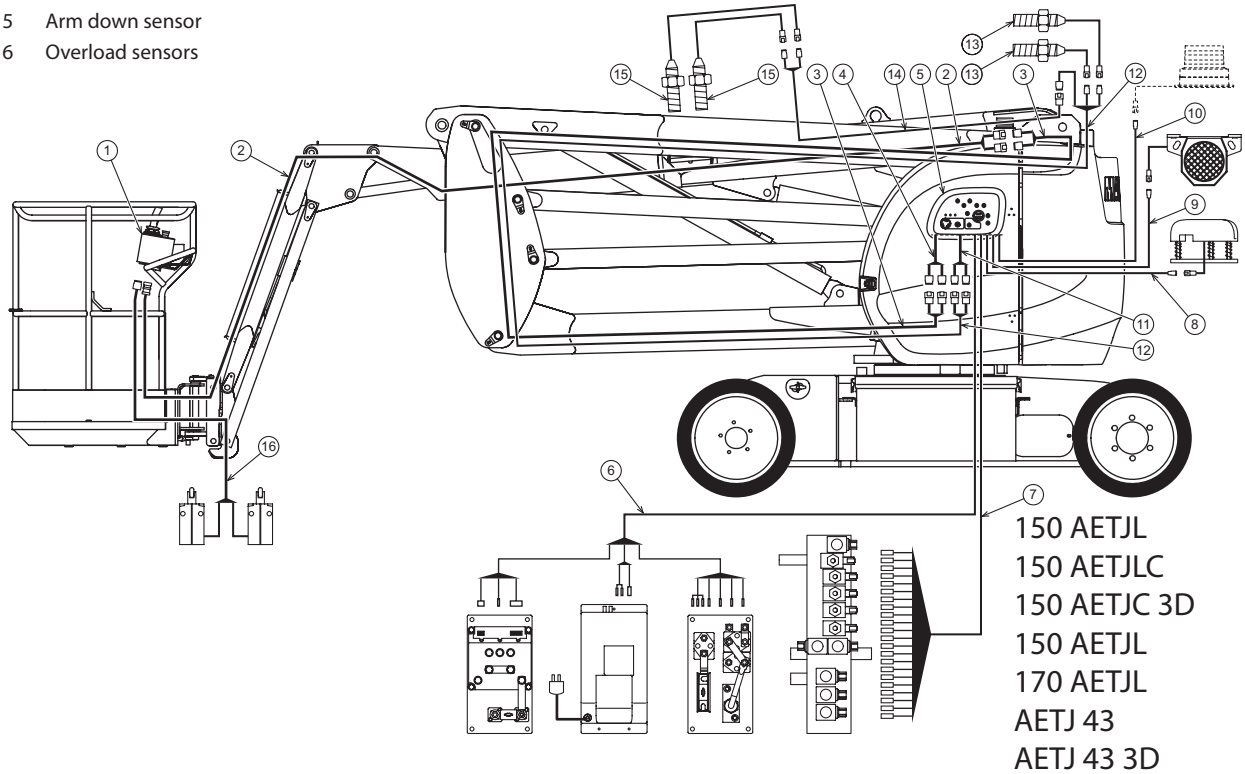


80.4.4 WIRING BASED ON SCHEMATIC DIAGRAM 676423 - 1ST VERSION

LOCATION OF WIRING HARNESSES ON THE ACCESS PLATFORM



Item	Designation
1	Basket control panel
2	Upper CAN extension harness
3	Lower CAN extension harness
4	BUS-CAN harness output
5	Base box
6	Variable speed controller harness
7	Electrovalve harness
8	Tilt wiring harness
9	Horn harness
10	Flashing flight harness
11	Output sensor control panel harness
12	- Intermediate inductive sensors harness (150 AETJC - 150 AETJL - 170 AETJL - AETJ 43 - AETJ 43 3D - AETJ 49) - Telescopic arm sensors harness (120 AETJL)
13	Telescope arm sensor
14	Low arm sensor harness
15	Arm down sensor
16	Overload sensors



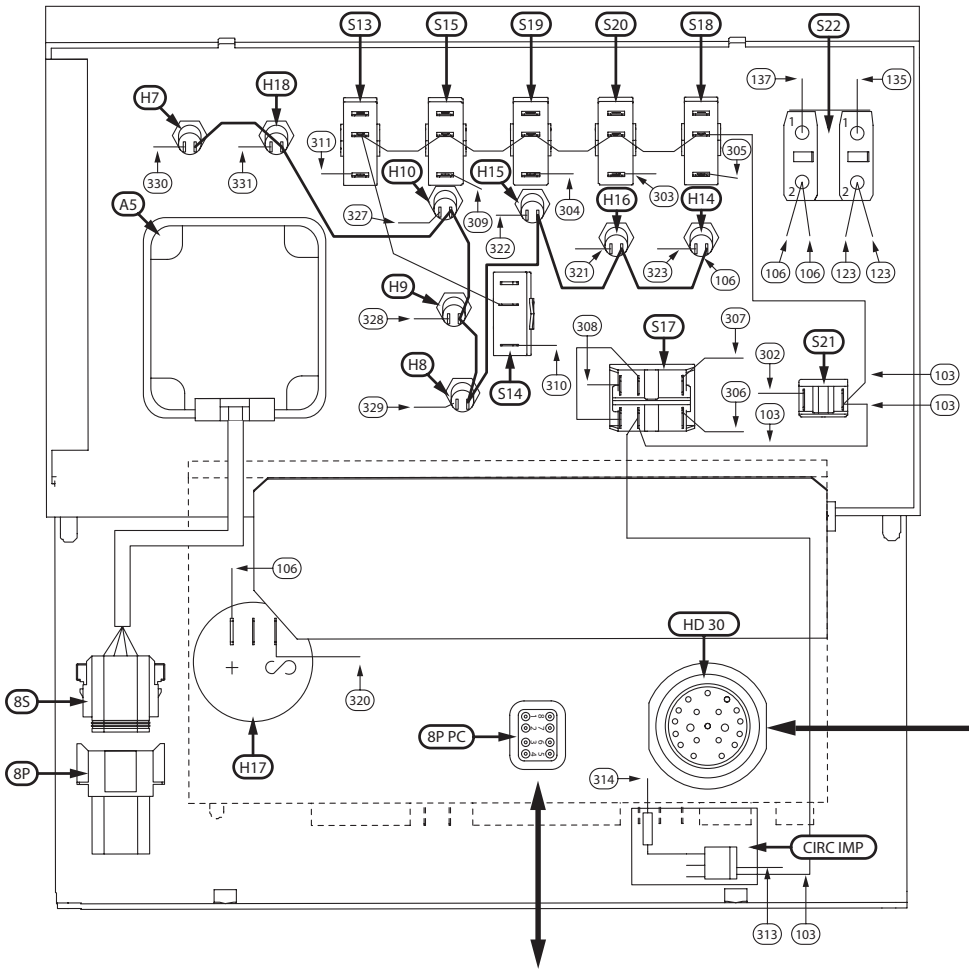
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BASKET CONTROL PANEL HARNESS

- ITEM 1

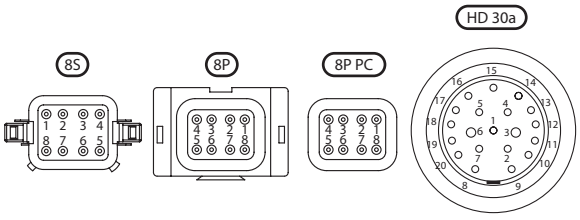
Installation procedure:

- 678383 - C (120 AETJL, 150 AETJC,150 AETJC 3D,150 AETJL,170 AETJL).



BASKET CONSOLE HARNESS

Ref. 1



Pos.	*Wire*
1	green
2	yellow
3	yellow/black
4	grey/black
5	white
6	white/black
	brown/black
	brown
7	green/black
8	grey

Pos.	*Wire*
1	314
2	315
3	316
4	317
5	123
6	103
7	319
8	318

Pos.	*Wire*
1	332
2	335
3	312
4	335
5	333
6	335
7	*spare*
8	*spare*

Pos.	*Wire*	
1	112	
2	113	
3	*spare*	
4	135	
5	137	
6	*spare*	
7	332	
8	333	
9	338	
10	103	
11	106	
12	123	
13	336	
14	337	
15	319	
16	400	*Optional spare*
17	401	*Optional spare*
18	402	*Optional spare*
19		*spare*
20		*spare*

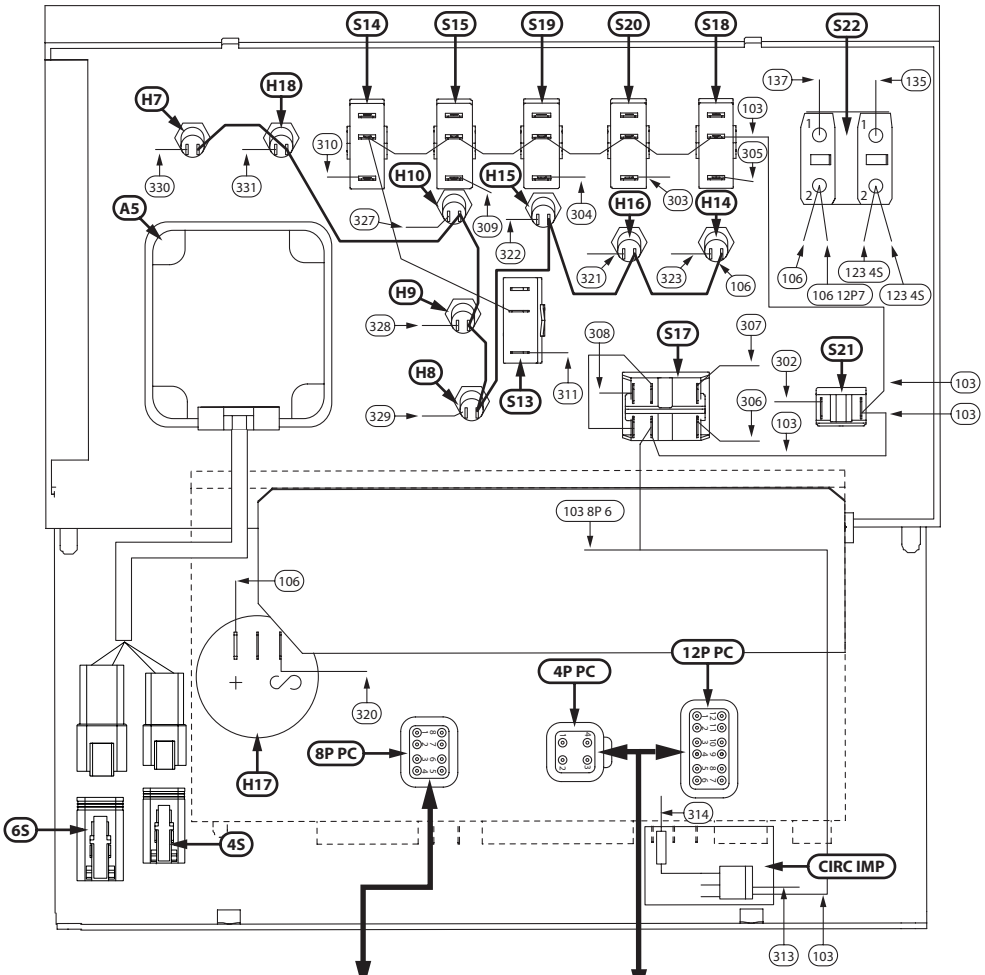
Ref.	*Designation*
A4	Basket module card
A5	Manipulator
PRINT.CIRC	Printed circuit
H7	Tilt LED
H8	Translation LED
H9	Arm 1/2 up LED
H10	Arm 3 up LED
H14	Tilt / reverse tilt LED
H15	Telescope LED
H16	Pendular arm up LED
H17	Buzzer
H18	Overload LED
HD30	20-port female Deutsch through-partition connector

Ref.	*Designation*
S13	Translation selector
S14	Arm 1/2 up / down selector
S15	Arm 3 up / down selector
S17	Pendular arm / turret / basket rotation selector
S18	Tilt / reverse tilt selector
S19	Telescope extension / retraction selector
S20	Pendular arm up / down selector
S21	Horn button
S22	Emergency Stop
8S	8-port male Deutsch connector
8P	8-port female Deutsch connector
8P PC	8-port female Deutsch through-partition connector

- ITEM 1

Installation procedure:

- 52501871. (150 AETJC,150 AETJC 3D,150 AETJL,170 AETJL)
- 52556918. (AETJ 43,AETJ 43 3D, AETJ 49)



6S

Pos	Wire
1	318
2	315
3	316
4	317
5	314
6	319

4S

Pos	Wire
1	123
2	103
3	103
4	103

8P PC

Pos	Wire
1	332
2	335
3	312
4	335
5	333
6	335
7	libre
8	libre

4P

Pos	Wire
1	338
2	400
3	401
4	402

12P

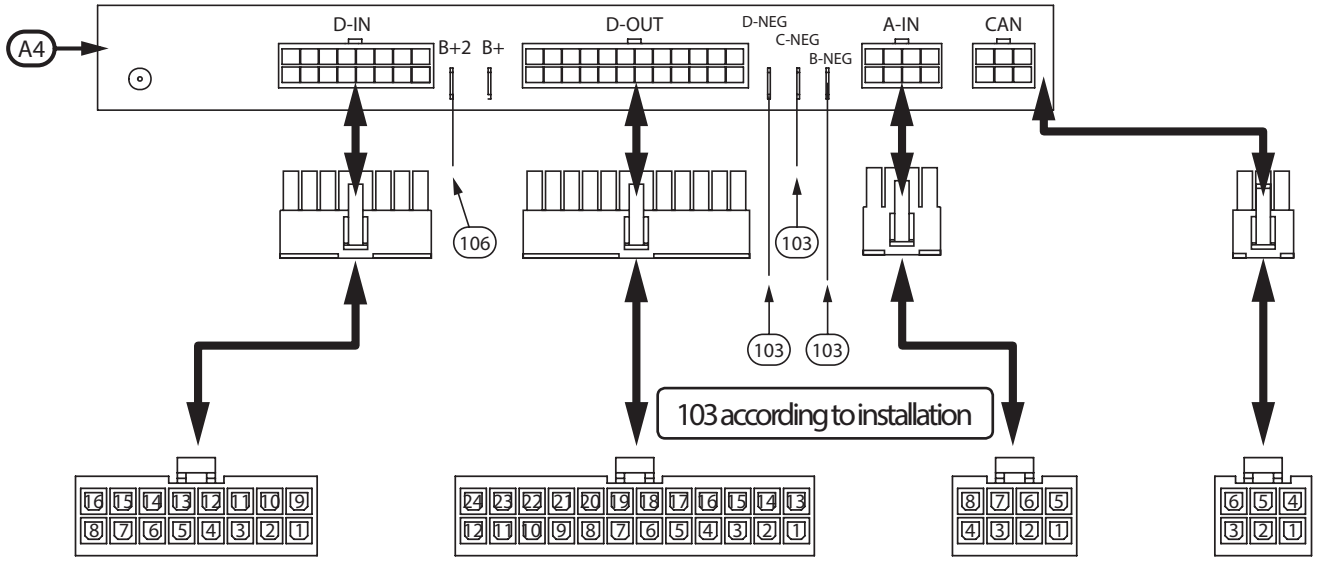
Pos	Wire
1	112
2	113
3	135
4	137
5	333
6	103
7	106
8	123
9	336
10	337
11	319
12	332

Ref.	Designation
A4	Basket module card
A5	Manipulator
PRINT.CIRC	Printed circuit
H7	Tilt LED
H8	Translation LED
H9	Arm 1/2 up LED
H10	Arm 3 up LED
H14	Tilt / reverse tilt LED
H15	Telescope LED
H16	Pendular arm up LED
H17	Buzzer
H18	Overload LED
4P PC	4-port female Deutsch through-partition connector
12P PC	12-port female Deutsch through-partition connector

Ref.	Designation
S13	Translation selector
S14	Arm 1/2 up / down selector
S15	Arm 3 up / down selector
S17	Pendular arm / turret / basket rotation selector
S18	Tilt / reverse tilt selector
S19	Telescope extension / retraction selector
S20	Pendular arm up / down selector
S21	Horn button
S22	Emergency Stop
4S	4-port male Deutsch connector
6S	6-port male Deutsch connector
8P PC	8-port female Deutsch through-partition connector

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Basket module control unit



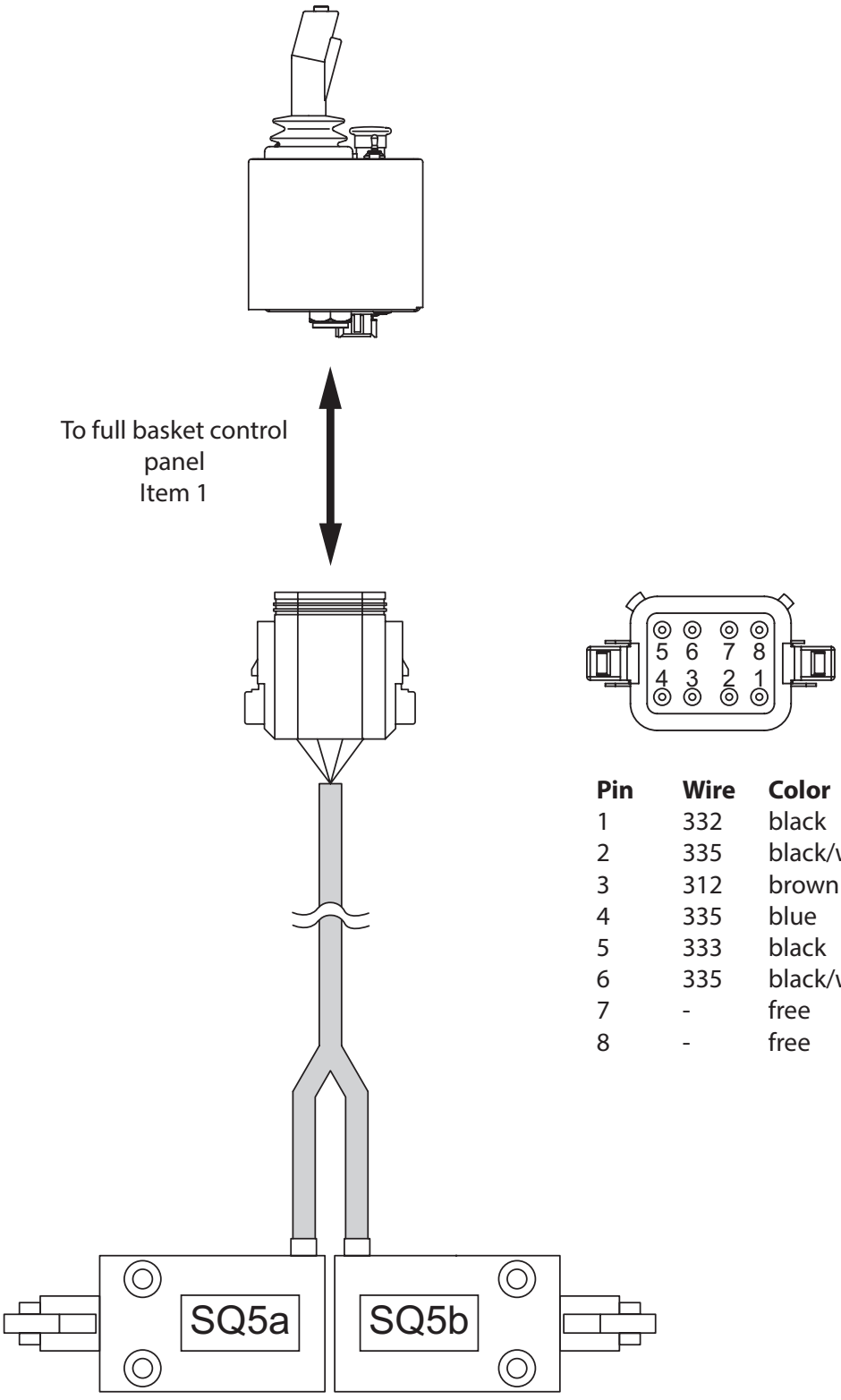
Pos.	Wire
1	319
2	312
3	311
4	313
5	332
6	316
7	317
8	306
9	310
10	309
11	304
12	303
13	305
14	308
15	307
16	302

Pos.	Wire
1	*spare*
2	328
3	327
4	322
5	321
6	*spare*
7	323
8	*spare*
9	*spare*
10	*spare*
11	*spare*
12	*spare*
13	329
14	331
15	320
16	330
17	*spare*
18	335
19	337
20	*spare*
21	336
22	338
23	*spare*
24	*spare*

Pos.	Wire
1	315
2	318
3	*spare*
4	*spare*
5	*spare*
6	*spare*
7	*spare*
8	*spare*

Pos.	Wire
1	*spare*
2	*spare*
3	*spare*
4	*spare*
5	113
6	112

OVERLOAD SENSORS HARNESS
- ITEM 16



OVERLOAD SENSORS HARNESS
678849 - D
Item 16

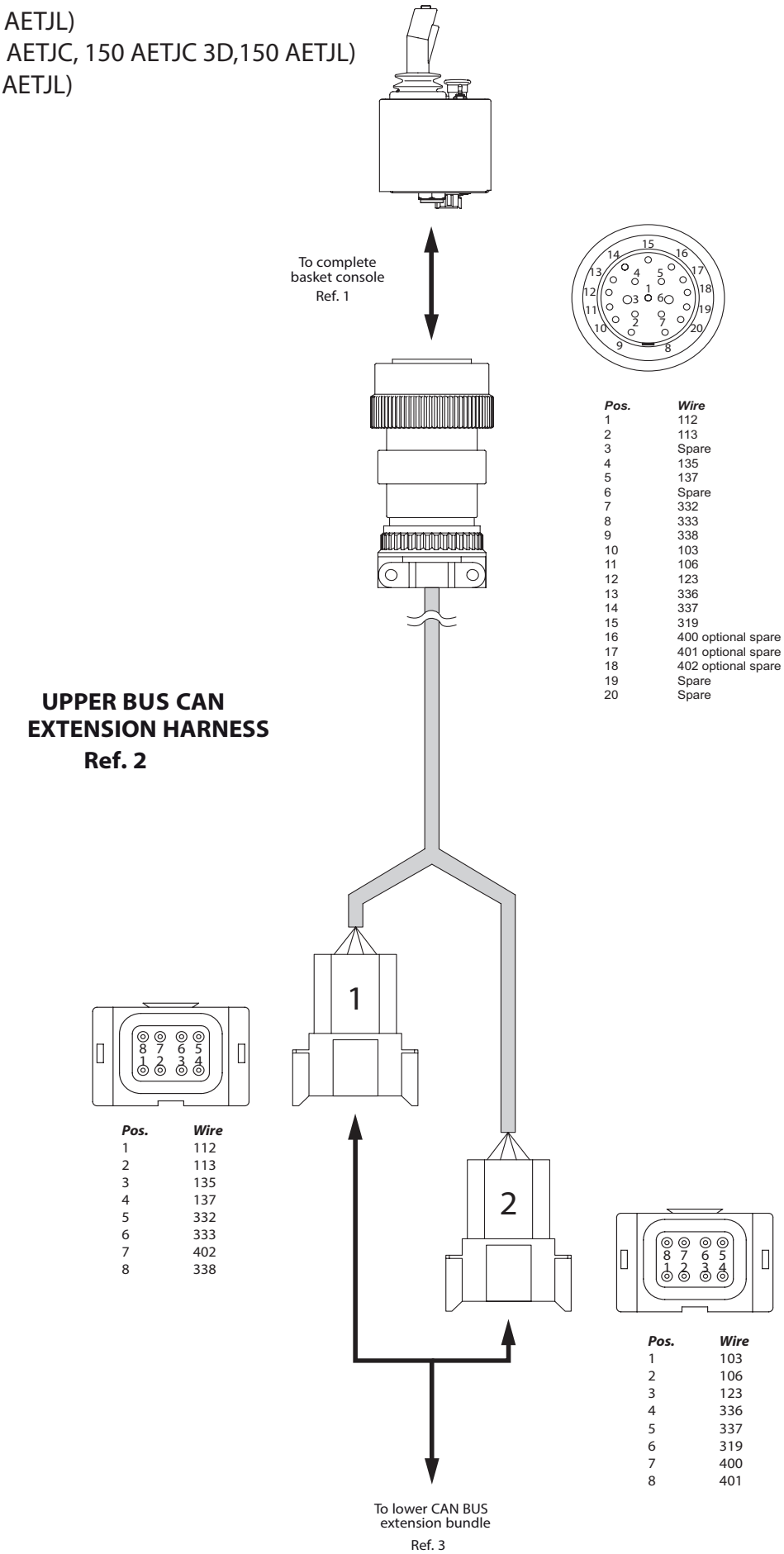
Pin	Wire	Color
1	332	black
2	335	black/white
3	312	brown
4	335	blue
5	333	black
6	335	black/white
7	-	free
8	-	free

UPPER BUS-CAN EXTENSION HARNESS

- ITEM 2

Installation procedure:

678855 - C (120 AETJL)
678387 - D (150 AETJC, 150 AETJC 3D,150 AETJL)
678643 - E (170 AETJL)



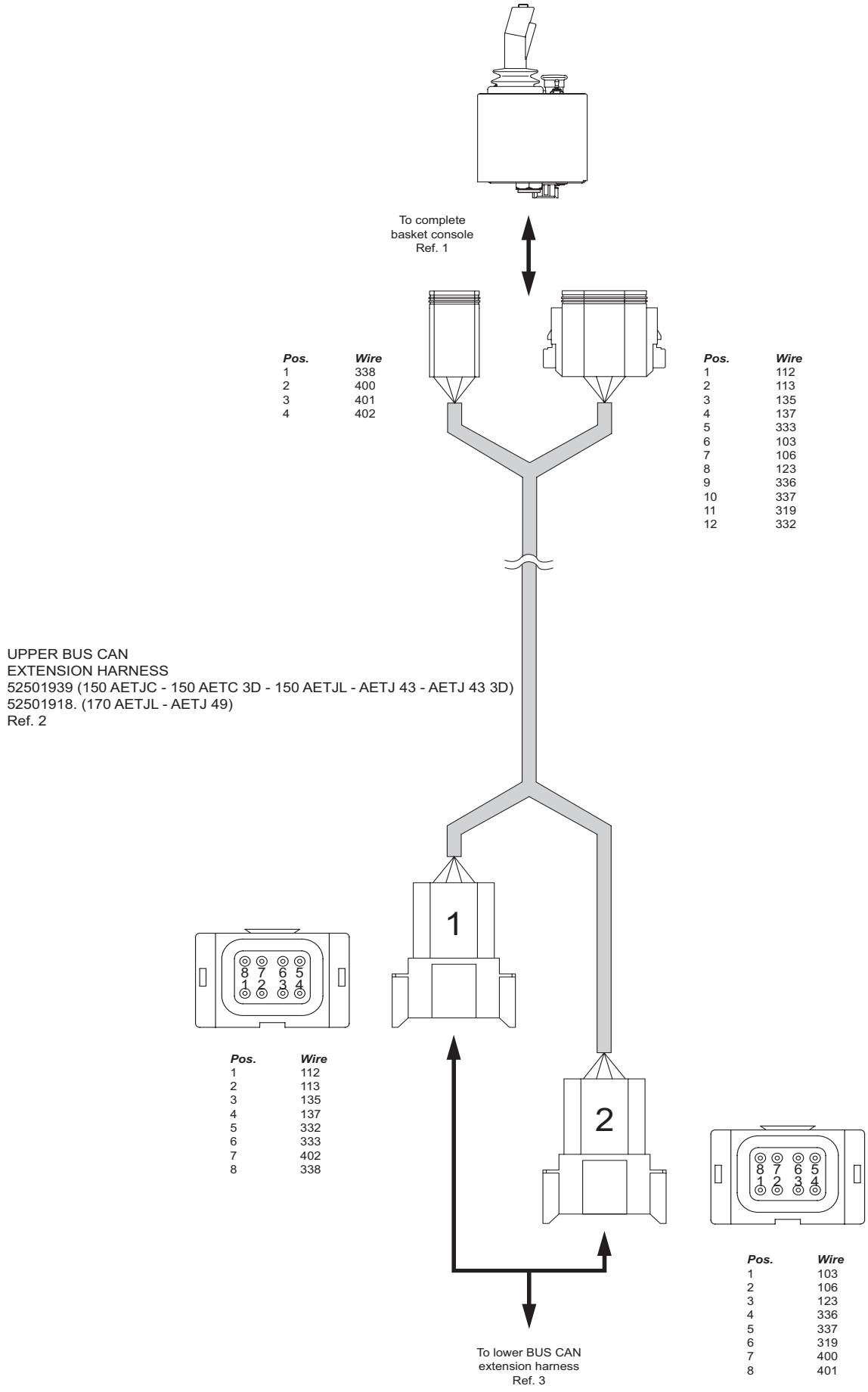
Pos.	*Wire*
1	112
2	113
3	Spare
4	135
5	137
6	Spare
7	332
8	333
9	338
10	103
11	106
12	123
13	336
14	337
15	319
16	400 optional spare
17	401 optional spare
18	402 optional spare
19	Spare
20	Spare

Pos.	*Wire*
1	112
2	113
3	135
4	137
5	332
6	333
7	402
8	338

Pos.	*Wire*
1	103
2	106
3	123
4	336
5	337
6	319
7	400
8	401

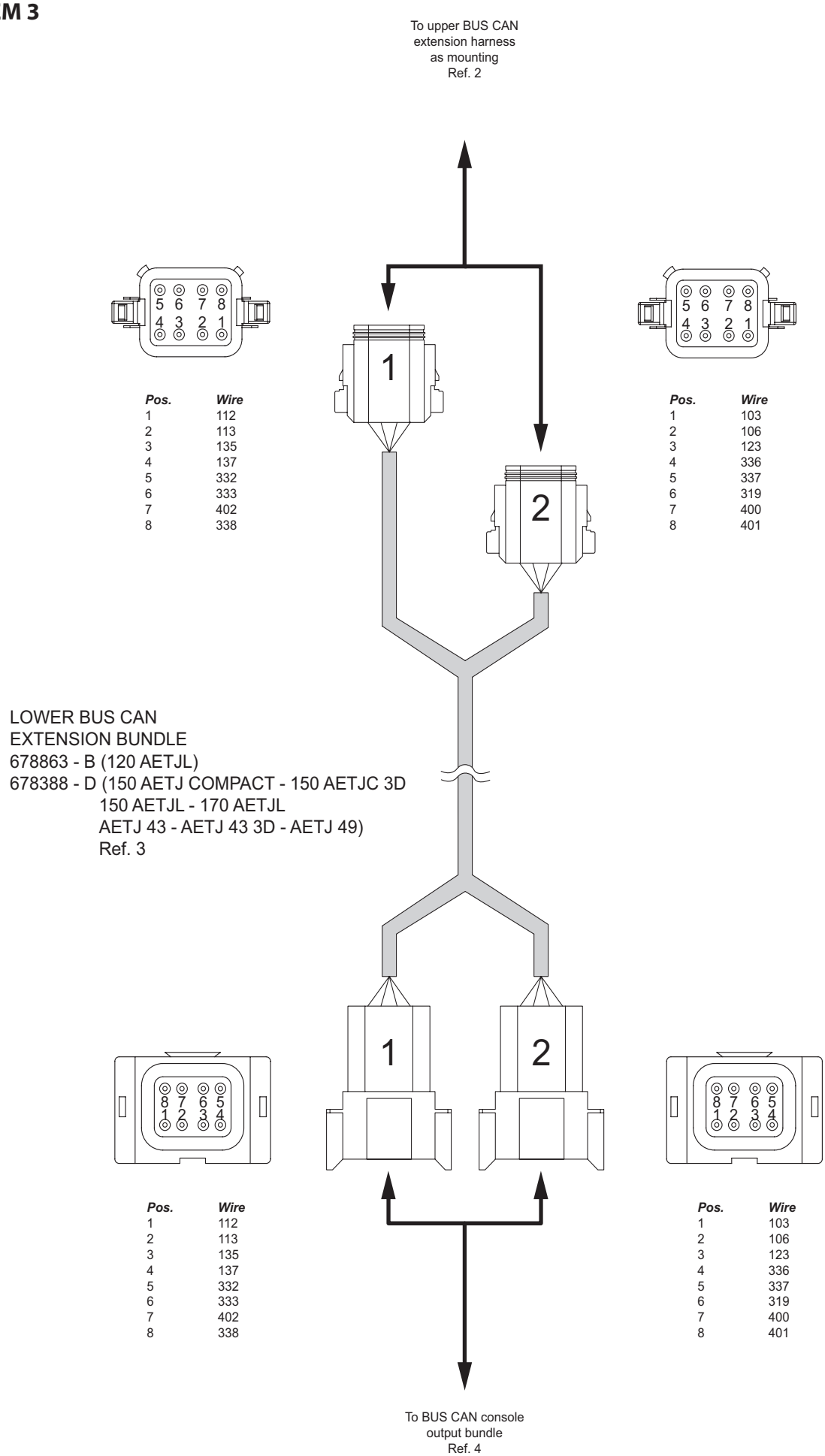
Installation procedure:

52501939.(150 AETJC, 150 AETJC 3D,150 AETJL, AETJ 43, AETJ 43 3D)
52501918. (170 AETJL, AETJ 49)

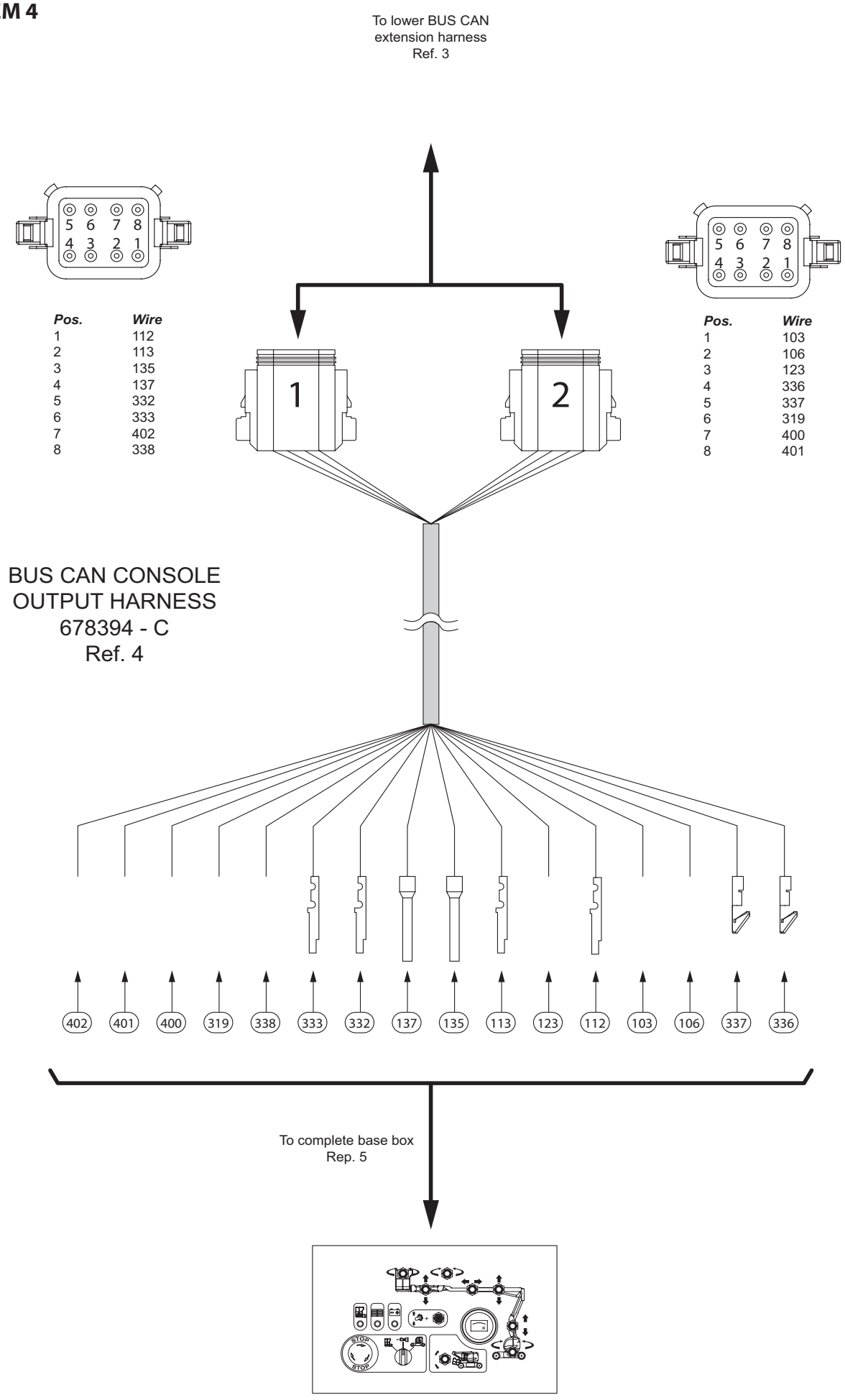


https://truckmanualshub.com/

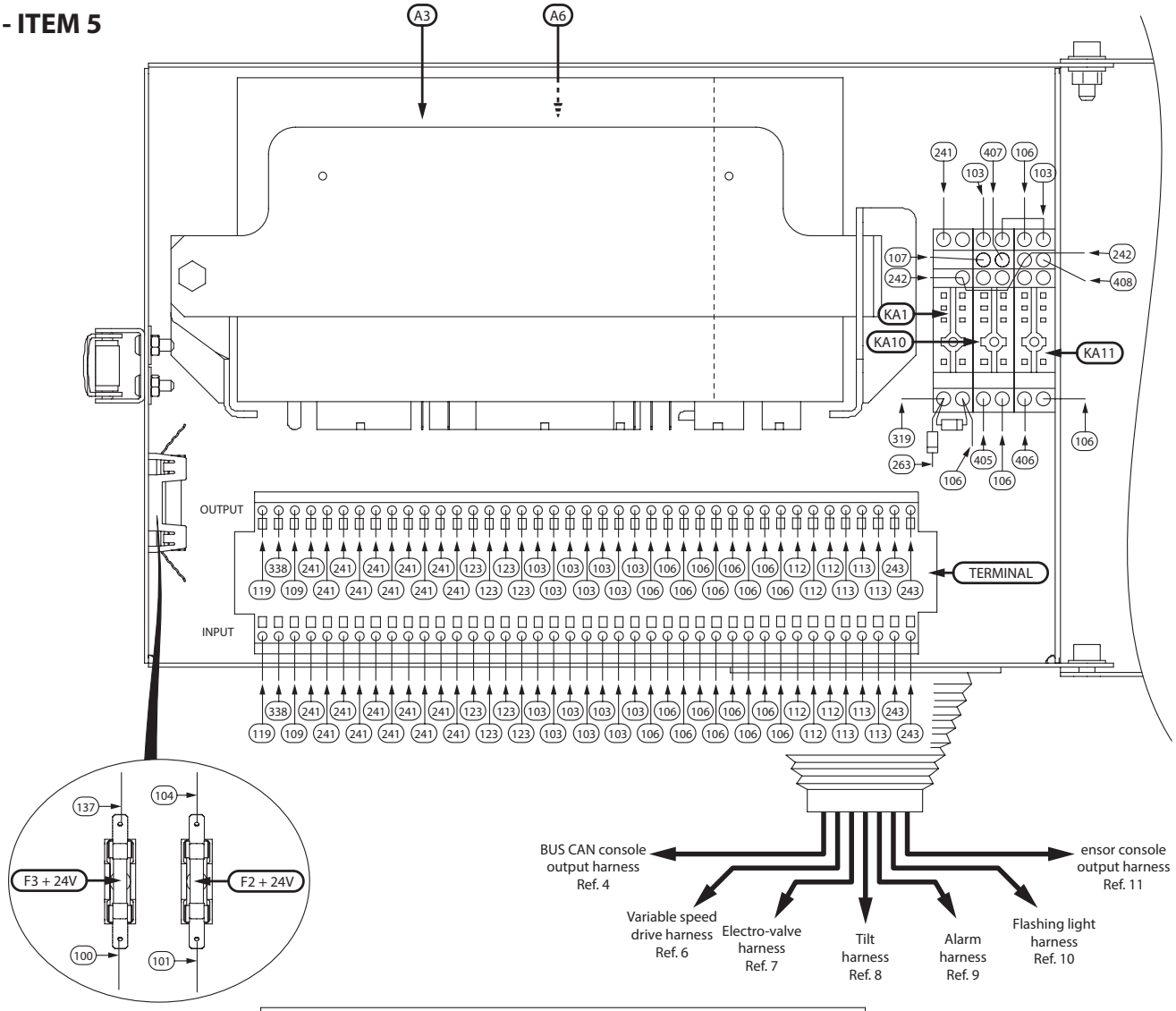
LOWER BUS-CAN EXTENSION HARNESS
- ITEM 3

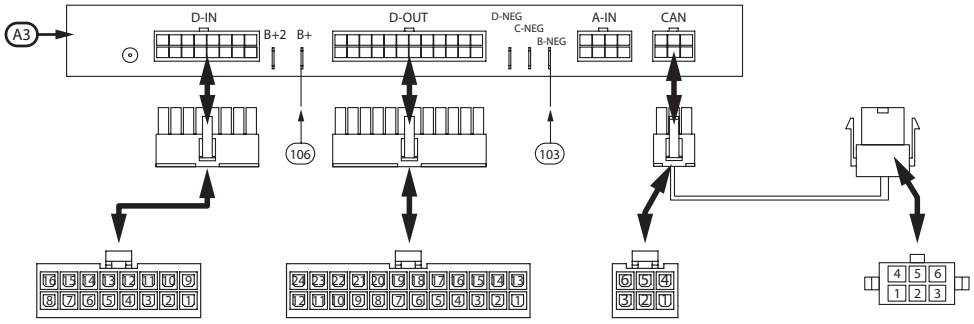


UPPER BUS-CAN CONTROL PANEL OUTPUT HARNESS - ITEM 4



BASE BOX HARNESS
- ITEM 5





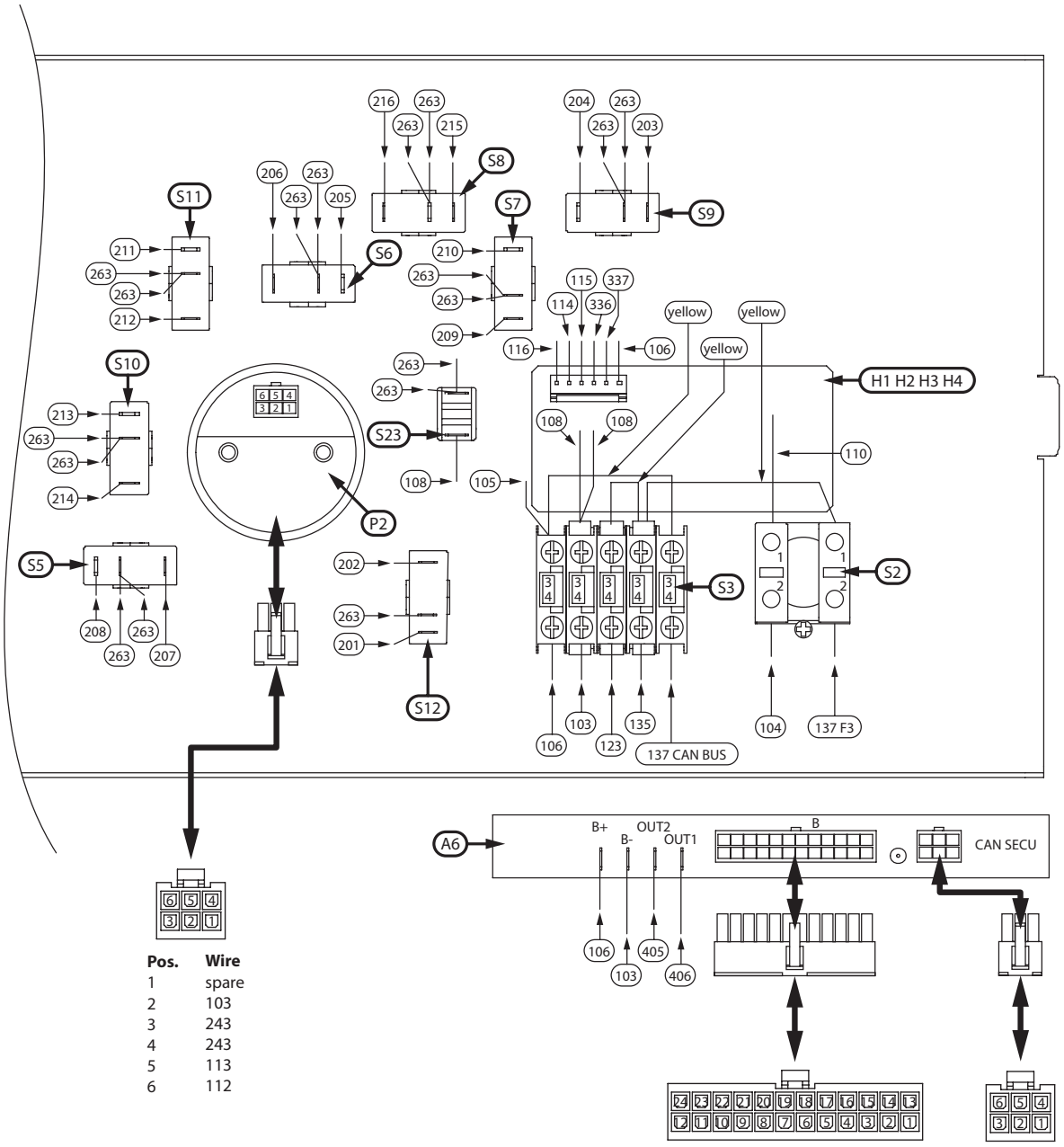
Pos.	Wire
1	215
2	214
3	213
4	212
5	211
6	208
7	207
8	205
9	206
10	201
11	202
12	209
13	210
14	204
15	203
16	216

Pos.	Wire
1	262
2	227
3	239
4	226
5	238
6	224
7	236
8	221
9	225
10	228
11	219
12	222
13	237
14	223
15	234
16	229
17	220
18	230
19	217
20	218
21	231
22	233
23	spare
24	235

Pos.	Wire
1	jaune J1-1
2	jaune J1-2
3	127
4	243
5	113
6	112

Pos.	Wire
1	jaune J1-1
2	jaune J1-2
3	127
4	243
5	113
6	112

BASE BOX
HARNESS
679459 - G (120 AETJL
- 150 AETJC - 150 AETJC 3D - 150 AETJL - 170 AETJL
52556928. (AET 43 - AETJ 43 3D - AETJ 49)
Ref. 5



Pos.	Wire
1	spare
2	103
3	243
4	243
5	113
6	112

Pos.	Wire
1	117
2	244
3	118
4	245
5	332
6	333
7	407
8	408
9	spare
10	spare
11	spare
12	spare
13	spare
14	spare
15	spare
16	spare
17	spare
18	spare
19	spare
20	spare
21	spare
22	spare
23	spare
24	spare

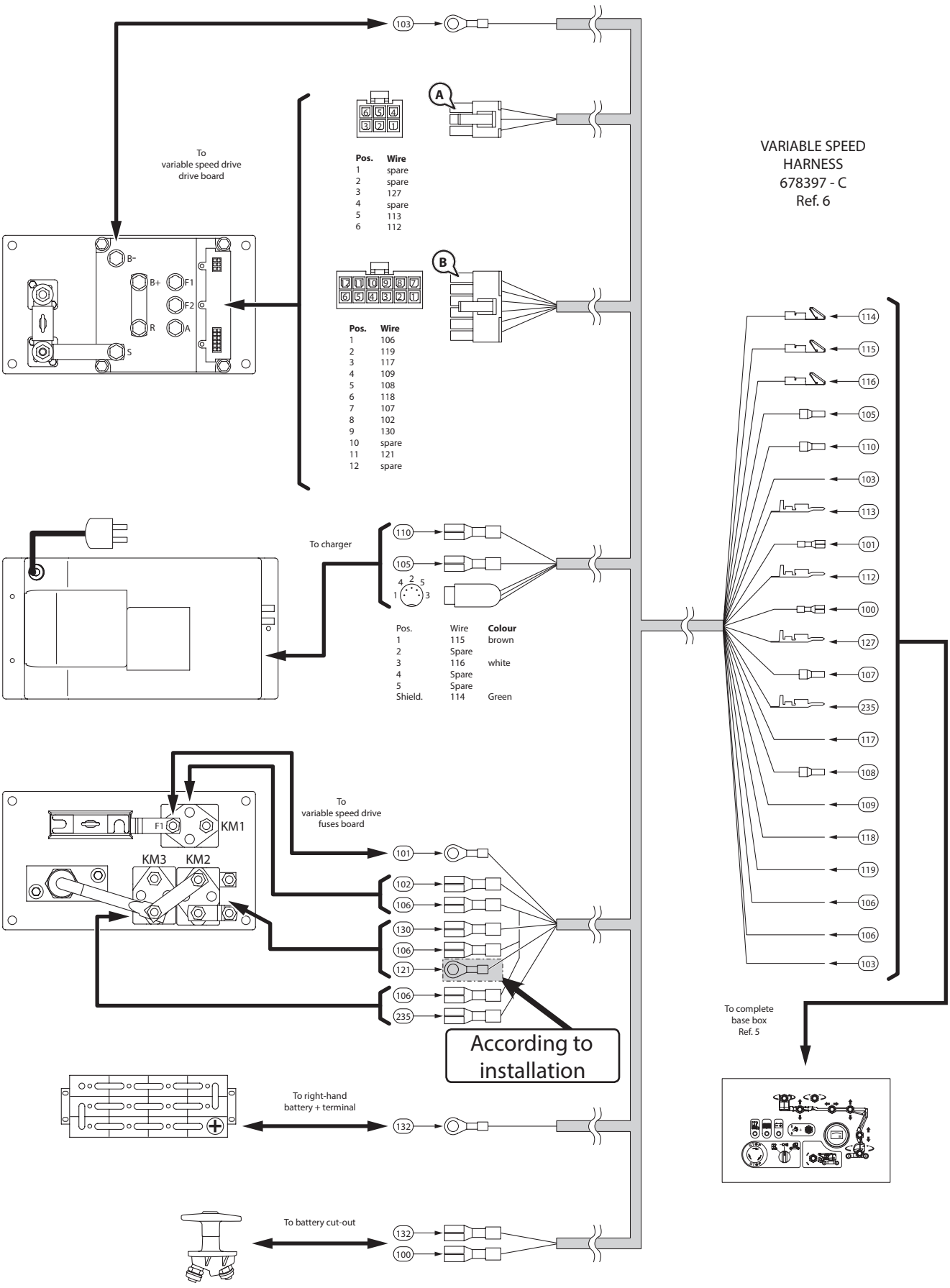
Pos.	Wire
1	spare
2	spare
3	spare
4	spare
5	113
6	112

Pos.	Designation
A3	Base module card
A6	Security control card
F2	15A fuse
F3	5A fuse
H1	Offset LED indicator - red LED
H2	Offset LED indicator - green LED
H3	Overload warning LED
H4	Maintenance warning LED
KA1	Electro-valve supply relays
KA10	Relay
KA11	Relay
P2	Timer

Pos.	Designation
S2	Emergency Stop
S3	Base/basket selector
S5	Turret rotation selector
S6	Telescope extension / retraction selector
S7	Pendular arm up / down selector
S8	Pendular arm rotation selector
S9	Basket rotation selector
S10	Arm 3 up / down selector
S11	Arm 1/2 up / down selector
S12	Tilt / reverse tilt selector
S23	Dead man's button

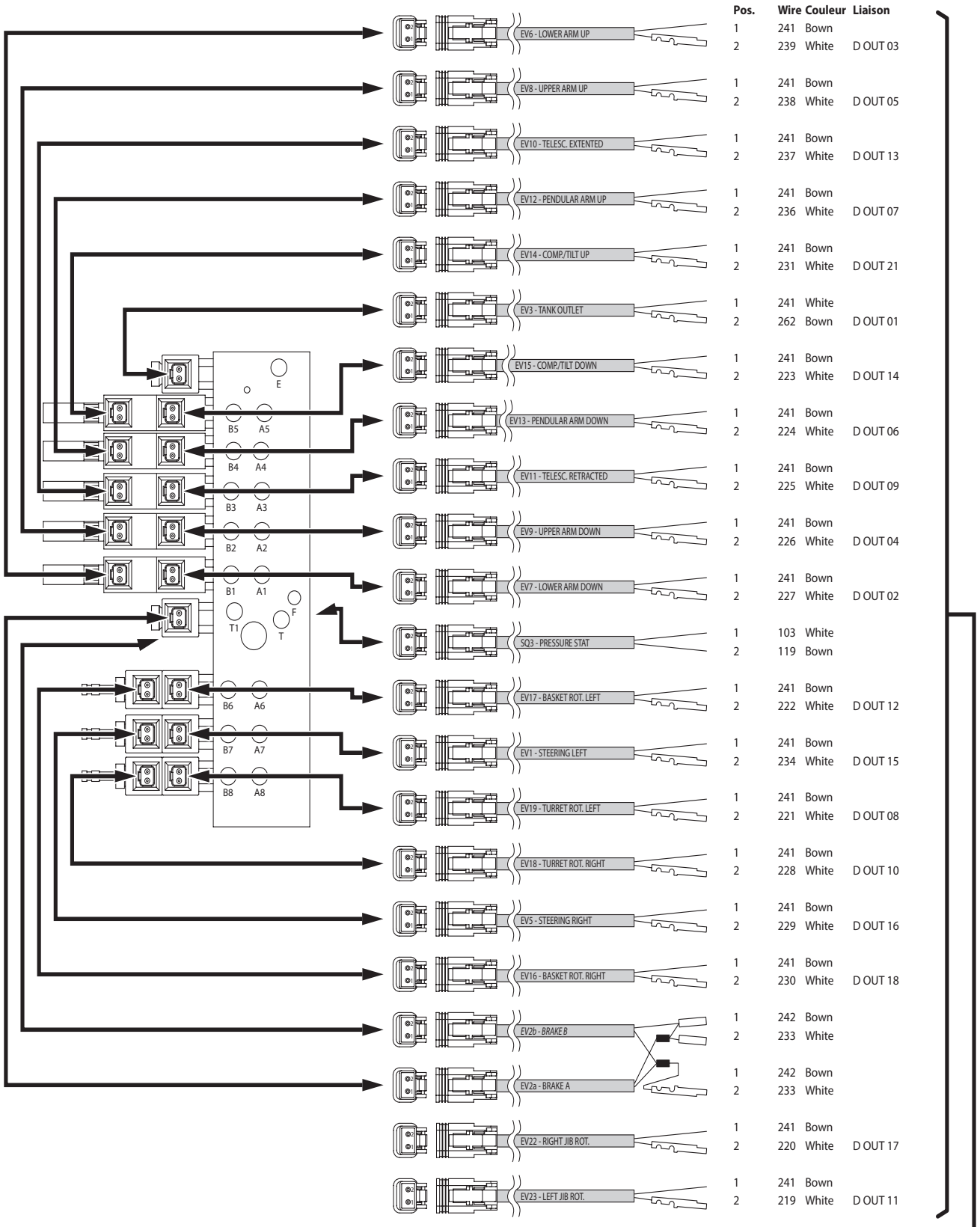
https://truckmanualshub.com/

VARIABLE SPEED CONTROLLER HARNESS
- ITEM 6

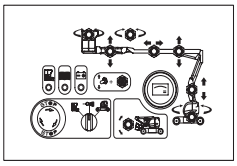


ELECTROVALVE HARNESS
- ITEM 7

ELECTRO-VALVE HARNESS
678393 - E
Ref. 4



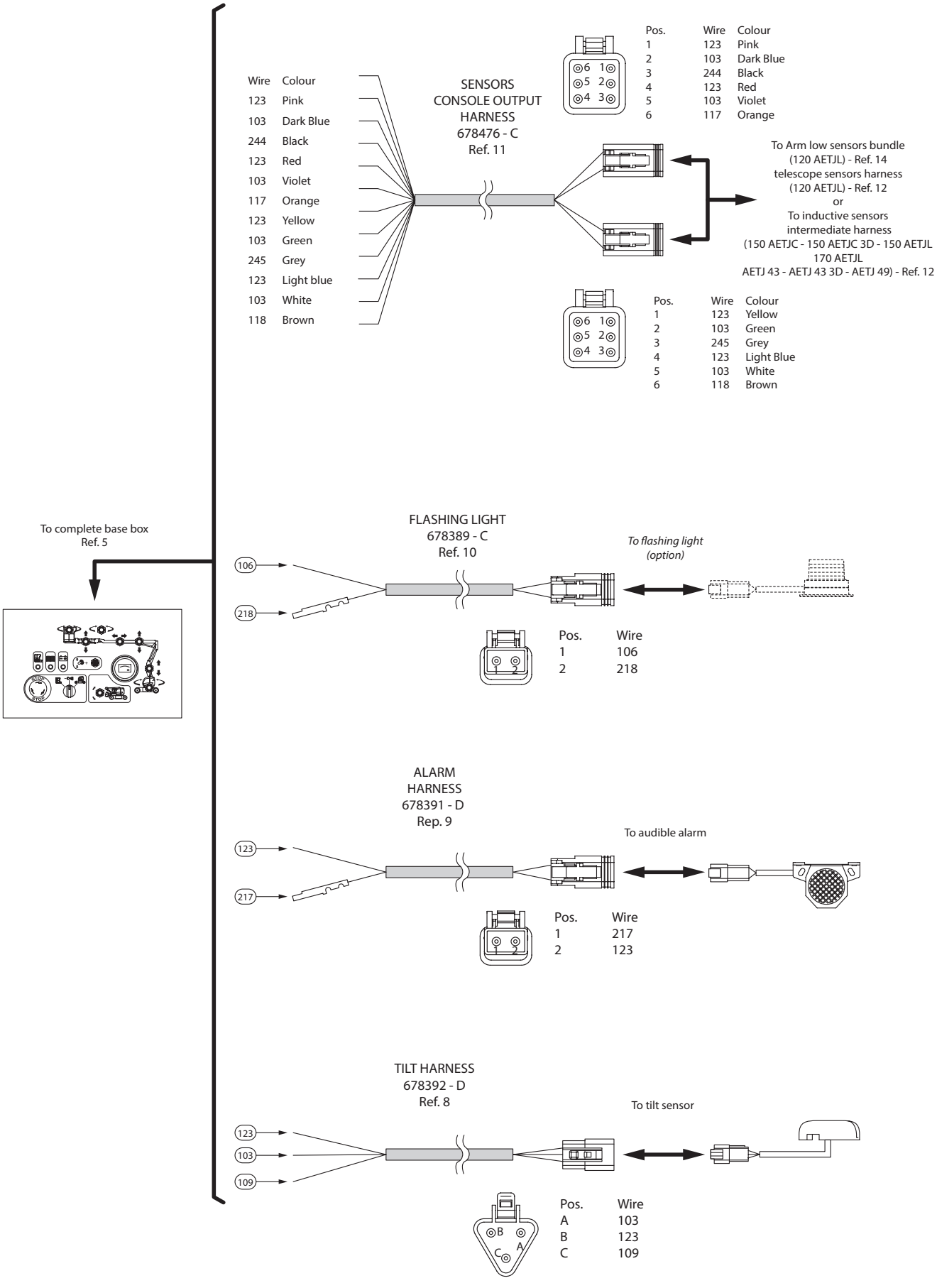
Pos.	Wire	Couleur	Liaison
1	241	Bown	
2	239	White	D OUT 03
1	241	Bown	
2	238	White	D OUT 05
1	241	Bown	
2	237	White	D OUT 13
1	241	Bown	
2	236	White	D OUT 07
1	241	Bown	
2	231	White	D OUT 21
1	241	White	
2	262	Bown	D OUT 01
1	241	Bown	
2	223	White	D OUT 14
1	241	Bown	
2	224	White	D OUT 06
1	241	Bown	
2	225	White	D OUT 09
1	241	Bown	
2	226	White	D OUT 04
1	241	Bown	
2	227	White	D OUT 02
1	103	White	
2	119	Bown	
1	241	Bown	
2	222	White	D OUT 12
1	241	Bown	
2	234	White	D OUT 15
1	241	Bown	
2	221	White	D OUT 08
1	241	Bown	
2	228	White	D OUT 10
1	241	Bown	
2	229	White	D OUT 16
1	241	Bown	
2	230	White	D OUT 18
1	242	Bown	
2	233	White	
1	242	Bown	
2	233	White	
1	241	Bown	
2	220	White	D OUT 17
1	241	Bown	
2	219	White	D OUT 11



To complete
base box
Ref. 5

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MISCELLANEOUS HARNESS
- ITEMS 8, 9, 10, 11



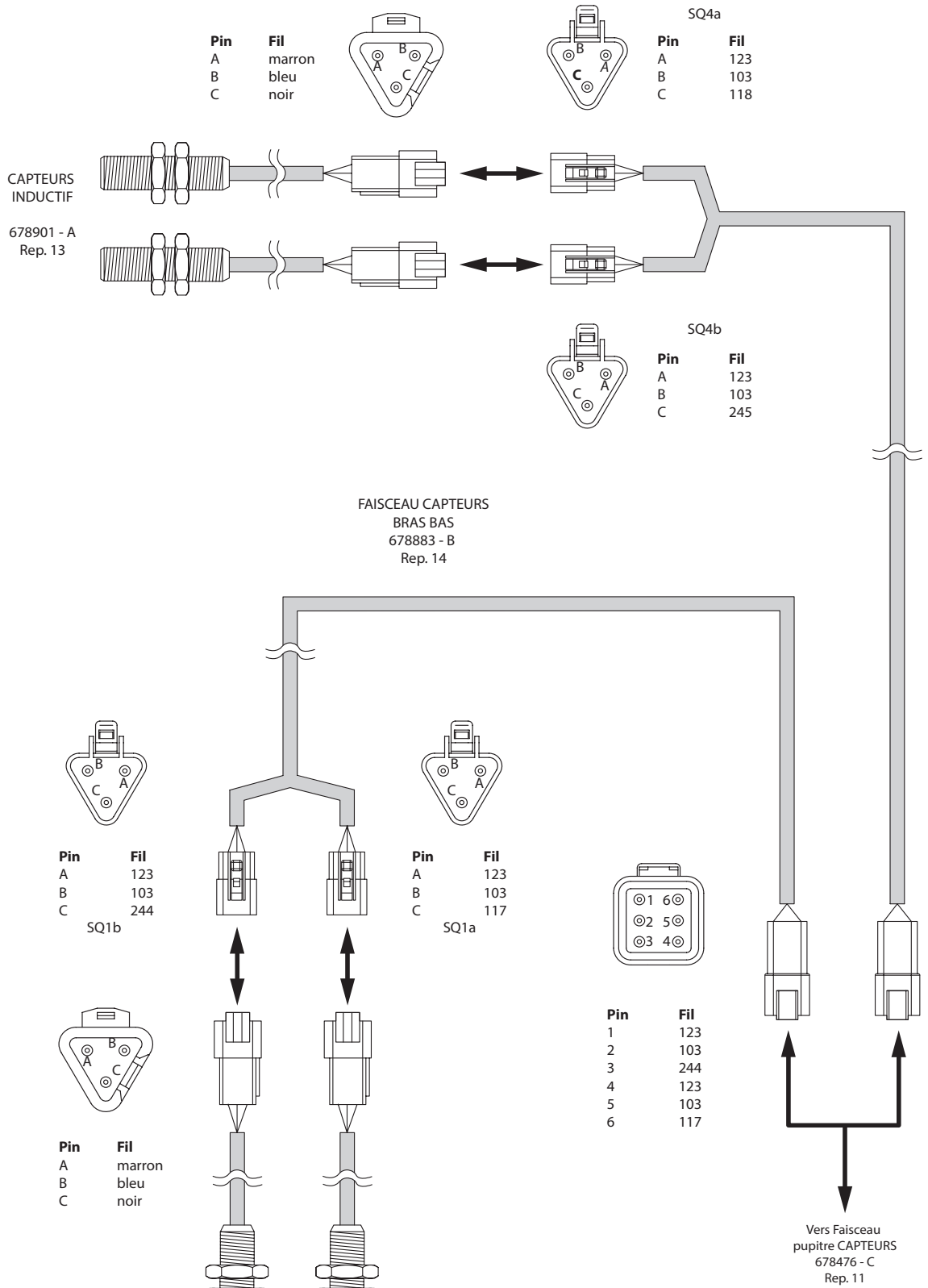
https://truckmanualshub.com/

MISCELLANEOUS HARNESS

- ITEMS 12, 13, 14, 15

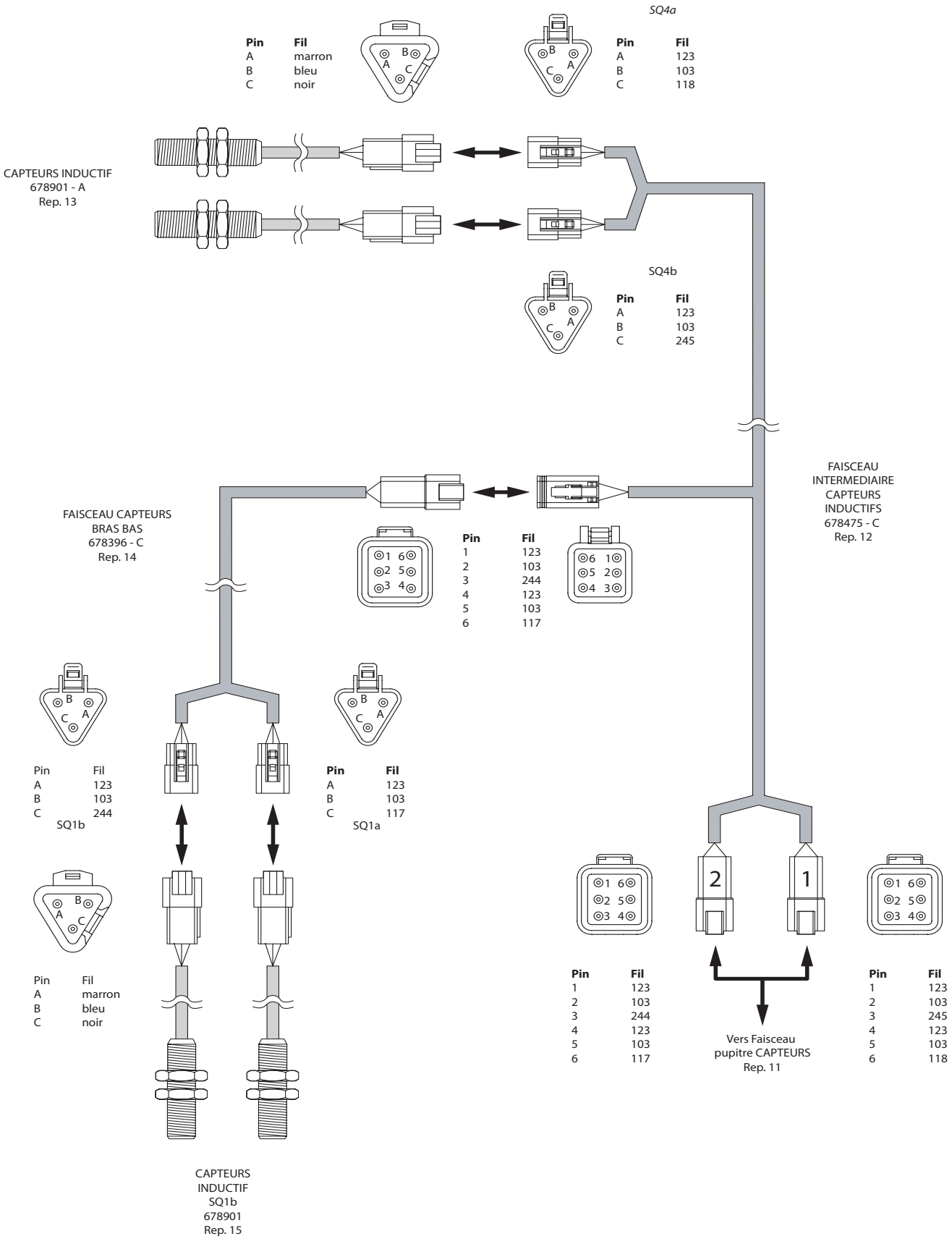
Installation procedure:

- 120 AETJL



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- ITEMS 12, 13, 14, 15
Installation procedure:
- 150 AETJC - 150 AETJC 3D - 150 AETJL - 170 AETJL - AETJ 43 - AETJ 43 3D - AETJ 49

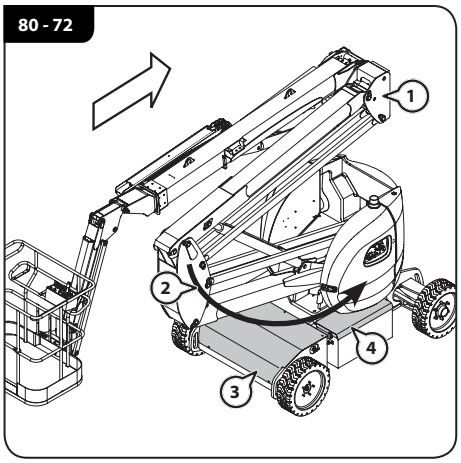


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80.3 ELECTRICAL CONTROL AND ADJUSTMENT

80.3.1 ZIVAN BATTERY CHARGER

ZIVAN BATTERY CHARGER REMOVAL



- Raise the arm 1/2 so that the upper hinge (1, 080 - 72) is raised by 1 m (39.37 in).

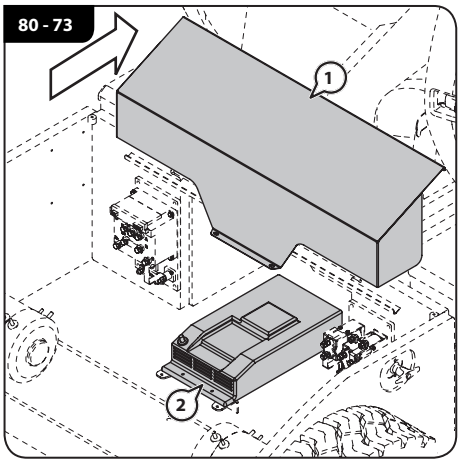
-Turn the turret by 1/4 turn (2, 080 - 73)

- Switch off the power supply.

- Remove the cover (3, 080 - 74).

- Remove the battery protective casings (4, 080 - 72).

- Remove the cables connected to the charger from the battery (*80.4.2 BATTERIES - REMOVAL, 137*)

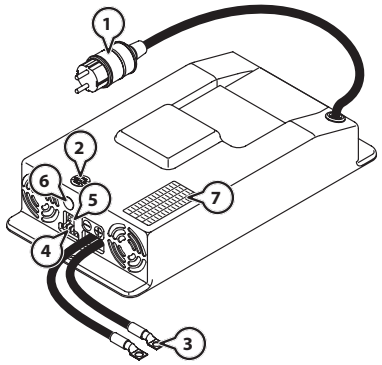


- Remove the cover plate (1, 080 - 73).

- Remove the charger (2, 080 - 73).

ZIVAN BATTERY CHARGER DESCRIPTION

80 - 74

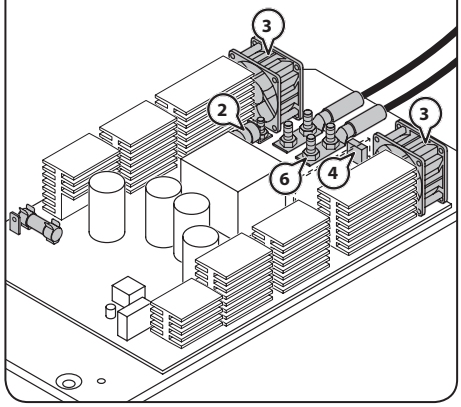


EXTERNAL VIEW

- Mains power supply cable..... (1, 080 - 74)
- LED indicator ..... (2, 080 - 74)
- Charging cables .....(3, 080 - 74)
- Auxiliary contacts ..... (4, 080 - 74)
- 5-pin plug..... (5, 080 - 74)
- Capacity switch protective plug ..... (6, 080 - 74)
- Sticker: indication of settings (position of capacity switch) made during first installation ..... (7, 080 - 74)

NOTE: ignore this sticker when configuring the settings for the charger (*ZIVAN BATTERY CHARGER CONNECTIONS LOAD CURVES, 104*)

80 - 75



INTERNAL VIEW

- Input fuse F1 (1, 080 - 75): 20 A (see parts catalog)

- Output fuse F2 (2, 080 - 75): 45 A (see parts catalog)

- Fans ..... (3, 080 - 75)

- Battery capacity switch C ..... (4, 080 - 75)

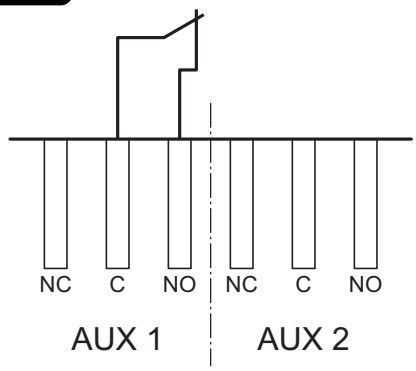
- Input terminals ..... (5, 080 - 75)

- Output terminals ..... (6, 080 - 77)

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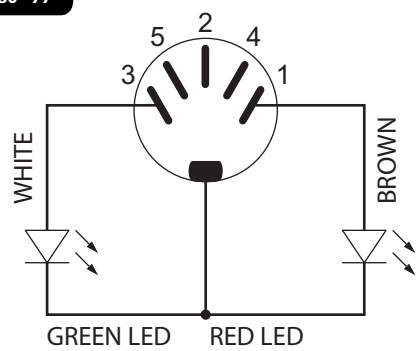
ZIVAN BATTERY CHARGER CONNECTIONS

80 - 76



- Auxiliary contacts to cut-off load movements: internal diagram (see figure, 080 - 76).

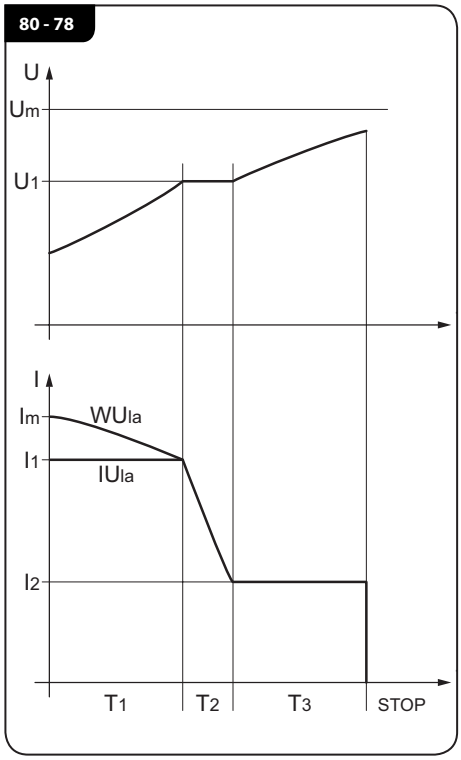
80 - 77



- 5-pin plug to connection the removed LED harness: external diagram (see figure, 080 - 77).

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ZIVAN BATTERY CHARGER CONNECTIONS LOAD CURVES



- Voltage curve:

- Amperage curve:

- Properties:

Intensity: Im = 43 A I1 = 36 A I2 = 4% C5
Voltage: U1 = 57.6 V Um = 66 V
Other: C = C5

Type of charger	IULa								WULa							
Capacity switch position	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
Capacity (Ah)	345	315	290	260	230	200	175	145	345	315	290	260	230	200	175	145
I2 (A)	138	127	115	104	92	81	69	58	138	127	115	104	92	81	69	58

Charging time	IULa								WULa							
Capacity switch position	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
T1max (h)	10hr 45min	10hr	9hr	8hr	7hr 15min	6hr 15min	5hr 30min	4hr 30min	10hr 45min	10hr	9hr	8hr	7hr 15min	6hr 15min	5hr 30min	4hr 30min
T2max (h)	3hr	3hr	3hr	3hr	3hr	3hr	3hr	3hr	3hr	3hr	3hr	3hr	3hr	3hr	3hr	3hr
(T1+T2+T3)max (h)	15hr 45min	15hr	14hr	13hr	12hr 15min	11hr 15min	10hr 30min	9hr 30min	15hr 45min	15hr	14hr	13hr	12hr 15min	11hr 15min	10hr 30min	9hr 30min

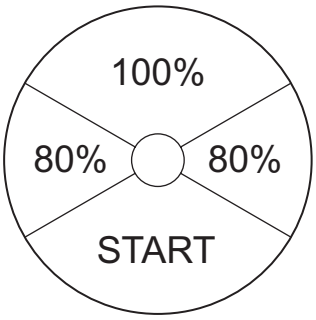
⚠ CAUTION

The capacity Switch is to be configured based on the battery properties shown on the stick affixed to the battery.

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ZIVAN BATTERY CHARGER - INDICATORS

80 - 79

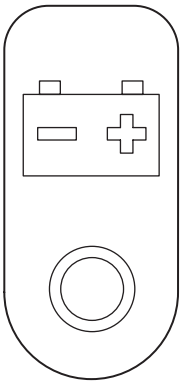


LED charger indicator (see figure, 080 - 79)

- Red permanently on: initial charging phase.
- Yellow permanently on: battery at 80% charge.
- Green permanently on: battery at 100% charge.

- LED flashing + intermittent audible signal from the charger: alarm situation (***80.5 TROUBLESHOOTING - ELECTRICAL,*** ***139***)

80 - 80



LED indicator removed (see figure, 080 - 80)

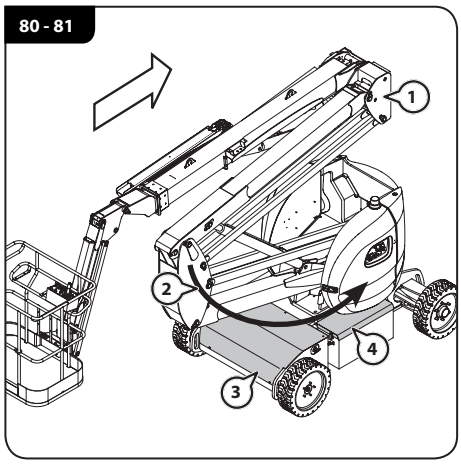
- Red permanently on: initial charging phase.
- Yellow permanently on: battery at 80% charge.
- Green permanently on: battery at 100% charge.

- LED flashing + intermittent audible signal from the charger: alarm situation (***80.5 TROUBLESHOOTING - ELECTRICAL,*** ***139***)

https://truckmanualshub.com/

80.3.2 IES BATTERY CHARGER

80 - 81



IES BATTERY CHARGER REMOVAL

- Raise the arm 1/2 so that the upper hinge (1, 080 - 81) is raised by 1 m (39.37 in).

-Turn the turret by 1/4 turn (2, 080 - 81)

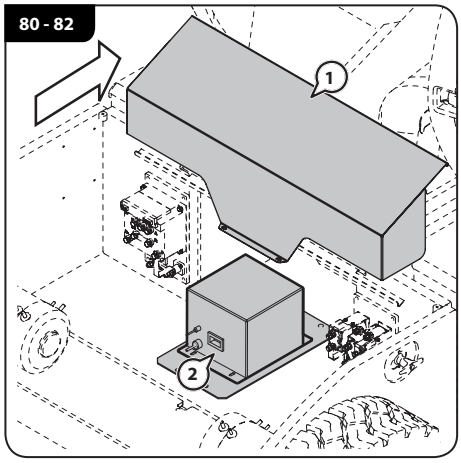
- Switch off the power supply.

- Remove the cover (3, 080 - 81).

- Remove the battery protective casings (4, 080 - 81).

- Remove the cables connected to the charger from the battery (***80.4.2 BATTERIES - REMOVAL, 137***)

80 - 82



- Remove the cover plate (1, 080 - 82).

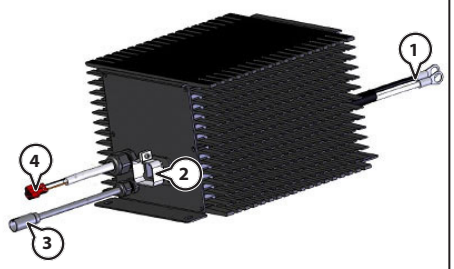
- Remove the charger (2, 080 - 82).

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IES BATTERY CHARGER DESCRIPTION

EXTERNAL VIEW

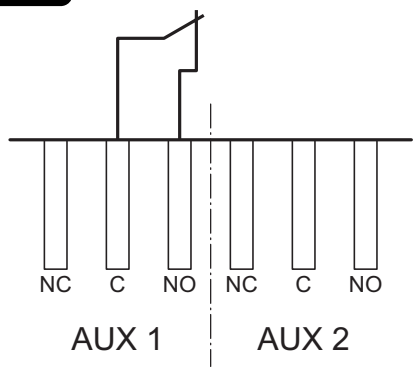
80 - 83



- Charging cables .....(1, 080 - 83)
- Mains power supply cable..... (2, 080 - 83)
- Auxiliary contacts ..... (3, 080 - 83)
- 5-pin plug..... (4, 080 - 83)

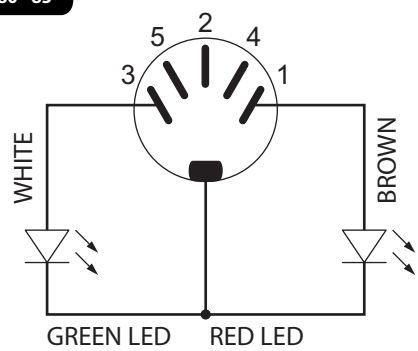
IES BATTERY CHARGER CONNECTIONS

80 - 84



Auxiliary contacts to cut-off load movements: internal diagram (see figure, 080 - 84).

80 - 85



- 5-pin plug to connection the removed LED harness: external diagram (see figure, 080 - 85).

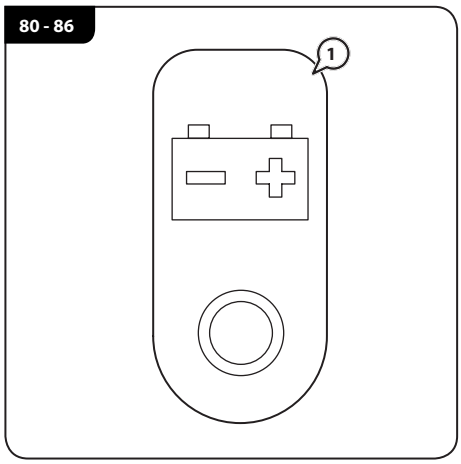
https://truckmanualshub.com/

IES BATTERY CHARGER CONNECTIONS LOAD CURVES

The charging current is selected automatically.

IES BATTERY CHARGER - INDICATOR

80 - 86



LED indicator removed (see figure, 080 - 86)
- Off: charger not powered
- Red permanently on: initial charging phase.
- Yellow permanently on: battery at 80% charge.
- Green permanently on: battery at 100% charge.

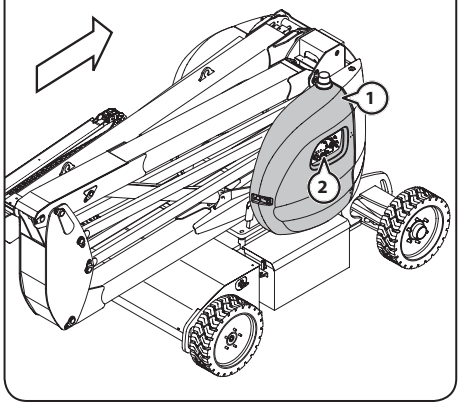
- LED flashing:
Yellow: battery balancing cycle
Red: alarm situation (***80.5 TROUBLESHOOTING - ELECTRICAL,*** ***139***)

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80.3.3 ELECTRONIC MODULES - CONTROL AND SETTINGS

ELECTRONIC CONTROL UNITS - REMOVAL

80 - 87

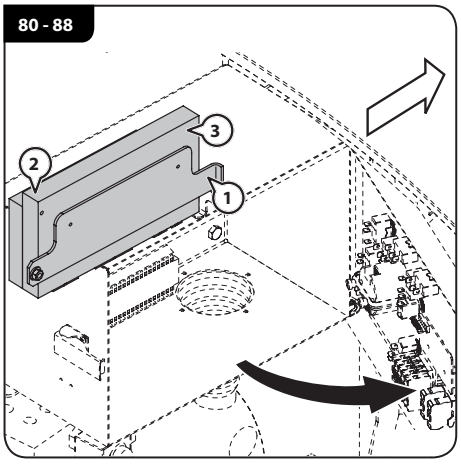


Base module control unit + safety control card

- Open the right-hand turret cover (1, 080 - 87).

- Open the front face of the base control panel (2, 080 - 87).

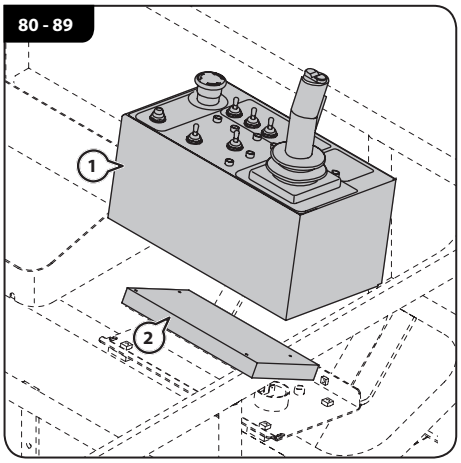
80 - 88



- Remove the plate holding the card in place (1, 080 - 88) and remove the cards:

- Safety control card (2, 080 - 88).
- Base module control unit (3, 080 - 88).

80 - 89



Basket module control unit

- Remove the front face from the basket control panel (1, 080 - 89).

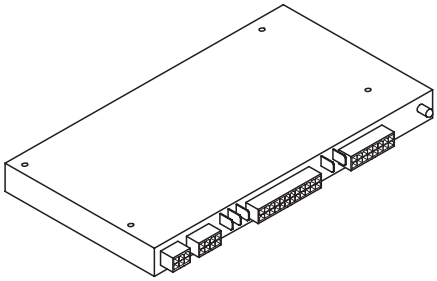
- Remove the basket module control unit (2, 080 - 89).

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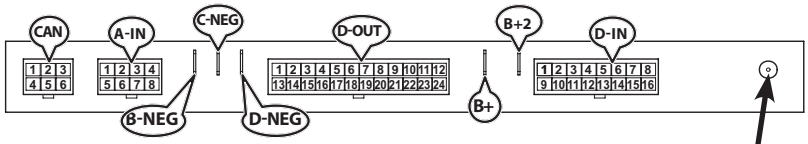
ELECTRONIC CONTROL UNITS DESCRIPTION AND WIRING

Base module control unit

80 - 90



80 - 91



LED RUN :
- ON, control unit powered.
- OFF, control unit switched off, defective or BUS-CAN problem.

Base module control unit				Measure using the calibrator				Multimeter	
Connector	PIN	WireN°	Signal	Menu	Description	Not activated	Activated	Not activated	Activated
CAN	1	243	+12V		NOT MEASURABLE				
	2		0V		NOT MEASURABLE				
	3		Free		NOT MEASURABLE				
	4		+12V		NOT MEASURABLE				
	5	113	CAN-H		NOT MEASURABLE				
	6	112	CAN-L		NOT MEASURABLE				
A-IN	1		Free		NOT MEASURABLE				
	2		Free		NOT MEASURABLE				
	3		Free		NOT MEASURABLE				
	4		Free		NOT MEASURABLE				
	5		Free		NOT MEASURABLE				
	6		Free		NOT MEASURABLE				
	7		Free		NOT MEASURABLE				
	8		Free		NOT MEASURABLE				
B-NEG		103	0V (masse)		NOT MEASURABLE				
C-NEG		103	0V (masse)		NOT MEASURABLE				
D-NEG		103	0V (masse)		NOT MEASURABLE				
D-IN	1	215	JIB - Right Rotation	Measurement to be performed using multimeter					0V
	2	214	Arm 1/2 - Raised	2.6.1	Boom 1 up	Open	Closed		0V
	3	213	Arm 1/2 - Lowered	2.6.2	Boom 1 down	Open	Closed		0V
	4	212	Arm 3 - Raised	2.6.3	Boom 2 up	Open	Closed		0V
	5	211	Arm 3 Lowered	2.6.4	Boom 2 down	Open	Closed		0V
	6	208	Turret - Left Rotation	2.6.9	Slew left	Open	Closed		0V
	7	207	Turret - Right Rotation	2.6.10	Slew right	Open	Closed		0V
	8	205	Telescope - Retracted	2.6.7	Tele in	Open	Closed		0V
	9	206	Telescope - Extended	2.6.8	Tele out	Open	Closed		0V
	10	201	Tilt - Raised	2.6.12	Cage level forward	Open	Closed		0V
	11	202	Tilt - Lowered	2.6.13	Cage level reverse	Open	Closed		0V
	12	209	Jib - up	2.6.5	Jib up	Open	Closed		0V
	13	210	Jib - down	2.6.6	Jib down	Open	Closed		0V
	14	204	Basket - Left Rotation	2.6.14	Cage rotate left	Open	Closed		0V
	15	203	Basket - Right Rotation	2.6.15	Cage rotate right	Open	Closed		0V
	16	216	JIB - Left Rotation	Measurement to be performed using multimeter					
B+		106	+48V bat		NOT MEASURABLE				
B2+		106	+48V bat		NOT MEASURABLE				

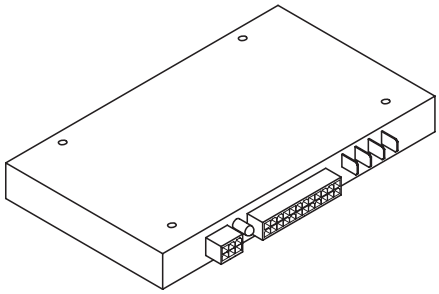
Base module control unit				Measure using the calibrator				Multimeter	
Connector	PIN	WireN°	Signal	Menu	Description	Not activated	Activated	Not activated	Activated
D-OUT	1	262	Tank return		NOT MEASURABLE				
	2	227	Arm 1/2 - Lowered		NOT MEASURABLE				
	3	239	Arm 1/2 - Raised		NOT MEASURABLE				
	4	226	Arm 3 Lowered		NOT MEASURABLE				
	5	238	Arm 3 - Raised		NOT MEASURABLE				
	6	224	Jib - down		NOT MEASURABLE				
	7	236	Jib - up		NOT MEASURABLE				
	8	221	Turret - Left Rotation		NOT MEASURABLE				
	9	225	Telescope - Extended		NOT MEASURABLE				
	10	228	Turret - Right Rotation		NOT MEASURABLE				
	11	219	JIB - Left Rotation		NOT MEASURABLE				
	12	222	Basket - Left Rotation		NOT MEASURABLE				
	13	237	Telescope - Extended		NOT MEASURABLE				
	14	223	Compensation - Lowered		NOT MEASURABLE				
	15	234	Steering - Left		NOT MEASURABLE				
	16	229	Steering - Right		NOT MEASURABLE				
	17	220	JIB - Right Rotation		NOT MEASURABLE				
	18	230	Basket - Right Rotation		NOT MEASURABLE				
	19	217	Horn		NOT MEASURABLE				
	20	218	Flashing Lights		NOT MEASURABLE				
	21	231	Compensation - Raised		NOT MEASURABLE				
	22	233	Brake		NOT MEASURABLE				
	23		Free		NOT MEASURABLE				
	24	235	Pump		NOT MEASURABLE				

NOTE: When powered on, the LED flashes once, then switches on or remains off depending on the results of the test phase.
- The operation of the base and basket fail-safes is checked using input 2.4.5 (◁ ***80.3.4 VARIABLE SPEED CONTROLLERS - CONTROL AND SETTINGS,*** ***115***)
- To check the inputs on the base control unit, it is imperative that the fail-safe button is pressed, then proceed by holding down the movement selector.

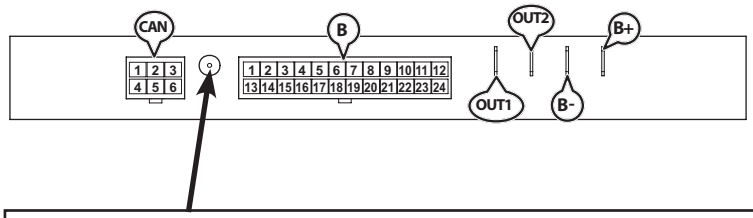
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Safety control card

80 - 93



80 - 92



LED RUN :
ON, control unit powered.
FLASHING, fault on the overload circuit.
OFF, control unit switched off, defective, or BUS-CAN problem.

Base module control unit				Measure using the calibrator				Multimeter	
Connector	PIN	Wire N°	Signal	Menu	Description	Not activated	Activated	Not activated	Activated
B	1	117	Arm 1/2 down - SQ1a	1.3.11	Boom rest	Open	Closed		0V (1)
	2	244	Arm 1/2 down - SQ1b	1.3.17	Boom rest 2	Open	Closed		0V (1)
	3	118	Telescope retracted - SQ4a	1.3.12	Tele sw	Open	Closed		0V (1)
	4	245	Telescope retracted - SQ4b	1.3.15	Tele sw 2	Open	Closed		0V (1)
	5	332	Overload - SQ5a	2.4.9	Cage over	see overload			_ (2)
	6	333	Overload - SQ5b	1.3.16	Cage over 2	see overload			_ (2)
	7		Free		NOT MEASURABLE				
	8	408	Return to overload validation	1.3.14	SFTY Rel	Open	Closed		0V (3)
	9		Free		NOT MEASURABLE				
	10		Free		NOT MEASURABLE				
	11		Free		NOT MEASURABLE				
	12		Free		NOT MEASURABLE				
	13		Free		NOT MEASURABLE				
	14		Free		NOT MEASURABLE				
	15		Free		NOT MEASURABLE				
	16		Free		NOT MEASURABLE				
	17		Free		NOT MEASURABLE				
	18		Free		NOT MEASURABLE				
	19		Free		NOT MEASURABLE				
	20		Free		NOT MEASURABLE				
	21		Free		NOT MEASURABLE				
	22		Free		NOT MEASURABLE				
	23		Free		NOT MEASURABLE				
	24		Free		NOT MEASURABLE				
CAN	1				NOT MEASURABLE				
	2				NOT MEASURABLE				
	3				NOT MEASURABLE				
	4				NOT MEASURABLE				
	5	112	CAN-L		NOT MEASURABLE				
	6	113	CAN-H		NOT MEASURABLE				
OUT 1		406	Validation overload Ka11						0V
OUT 2		405	Free		NOT MEASURABLE				
B-		103	0V		NOT MEASURABLE				
B+		106	+48V		NOT MEASURABLE				

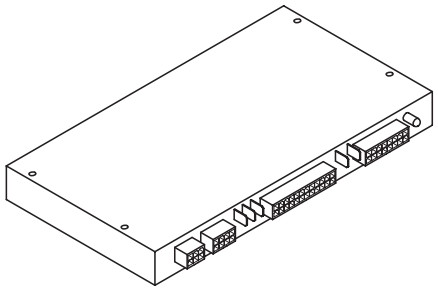
1: 0 V in transport position only.
2 : .....(*80.3.5 SAFETY COMPONENTS - CONTROL AND SETTINGS,* 126).
3: Input must be in the "closed" state in order to obtain all movements.

NOTE: When powered on, the LED flashes once, then switches on or remains off depending on the results of the test phase.
NOTE: There are no parameters for displaying the outputs, measurements must be taken with a multimeter.

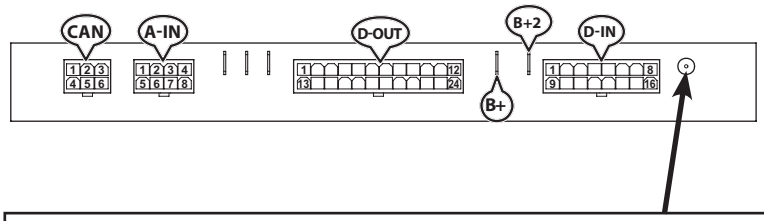
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Basket module control unit

80 - 94



80 - 95



LED RUN :
- ON, control unit powered.
- OFF, control unit switched off, defective or BUS-CAN problem.

Base module control unit				Measure using the calibrator				Multimeter	
Connector	PIN	Wire N°	Signal	Menu	Description	Not activated	Activated	Not activated	Activated
CAN	1		Free		NOT MEASURABLE				
	2		Free		NOT MEASURABLE				
	3		Free		NOT MEASURABLE				
	4		Free		NOT MEASURABLE				
	5	112	CAN-L		NOT MEASURABLE				
	6	113	CAN-H		NOT MEASURABLE				
A-IN	1	315	Rotation set-point (%)	2.4.3	Y Axis Joystick %				_ (1)
			Rotation set-point V)	2.4.4	Y Axis Joystick Voltage				_ (1)
	2	318	Traction set-point (%)	2.4.1	X Axis Joystick %				_ (1)
			Traction set-point (V)	2.4.2	X Axis Joystick Voltage				_ (1)
	3		Free		NOT MEASURABLE				
	4		Free		NOT MEASURABLE				
	5		Free		NOT MEASURABLE				
	6		Free		NOT MEASURABLE				
	7		Free		NOT MEASURABLE				
	8		Free		NOT MEASURABLE				
B-NEG		103	0V (masse)		NOT MEASURABLE				
C-NEG		103	0V (masse)		NOT MEASURABLE				
D-NEG		103	0V (masse)		NOT MEASURABLE				
D-IN	1	319	Fail-safe	2.4.5	Deadman	Open	Closed		0V (9)
	2	312	Overload 1 NO		NOT MEASURABLE				_ (2)
	3	311	Travel selection	2.4.10	Traction select	Open	Closed		0V (3)
	4	313	Not neutral	1.3.18	Joystick NTRL sw	Open	Closed		0V (8)
	5	332	Overload **SQ5b** NF	2.4.9	NOT MEASURABLE				
	6	316	Steering G	1.3.6	Steer left	Open	Closed		0V (3)
	7	317	Steering D	1.3.7	Steer right	Open	Closed		0V (3)
	8	306	JIB Rotation		NOT MEASURABLE				0V (3)
	9	310	Select arm 1/2	2.4.11	Boom 1 select	Open	Closed		0V (3)
	10	309	Select arm 3	2.4.12	Boom 2 select	Open	Closed		0V (3)
	11	304	Telescope selection	2.4.14	Tele select	Open	Closed		0V (3)
	12	303	Jib selection	2.4.13	Jib select	Open	Closed		0V (3)
	13	305	Compensation selection	2.4.16	Cage level select	Open	Closed		0V (3)
	14	308	Basket rotation selection	2.4.17	Cage rotate	Open	Closed		0V (10)
	15	307	Turret rotation selection	2.4.15	Slew select	Open	Closed		0V (10)
	16	302	Horn		NOT MEASURABLE				0V (3)
B+		106	+48V battery		NOT MEASURABLE				
B2+		106	+48V battery		NOT MEASURABLE				

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Base module control unit				Measure using the calibrator				Multimeter	
Connector	PIN	Wire N°	Signal	Menu	Description	Not activated	Activated	Not activated	Activated
D-OUT	1	325	Turret rotation	NOT MEASURABLE					0V
	2	328	Arm 1/2	NOT MEASURABLE					0V
	3	327	Arm 3	NOT MEASURABLE					0V
	4	322	Telescope	NOT MEASURABLE					0V
	5	321	Jib	NOT MEASURABLE					0V
	6	324	JIB Rotation	NOT MEASURABLE					0V
	7	323	Compensation	NOT MEASURABLE					0V
	8	326	Basket rotation	NOT MEASURABLE					0V
	9		Free	NOT MEASURABLE					
	10		Free	NOT MEASURABLE					
	11		Free	NOT MEASURABLE					
	12		Free	NOT MEASURABLE					
	13	329	Traveling	NOT MEASURABLE					0V
	14	331	Alarm/faults	NOT MEASURABLE					_ (4)
	15	320	Buzzer	NOT MEASURABLE					_ (5)
	16	330	Tilt	NOT MEASURABLE					_ (6)
	17			NOT MEASURABLE					
	18	335	Overload ref.	NOT MEASURABLE					_ (7)
	19	338	Maintenance alarm	NOT MEASURABLE					0V
	20			NOT MEASURABLE					
	21	336	Overload	NOT MEASURABLE					_ (7)
	22	338	Tilt ref.	NOT MEASURABLE				not used	
	23		Free	NOT MEASURABLE					
	24		Free	NOT MEASURABLE					

1 - (◁ ***80.3.6 MANIPULATOR - OPERATION AND SETTINGS,*** 🗍 ***133***)
2 - See overload settings (◁ ***80.3.5 SAFETY COMPONENTS - CONTROL AND SETTINGS,*** 🗍 ***126***)
3 - Keep the selection to measure the signal.
4 - Negative signal (0 V) intermittent: LED overload.
5 - Negative signal (0 V) intermittent if in tilt, continue if overload.
6 - Negative signal (0 V) intermittent (tilt LED + variable speed controller redundancy).
7 - See overload (◁ ***80.3.5 SAFETY COMPONENTS - CONTROL AND SETTINGS,*** 🗍 ***126***)
8 - Joystick in neutral position if parameter displayed is **Open**.
Each time the joystick is moved, the parameter turns to Closed.
9 - The operation of the base and basket failsafes is checked using input 2.4.5 (◁ ***80.3.4 VARIABLE SPEED CONTROLLERS - CONTROL AND SETTINGS,*** 🗍 ***115***)
10 - Based on the position of the selector at the time of the check.

NOTE:
- When powered on, the LED flashes once, then switches on or remains off depending on the results of the test phase.

- There are no parameters for displaying the outputs of the basket module control unit, measurements must be taken with a multimeter.

ELECTRONIC MODULES - DIAGNOSTICS AND SETTINGS

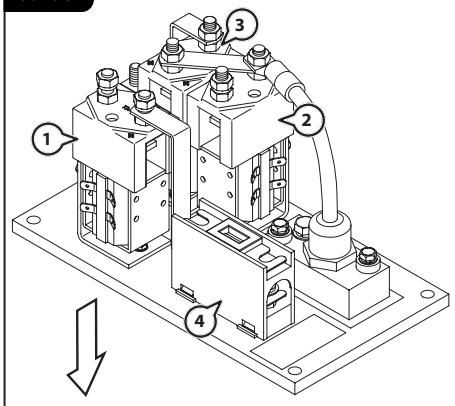
(◁ ***80.3.4 VARIABLE SPEED CONTROLLERS - CONTROL AND SETTINGS,*** 🗍 ***115***)

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80.3.4 VARIABLE SPEED CONTROLLERS - CONTROL AND SETTINGS

VARIABLE SPEED CONTROLLERS - DESCRIPTION

80 - 96



Relay and fuse holder plate

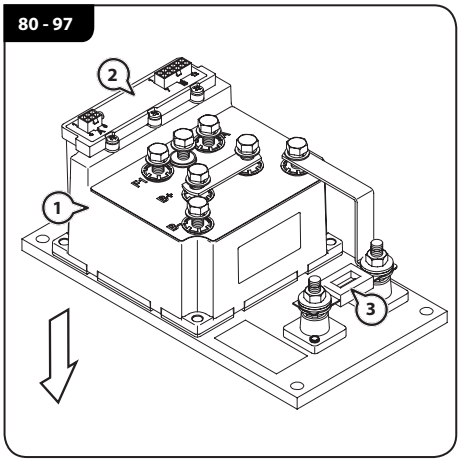
- Power contacts:

- Line contact KM1 (A1-1) - Resistance ..... 46.1 Ω
- Electric pump KM3 (2, 080 - 96) - Resistance ..... 46.1 Ω
- Traction/pump motors KM2 (3, 080 - 96) - Resistance ..... 19.2 Ω

- Free wheel diode (4, 080 - 96) - Resistance ..... 44 Ω

- Fuse of power circuit (4, 080 - 96): 325 A (see parts catalog)

80 - 97



Variable speed controller plate

- Variable speed controller (1, 080 - 97).

- Electronic module (2, 080 - 97).

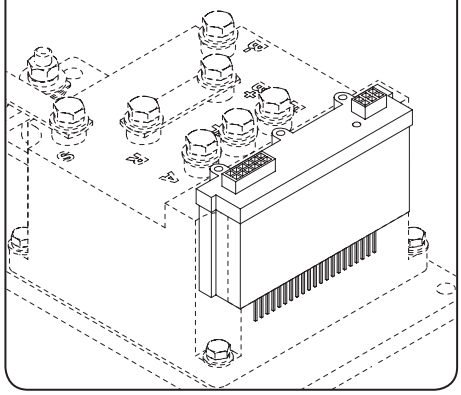
- Fuse (3, 080 - 97): 100A (see parts catalog)

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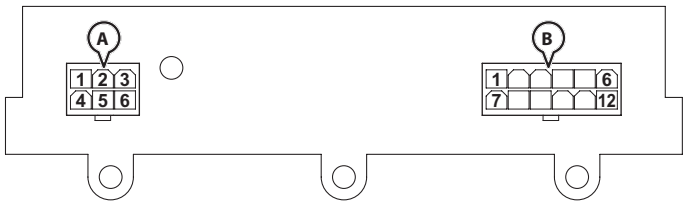
VARIABLE SPEED CONTROLLERS - WIRING

Control circuit - Electronic module

80 - 98



80 - 99



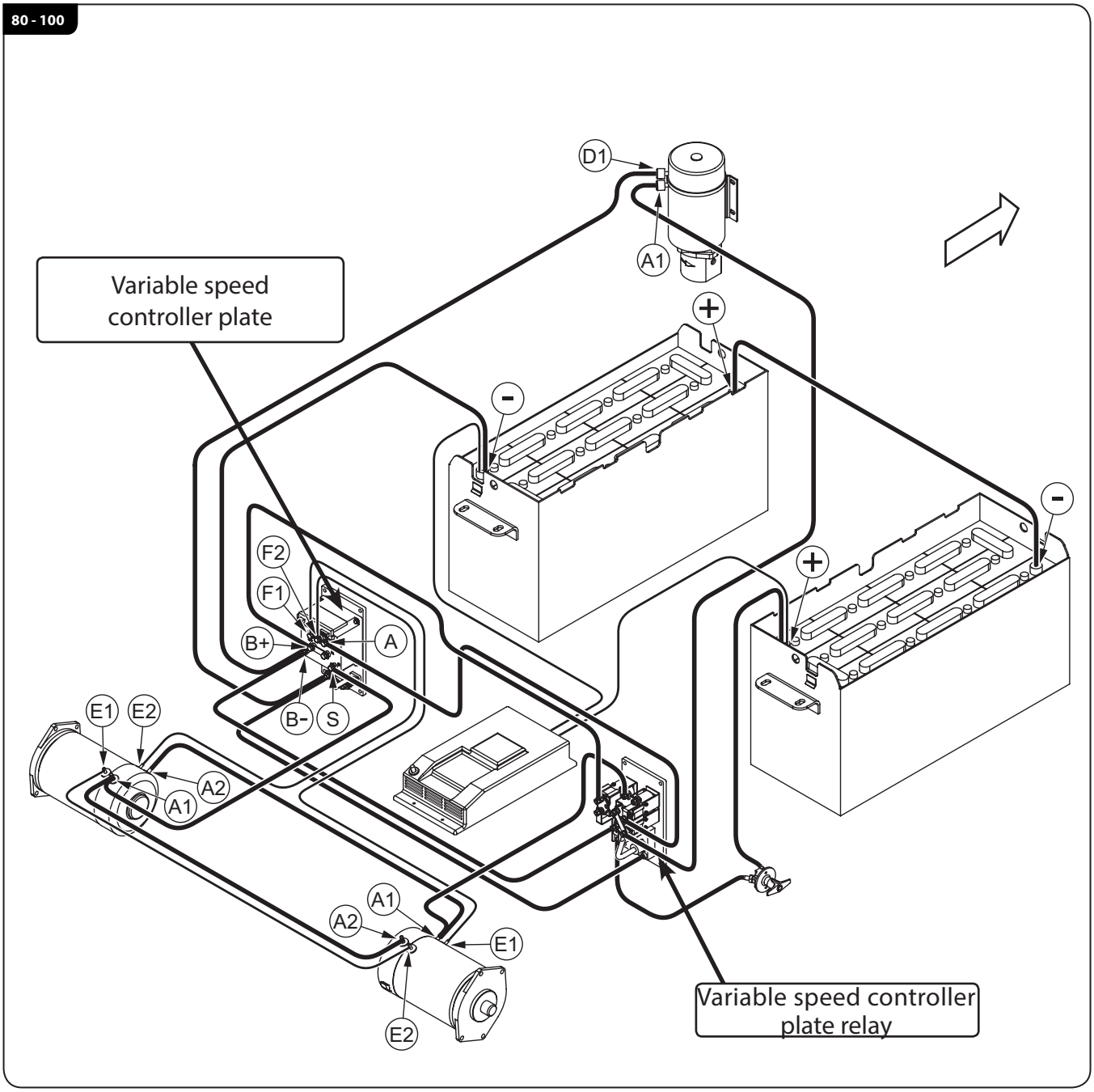
Base module control unit					Measure using the calibrator				Multimeter	
Connector	*PIN*	*Wire N°*	*Signal*	*Type of signal*	*Menu*	*Description*	*Not activated*	*Activated*	*Not activated*	*Activated*
A	1	128	+10.5V	Not used		NOT MEASURABLE				
	2	128	0V			NOT MEASURABLE				
	3			Free		NOT MEASURABLE				
	4		+10.5V	Not used		NOT MEASURABLE				
	5	113	CAN-L			NOT MEASURABLE				
	6	112	CAN-H			NOT MEASURABLE				
B	1	106	Power supply	Incoming						
	2	119	Pressure switch	Incoming	1.3.13	Brake release	Open	Closed		+48V
	3	117	Arm down SQ1a	Incoming	1.3.11	Boom rest	Open	Closed		_ (1)
	4	109	Tilt	Incoming	1.3.10	Tilt	Open	Closed		0V (3)
	5	108	Base selector	Incoming	2.6.11	Lower box select	Open	Closed		0V (5)
	6	118	Telescope retracted SQ4a	Incoming	1.3.12	Tele sw	Open	Closed		0V (2)
	7			Free						
	8	102	Line switch	Outgoing						0V
	9	130	Pump/traction switch	Outgoing						0V (4)
	10			Free						
	11	121	Switch KM2	Outgoing						
	12		+12V							

1 - See operation of brake release electrical circuit.
2 - 0 V when the base/basket selector is set to base.
3 - 0 V in transport position only.
4 - 0 V only during hydraulic movements (except for travel, left/right steering, and supplying brakes).
5 - See tilt sensor settings for operating conditions (◁ ***TILT SENSOR - SETTINGS,*** ***126***)

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Power circuit

80 - 100



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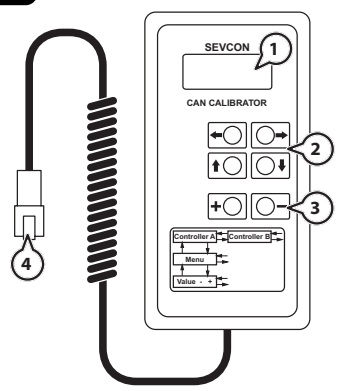
VARIABLE SPEED CONTROLLERS - DIAGNOSTIC AND ADJUSTMENT TOOLS

CALIBRATOR

⚠ CAUTION

The calibrator is also used for:
- The adjustment of the switches. (◅ ***80.3.4 VARIABLE SPEED CONTROLLERS - CONTROL AND SETTINGS,*** ***115***)
- Testing the manipulators. (◅ ***80.3.6 MANIPULATOR - OPERATION AND SETTINGS,*** ***133***)
- Troubleshooting. (◅ ***80.5 TROUBLESHOOTING - ELECTRICAL,*** ***139***)

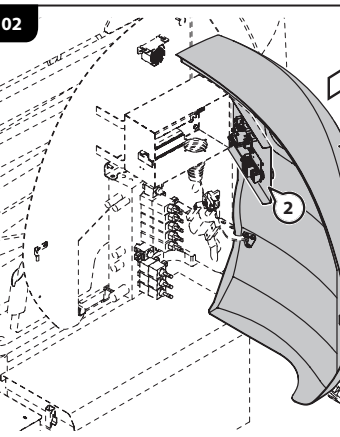
80 - 101



Description

- Screen (1, 080 - 101).
- Scrolling buttons (2, 080 - 101) (◅ ***VARIABLE SPEED CONTROLLERS - USE OF CALIBRATOR,*** ***120***)
- Incrementation buttons (3, 080 - 101) (◅ ***VARIABLE SPEED CONTROLLERS - USE OF CALIBRATOR,*** ***120***)
- Connection socket (4, 080 - 101).

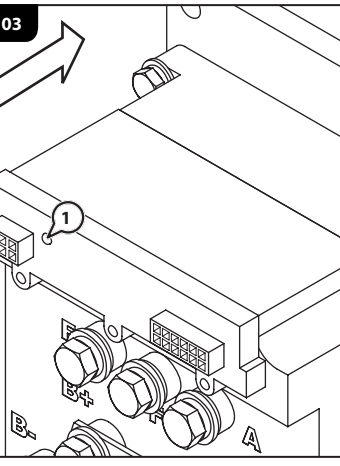
80 - 102



Fitting

- Open the right-hand turret cover (1, 080 - 102).
- Open the front face of the base control panel (2, 080 - 102).
- Identify the connection cable and attach to it the connection socket (4, 080 - 101).
- Switch on the access platform.
- Adjust or check the variable speed controllers (◅ ***CONFIGURATION MENUS,*** ***121***)

80 - 103



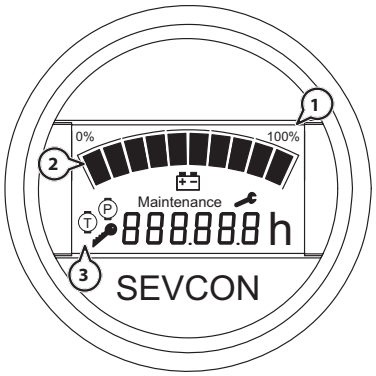
DIAGNOSTIC LED

- LED (1, 080 - 103).

- Status of LED and meaning (◅ ***80.1 ELECTRICAL SCHEMATIC DIAGRAMS,*** ***73***)

BATTERY CHARGE INDICATOR/HOUR METER

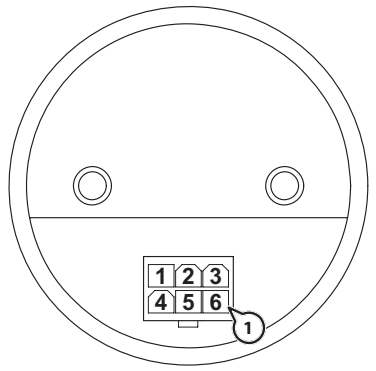
80 - 104



Description

- Screen (1, 080 - 104).
- Battery charge indicator (2, 080 - 104).
- Hour meter and variable speed controller fault display screen (3, 080 - 104).

80 - 105



- Connection socket (1, 080 - 105).

Operation (see instruction manual).

Connection

PIN	*Signal*
1	Free
2	0V (masse)
3	+12V (back-lit)
4	+12V (power supply)
5	CAN_H
6	CAN_L

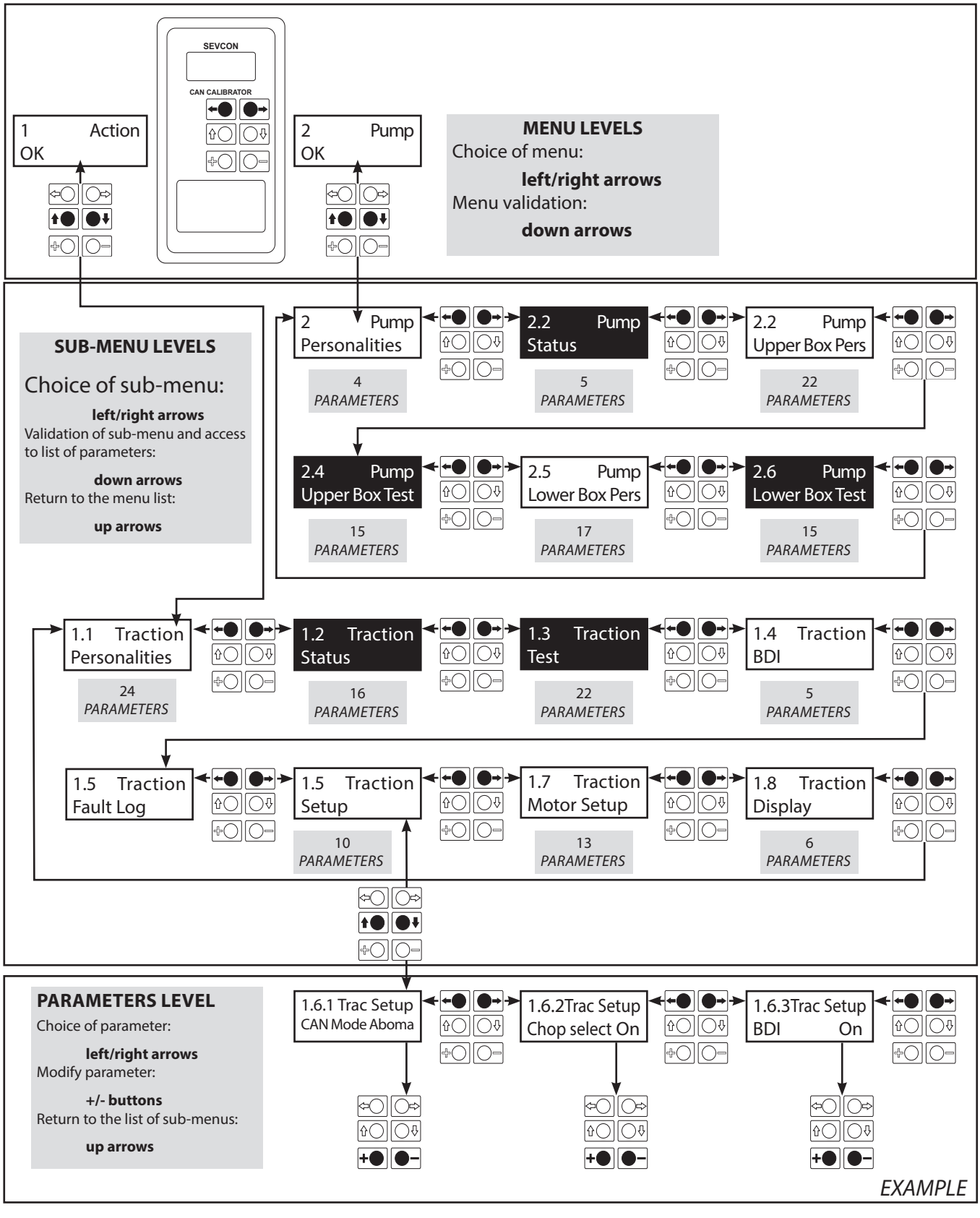
Error messages variable speed controller (◁ *80.1 ELECTRICAL SCHEMATIC DIAGRAMS,* ▯ *73*)

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VARIABLE SPEED CONTROLLERS - USE OF CALIBRATOR

Structure of electronic module menu

- Configuration submenus:
Black text on white background (◁ ***CONFIGURATION MENUS,*** 🗍 ***121***).
- Test submenus:
White text on black background (◁ ***TEST MENUS,*** 🗍 ***124***).



CONFIGURATION MENUS

Menu	*Traction Personalities*	*Travel parameters*	*Mini display*	*Maxi display*	*Pitch*	*Value*
1.1.1A	Armature I Max (A)	Armature limit current (A)	50	500	10	(*)
1.1.1F	Field I Max (A)	Field limit current (A)	10	50	1	50
1.1.2	Traction Accel Delay (s)	Acceleration curve (s)	0.1	5.0	0.1	1.8
1.1.3	Traction Decel Delay (s)	Deceleration curve (s)	0.1	5.0	0.1	0.1
1.1.3A	Traction Direction Decel Delay (s)	Deceleration curve current (A)	0.1	5.0	0.1	0.8
1.1.4	Traction Creep Speed (%)	Zero speed (offset0) (%)	0	25	1	3
1.1.5	Flat Regen Direction Braking (A)	Braking regeneration current on flat (A)	50	500	10	400
1.1.6	Tilt Regen Direction Braking (A)	Braking regeneration current in tilt (A)	50	500	10	500
1.1.7	Traction Regen Time (ms)	Recup time (mS)	0	300	10	10
1.1.8	Brake Threshold (V)	Threshold voltage (V)	0.09	3.20	0.016	0.8
1.1.9	Traction Maximum Speed (%)	Maximum speed (%)	0	100	1	100
1.1.10	Elevated Speed (%)	Working speed (%)	0	100	1	13
1.1.11	Tilt Speed (%)	Tilt speed (%)	0	100	1	100
1.1.12	Traction Cut 3 Speed (%)	Speed limit 3 (%)	0	100	1	100
1.1.13	Review delay (h)	Maintenance intervals (H)	0	100	1	50
1.1.14	Customers Options	Customizable settings	0	31	1	(+)
1.1.15	Low Speed Traction Speed (%)	Slow speed (%)	0	100	1	100
1.1.16	Low Battery Start (V)	Low battery safe start (V)	14.5	48.0	0.5	18
1.1.17	Low Battery Cutout (V)	Low battery cutout (V)	14.5	48.0	0.5	14.5
1.1.18	High Battery Start (V)	High battery safe start (V)	14.5	75.0	0.5	65
1.1.19	High Battery Cutout (V)	High battery cutout (V)	14.5	75.0	0.5	70
1.1.20	Battery Protection Level (V)	Battery protection (V)	14.5	48.0	0.5	14.5
1.1.21	Battery Protection Delay (s)	Battery protection delay (S)	0.1	2.5	0.1	0.5
1.1.22	Traction Alarm	Battery alarm				ON

(*) According to motor type.

(+) According to Beep option.

Menu	Traction BDI	Check Battery Charge	Mini display	Maxi display	Pitch	Value
1.4.1	BDI Level (%)	BDI battery charge level (%)	/	/	/	/
1.4.2	BDI Reset Level (V)	BDI battery nominal voltage (V)	2.00	2.50	0.01	2.10
1.4.3	BDI Discharge Level (V)	BDI Re enclenchement (V)	1.50	1.99	0.01	1.70
1.4.4	BDI Warning Level (%)	BDI empty battery (V)	0	90	1	30
1.4.5	BDI Cutout Level (%)	BDI Threshold warning (%)	0	90	1	20

Menu	***1.5 Traction Fault Log***	***Check Fault Log***	Mini display	Maxi display	Pitch	Value

Menu	Traction BDI	Check Battery Charge	Mini display	Maxi display	Pitch	Value
1.6.1	CAN Mode	Configuration of CAN system				Aboma
1.6.2	Chop Select	Select voltage of digital output codes				On
1.6.3	BDI	Battery Charge Indicator				On
1.6.4	Fault Log	Fault log				On
1.6.5	Service Log	Manage fault log				On
1.6.6	EU/US Functionality	Select specific functionality Europe/US				EU
1.6.7	Traction Full Speed (KPH)	Traction Max. Speed (Km/h)	0	160	1	21
1.6.8	Traction Full Speed (MPH)	Traction Max. Speed (mph)	0	100	0	13
1.6.9	Accelerator Characteristic	Select type of accelerator curve set-point				Centre-Pot
1.6.10	BDI Battery Voltage (V)	Battery rated voltage (V)	24	96	2	48

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Menu	Traction Motor Setup	Motor setup	Mini display	Maxi display	Pitch	Value
1.7.1	Armature I Low (A)	Armature low current (A)	10	240	10	90
1.7.2	Field I Low (A)	Field low current (A)	5	25	1	6
1.7.3	Armature I Mid (A)	Armature mid current (A)	90	400	10	200
1.7.4	Field I Mid (A)	Field mid current (A)	6	40	1	25
1.7.5	Armature I High (A)	Armature high current (A)	260	500	10	400
1.7.6	Field I High (A)	Field high current (A)	25	50	1	40
1.7.7	Armature Resistance (mOhm)	Armature resistance (mOhm)	0	255	1	13
1.7.8	Field Resistance (Ohm)	Field resistance (Ohm)	0.25	2.50	0.01	1.26
1.7.9	Drive Proportional Gain	Translation proportional gain	0	255	1	2
1.7.10	Drive Integral Gain	Travel total gain	0	16	1	6
1.7.11	Brake Proportional Gain	Brake proportional gain	0	255	1	40
1.7.12	Brake Integral Gain	Brake total gain	0	16	1	15
1.7.13	Speed Estimate Gain	Speed estimated gain	0	2.50	0.01	1.5

Menu	Traction BDI	Check Battery Charge	Mini display	Maxi display	Pitch	Value
1.8.1	Display Default Hours	Select hour meter to display				Aboma
1.8.2	Display Status Type	Select type of status data to display				On
1.8.3	Display Contrast	Set contrast level standard display screen	0	127	1	On
1.8.4	FFD Indicator 1	Select indicator 1 to display for advanced display screen				On
1.8.5	FFD Indicator 2	Select indicator 2 to display for advanced display screen				On
1.8.6	Display Fault Messages	Validate display of default messages				EU

Menu	Pump Personalities	Properties (hydraulic functions)	Mini display	Maxi display	Pitch	Value
2.1.1	Pump I Max	Pump max current (A)	50	500	10	350
2.1.2	Ramp Up Delay	Ramp up time (S)	0.1	5.0	0.1	1.8
2.1.3	Ramp Down Delay	Ramp down time (S)	0.1	0.5	0.1	0.5
2.1.4	Pump Creep Speed	Speed (%)	0	25	1	10

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Menu	Pump Upper Box Pers	Parameters Hydraulic Functions Basket codes	Average value			Time target		
			120AETJL	150AETL/C	170AETJL	120AETJL	150AETL/C	170AETJL
2.3.1	Boom 1 Up Speed (%)	Lifting speed arm 1 & 2	100			17	45	
2.3.2	Boom 1 Down Speed (%)	Lowering speed arm 1 & 2	42		65	26	45	
2.3.3	Boom 1 Cutback Speed (%)	Speed limit arm 1 & 2	100			100		
2.3.4	Boom 2 Up Speed (%)	Lifting speed arm 3 telescope extended	73	70	67	24	38	48
2.3.5	Boom 2 Down Speed (%)	Lowering speed arm 3 telescope extended	42	38	30	24	34	36
2.3.6	Boom 2 Cutback Speed (%)	Speed limit arm 3	100			100		
2.3.7	Jib Up Speed (%)	Speed jib lifting (%)	36			16		
2.3.8	Jib Down Speed (%)	Jib lowering speed (%)	20			18		
2.3.8A	Jib Rotate Left Speed (%)	Jib left rotation speed (%)	1			1		
2.3.8B	Jib Rotate Right Speed (%)	Jib right rotation speed (%)	1			1		
2.3.9	Tele In Speed (%)	Speed telescope retraction (%)	100			12	15	17
2.3.10	Tele Out Speed (%)	Speed telescope extension (%)	100			24	19	23
2.3.11	Slew Left Speed (%)	Speed left rotation turret (%)	29	23	26	80	88	120
2.3.12	Slew Right Speed (%)	Speed right rotation turret (%)	29	23	26	80	88	120
2.3.13	Cage Rotate Left Speed (%)	Speed left rotation basket (%)	24			7		
2.3.14	Cage Rotate Right Speed (%)	Speed right rotation basket (%)	24			7		
2.3.15	Cage Level Forward Speed (%)	Speed tilting bucket (%)	62			25		
2.3.16	Cage Level Reverse Speed (%)	Speed tilting spill (%)	28			25		
2.3.17	Y-Axis Forward Voltage (V)	Front travel voltage (V)	4.06			4.06		
2.3.18	Y-Axis Reverse Voltage (V)	Rear travel voltage (V)	0.52			0.52		
2.3.19	X-Axis Left Voltage (V)	Zero position (X-axis) voltage (V)	0.52			0.52		
2.3.20	X-Axis Right Voltage (V)	Max voltage (X-axis) (V)	4.06			4.06		
		Speed travel movement over 10 m (s)	100			8		
		Speed travel working over 10 m (s)	13			60		

Menu	Pump Lower Box Pers	Parameters Hydraulic Functions Base Codes	Mini display	Maxi display	Pitch	Value
2.5.1	Boom 1 Up Speed (%)	Lifting speed arm 1 & 2	0	100	1	100
2.5.2	Boom 1 Down Speed (%)	Lowering speed arm 1 & 2	0	100	1	90
2.5.3	Boom 1 Cutback Speed (%)	Speed limit arm 1 & 2	0	100	1	100
2.5.4	Boom 2 Up Speed (%)	Lifting speed arm 3 telescope extended	0	100	1	100
2.5.5	Boom 2 Down Speed (%)	Lowering speed arm 3 telescope extended	0	100	1	70
2.5.6	Boom 2 Cutback Speed (%)	Speed limit arm 3	0	100	1	25
2.5.7	Jib Up Speed (%)	Speed jib lifting (%)	0	100	1	90
2.5.8	Jib Down Speed (%)	Jib lowering speed (%)	0	100	1	75
2.5.9	Tele In Speed (%)	Speed telescope retraction (%)	0	100	1	100
2.5.10	Tele Out Speed (%)	Speed telescope extension (%)	0	100	1	100
2.5.11	Slew Left Speed (%)	Speed left rotation turret (%)	0	100	1	60
2.5.12	Slew Right Speed (%)	Speed right rotation turret (%)	0	100	1	60
2.5.13	Cage Level Forward Speed (%)	Speed left rotation basket (%)	0	100	1	50
2.5.14	Cage Level Reverse Speed (%)	Speed right rotation basket (%)	0	100	1	60
2.5.15	Cage Rotate Left Speed (%)	Speed tilting bucket (%)	0	100	1	50
2.5.16	Cage Rotate Right Speed (%)	Speed tilting spill (%)	0	100	1	50
2.5.17	Overload Cutback Speed (%)	Overload speed limit (%)	0	100	1	50

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TEST MENUS

Menu	Traction Status	Status (Variable Speed Controller)	Mini display	Maxi display	Pitch	Log. Info
1.2.1	Battery Voltage	Battery voltage	0 V	127 V	0.1	+
1.2.2	Armature Motor Voltage	Armature Voltage	0 V	127 V	0.5	
1.2.3	Field Motor Voltage	Field voltage	0 V	127 V	0.5	
1.2.4	Armature Motor Current	Armature current	0	625 A	0.20833333	+
1.2.5	Field Motor Current	Field current	0	64 A	0.25	+
1.2.6	Armature MOSFET Voltage	MOSFET voltage	0 V	127 V	0.5	
1.2.7	Controller Temp.	Temperature variable speed controller	-30 °C (-22 °F)	+225 °C (+437 °F)	1	+ –
1.2.8	Capacitor Voltage	Capacitor Voltage	0 V	127 V	0.5	
1.2.9	Speed estimation	Speed measurement	0	1	0.005	
1.2.10	Speed estimation	Speed measurement	0Km/H(0mph)	60Km/H(37.28mph)	1.0	
1.2.11	Speed estimation	Speed measurement	0 MPH	60 MPH	1.0	
1.2.12	Key Switch Hours Count	Hour meter operation	0 Hrs	65279.9 Hrs	0.1	
1.2.13	Traction Pulsing Hours Count (Drive)	Hour meter travel	0 Hrs	65279.9 Hrs	0.1	
1.2.14	CAN fail node	CAN fault note: 2	None	Output, EOutput	n/a	
1.2.15	CAN error count	CAN meter error	-	-	-	
1.2.16	CAN error code	CAN coding error	-	-	-	
	Service Log Reset	RAZ memory faults	Press + then - to reset Service Log			

Menu	Traction Test	Variable speed controller	Mini display	Maxi display	Pitch	Log. Info
1.3.1	Accelerator %	Accelerator %	0%	100%	1%	range
1.3.2	Accelerator Voltage	Accelerator Voltage	0.0 V	5.0 V	0.02 V	range
1.3.3	Deadman	Fail-safe	Open	Closed	–	Switch
1.3.6	Steer left	LH steering	Open	Closed	–	Switch
1.3.7	Steer Right	RH steering	Open	Closed	–	Switch
1.3.8	Horn	Horn	Open	Closed	–	Switch
1.3.9	Traction select	Traction select	Open	Closed	–	Switch
1.3.10	Tilt	Tilt input	Open	Closed	–	Switch
1.3.11	Boom Rest	Arm down sensor	Open	Closed	–	Switch
1.3.12	Tele sw.	Extended telescope sensor	Open	Closed	–	Switch
1.3.13	Brake Release	Brake sensor released	Open	Closed	–	Switch
1.3.14	BDI Input	BDI Input	Open	Closed	–	Switch
1.3.15	Frame Fault	Earth detection	Open	Closed	–	Switch
1.3.16	Cage Ovl2	Overload detection no. 2	Open	Closed	–	Switch
1.3.18	Joystick NTRL sw	Contact joystick not neutral	Open	Closed	–	Switch
1.3.19	LS Traction sw	Select low speed traction	Open	Closed	–	Switch
1.3.20	Ver xxxxxxx	Software version	xxxxxx	xxxxxx		
1.3.21	Controller Serial Number	Variable speed controller serial number	0	99999999	–	
1.3.22	Controller type	Power type		xxnnn	–	

Menu	Pump Status	Variable speed controller (hydraulic functions)	Mini display	Maxi display	Pitch	Log. Info
2.2.1	Battery Voltage	Battery voltage	0 V	127 V	0.1 V	+
2.2.2	Motor Voltage	Motor Voltage	0 V	127 V	0.5 V	
2.2.3	Motor Current	Motor Current	0	625 A	0.20833333	+
2.2.4	MOSFET Voltage	MOSFET voltage	0 V	127 V	0.5 V	
2.2.5	Controller Temp.	Microprocessor temperature	-30 °C (-22 °F)	+225 °C (+437 °F)	1 °C (33.8 °F)	+ –
	Service Log Reset	RAZ memory faults	Press + then - to reset Service Log			

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Menu	Pump Upper Box Test	Test Hydraulic Functions Basket Codes	Mini display	Maxi display	Pitch	Type
2.4.1	Y axis Joystick %	Joystick - Y-axis %	0	1	0.01	range
2.4.2	Y axis Joystick Voltage	Joystick - Y-Axis Voltage	0.0 V	5.0 V	0.02 V	range
2.4.3	X axis Joystick %	Joystick - X-axis %	0	1	0.01	range
2.4.4	X axis Joystick Voltage	Joystick - X-Axis Voltage	0.0 V	5.0 V	0.02 V	range
2.4.5	Deadman	Joystick - Deadman pedal	Open	Closed	–	Switch
2.4.8	Jib extension	Jib detection	Open	Closed	–	Switch
2.4.9	Cage over	Overload detection no. 1	Open	Closed	–	Switch
2.4.10	Traction select	Travel selection	Open	Closed	–	Switch
2.4.11	Boom 1 Select	Select arm 1/2	Open	Closed	–	Switch
2.4.12	Boom 2 Select	Select arm 3	Open	Closed	–	Switch
2.4.13	Jib select	Jib selection	Open	Closed	–	Switch
2.4.14	Tele Select	Telescope selection	Open	Closed	–	Switch
2.4.15	Slew Select	Turret rotation selection	Open	Closed	–	Switch
2.4.16	Cage Level Select	Compensation selection	Open	Closed	–	Switch
2.4.17	Cage Rotate	Basket rotation selection	Open	Closed	–	Switch

Menu	Pump Upper Box Test	Test Hydraulic Functions Basket Codes	Mini display	Maxi display	Pitch	Type
2.6.1	Boom 1 Up	Arm 1 Lifting Control	Open	Closed	–	Switch
2.6.2	Boom 1 Down	Arm 1 Lowering Control	Open	Closed	–	Switch
2.6.3	Boom 2 Up	Arm 2 Lifting Control	Open	Closed	–	Switch
2.6.4	Boom 2 Down	Arm 2 Lowering Control	Open	Closed	–	Switch
2.6.5	Jib Up	Control jib raising	Open	Closed	–	Switch
2.6.6	Jib Down	Control jib lowering	Open	Closed	–	Switch
2.6.7	Tele In	Control telescope retraction	Open	Closed	–	Switch
2.6.8	Tele Out	Control telescope extension	Open	Closed	–	Switch
2.6.9	Slew Left	Control turret right rotation	Open	Closed	–	Switch
2.6.10	Slew Right	Control turret left rotation	Open	Closed	–	Switch
2.6.11	Lower Box select	Selection BASE controls	Open	Closed	–	Switch
2.6.12	Cage Level Forward	Control forward compensation selection	Open	Closed	–	Switch
2.6.13	Cage Level Reverse	Control backwards compensation selection	Open	Closed	–	Switch
2.6.14	Cage Rotate Left	Control turret left rotation	Open	Closed	–	Switch
2.6.15	Cage Rotate Right	Control turret right rotation	Open	Closed	–	Switch

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80.3.5 SAFETY COMPONENTS - CONTROL AND SETTINGS

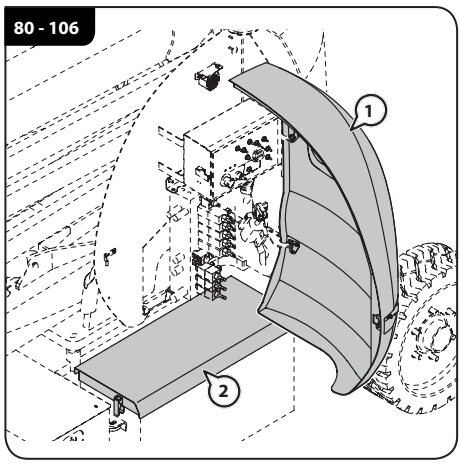
SWITCHES - LOCATION

- (*80.2.2 ELECTRICAL POWER COMPONENTS - LOCATION, 84*)

TILT SENSOR - SETTINGS

CAUTION

The tilt sensors are pre-configured by the manufacturer.
The only parameter that can be adjusted is sensor initialization.



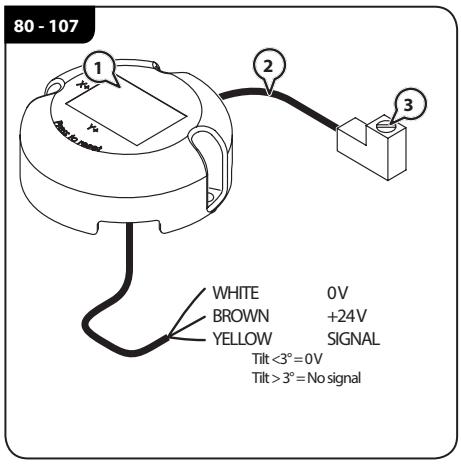
- Place the access platform on level ground and leave the power switched on.

- Open the right-hand turret cover (1, 080 - 106).

- Locate the tilt sensor located between the base control panel box and the counterweight.

CAUTION

Check that the angle of the sensor written in (2, 080 - 107) matches that of the manufacturer's plate on the machine.



- Take the disconnected wire (2, 080 - 107) protruding from the sensor.

- Take off the plastic cap (3, 080 - 107) at the end of the wire.

- Remove the right-hand battery protective cover (2, 080 - 107).

- Take an electric wire 0.5 m (19.69 in) long with its ends stripped, connect it to the wire (2, 080 - 107) and connect it to the – terminal of the right-hand battery (3, 080 - 106):

- The green LED located under the sensor should flash several times.
- It stops when the sensor has initialized.
- It remains continuously lit.

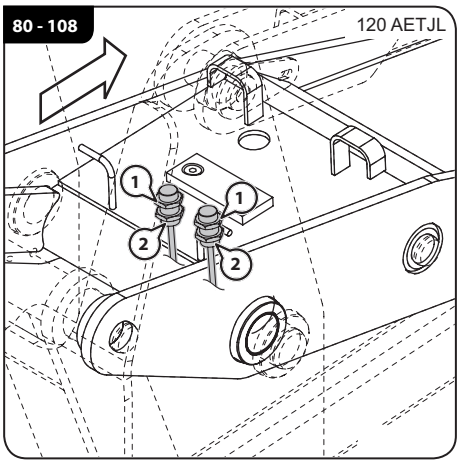
CAUTION

During normal operation, the green LED is lit, and only switches off if the angular tilt value is exceeded.

Checking

Tilt sensor		*Audible signal*	*Measure using the calibrator*			*Authorized movements*		*Multimeter*
Tilt	*LED status*		*Menu*	*Description*	*Message*	*Transport position*	*Working position*	*Signal wire*
< 3°	Lit	None	1.3.10	Tilt switch	CLOSED	Travelling Lifting/lowering	Travelling Lifting/lowering	0V
> 3°	Not lit	Intermittent			OPEN	Travelling	None	~V

ARM DOWN SENSORS - SETTINGS

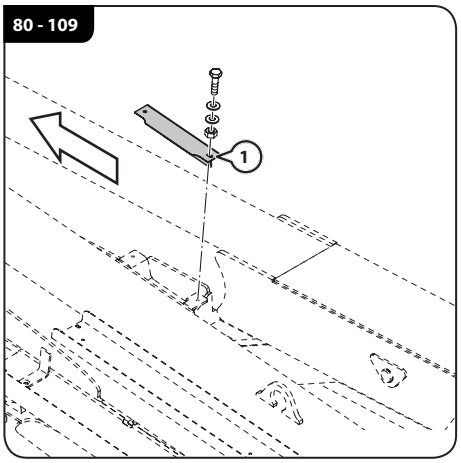


-- Set the telescope to the down position, ensuring the control is activated for as long as necessary, keeping the access platform switched on.

ACCESS PLATFORM 120 AETJL

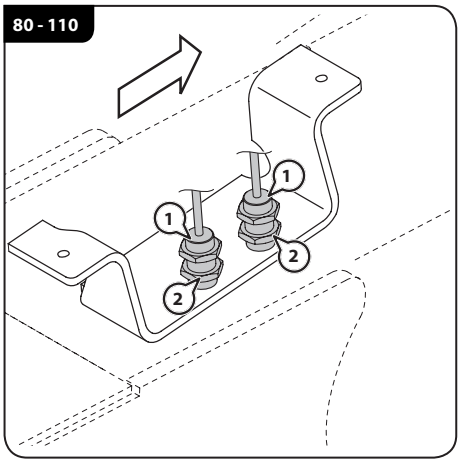
- Loosen the lock nuts (1, 080 - 108).
- Screw or unscrew the sensors (2, 080 - 108) until their LED, located next to the power supply wire, switches from off to on (orange); the clearance remaining between the support and the sensor is approximately 3 mm (0.11 in).

- Tighten the lock nuts.



ACCESS PLATFORMS 150 AETJC, 150 AETJC 3D, 150 AETJL, 170 AETJL, AETJ 43, AETJ 43 3D, AETJ 49

-Remove the sensor protective covers from arm 3 (1, 080 - 109).



- Loosen the lock nuts (1, 080 - 110).

- Screw or unscrew the sensors (2, 080 - 110) until their LED, located next to the power supply wire, switches from off to on (orange); the clearance remaining between the support and the sensor is approximately 3 mm (0.11 in).

- Tighten the lock nuts.

Checking

Retracted telescope sensor SQ4a			*Measure using the calibrator*			*Multimeter*
Telescope	***LED status***	***Wire N°***	***Menu***	***Description***	***Message***	***Display***
Retracted*	Orange	118	1.3.12	Tele sw	Closed	0V
Extended	Not lit	118			Open	~V

Retracted telescope sensor SQ4b			*Measure using the calibrator*			*Multimeter*
Telescope	***LED status***	***Wire N°***	***Menu***	***Description***	***Message***	***Display***
Retracted*	Orange	245	1.3.15	Tele sw	Closed	0V
Extended	Not lit	245			Open	~V

* Access platform in transport position.

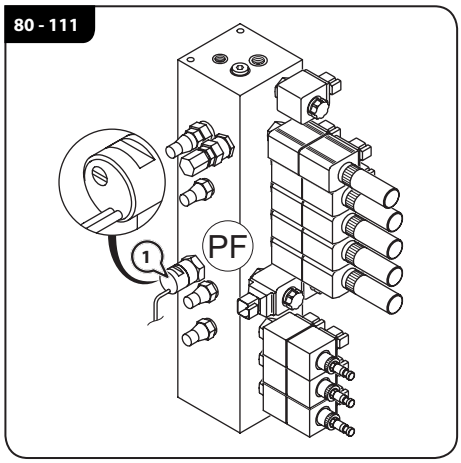
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BRAKE RELEASE CIRCUIT - CHECKING

⚠ CAUTION

The configuration of the pressure switch (1, 080 - 111) is hydraulic and not electrical (◁ ***70.3.3 BRAKE RELEASE CIRCUIT - PRESSURE SETTING,*** 🗐 ***48***)
This chapter does not deal with verification of the signals.

80 - 111



Checking

Pressure switch SQ3			*Measure using the calibrator*			*Multimeter*
Pressure in braking circuit	***Wire N°***	***Wire N°***	***Menu***	***Description***	***Message***	***Display***
0 to 25 bar* (0 to 362.59 psi)	119	119	1.3.13	Brake release	Open	~V
> 25 bar* (362.59 psi)	119	119			Closed	0V

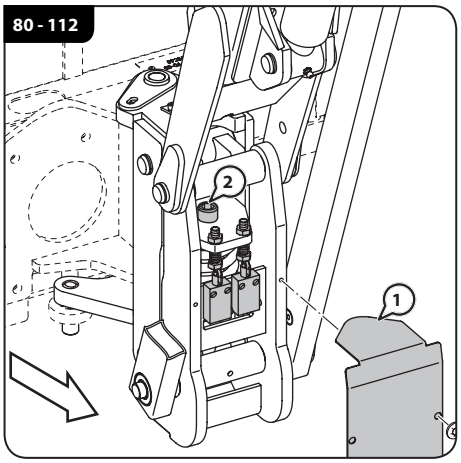
* Based on pressure switch setting.

NOTE: in the absence of a signal from the brakes pressure switch (parameter 1.3.13 = open), the electric pump is permanently active = incorrect operation of the access platform due to excess power consumption of the batteries.

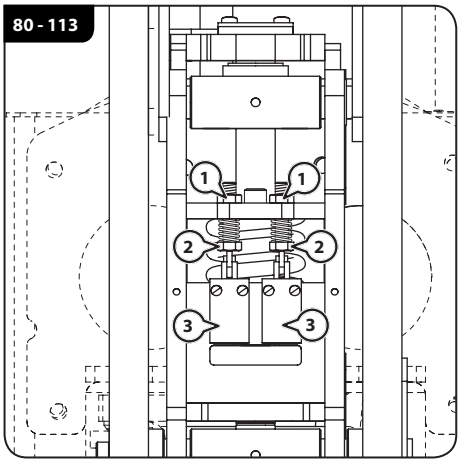
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OVERLOAD SENSORS - SETTINGS

80 - 112



80 - 113



PROCEDURE

- Set the basket to the low position, keeping the access platform switched on.

- Remove the cover (1, 080 - 112).

- Connect the calibrator to the access platform (◁ ***80.3.4 VARIABLE SPEED CONTROLLERS - CONTROL AND SETTINGS,*** 115)

Overload spring pre-tensioning adjustment

- Place a load in the basket and distribute it evenly across the floor.

- *120 AETJL :* ***170 kg (375 lbs)***
- *150 AETJC - 150 AETJC 3D - AETJ43 - AETJ 43 3D :* ***170 kg (375 lbs)***
- *150 AETJL :* ***200 kg (441 lbs)***
- *170 AETJL :* ***170 kg (375 lbs)***

- Tighten the bolt (2, 080 - 112) in such a way that it remains free to rotate at the end of the operation with minimum play.

Overload sensor adjustment

- Undo the lock nuts (1, 080 - 113) then tighten the overload screws (2, 080 - 113) to their maximum extent.

- Place a load in the basket and distribute it evenly across the floor.
- *120 AETJL:* ***230 kg (507 lbs)***
- *150 AETJC - 150 AETJC 3D :* ***230 kg (507 lbs)***
- *150 AETJL:* ***250 kg (551 lbs)***
- *170 AETJL - AETJ 49:* ***230 kg (507 lbs)***

- Sensor **SQ5a**: test menu 1.3.16
- Sensor **SQ5b**: test menu 2.4.9

- Identify sensor **SQ5a** (yellow ring on the power cable) and loosen the overload screw (2, 080 - 113) until the calibrator displays OPEN instead of CLOSED.
- Identify sensor **SQ5b** (yellow ring on the power cable) and loosen the overload screw (2, 080 - 113) until the calibrator displays CLOSED instead of OPEN.

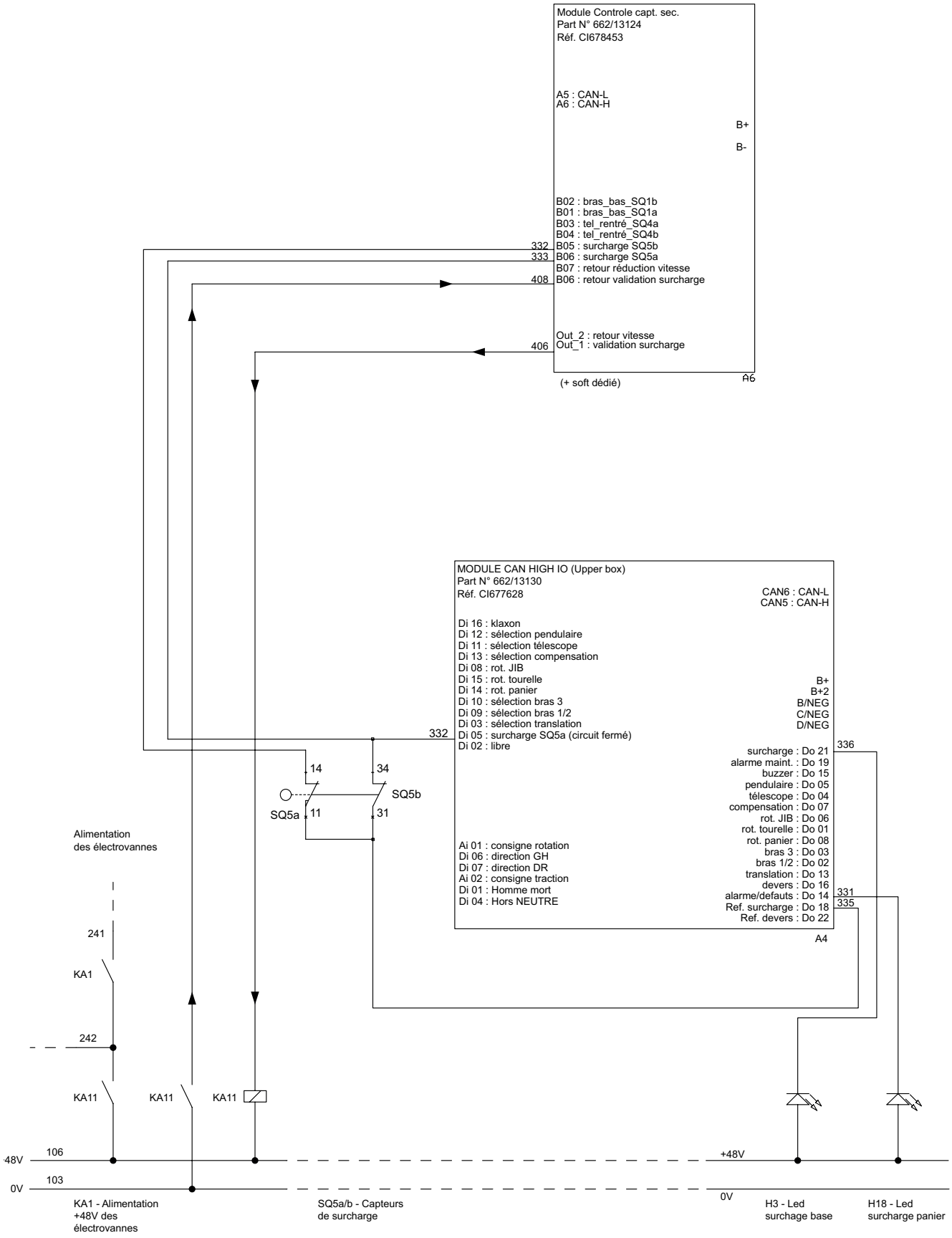
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Overload test

- Of the load still in the basket, take out **20 kg (44 lbs)** and check that:

- The alarm switches off.
- The calibrator displays CLOSED in test menu 1.3.16 (**SQ5a**).
- The calibrator displays OPEN in test menu 2.4.9 (**SQ5b**).
- Replace the **20 kg (44 lbs)**, the alarm triggers (permanent tone), tighten the lock nuts (1, 080 - 113) and put a paint mark on them to confirm the configuration.

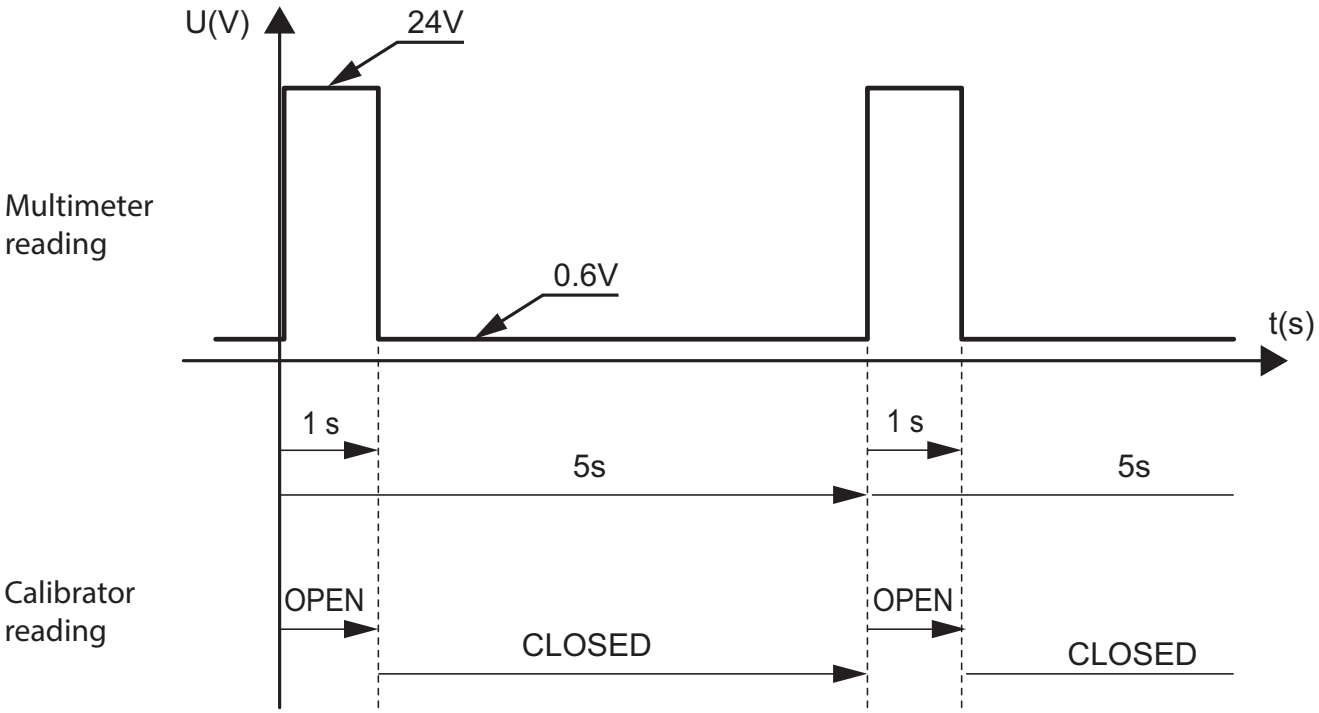
SIMPLIFIED OVERLOAD WIRING DIAGRAM



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OVERLOAD SIGNAL

- The reference of the overload signal is emitted by the basket card, output Do 18 (wire 335)..... (680.1 ELECTRICAL SCHEMATIC DIAGRAMS, 5 73)



MULTIMETER TEST

Overload sensor SQ5a		*Measure using the calibrator*			*Multimeter*	
Weight in the basket	*Wire N°*	*Menu*	*Description*	*Message*	*To card*	*Display*
< 200 kg (441 lbs)	333	1.3.16	Cage Ovl 2	(F4)	Safety	(F4)
> 200 kg (441 lbs)	333			Open	Safety	No signal

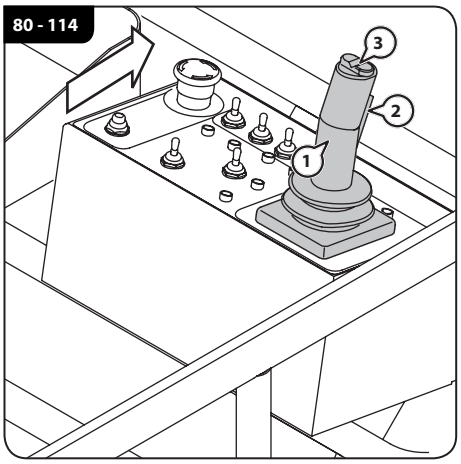
Overload sensor SQ5b		*Measure using the calibrator*			*Multimeter*	
Weight in the basket	*Wire N°*	*Menu*	*Description*	*Message*	*To card*	*Display*
< 200 kg (441 lbs)	332	2.4.9	Cage Ovl 2	(F4)	Safety	(F4)
> 200 kg (441 lbs)	332			Open	Safety	No signal

80.3.6 MANIPULATOR - OPERATION AND SETTINGS

MANIPULATOR - TESTS USING CALIBRATOR

⚠ CAUTION

The manipulator test from the basket base requires the presence of two operators.



- Connect the calibrator to the access platform and display test menu 2-4 (*80.3.4 VARIABLE SPEED CONTROLLERS - CONTROL AND SETTINGS, 115*)

- Switch on the access platform.

- Climb into the basket, then perform the following actions:

- Move the manipulator (1, 080 - 114) forwards and then backwards without operating the trigger (2, 080 - 114).

- Press the upper left-hand button then the upper right-hand button (3, 080 - 114) without operating the trigger.

- Operate the trigger (2, 080 - 114) on its own.

- For each action, check on the sub-menu in question the status of the inputs/outputs at the neutral point, then when the manipulators or switches are operated.

TEST

- Lastly, select menu 2-4-1 and 2-4-3 (UPPER BOX TEST) on the calibrator and check:

- That the proportional signal progresses steadily (i.e. from 0 to 100%).
- That it is at 0% in neutral and 100% only when the manipulator almost reaches its limit.

Manipulator test when lifting/lowering and travelling (Y)				
Calibrator (measurement)		Position of Joystick		
Menu	Description	Front*	Neutral	Rear*
2.4.1	Y-axis voltage %	100	0	100
2.4.2	Y Axis joystick voltage	45	25	5
1.3.1	Accelerator %	100	0	100
1.3.2	Accelerator Voltage	45	25	5

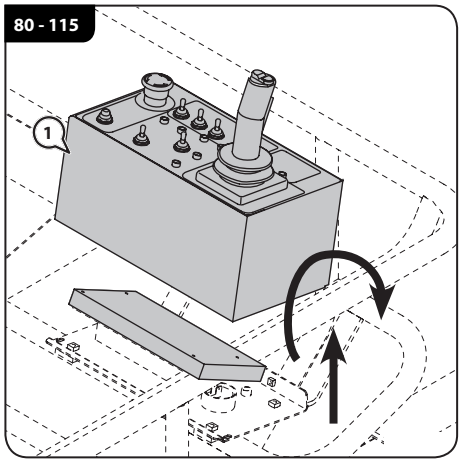
* Manipulateur au maximum

Manipulator test with turret/basket rotation (X)				
Calibrator (measurement)		Position of Joystick		
Menu	Description	Left*	Neutral	Right*
2.4.3	X Axis Joystick %	100	0	100
2.4.4	X Axis Joystick Voltage	0.5	2.5	4.5

* Manipulateur au maximum

MANIPULATOR - TEST WITH A VOLTMETER

80 - 115



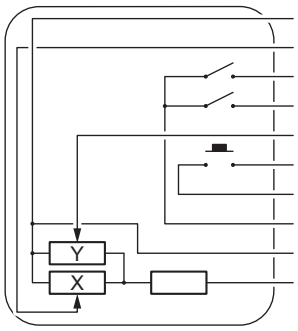
- Climb into the access platform with a voltmeter.

- Remove the front face from the basket control panel (1, 080 - 115) and replace it.

- Locate the colored wires at the manipulator connector (see figure, 080 - 116).

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

80 - 116



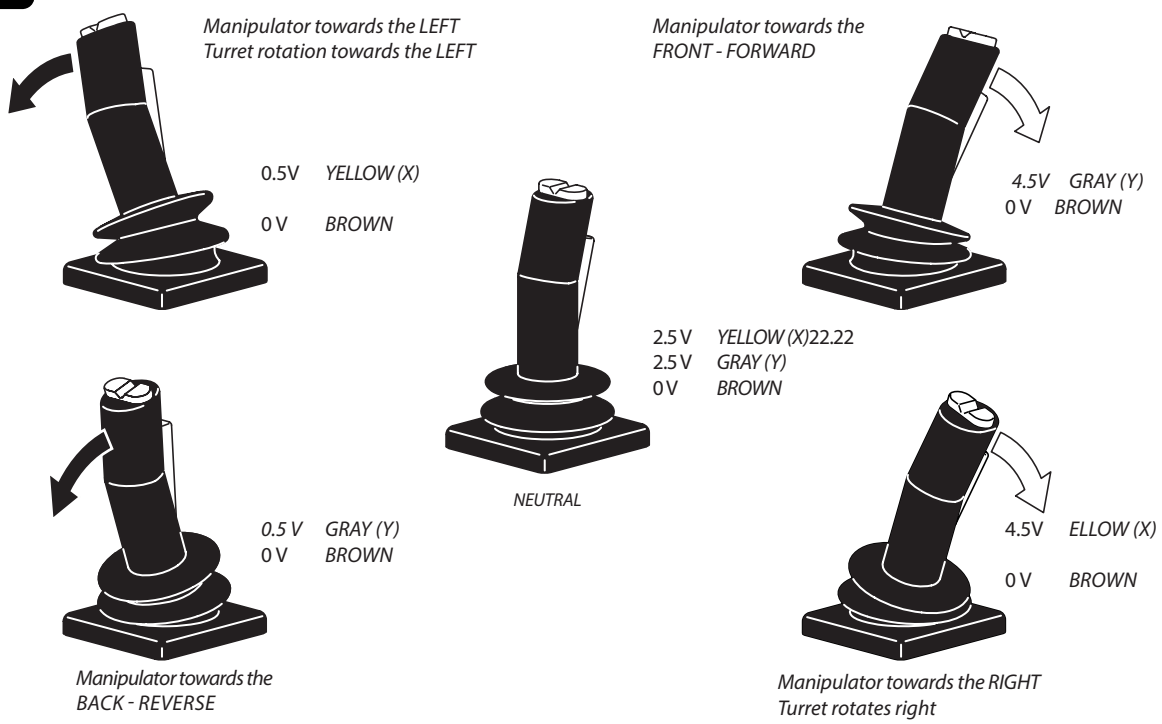
	OLD STANDARD	NEW STANDARD	
	GREEN	GREEN	(NOT NEUTRAL - MANIPULATOR)
	YELLOW (X)	YELLOW (X)	(TURRET ROTATION CONTROL)
	BLUE	YELLOW/BLACK	(LH STEERING PB)
	BLACK	GRAY/BLACK	(RH STEERING PB)
	GRAY (Y)	GRAY (Y)	(TRAVEL CONTROL)
	PURPLE	GREEN/BLACK	(DEADMAN TRIGGER)
	RED	BROWN/BLACK	(POWER SUPPLY - TRIGGER)
	PINK	WHITE/BLACK	(POWER SUPPLY - STEERING PB)
0V	BROWN	BROWN	(GROUND)
+24V	WHITE	WHITE	(+ BATTERY)

Testing the analog outputs

- Move the manipulator (1, 080 - 114) forwards and then backwards without operating the trigger (2, 080 - 114) and check the values displayed by the voltmeter (see figure, 080 - 117).

80

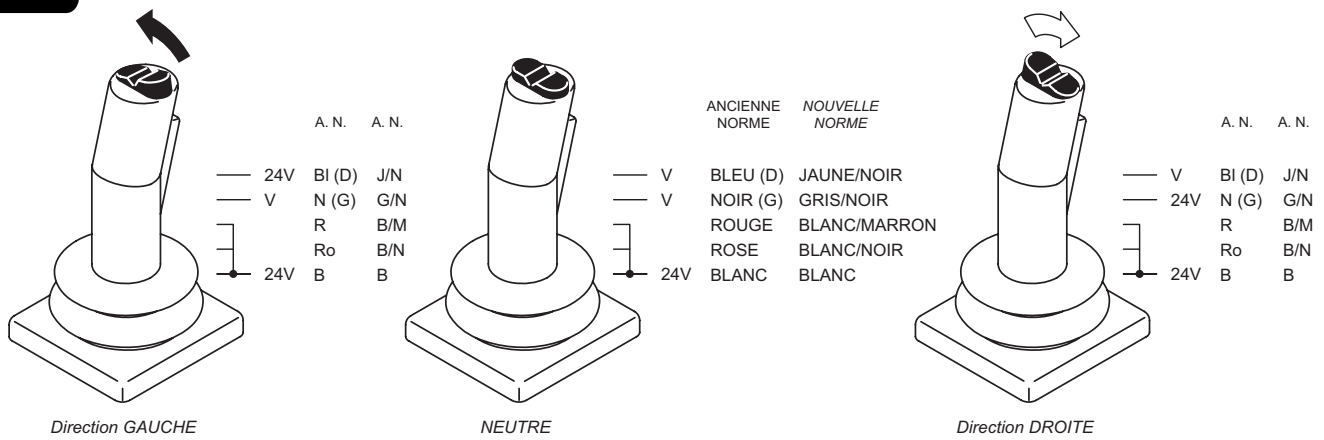
80 - 117



Testing the logic outputs

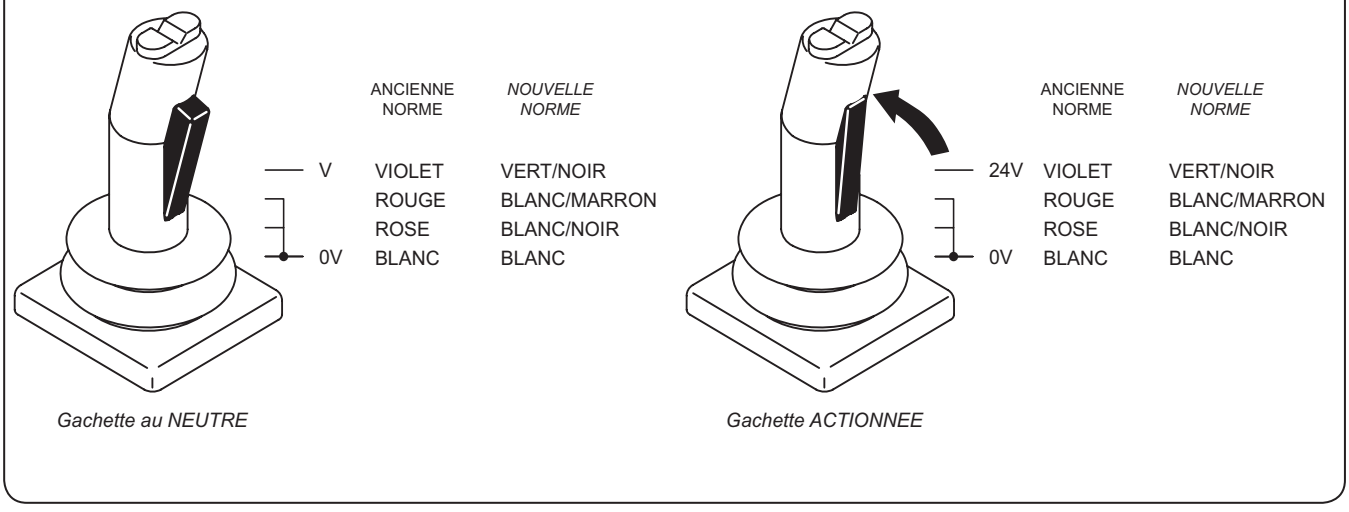
- Press the top left-hand button followed by the top right-hand button (3, 080 - 114) without activating the trigger, and check the values displayed by the voltmeter (see figure, 080 - 118).

80 - 118



- Activate the trigger (2, 080 - 114) only alone and check the values displayed by the voltmeter (see figure, 080 - 119).

80 - 119



CAUTION

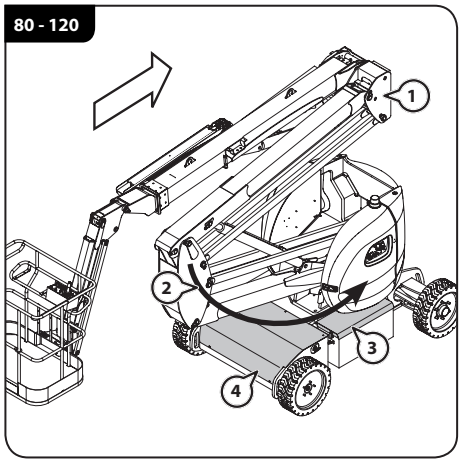
The "V"s mean that an uncertain voltage can be measured on the wire indicated.
"NS" means that there is no signal on the wire indicated".

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80.4 ELECTRICITY REMOVALS - REFITTING

80.4.1 VARIABLE SPEED CONTROLLERS - REMOVAL

80 - 120



- Raise arm 1/2 so that the upper hinge (1, 080 - 120) is raised by 1 m (39.37 in).

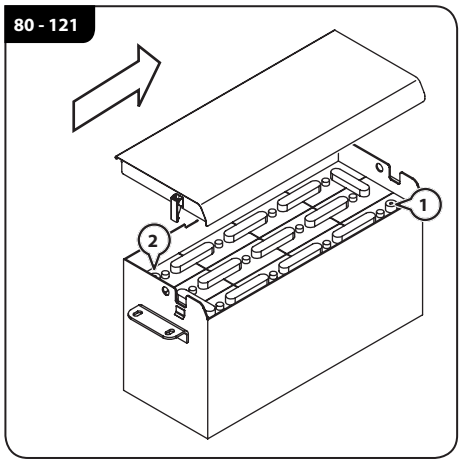
-Turn the turret by 1/4 turn (2, 080 - 120).

- Switch off the power supply.

- Disconnect the right-hand battery:

- Remove the right-hand battery protective cover (4, 080 - 120).
- Disconnect the - earth (1, 080 - 121).
- Disconnect the + (2, 080 - 121).

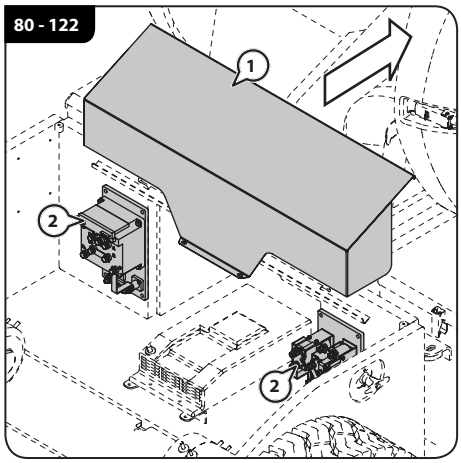
80 - 121



- Disconnect the left-hand battery, following the same procedure.

- Remove the cover (4, 080 - 120).

80 - 122



- Remove the cover plate (1, 080 - 122).

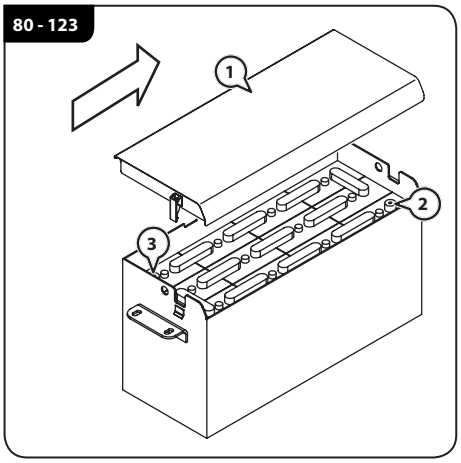
- Mark and then remove the harnesses connected to the variable speed controllers (2, 080 - 122) (***80.3.4 VARIABLE SPEED CONTROLLERS - CONTROL AND SETTINGS, 115***)

- Remove the variable speed controllers.

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80.4.2 BATTERIES - REMOVAL

80 - 123

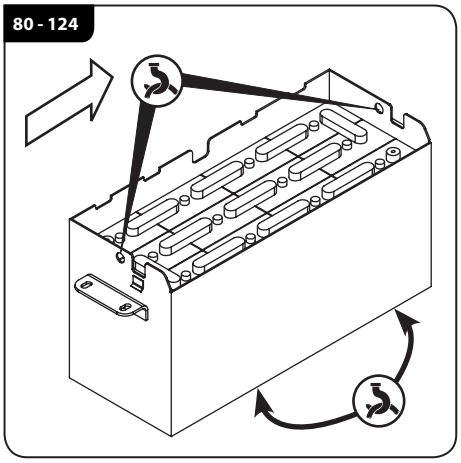


- Disconnect the right-hand battery:

- Remove the right-hand battery protective cover (1, 080 - 123).
- Disconnect the - earth (2, 080 - 123).
- Disconnect the + (3, 080 - 123).

- Disconnect the left-hand battery, following the same procedure.

80 - 124



- Remove the right-hand battery (see figure, 080 - 124), then the left-hand battery:

- 120 AETJL : ***220 kg (485 lbs)***
- 150 AETJC - 150 AETJC 3D - 150 AETJL - 170 AETJL : ***265 kg (584 lbs)***
- AETJ 43 - AETJ43 3D : ***268 kg (591 lbs)***

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80.4.3 ELECTRICAL HARNESSES - REMOVAL

A - Wiring based on the schematic diagrams (◁ ***80.1.3 SCHEMATIC DIAGRAM - BASKET CONTROL PART - 1ST VERSION,*** ***77***)

⚠ CAUTION

In this chapter, all of the connectors are shown on the wire insertion side.

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80.5 TROUBLESHOOTING - ELECTRICAL

80.5.1 VARIABLE SPEED CONTROLLERS - FAULTS AND FIXES

Led Variable Speed Controller	Message Hour meter	Message Calibrator	Description and Comments	Investigations
Lit		**OK**	Traction operational and OK.	No action required.
Not lit	**F05003**	**Internal Fault**	Variable speed controller unusable.	Variable speed controller needs replacing.
	F05004	**12V Supply Low**		
	F05011	**Drive 0 on**		
	F05012	**Drive 1 on**		
	F05013	**Drive 0 off**		
	F05014	**Drive 1 off**		
	F05019	**Stack Corrupted**		
		No message	No power to variable speed controller.	- Check: • Battery voltage. • Electrolyte-specific gravity by elements. • The wiring of the batteries, polarities, and tightening of the terminals. • The fuses. • The emergency shutdowns. • The battery cut-off. • That the battery charger is not connected to the mains. - Check: • The battery connections (B-). • The presence of the "+" battery on the "B1" input of the variable speed controller logic (+24 V). • The presence of the "+12 V" output of the B12 pin of the variable speed controller: availability "+12 V" internal (pre-set).
1 Flash PARAMETERS	**F04012**	**Pers Error**	Parameter outside valid range. The fault is removed by adjusting the value using the calibrator.	- Search for and fix the parameter where the following value is displayed "- - -". - Switch the variable speed controller off and on: check the parameters.
	F04013	**CRC Error**	Checksum parameter value incorrect. The fault is removed by adjusting the value using the calibrator.	- Check: the value of all parameters. - Force the update of the CRC by changing any parameter. - Switch the variable speed controller off and on: check the parameters.
	F05001	**EEPROM Fault**	Parameters memory fault.	- Check the value of the parameters.
2 Flashs INCORRECT INPUT SEQUENCE	**F04003**	**Sequence Fault**	Input(s) active when powered on: status "CLOSED".	- Check that the input(s) are in the "CLOSED" status when switched on in the following menus: • Traction test (1.3). • Upper box test (2.4). • Lower box test (2.6). - Check the input(s) which are in error.
	F04005	**SRO Fault**	Sequence error: non-compliance with the start-up procedure.	- Re-start the start-up procedure for the required movement.
		Sequence Fault or SRO Fault	Variable speed controller internal or external fault.	- Measure the voltages on the "D-IN" connector inputs of the electronic control units and "B" of the variable speed controller: • 0 V = Contact CLOSED. • > (greater) than 4.5 V = Contact OPEN.

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Led Variable Speed Controller	Message Hour meter	Message Calibrator	Description and Comments	Investigations
3 Flashs MOSFET	**F05009**	**PUp Trac MOS**	Failure of power test when switching on.	- Check the following points: • With the line switch (KM1) CLOSED, the voltage at terminal "A" of the variable speed controller must be equal to the battery voltage (if no movement activated). • With the line switch (KM1) OPEN, the voltage at terminal "A" of the variable speed controller is around 7-8 V. **1 - If one of the two points above is correct, the problem originates outside the variable speed controller**. In this case, perform the following checks (list not exhaustive): • No negative voltage on the chassis. • The electric pump must be isolated from the chassis. • The electrical power harnesses must not be in short circuit. **2 - If any of the points described above is not proven, the problem originates inside the variable speed controller**. In this case, perform the following checks. 2 - 1 - With the line switch (KM1) CLOSED, the voltage at terminal "A" of the variable speed controller is <3 V: • Disconnect the travel motor cables (terminal A, S F1 & F2 on the variable speed controller). • Switch the variable speed controller off and on. • Check if the problem persists. • Disconnect connector 'B' of the variable speed controller logic module, connect a wire from plug "B1" of the variable speed controller logic module to a positive battery. • Switch the variable speed controller off and on. • Check the status of the LED: if the problem persists, change the variable speed controller or otherwise check the insulation of the variable speed controller and the switch (KM3). 2 - 2 - With the line switch (KM1) OPEN, the voltage at terminal "A" of the variable speed controller is <3 V: • Internal fault in the variable speed controller, replace it.
	F05006	**Mosfet s/c**	Failure of power test when switching on	- Turn off the machine: if the problem persists, repeat the procedure described above
4 Flashs SWITCH OPEN OR CLOSED	**F05008**	**PUp Trac Weld**	Line switch (KM1) "CLOSED" (stuck or welded) when switched on: the variable speed controller measures a voltage on terminal "A" 2 volts less than the battery's rated voltage.	- Check if the line switch (KM1) is OPEN when the power supply is cut: • KM1 OPEN: variable speed controller OK. • KM1 CLOSED: switch stuck, check the switch, check its power supply and replace if necessary. - Check that there is a delay of 2 seconds between switching on and the closure of the line switch (KM1). • DELAY = 2s: variable speed controller OK. • Delay ≠ 2s: variable speed controller defective, driver of LINE switch out of service. - Check the power cables.
	F05020	**Line Cont O/C**	Line switch (KM1) "OPEN": the variable speed controller measures a voltage on terminal "A" 3 volts less than the battery's rated voltage.	- Check: • The mechanical condition of the switch. • The coil of the switch. • The control of the switch coil. • The power and auxiliary fuses. • The wiring of the motors. - Check output B8 of the variable speed controller logic module, the signal is negative, if this is not the case, the line switch driver is out of service: change the variable speed controller.
	F05021	**Coil s/c (std)**	Digital output in short circuit on the E/S module: BASE	- Check: • The wiring. • The elements controlled by the module.

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Led Variable Speed Controller	Message Hour meter	Message Calibrator	Description and Comments	Investigations
5 Flashs FAULTS SENSORS		**C_OVL Ssr Flt**	This fault is detected when there is a fault on the overload sensors.	- Check: • The status of the overload circuits. • The electrical circuit and connections. • Basket electronic control unit and safety electronic control unit.
	F02004	**C_OVL Sync Flt**	This fault is detected when the two overload sensors are not in the same status.	- Check: • The status of the sensors: parameters: 1.3.16 and 2.4.9. • The overload settings. • The electronic control unit and connections of the sensors. • Basket electronic control unit and safety electronic control unit.
	F02005	**ElvTd Ssr Fault**	Signals an inconsistency between the "working/travel" position sensors (telescope or arm 2/3).	- Check: • The settings of the "Working/Travel" position sensors. • The correct operation of the sensors. • The electronic control unit and connections of the sensors. • Logic module of the variable speed controller and safety electronic control unit.
	F05010	**Bypass pump**	Fault switch KM3 stuck	- Check KM3 switch
6 Flashs ACCELERATOR	**F02001**	**Accel. Fault**	Voltage fault in the joystick on one of the X or Y axes. Accelerator Value >20% on start-up for one of the X or Y axes.	- Check: • That the joystick is activated when switched on. • The joystick supply voltage. • The values of the manipulator parameters for each of the X and Y axes. • The configuration of the joystick potentiometer values. • That the gray (Y) and yellow (X) harnesses of the joystick and their connections are in good condition.
	F02000	**Accel. Fault**	Accelerator fault (out of range).	- Check the manipulator, its wiring.
7 Flashs VOLTAGE BATTERY	**F04010**	**Battery High**	Battery voltage high on "High V cut" parameter.	- Check the correct operation of the battery charger.
	F04009	**Battery Low**	Battery voltage higher than the "High V cut" parameter. Battery voltage lower than the "Low V cut" parameter. Battery voltage lower than the "battery protection" parameter, beyond the delay specified by the parameter "protection delay".	- Check: • The state of the battery charge (voltage, electrolyte density, water level). • The correct operation of the battery charger, its connectors. - Put the access platform on charge.
	F01004	**BDI Cutout**	Battery charge level lower than "BDI CUTOUT" parameter.	- Check: • The battery electrolyte-specific gravity. • The condition of the battery cables. • The tightening of the cable terminals. • The BDI parameters. - Put the access platform on charge.
8 Flashs TEMPERATURE	**F01005**	**Thermal Cutback**	The temperature of the power unit is higher than 75°C (167 °F).	- Check: • The operating conditions (motor overload, etc.). • The tightening of the power terminals (motor, battery). • The fitting of the variable speed controller plate on the chassis (heat-conducting grease, etc.). - Leave the variable speed controller to cool
9 Flashs COIL SWITCH	**F05000**	**Coil s/c**	The intensity of the current is higher than the acceptable limit for one of the following outputs: - Coil of switch KM1. - Relay. - Electrovalves. - LEDs. - Buzzer. - Harnesses.	- Check the current limit on the following digital inputs and outputs: • 2A for the connector outputs of the variable speed controller logic module (Plug 8 and 9 of connector B). • 2A for the outputs of the connector "D-OUT" of the CAN electronic control unit of the BASE. • 2A & 100 mA for the outputs of the connector "D-OUT" of the CAN electronic control unit of the BASKET.
	F05022	**Coil s/c (ext)**	Digital output in short circuit on the E/S module: BASKET	- Check: • The wiring. • The elements controlled by the module.

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<table>
<tr><th>Led
Variable Speed Controller</th><th>Message
Hour meter</th><th>Message
Calibrator</th><th>Description and
Comments</th><th>Investigations</th></tr>
<tr><td>12 Flashs CANBUS</td><td>F05005</td><td>Can Bus Fault</td><td>There is no dialog between one or more electronic control units.</td><td>
- Check for each of the electronic control units if their LED is permanently on:
• If all of the LEDs are lit: perform tests §1-1 and §1-2.
• If at least one LED is switched off: perform test §2.

1-1 Tests to be performed 5 BUS-CAN connectors connected.
- Access platform switched on: measure the voltage between the BUS-CAN wires and the negative (wire 103).

<table>
<tr><th>BUS-CAN wire</th><th>Theoretical voltage (V)</th><th>The signal must be between</th></tr>
<tr><td>112</td><td>~2.4V</td><td>2.3V < < 2.7V</td></tr>
<tr><td>113</td><td>~2.6V</td><td>2.3V < < 2.7V</td></tr>
</table>
- Access platform switched off: measure the resistance of the BUS-CAN circuit between wires 112 and 113 at the diagnostics plug:
• The resistance is 95 Ω.

<table>
<tr><th>Disconnect successively</th><th>Theoretical resistance between wires 112/113</th></tr>
<tr><td>Smart view</td><td>118 Ω</td></tr>
<tr><td>Base control unit</td><td>156 Ω</td></tr>
<tr><td>Safety control unit</td><td>235 Ω</td></tr>
<tr><td>Variable speed controller</td><td>470 Ω</td></tr>
<tr><td>Basket control unit</td><td>---</td></tr>
</table>
- Access platform switched off: for each of the electronic control units, measure the resistance between the 112 and 113 inputs at the CAN connector:
• The resistance is 470 Ω.

1-2 Tests to be performed 5 BUS-CAN connectors disconnected.
- Disconnect the BUS-CAN harnesses (wires 113 and 112) at each end (variable speed controller, base electronic control unit, basket electronic control unit).
- For wires 113 and 112, check the continuity between each of them and each end: check that there is no continuity between wires 113 and 112.
- Check the connections, the shielding (variable speed controller section - BASE box).
- Put the contact bomb on the BUS-CAN connections, bypass the BUS-CAN lines with external wires to determine if the wires or connections are defective.

2-Test to be performed if at least one LED is switched off
- Check when switched off if the LED flashes for 0.5 seconds:
• Check the power supply between terminals B+, B+2 (positive terminals) and B/NEG, C/NEG, D/NEG (negative terminals) of the control unit which is causing the problem.
• Check the connections of all power supplies mentioned above
- Check the quality of the battery negative signal: wire no. 103.
• Ensure that all of the connections of wire 103 are correctly attached and connected (crimping of wires not damaged, quality of contacts, etc.) in the electrical sockets, the terminal blocks, the terminals, etc.
- Check the quality of the battery positive signal: wire no. 106.
• Ensure that all of the connections of wire 106 are correctly attached and connected (crimping of wires not damaged, quality of contacts, etc.) in the electrical sockets, the terminal blocks, the terminals, etc.
</td></tr>
</table>

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80.5.2 ZIVAN BATTERY CHARGER - ERROR SIGNALS

SYMPTOMS	CAUSES	TO BE DONE IMMEDIATELY	CAUSES TO CHECK
Acoustic signal + RED LED flashing	Battery disconnected or not compliant.	Check the connection or the rated voltage.	Output fuse and if the battery has been connected with the correct polarities
Acoustic signal + YELLOW LED flashing	Temperature probe disconnected during recharging or out of operational range.	Check the connection of the probe and measure the battery temperature.	The voltage on the temperature probe and measure the temperature of the battery.
Acoustic signal + GREEN LED flashing	Phase 1 and/or Phase 2 more than the maximum permitted.	Check the capacity of the battery.	Does the charge curve for the battery comply with that of the battery charger?
Acoustic signal + RED-YELLOW LED flashing	Loss of control of output current	Logic control unit fault.	Stage of reading current or shunt.
Acoustic signal + RED-YELLOW LED flashing	Loss of control of output voltage	Battery disconnected or fault on logic control unit.	Stage of reading voltage or resistance of reading voltage of open battery.
Acoustic signal + YELLOW-GREEN LED flashing	An unavailable configuration has been selected.	Check the position of the selector.	
Acoustic signal + RED-YELLOW-GREEN LED flashing	Over-heating of semi-conductors.	Check the operation of the ventilation system.	Operation of the fan, fan pilot circuit, good connections with PTC sensor.

80.5.3 IES BATTERY CHARGER

SYMPTOMS	CAUSES	TO BE DONE IMMEDIATELY	CAUSES TO CHECK
RED LED flashing	Battery temperature high		Ambient temperature > 65°C
	Battery element in short circuit	Disconnect the charger from the mains	Battery condition Power supply connector Mains voltage Select the voltages on the charger Charger defective
	Charge cycle greater than 20 hours	Disconnect/Reconnect the charger to the mains	

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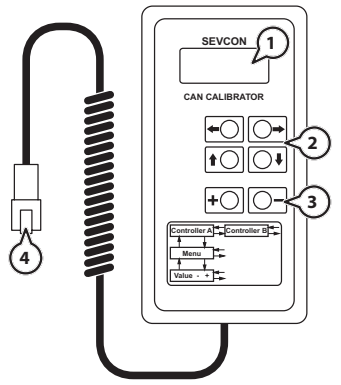
80.6 SPECIFIC TOOLING - ELECTRICITY

80.6.1 CALIBRATOR

⚠ CAUTION

The calibrator is also used for:
- The adjustment of the switches.
(◁ ***80.3.4 VARIABLE SPEED CONTROLLERS - CONTROL AND SETTINGS,*** ***115***)***131***
- Testing the manipulators.
(◁ ***80.3.6 MANIPULATOR - OPERATION AND SETTINGS,*** ***133***)***138***
- Troubleshooting.
(◁ ***80.5 TROUBLESHOOTING - ELECTRICAL,*** ***139***)***160***

80 - 125



DESCRIPTION

- Screen (1, 080 - 125).
- Scrolling buttons (2, 080 - 125) (◁ ***VARIABLE SPEED CONTROLLERS - USE OF CALIBRATOR,*** ***120***)
- Incrementation buttons (3, 080 - 125) (◁ ***VARIABLE SPEED CONTROLLERS - USE OF CALIBRATOR,*** ***120***)
- Connection socket (4, 080 - 125).

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GENERAL CHARACTERISTICS AND SAFETY

00.1 GENERAL INSTRUCTIONS AND SAFETY NOTICE

00.1.1 INTRODUCTION

This chapter deals with the general instructions and safety notice during inspection and maintenance work.
Other instructions and warnings are indicated in each chapter concerned.

In order to reduce accident risks, make sure to:

– Follow the instructions in the truck operating and maintenance manual.
  ⇒ This manual should be found in all trucks.
– Please follow all safety instructions.
– Use the appropriate tools for any work to be performed.
– Use original Manitou spare parts.

Any non-compliance increases the risk of accidents occurring which may lead to causing grievous bodily harm and even death.

An efficient, dependable and profitable combination will be formed if the operator follows the safety manual correctly and the machine is serviced properly.

00.1.2 SERVICING POSITION

Before any intervention:

1 - Place the machine on a flat surface and chock the wheels.
2 - Turn off the engine and remove the ignition key.
3 - Let the machine cool down.
4 - Take all the pressure out of the circuits concerned.

00.1.3 EXPLANATION OF SYMBOLS

The symbols shown below are used to warn of potential hazards as well as to provide useful information concerning a procedure.

SYMBOLE	OBSERVATION
DANGER	Indicates an imminent hazardous situation which, if not avoided will result in death or serious injury.
WARNING	Indicates a potentially hazardous situation which, if not avoided, may result in death or serious injury.
CAUTION	Indicates a potentially hazardous situation which, if not avoided, may result in minor injury or damage to property. It is also used to warn users of unsafe practices.
TIP	Indicates a tip to facilitate the performance of a procedure.
PROTECT THE ENVIRONMENT	Indicates a message to draw attention to important information regarding environmental protection.
SPECIFIC TOOLING	Indicates special tools for performing a task.
	"***SEE***": Indicates a cross-reference to a manual.
	"***SEE***": Indicates a cross-reference to a page.
	"***SEE***": Indicates a cross-reference to a picture.
	"***WEIGHT***": Indicates the weight of an item. (E.g.: it helps to anticipate an action linked to a person's health or the choice of lifting equipment)
	"***TIGHTENING TORQUE***": Indicates the value of tightening torque to be applied.
	"***OPTION***": Indicates the presence of an option.

The manufacturer cannot predict all possible risky situations. Consequently, the safety instructions given in the manual are not exhaustive.
At any time, as an operator, you must consider, within reason, the possible risk to yourself, to others or to the lift truck itself when you repair, service or drive it.

Manitou cannot be held responsible for the use of any lifting devices, tools or operating methods other than those specified.

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00.1.4 SERVICING RULES



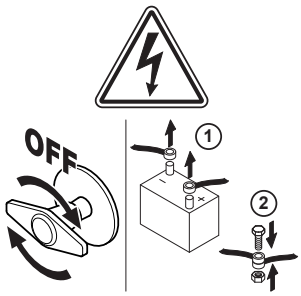
Do not carry out any work on the machine unless you have followed a suitable training course and have the knowledge required for it.

Make sure you have taken into consideration all the indicator plates on the machine and in the instruction manual.



⚠ PRÉCAUTION

Be careful not to burn yourself when touching hot liquids or parts when operations have to be done before the machine has had time to cool down.



⚠ AVERTISSEMENT

Before carrying out any operation on an electrically powered component, activate the battery cut-off.

⚠ PRÉCAUTION

Press the battery switch at least 30 seconds after disconnecting the electrical contact with the ignition key.

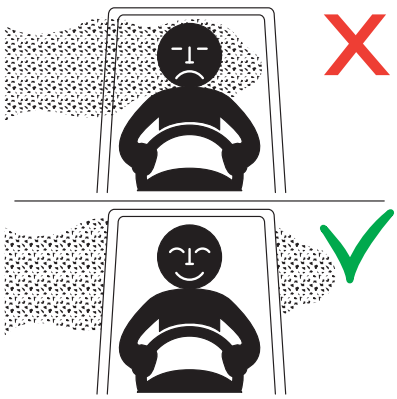


⚠ AVERTISSEMENT

If the telehandler does not have a battery isolating switch, disconnect the battery terminals then gather them.

⚠ PRÉCAUTION

Before carrying out any welding operations, think of disconnecting computers.



⚠ PRÉCAUTION

A machine operating in a contaminated environment should be specifically equipped. Moreover, local safety notices deal with maintenance and repair work on such machines.



⚠ AVERTISSEMENT

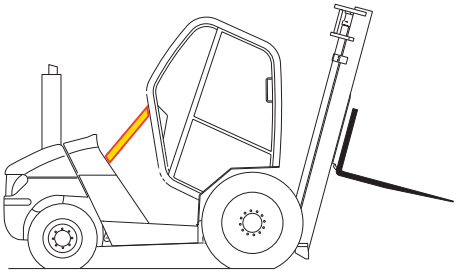
Never step on a part of the machine that has not been designed for it.



⚠ AVERTISSEMENT

Never wear clothes, jewelry or objects that could get caught during work and cause accidents.

Always wear protection glasses, gloves, safety shoes as well as any other protection required for the work to be carried out.





⚠ DANGER

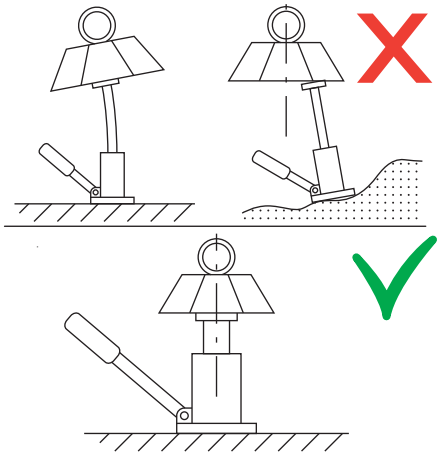
When carrying out maintenance operations near a mobile object, make sure it is securitized.



♻ PROTÉGER L'ENVIRONNEMENT

When changing, or draining oils or fuel, or any other operation with liquids, solids, gases that are harmful to the environment, make sure the necessary precautions are taken to avoid contaminating the environment.

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DANGER

When lifting or shoring a component of the machine, make sure the equipment used is suitable for at least the load for which it is subjected by the component and that it meets the national standards for lifting devices.

When using a jack, make sure it is used on a flat, uniform surface, is sturdy enough to support the load, that its lifting capacity is sufficient and that it is correctly placed and positioned under the machine.



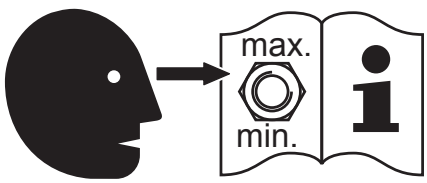
PRÉCAUTION

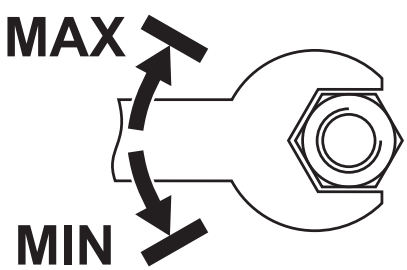
Make sure no object or tool which could cause an accident is left in the machine.



AVERTISSEMENT

Never control any leaks using a hand.





PRÉCAUTION

Never adjust a component to over the maximum capacity indicated by the manufacturer.

00.2 GENERAL CHARACTERISTICS AND SPECIFICATIONS

00.2.1 CHARACTERISTICS

Designation		120 AETJL	150 AETJC	150 AETJC 3D	150 AETJL	170 AETJL	AETJ 43	AETJ 43 3D	AETJ 49
Unladen weight of carriage		5050 kg (11,133 lbs)	6700 kg (14,771 lbs)	6760 kg (14,904 lbs)	5910 kg (13,030 lbs)	6910 kg (15,234 lbs)	7100 kg (15,653 lbs)	7160 kg (15,785 lbs)	7105 kg (15,684 lbs)
Unladen pneumatic load	FRONT	1185 kg (2,613 lbs)	1465 kg (3,230 lbs)	1465 kg (3,230 lbs)	1240 kg (2,734 lbs)	1534 kg (3,389 lbs)	-	-	1555 kg (3,428 lbs)
	REAR	1340 kg (2,954 lbs)	1885 kg (4,156 lbs)	1885 kg (4,156 lbs)	1715 kg (3,781 lbs)	1921 kg (4,325 lbs)	-	-	1992.5 kg (4,393 lbs)
Nominal capacity (2 people)		200 kg (441 lbs)	200 kg (441 lbs)	200 kg (441 lbs)	230 kg (507 lbs)	200 kg (441 lbs)	227 kg (500 lbs)	227 kg (500 lbs)	227 kg (500 lbs)

00.2.2 LUBRICANTS AND FUEL

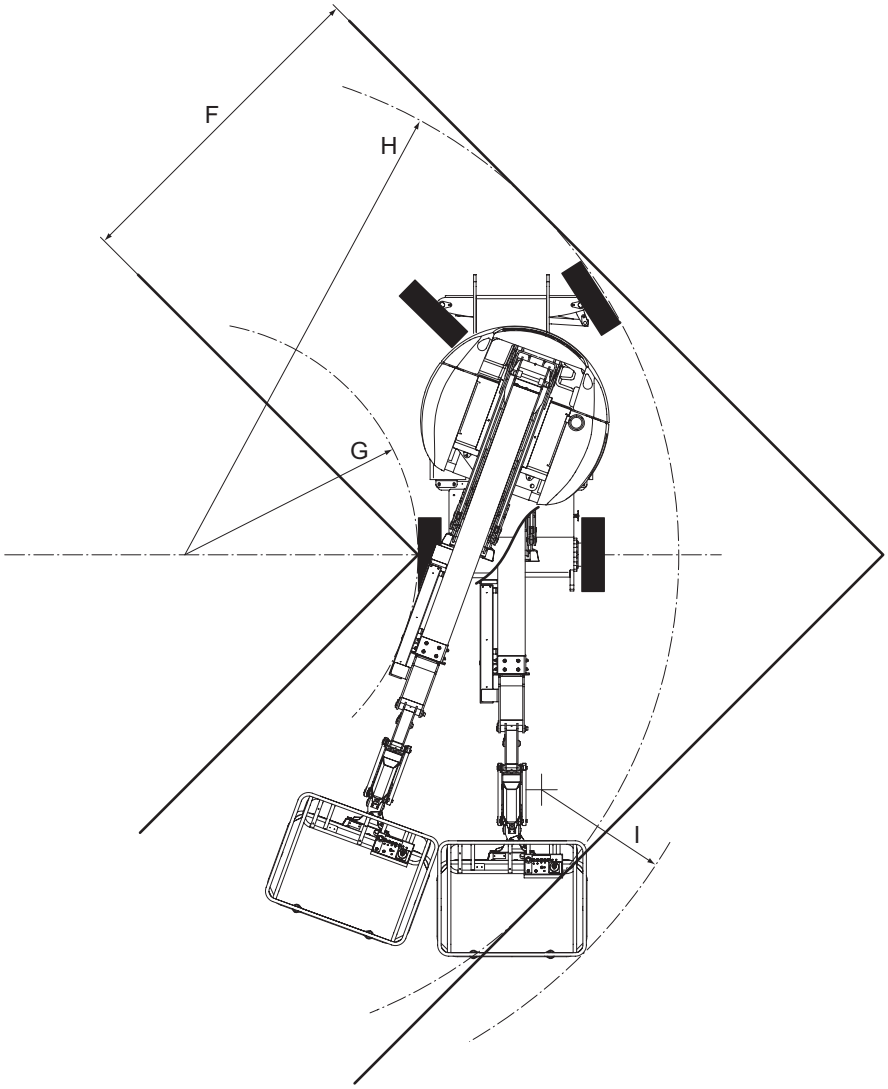
Designation	Type	Quantity
Hydraulic tank	MANITOU ISO VG 46 Hydraulic oil	18 ℓ (4.76 US gallons)
Wheel motor (each) Turret rotation motor	SHELL SPIRAX A90 oil	0.8 ℓ (0.21 US gallons) 1.5 ℓ (0.40 US gallons)
General greasing	SHELL RETINAX HD grease	-
Greasing of turret crown of bearing track	Grease SHELL ALVANIA EP LF 2	-
Lubrication of turret crown gear teeth	SHELL MALLEUS GL 205 oil	-

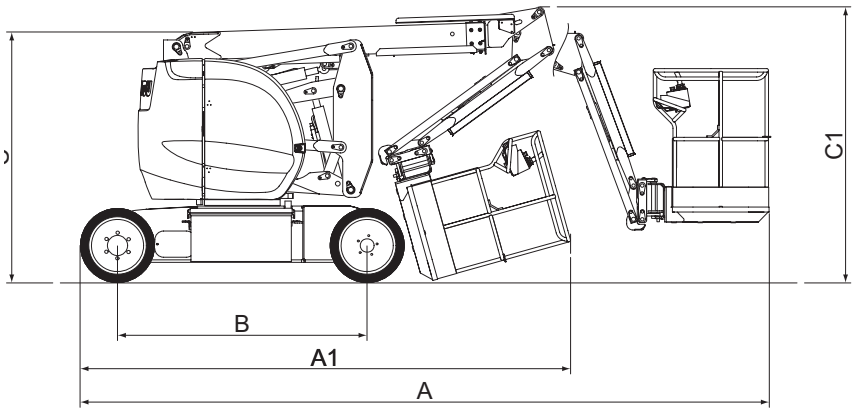
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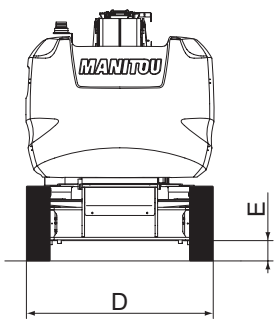
00.2.3 DIMENSIONS

DIMENSIONS 120AETJL

	mm	ft-in
A	5520	18-1.3
A1	3930	12-10.7
B	2000	6-6.7
C	1995	6-6.5
C1	2210	7-3.0
D	1500	4-11.1
E	153	0-6.0
F	2640	8-8.0
G	1870	6-1.6
H	3960	12-11.9
I	4520	14-9.9

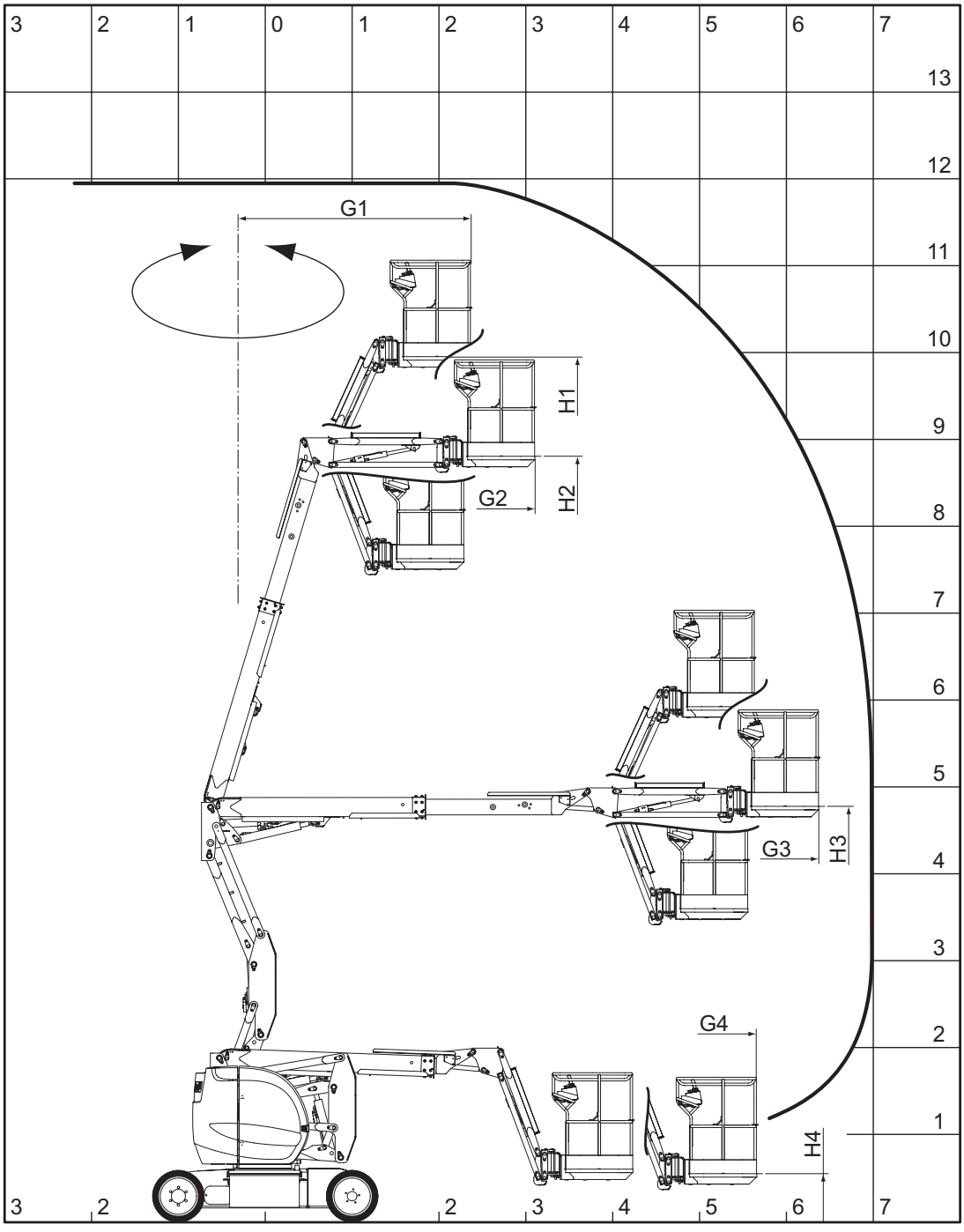






	mm	ft-in
G1	2350	7-8.5
G2	3105	10-2.2
G3	6370	20-10.8
G4	5640	18-6.0

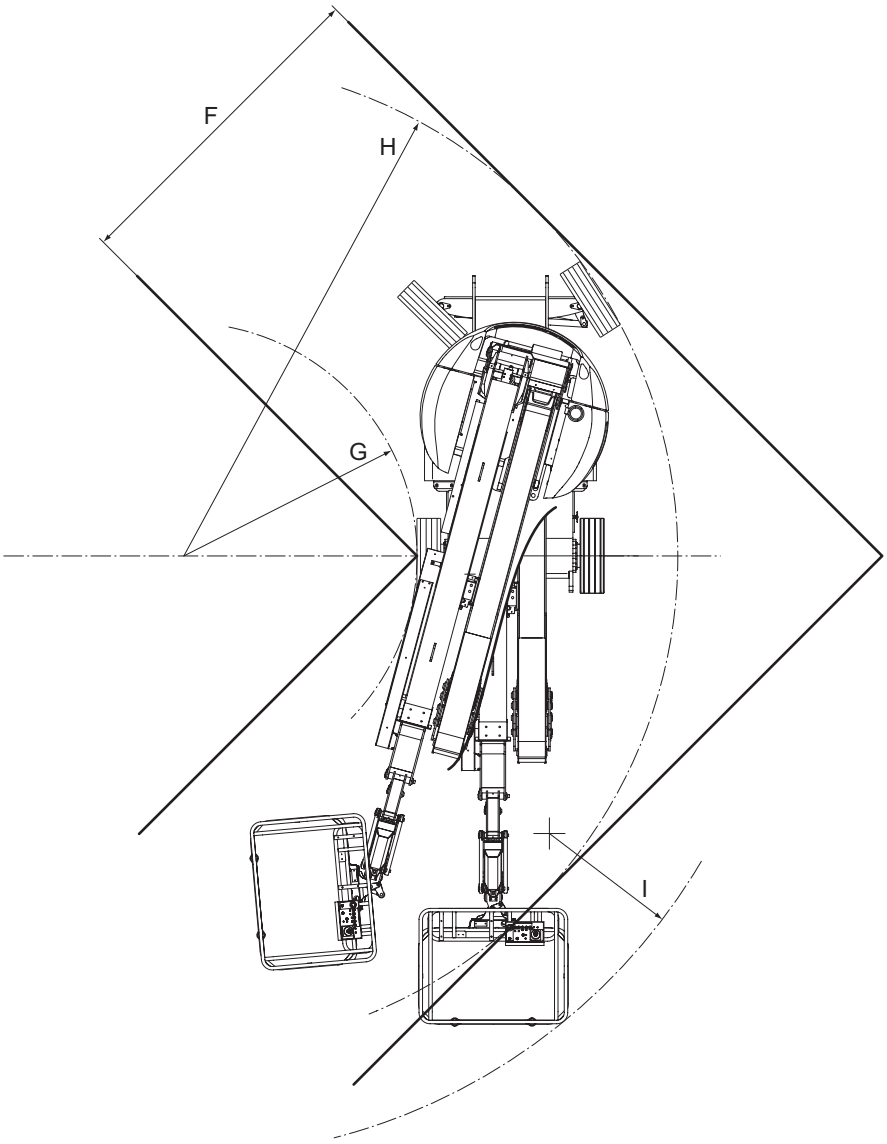
	mm	ft-in
H1	9950	32-7.7
H2	8795	28-10.3
H3	4775	15-8.0
H4	545	1-9.5

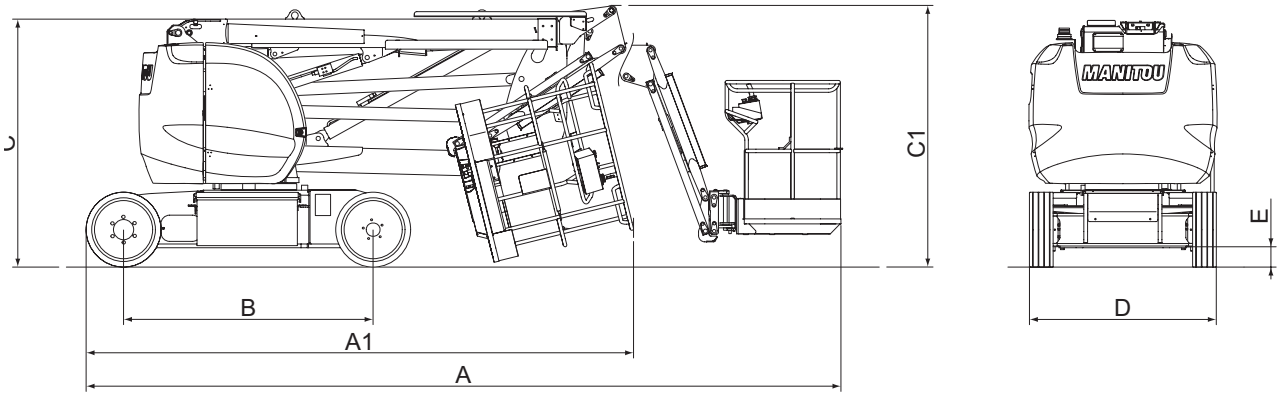


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DIMENSIONS 150AETJC - AETJ 43 - AETJC 43 3D

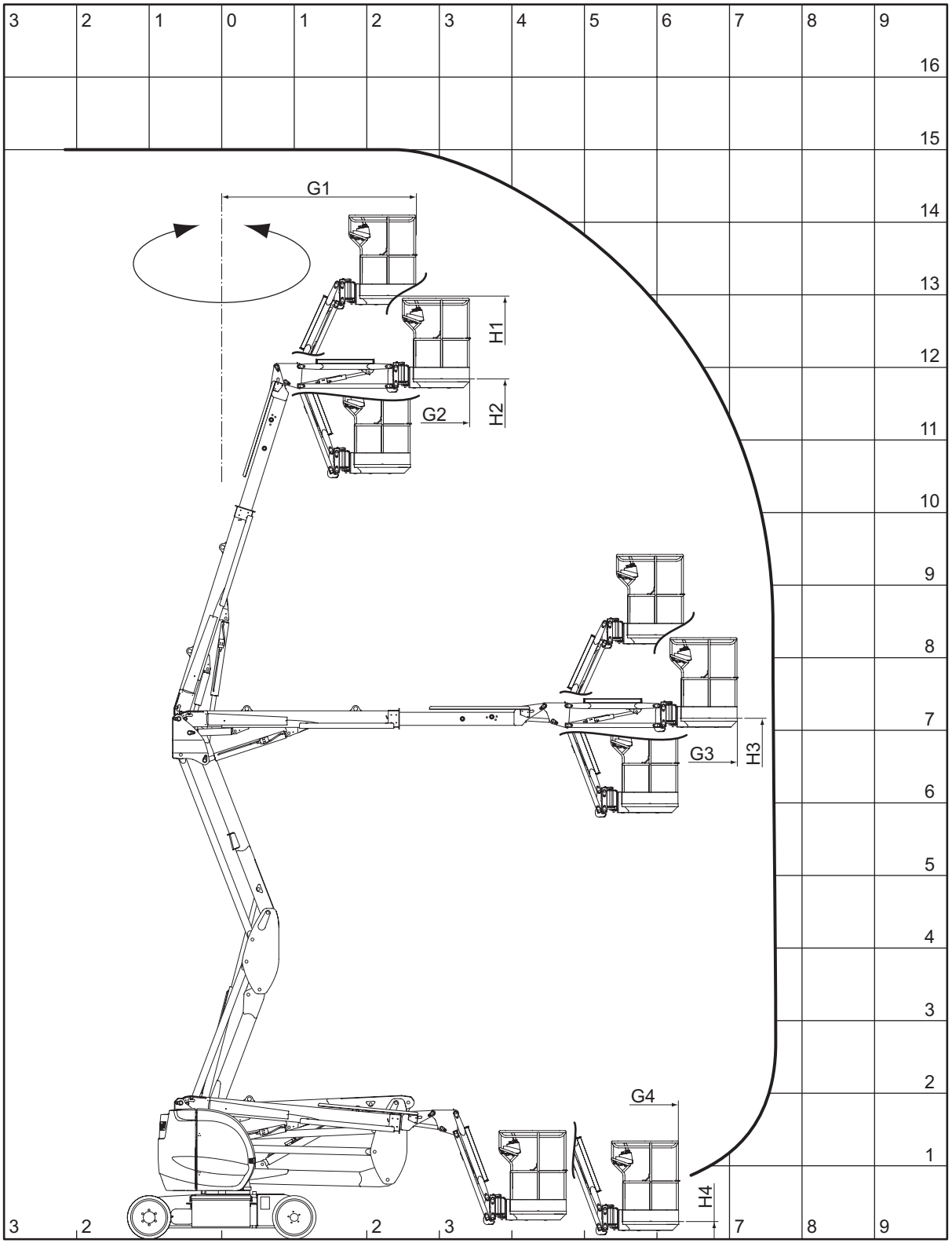
	mm	ft-in
A	6050	19-10.2
A1	4400	14-5.2
B	2000	6-6.7
C	1965	6-5.4
C1	2080	6-9.9
D	1500	4-11.1
E	143	0-5.6
F	2640	8-7.9
G	1870	6-1.6
H	3960	12-11.9
I	4820	15-9.7





	mm	ft-in
G1	2665	8-8.9
G2	3425	11-2.8
G3	7105	23-3.7
G4	6300	20-8.0

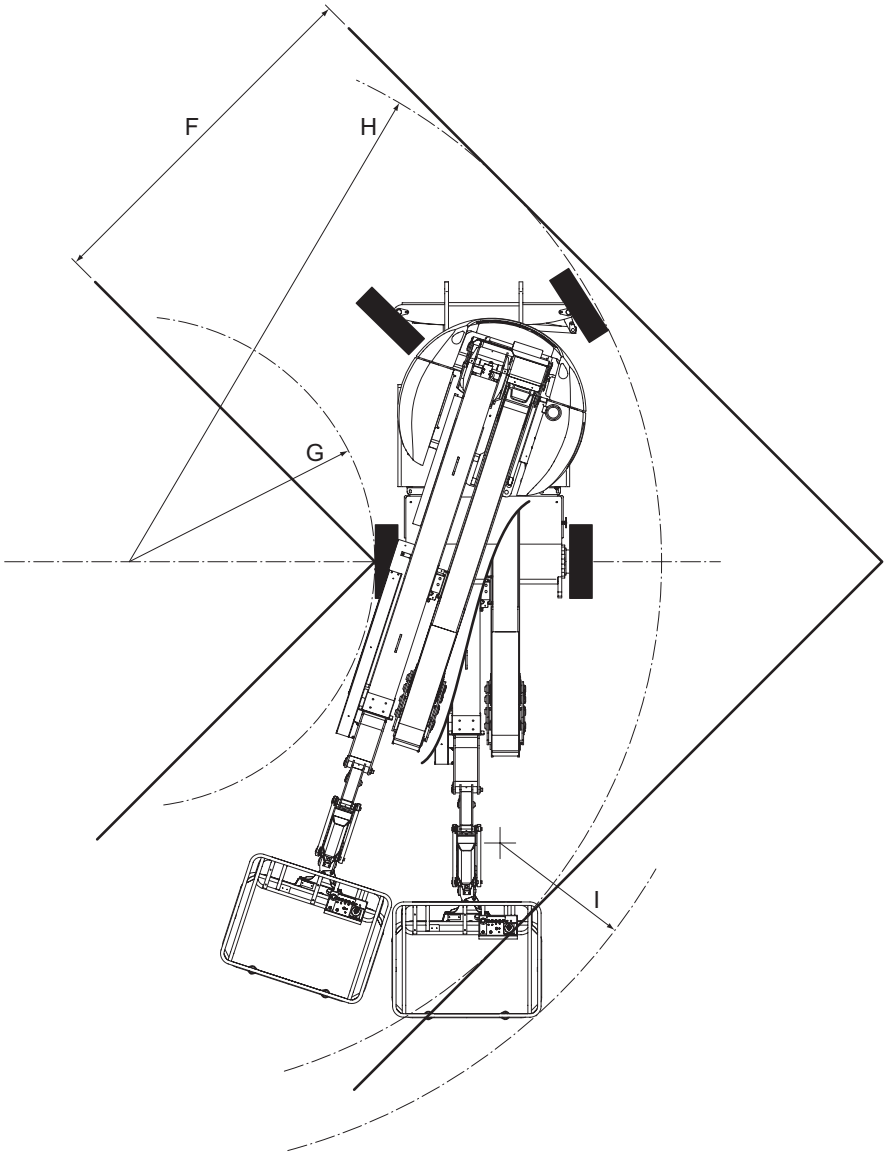
	mm	ft-in
H1	12985	42-7.2
H2	11835	38-9.9
H3	7165	23-6.1
H4	235	0-9.2

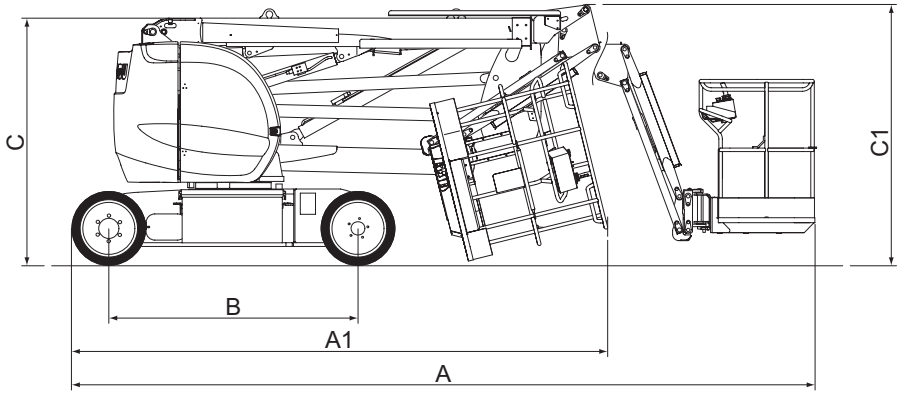


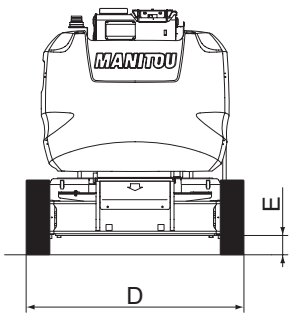
https://truckmanualshub.com/

DIMENSIONS 150AETJL

	mm	ft-in
A	5960	19-6.6
A1	4400	14-5.2
B	2000	6-6.7
C	1970	6-5.5
C1	2080	6-9.9
D	1750	5-8.9
E	143	0-5.6
F	2880	9-5.4
G	1970	6-5.6
H	4270	14-0.1
I	4890	16-0.5

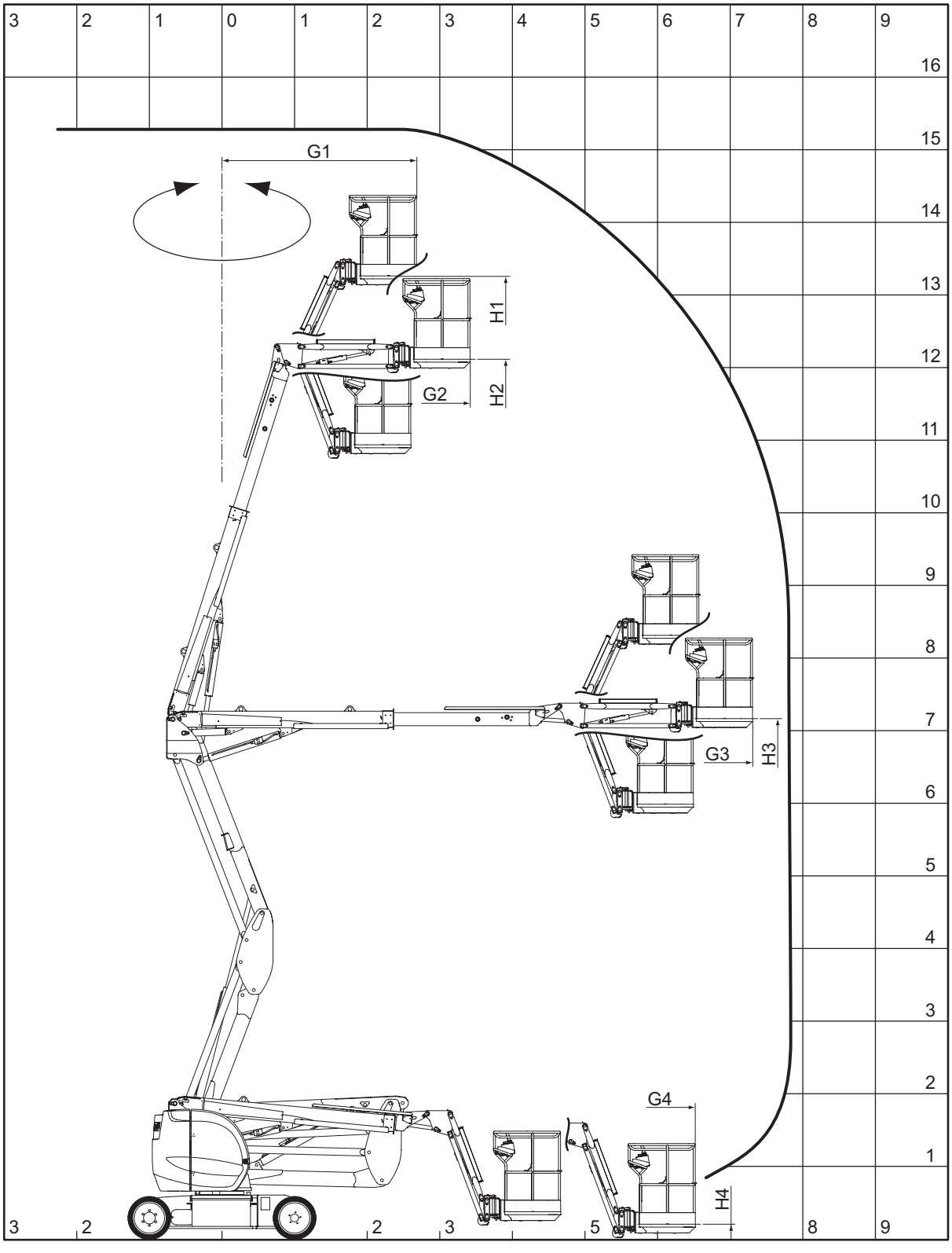






	mm	ft-in
G1	2660	8-8.7
G2	3420	11-2.6
G3	7310	23-11.8
G4	6500	21-3.9

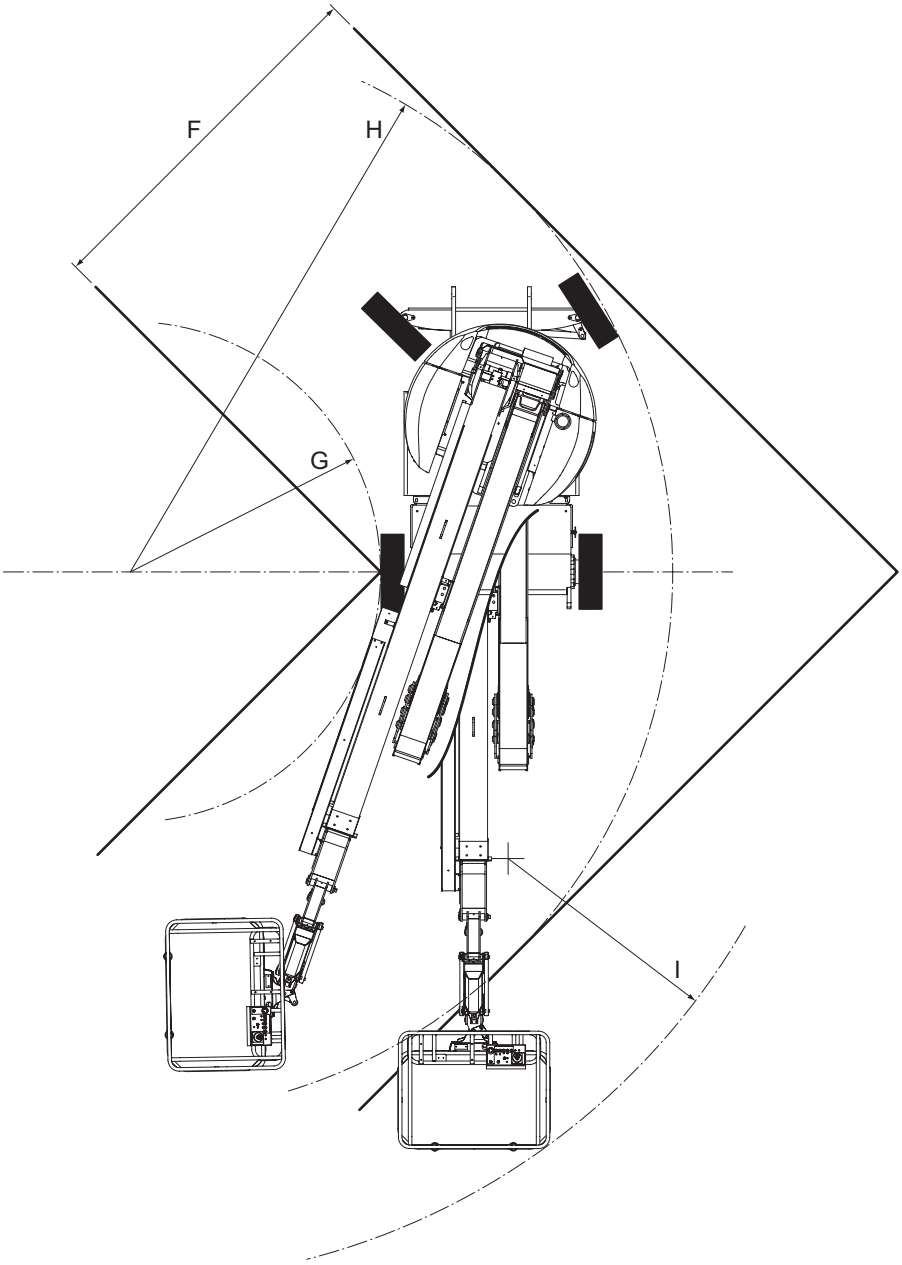
	mm	ft-in
H1	13275	43-6.6
H2	12120	39-9.1
H3	7165	23-6.1
H4	205	0-8.1

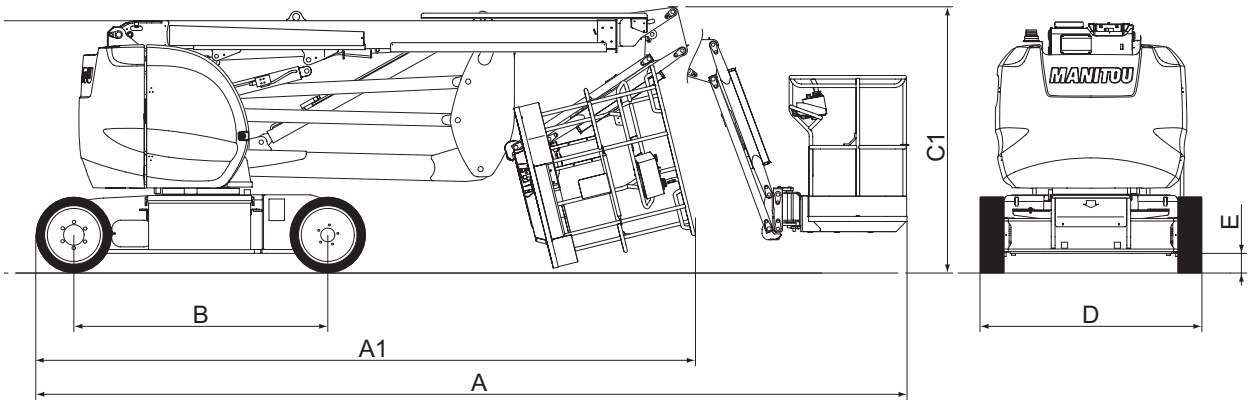


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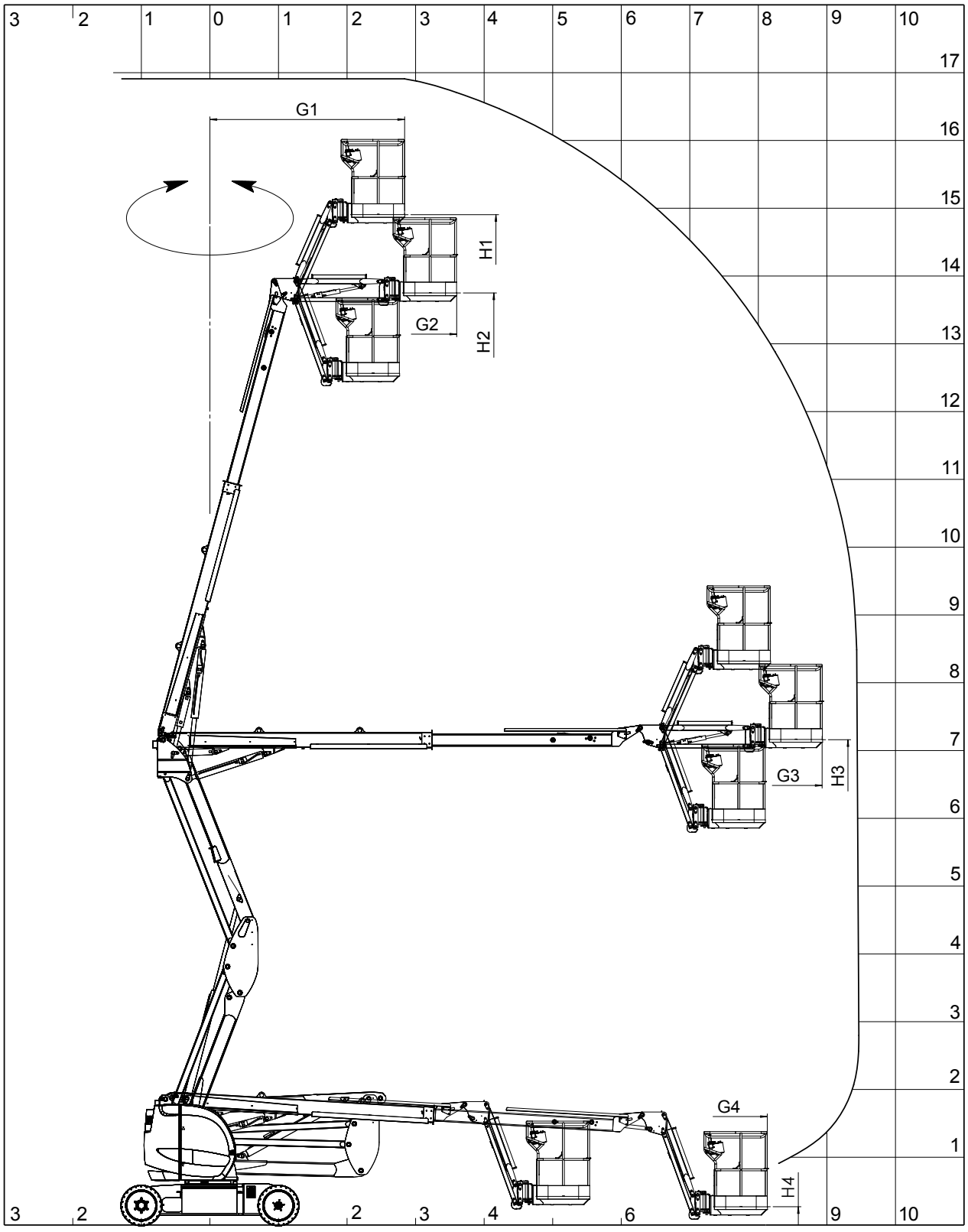
DIMENSIONS 170AETJL - 49 AETJC

	mm	ft-in
A	6840	22-5.3
A1	5120	16-9.6
B	2000	6-6.7
C	1970	6-5.6
C1	2040	6-8.3
D	1750	5-8.9
E	140	0-5.5
F	2890	9-5.8
G	2005	6-6.9
H	4300	14-1.3
I	5600	18-4.5





	mm	ft-in
G1	2840	9-3.8
G2	3600	11-9.7
G3	8930	29-3.6
G4	8130	26-8.1
H1	14905	48-10.8
H2	13750	45-1.3
H3	7160	23-5.9
H4	270	0-10.6



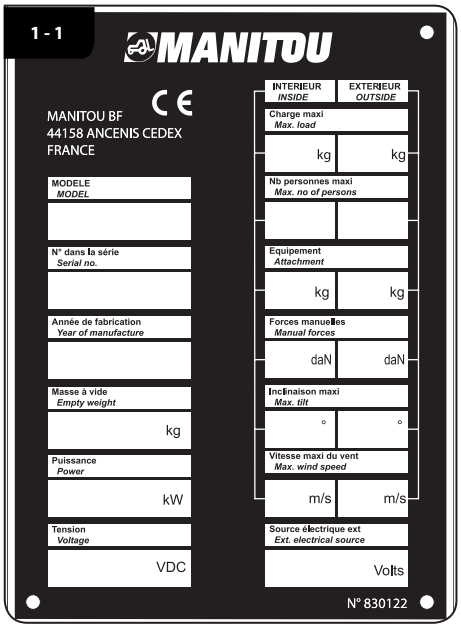
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GENERAL LOCATION

00.2.4 LOCATION OF NAME AND IDENTIFICATION PLATE

As our policy is one of constant improvement of our products, our range of access platforms may undergo certain modifications, without obligation for us to advise our customers.
When you order parts, or when you require any technical information, always specify:
NOTE: For the owner's convenience, it is recommended that a note of these numbers is made in the spaces provided, at the time of the delivery of the access platform.

1 - 1



ACCESS PLATFORM MANUFACTURER'S PLATE

Type:
Serial no.:
Year of manufacture:

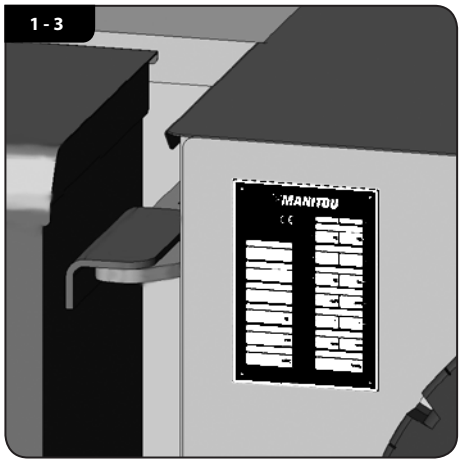
1 - 2



LOCATION OF MANUFACTURER'S PLATE 120 AETJ

The manufacturer's plate is fitted on the inside right panel of the turret.

1 - 3



LOCATION OF MANUFACTURER'S PLATE
150 AETJC - AETJ43 - 150 AETJC 3D - AETJ43 3D
150 AETJL - AETJ49
170 AETJ L

The manufacturer's plate is fitted on the left rear side of the chassis.

00.3 GENERAL CONTROL AND ADJUSTMENT

00.3.1 STANDARD TIGHTENING TORQUES

Standard tightening torques

To be used. unless otherwise indicated in the removal or refit operations.

SCREW / NUT ASSEMBLY

- with hexagon head screws without flanges ou cylinder head hexagon socket screws.
- for dry-fitted zinc-plated fasteners and for torque tools having a ± 20 % class C tightening torque accuracy (equivalent to pneumatic screwdrivers).

1 - NF E 25-030-1 :

Ø x "coarse" pitch	Grade 8.8		Grade 10.9		Ø x "fine" pitch	Grade 8.8		Grade 10.9	
	N.m	lb-in	N.m	lb-in		N.m	lb-in	N.m	lb-in
M6 x 1	8.2	72.57	12.1	107	-	-		-	
M8 x 1.25	20	177	30	265	M8 x 1	22	195	32	283
M10 x 1.5	40	354	59	522	M10 x 1.25 (x 1)	43 (46)	380 (407)	63 (68)	558 (602)
M12 x 1.75	69	611	102	903	M12 x 1.5 (x 1.25)	74 (78)	655 (690)	108 (115)	956
M14 x 2	111	982	163	1443	M14 x 1.5	123	1088	181	1602
M16 x 2	175	1549	256	2266	M16 x 1.5	190	168	279	2470
M18 x 2.5	240	2124	352	3115	M18 x 1.5	279	2469	410	3629
M20 x 2.5	341	3018	501	4434	M20 x 1.5	391	3460	574	5080
M22 x 2.5	470	4160	691	6116	M22 x 1.5	531	4700	780	6903
M24 x 3	588	5204	864	7647	M24 x 2	659	5833	967	8559
M27 x 3	874	7735	1284	11364	M27 x 2	965	8541	1418	12550
M30 x 3.5	1181	10453	1735	15356	M30 x 2	1351	11957	1984	17560
M33 x 3.5	1614	14285	2371	20985	M33 x 2	1821	16117	2674	23667
M36 x 4	2068	18303	3037	26880	-	-		-	

For hexagon screws with flanges (NF E 25-030-1) : Apply an increased torque of +10%.



Where washers are used. the following coefficient is to be applied (FD E 25-502) :

- ***Plate : +0%***
- ***Spring (or Grower) washer without jaws (W) : +10%***
- ***Smooth tapered washer (CL): +5%***
- ***Conical. internal teeth (CDJ-JZC) : +15%.***

2 - With marking :

	4 4T (flange : 4.8T)		5 5T (N.m)		6 6T (flange : 6.8T)		7 7T (N.m)		8 8T (flange : 8.8T)		(flange : 10.9T)		11 (flange : 11.9T)	
Ø x Pitch	N.m	lb-in	N.m	lb-in	N.m	lb-in	N.m	lb-in	N.m	lb-in	N.m	lb-in	N.m	lb-in
M6 x 1	**5.4** (5.5)	**48** (49)	**6.5**	**57.5**	**7.8** (7.5)	**69** (66)	**11**	**97**	**12** (12)	**106** (106)	(15.5)	(137.2)	(17.5)	(155)
M8 x 1.25	**13** (13)	**115** (115)	**16**	**142**	**19** (19)	**168** (168)	**25**	**221**	**29** (29)	**257** (257)	(38)	(336)	(42)	(372)
M10 x 1.25	**25** (27)	**221** (239)	**32**	**283**	**39** (39)	**345** (345)	**52**	**460**	**61** (61)	**540** (540)	(80)	(708)	(89)	(788)
M12 x 1.25	**47** (50)	**416** (443)	**59**	**522**	**72** (71)	**637** (628)	**95**	**841**	**108** (110)	**956** (974)	(145)	(1283)	(160)	(1416)
M14 x 1.5	**75** (78)	**664** (690)	**91**	**805**	**108** (110)	**956** (974)	**147**	**1301**	**172** (175)	**1522** (1549)	(230)	(2036)	(260)	(2301)
M16 x 1.5	**113** (120)	**1000** (1062)	**137**	**1213**	**172** (170)	**1522** (1504)	**226**	**2000**	**265** (270)	**2345** (2390)	(360)	(3186)	(400)	(3540)

use the upper class where spring (or Grower) washers are used.

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00.3.2 METRIC - IMPERIAL UNIT CONVERSION

RULES

-The tolerance has the same unit as the value and is not a percentage :

Example : 120 ± 12 Ω , not ~~120 ± 10 %~~.

-The unit is separated from the value by a space and placed after the tolerance :

Example: 120 Ω ou 120 ± 12 Ω except for angle degrees : 40° ou 40 ± 3°.

-The conversion of some marks is not possible :

Example: thread of a screw : M12x1.75.

-Use decimals to convert precise values :

Example: 190 mm = 7.48 in.

-Write lengths in feet-inches format:

Example: 20 m = 65 ft 7.4 in or in a table 20 (m) = 65-7.4 (ft-in).

CONVERSION COEFFICIENTS:

Metric Unit (S.I)	***Coefficient***		***Imperial Unit US***
° (angle degree)	x 1	=	° (angle degree)
°C (Celsius degree)	x 1.8 + 32	=	°F (Fahrenheit degree)
cv (cheval vapeur)	x 0.9859	=	hp (horsepower)
bar (bar)	x 14.51	=	psi (pound-force/square inch)
g (gram)	x 0.0353	=	oz av (ounce avoirdupois) (oz : lat. onza)
Hz (Hertz)	x 1	=	Hz (Hertz)
kg (kilogram)	x 2.2046	=	lb (pound) (lat . libra)
kg (kilogram)	x 35.274	=	oz av (ounce avoirdupois) (oz : lat. onza)
km/h (kilometer per hour)	x 0.6214	=	mph (miles per hour)
kW (kilowatt)	x 1.34048	=	hp (horsepower)
ℓ (liter)	x 0.2642	=	gal US (US gallon)
ℓ (liter)	x 1.0567	=	qt US (quart US gallon)
m (meter)	x 3.2808	=	ft (foot)
m (meter)	x 39.37	=	in (inch)
min (minute)	x 1	=	min (minute)
mℓ (milliliter)	x 0.0338	=	fl oz (fluid ounce) (fl : fluid, oz : lat. onza)
mm (millimeter)	x 0.03937	=	in (inch)
µm (micrometer)	x 0.03937	=	mil (thousands of an inch)
N (Newton)	x 0.2248	=	lbf (pound-force) (lb : lat. libra, f : force)
N.m (Newton meter)	x 0.7376	=	ft-lb (pound-force-foot) (ft : foot, lb : lat. libra)
N.m (Newton meter)	x 8.8507	=	lb-in (pound-force-inch) (lb : lat. libra, in : inch)
s (second of time)	x 1	=	s (second of time)
rad/s (radian/second)	x 9.5493	=	rpm (revolution per minute)
t (metric ton)	x 2204.62	=	lb (pound) (lat. libra)
tr/min (tour per minute)	x 1	=	rpm (revolution per minute)
Ω (Ohm)	x 1	=	Ω (Ohm)

Other unit conversions	***Coefficient***		
ft (foot)	x 12	=	in (inch)
lb (pound) (lat . libra)	x 16	=	oz av (ounce avoirdupois)
m (meter)	x 1000	=	mm (millimeter)
µm (micrometer)	x 0.001	=	mm (millimeter)
t (metric ton)	x 1000	=	kg (kilogram)
° (angle degree)	x 0.01745	=	rad (radian)

Abbreviation

lat: Latin

gr: Greek

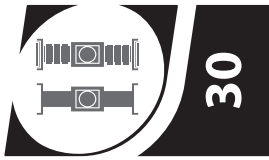
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AXLE

30.1 CHARACTERISTICS AND SPECIFICATIONS

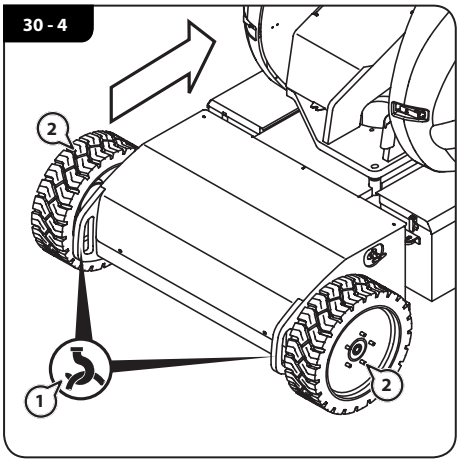
30.1.1 REAR AXLE - OPERATION IN FREEWHEEL MODE

DANGER

In order to operate the access platform in freewheel mode, it should not be subjected to translational constraints resulting from a slope.
When the access platform is in the freewheel mode, it can move freely: fit wedges to immobilize the wheels.

CAUTION

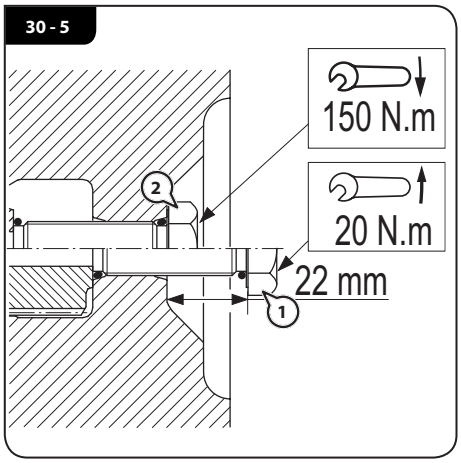
If the access platform needs to be towed, this operation should only be carried out:
- Over short distances.
- Necessarily by a machine that has high braking power in order to hold it steady, and at a slow speed.
- By means of a connecting bar between the two machines.



- IF POSSIBLE, lift the rear of the platform (1, ***030 - 4***).

120 AETJL : ***2680 kg (5908 lbs)***
150 AETJC : ***3770 kg (8311 lbs)***
150 AETJL - 150 AETJC 3D : ***3375 kg (7441 lbs)***
170 AETJL - AETJ49 : ***3842 kg (8470 lbs)***
AETJ43 - AETJ43 3D : ***3775 kg (8322 lbs)***

- Locate the screws (2, ***030 - 4***).



- Unscrew these screws according to the model of your platform, ***030 - 5***) by 22 mm (0.87 in), up to the hard spot and without forcing: **RISK OF BREAKAGE**.
Maximum loosening torque 20 N.m (177 lb-in).
- Set the platform down.
- The machine can now be towed.

RESETTING
- Raise the rear of the platform.
- Turn the wheels from left to right and reset the gears by re-tightening the screws (2, ***030 - 5***):
Maximum tightening torque for rear wheel 150 N.m (1327.6 lb-in)

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JIB - BASKET

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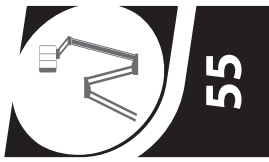
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JIB - BASKET

55.1 JIB - BASKET CONTROLS

55.1.1 CHECK THE CLEARANCE OF THE TELESCOPE

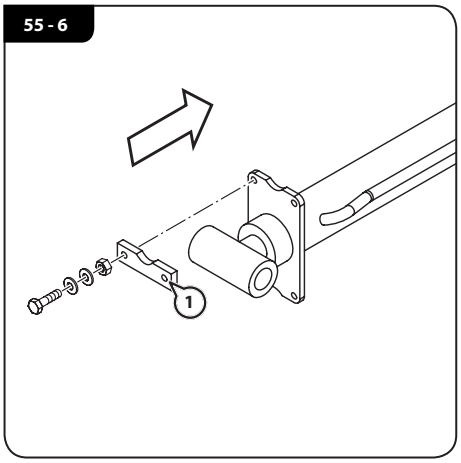
CLEARANCE between moving tube and arm of telescope	
Lateral	0.5 mm (0.02 in)
Upper	0.5 mm (0.02 in)

If necessary, add the adjustment plates if necessary (see parts catalogs).

55.2 JIB - BASKET REMOVAL

55.2.1 REMOVAL OF PADS OF TELESCOPIC CYLINDER

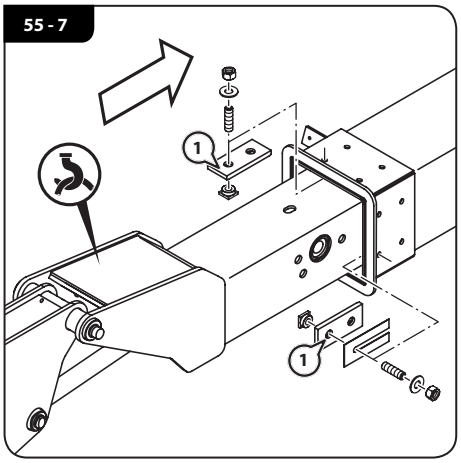
55 - 6



Remove the telescopic cylinder (◁ ***TELESCOPIC CYLINDER - REMOVAL,*** ***63***)
Remove and replace the pads (1, ***055 - 6***) (see parts catalog).

55.2.2 REMOVAL OF REAR PADS OF TELESCOPIC CYLINDER

55 - 7



- Remove the telescopic cylinder (◁ ***TELESCOPIC CYLINDER - REMOVAL,*** ***63***).

- Release the pads (1, ***055 - 7***) by slightly raising the basket.

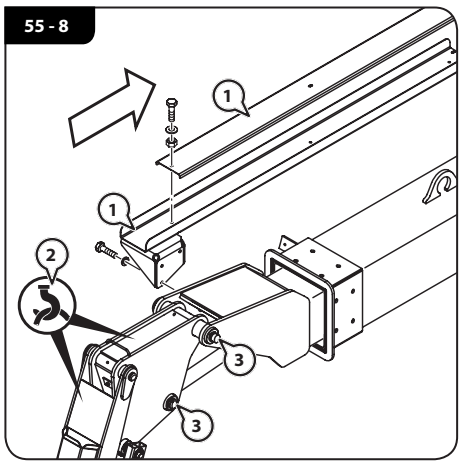
- Remove the pads (1, ***055 - 7***), pay attention to the position and number of adjustment plates.

- Get new pads (see parts catalog)
- Replace the pads and adjustment plates, then check the clearance (◁ ***55.1.1 CHECK THE CLEARANCE OF THE TELESCOPE,*** ***31***).

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55.2.3 REMOVAL OF PADS OF TELESCOPE MOVING TUBE

55 - 8



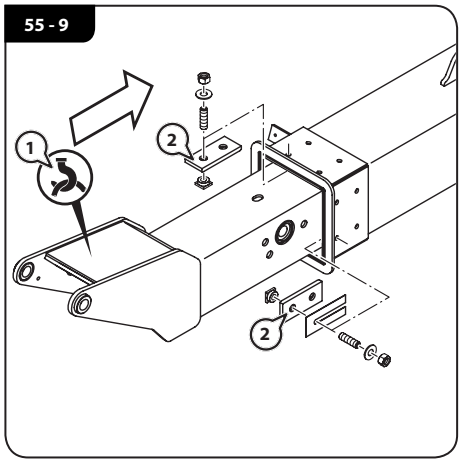
- Remove the telescopic cylinder (◅ ***TELESCOPIC CYLINDER - REMOVAL,*** 🗐 ***63***).

- Remove the flexible guide fasteners on the moving tube (1***, 055 - 8***).

- Sling the basket/jib/hinge assembly (2***, 055 - 8***):
- *without steering actuator (3D - JIB)* **230 kg (507 lbs)**
- *with steering actuator (3D - JIB)* **267 kg (589 lbs)**

- Remove the axles (3***, 055 - 8***) then remove the basket/jib/hinge assembly nearby to avoid damaging the hydraulic hoses and wiring harnesses.

55 - 9

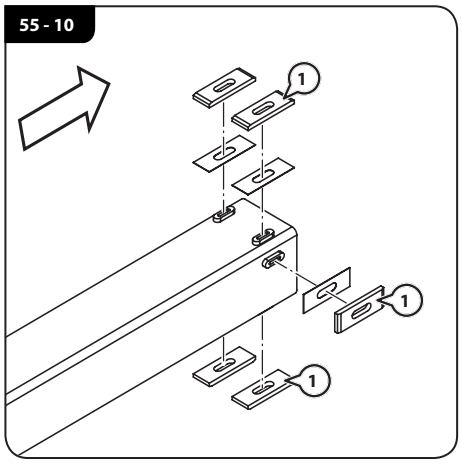


- Release the pads of the telescope jib by gently releasing the moving tube (1***, 055 - 9***).

- Remove the pads (2***, 055 - 9***) of the telescope jib, pay attention to the position and number of adjustment plates.

- Remove the moving tube by allowing it to slide towards the rear:
- *120 AETJL :* ***102 kg (225 lbs)***
- *150 AETJC et 150 AETJL - 150 AETJC 3D - AETJ43 - AETJ43 3D:* ***116 kg (256 lbs)***
- *170 AETJL - AETJ49 :* ***148 kg (326 lbs)***

55 - 10



- Remove the pads (1***, 055 - 10***), pay attention to the position and number of adjustment plates.

- Get new pads (see parts catalog).

- Fit the pads and adjustment plates, then check the clearance (◅ ***55.1.1 CHECK THE CLEARANCE OF THE TELESCOPE,*** 🗐 ***31***).

55

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HYDRAULIC

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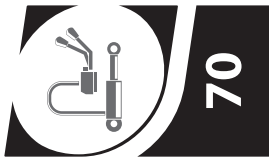
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JIB CYLINDER - REMOVAL 66

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LINKS TO REPAIR MANUALS:

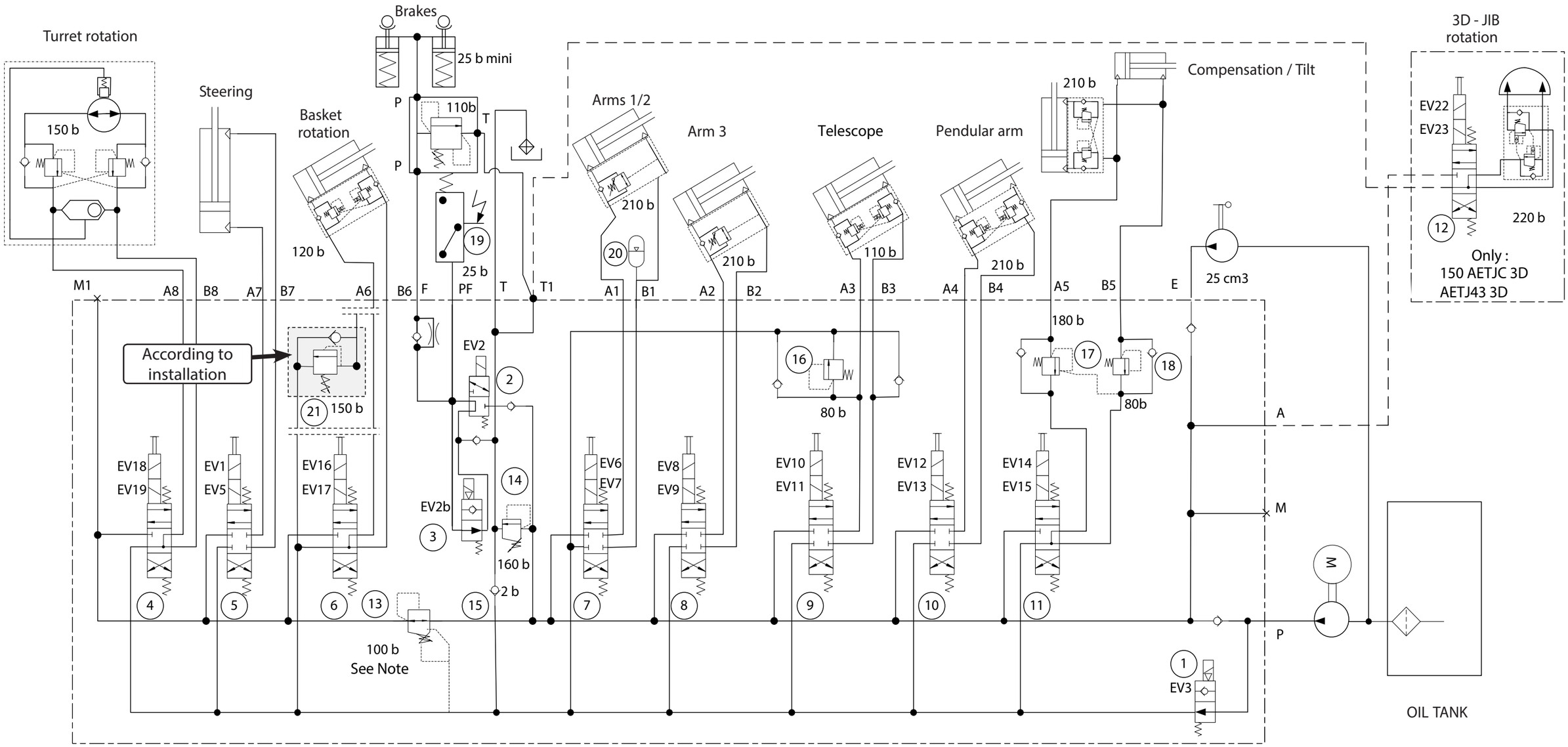
MANUAL REFERENCE NUMBER	DESIGNATION
647 187	ROTARY ACTUATORS HELICAL HYDRAULIC L20 SERIE

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HYDRAULIC

70.1 HYDRAULIC SCHEMATIC DIAGRAMS

70.1.1 679449 - HYDRAULIC DIAGRAM



150 AETJC - 150 AETJC 3D
AETJ 43 - AETJ 43 3D
150 AETJL
170 AETJL - AETJ 49
679449 Index E

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This diagram relates to lifting platforms :
- 150 AETJC - 150 AETJC 3D
- AETJ 43 - AETJ 43 3D
- 150 AETJL
- 170 AETJL - AETJ 49

COMPONANTS OF THE HYDRAULIC LAYOUT

NOTE : Delivery of the block with the adjustment AETJ standard

No.	Function	AETJ Standard Taring
21	Pressure restrictor	150 b
20	Hydro accumulator 75 ml	20 b
19	Pressure controller	25 b
18	Balancing valve	80 b
17	Balancing valve	180 b
16	Pressure reducer	80 b
15	Valve	2 b
14	Main pressure restrictor	160 b
13	Pressure reducer	
12	Rotating JIB (Option)	
11	Compensation / Tilt	
10	Pendular arm	
9	Telescope	
8	Arm 3	
7	Arms 1-2	
6	Basket rotation	
5	Steering	
4	Turret rotation	
3	Brakes	
2	Brakes	
1	Safety valve	

ACTIVATION TABLE FOR THE ELECTRO-VALVES ACCORDING TO THE DESIRED MOVEMENT

Please refer to the hydraulic layout to match the electro-valve numbers and their location on the platform

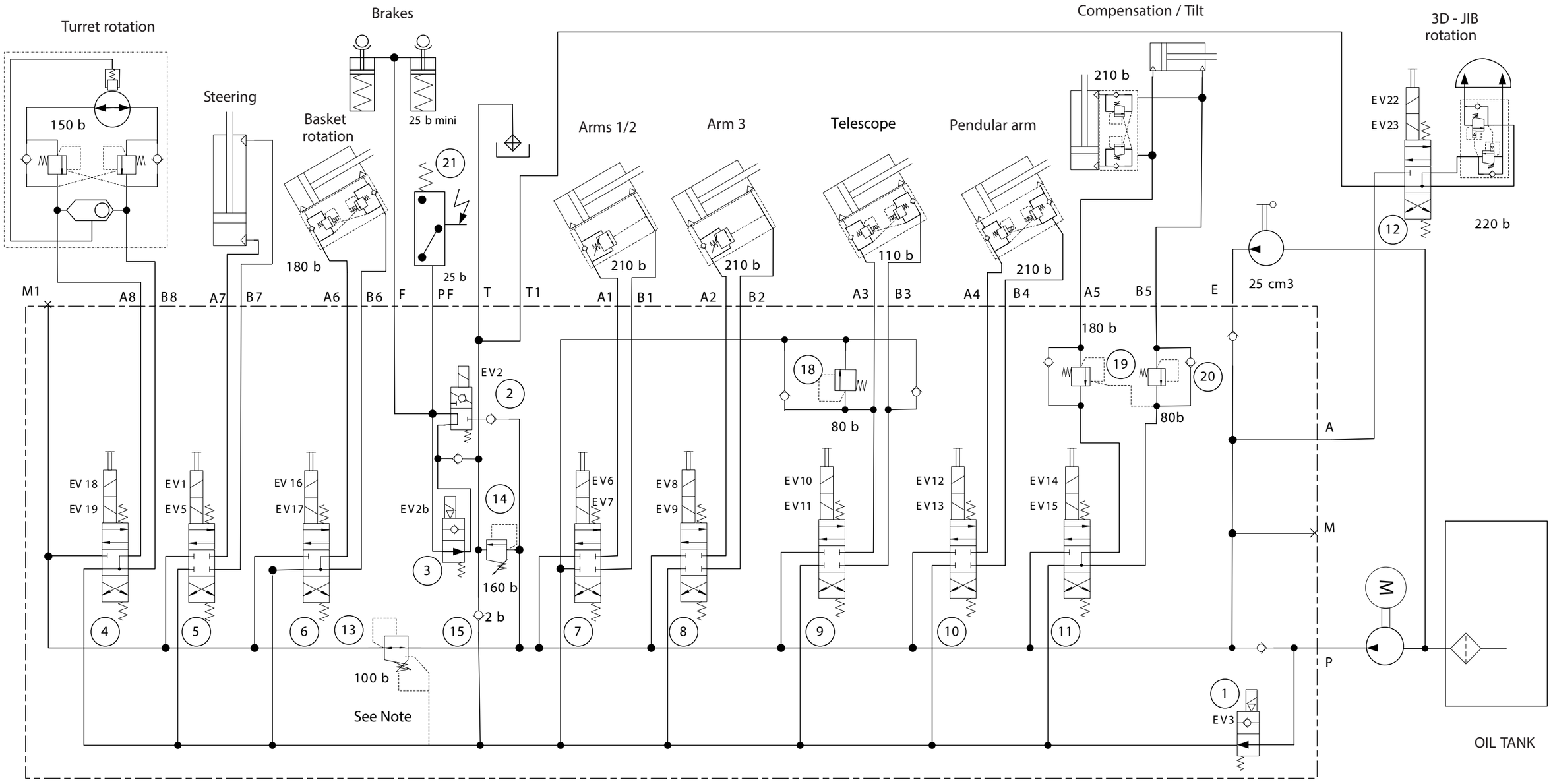
E : Excited

			1	2	3	4		5		6		7		8		9		10		11		12	
			ev3	ev2	ev2b	ev18	ev19	ev1	ev5	ev16	ev17	ev6	ev7	ev8	ev9	ev10	ev11	ev12	ev13	ev14	ev15	ev22	ev23
Transport Position	Stop																						
	Stop + steering		E					E or E															
	translation		E	E	E																		
	translation + steering		E	E	E			E or E															
Work Position	Stop																						
	Stop + steering		E					E or E															
	translation		E	E	E																		
	translation + steering		E	E	E			E or E															
	Turret Rotation	Right	E			E																	
		Left	E				E																
	Basket Rotation	Right	E							E													
		Left	E								E												
	Raising 1-2	Raising	E									E											
		Lowering	E										E										
	Raising 3	Raising	E											E									
		Lowering	E												E								
	Telescope	Extended	E													E							
		Retracted	E														E						
	Pendular arm	Raising	E															E					
		Lowering	E																E				
	Tilt	Boost	E																	E			
		Tilt	E																		E		
	Jib Rotation (option)	Right	E																			E	
		Left	E																				E

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70.1.2 685268 - HYDRAULIC DIAGRAM



120 AETJL
685268
Indice A

685268 Index A

70

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This diagram relates to lifting platforms :
- 150 AETJC - 150 AETJC 3D
- AETJ 43 - AETJ 43 3D
- 150 AETJL
- 170 AETJL - AETJ 49

COMPONANTS OF THE HYDRAULIC LAYOUT

NOTE : Delivery of the block with the adjustment AETJ standard

No.	Function	AETJ Standard Taring
21	Pressure restrictor	25 b
20	Balancing valve	80 b
19	Balancing valve	180 b
18	Pressure restictor	80 b
16	Pressure restictor	150 b
15	Shutter Valve	2 b
14	Main pressure restrictor	160 b
13	Pressure reducer	150 b
12	Rotating JIB (Option)	
11	Compensation / Tilt	
10	Pendular arm	
9	Telescope	
8	Arm 3	
7	Arms 1-2	
6	Basket rotation	
5	Steering	
4	Turret rotation	
3	Brakes	
2	Brakes	
1	Safety valve	

ACTIVATION TABLE FOR THE ELECTRO-VALVES ACCORDING TO THE DESIRED MOVEMENT

Please refer to the hydraulic layout to match the electro-valve numbers and their location on the platform

E : Excited

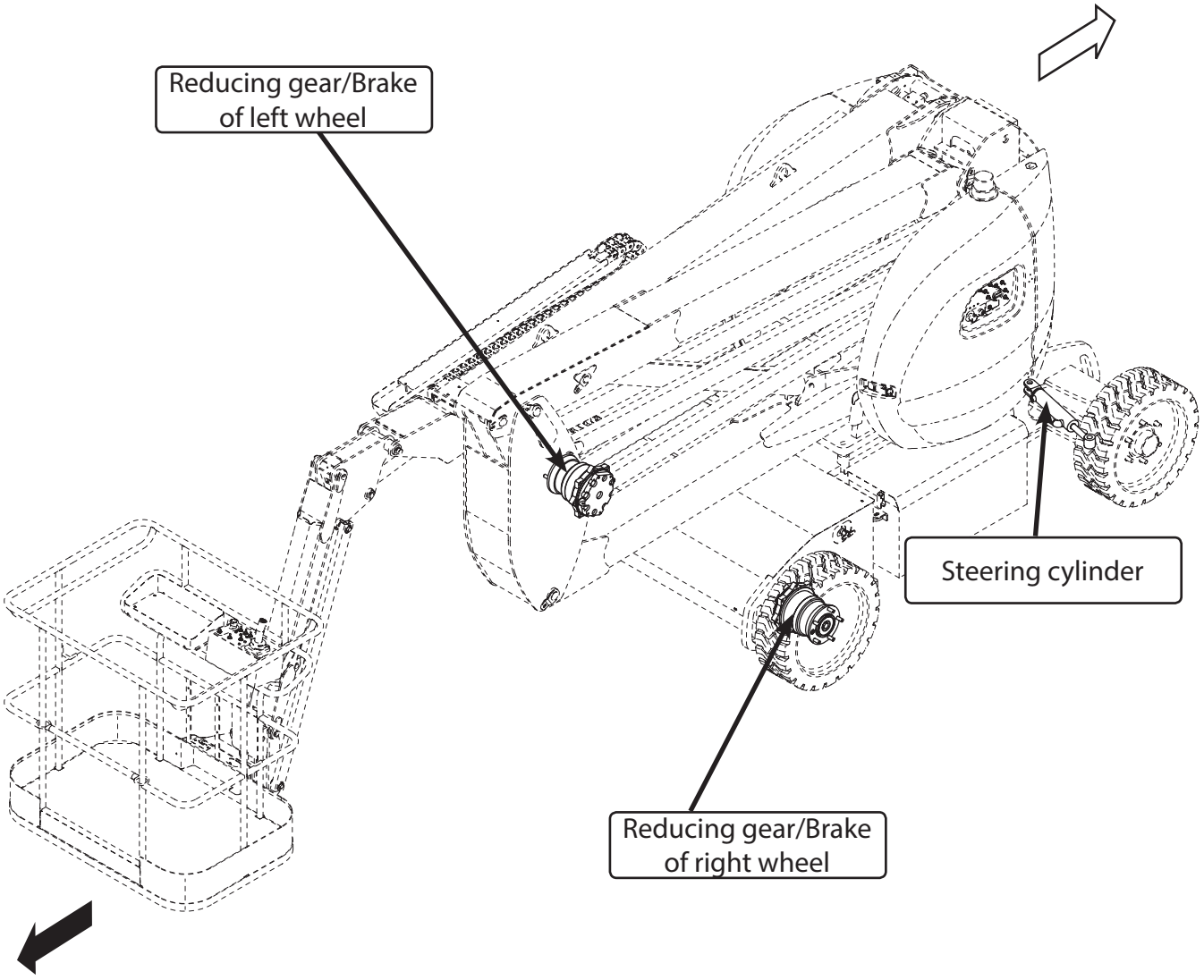
			1	2	3	4		5		6		7		8		9		10		11		12	
			ev3	ev2	ev2b	ev18	ev19	ev1	ev5	ev16	ev17	ev6	ev7	ev8	ev9	ev10	ev11	ev12	ev13	ev14	ev15	ev22	ev23
Transport Position	Stop																						
	Stop + steering		E					E or E															
	translation		E	E	E																		
	translation + steering		E	E	E			E or E															
Work Position	Stop																						
	Stop + steering		E					E or E															
	translation		E	E	E																		
	translation + steering		E	E	E			E or E															
	Turret Rotation	Right	E			E																	
		Left	E				E																
	Basket Rotation	Right	E							E													
		Left	E								E												
	Raising 1-2	Raising	E									E											
		Lowering	E										E										
	Raising 3	Raising	E											E									
		Lowering	E												E								
	Telescope	Extended	E													E							
		Retracted	E														E						
	Pendular arm	Raising	E															E					
		Lowering	E																E				
	Tilt	Boost	E																	E			
		Tilt	E																		E		
	Jib Rotation (option)	Right	E																			E	
		Left	E																				E

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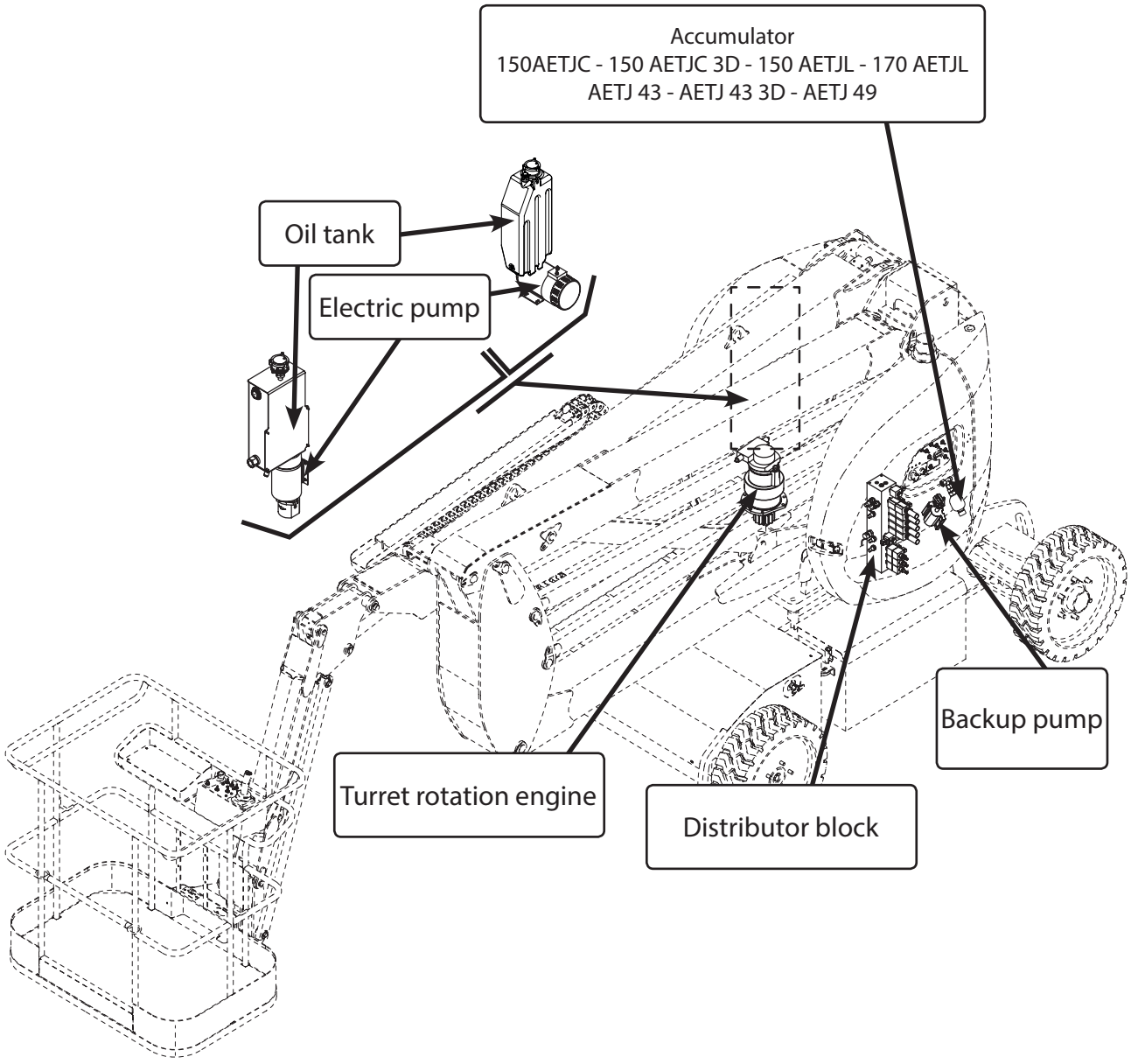
70.2 HYDRAULIC COMPONENTS LOCATION

70.2.1 HYDRAULIC COMPONENTS OF THE CHASSIS - LOCATION



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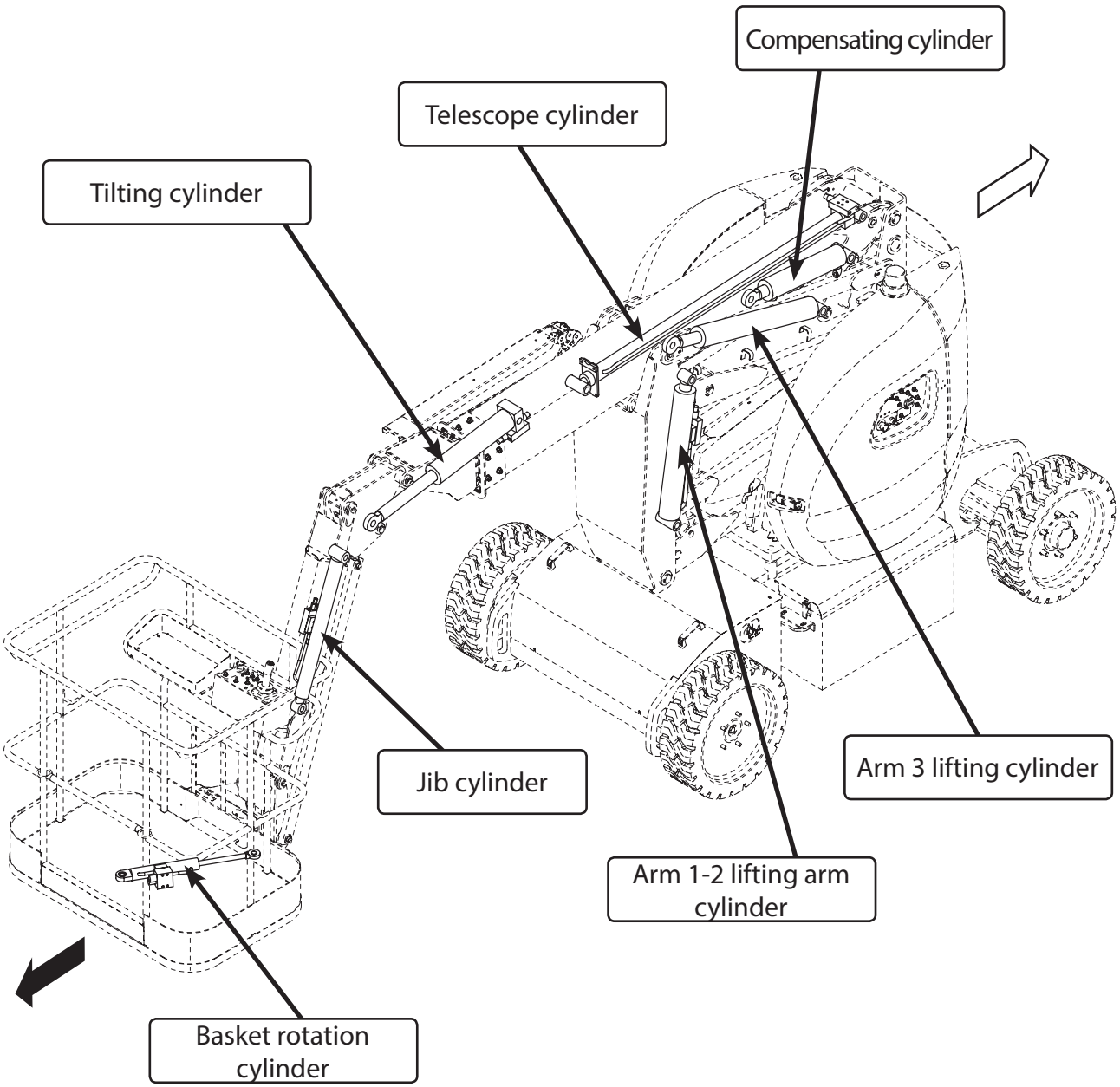
70.2.2 HYDRAULIC COMPONENTS OF THE TURRET - LOCATION



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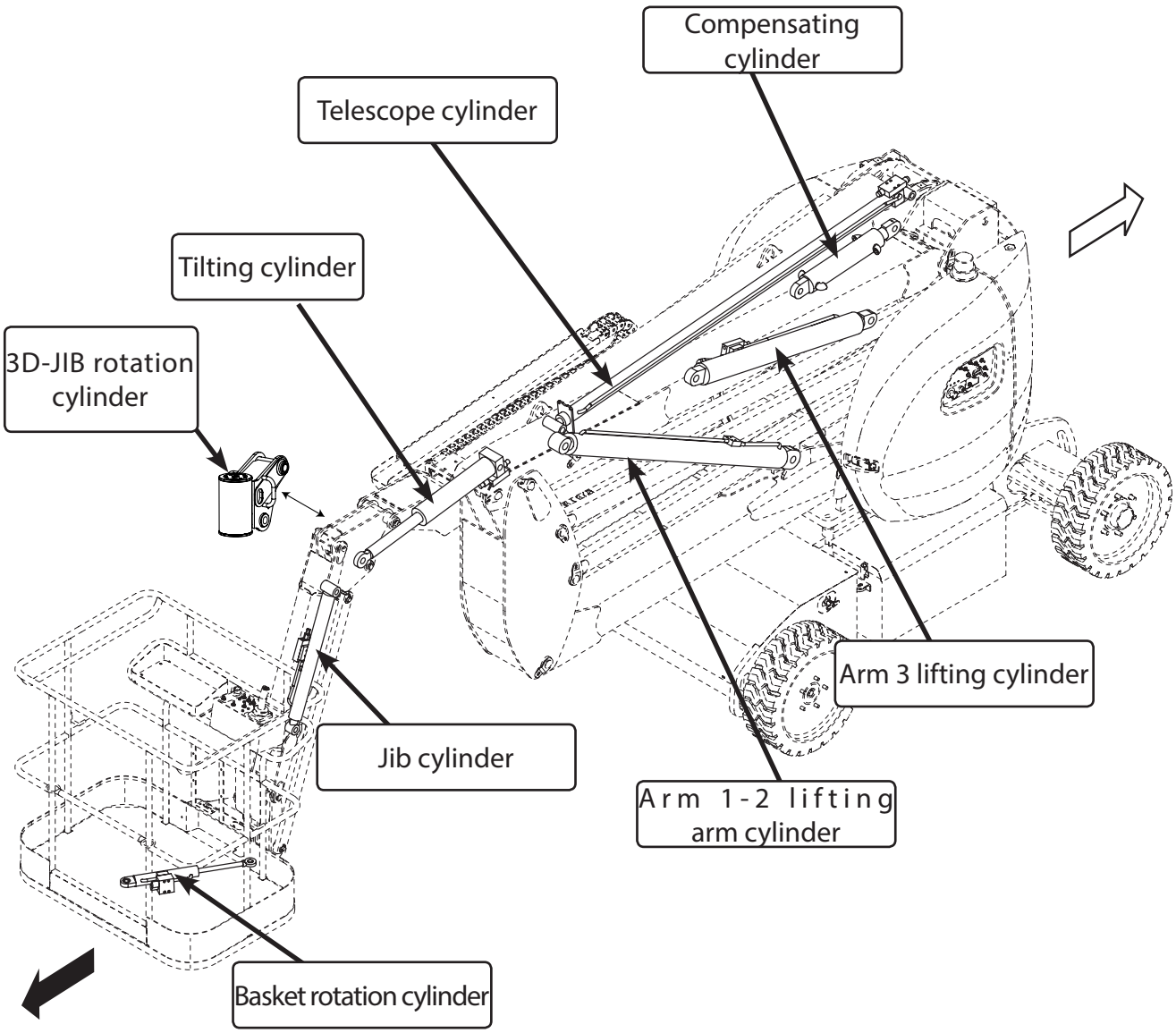
70.2.3 HYDRAULIC COMPONENTS OF THE JIB - LOCATION

- 120 AETJL :



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- 150 AETJC, 150 AETJC 3D, 150 AETJL, 170 AETJL, AETJ43, AETJ43 3D, AETJ 49 :



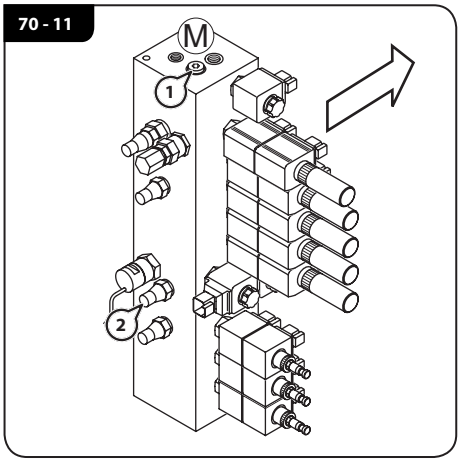
70.3 HYDRAULIC CONTROL AND ADJUSTMENT

⚠ CAUTION

In this chapter, unless specifically indicated, in order to view the setting pressure values and choose the appropriate pressure gauge, refer to the hydraulic diagrams (◁ ***70.1.1 679449 - HYDRAULIC DIAGRAM, 5 35***))***37***+ (◁ ***70.1.2 685268 - HYDRAULIC DIAGRAM,*** ***39***)***41***

70.3.1 MAIN CIRCUIT - PRESSURE SETTING

70 - 11



Setting the main pressure relief valve (14,📷 ***70.1.1***), (14,, ***070.1.2***)

- On the distributor, connect a pressure gauge to M (1, ***070 - 11***).

- Switch on the access platform.

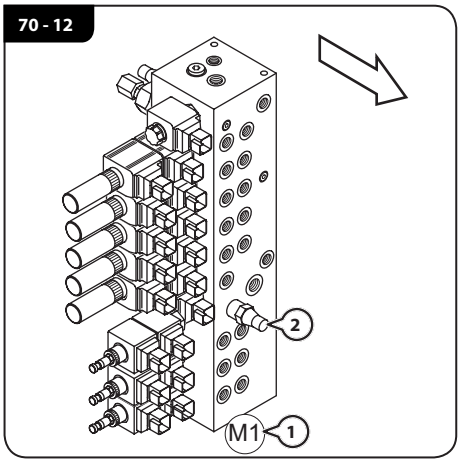
- Control the lowering of arms 1/2 and maintain the control when the cylinder reaches the stop.

- Check that the pressure gauge displays the pressure recommended in the hydraulic diagram.

- As required, adjust the setting of the main relief valve (2, ***070 - 11***).

70.3.2 STEERING, BASKET/TURRET ROTATION CIRCUIT - PRESSURE SETTING

70 - 12



Setting the pressure relief valve (13,📷 ***70.1.1***), (13,📷 ***70.1.2***)

- On the distributor, connect a pressure gauge to M1 (1, ***070 - 12***).

- Switch on the access platform.

- Control the steering to one side and maintain the control when the cylinder reaches the stop.

- Check that the pressure gauge displays the pressure recommended in the hydraulic diagram.

- As required, adjust the setting of the pressure reducer (2, ***070 - 12***)

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70.3.3 BRAKE RELEASE CIRCUIT - PRESSURE SETTING

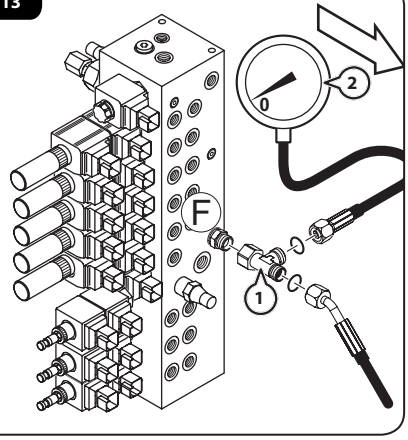
⚠ CAUTION

Procedure to be performed by two people.

Use a pressure gauge with a capacity of 0 - 250 bar (0-3625.94 psi).

The pressure switch is adjusted only by TIGHTENING the adjustment screw.

70 - 13



PRESSURE SWITCH ADJUSTMENT

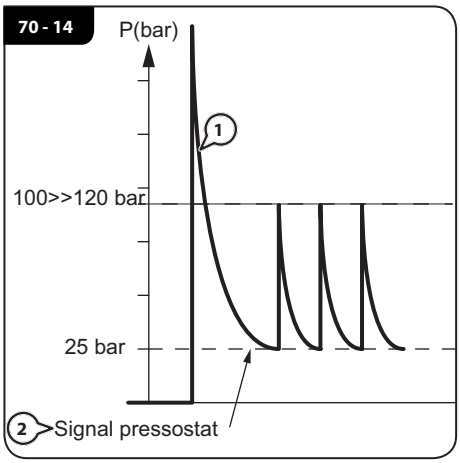
(17,📷 ***70.1.1***),(19,📷 ***70.1.2***)

- Place a Tee connector on the bypass at outlet F (1, ***070 - 13***) and connect the pressure gauge (2, ***070 - 13***)

.

- Switch on the access platform.

70 - 14



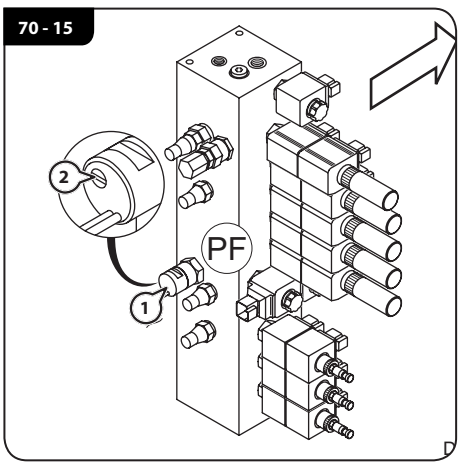
- Control the travel and check that the displayed pressure follows the curve (1, ***070 - 14***):

If the pressure switch (2, ***070 - 15***) trips BELOW the threshold (2, ***070 - 14***), then, with the platform stationary, adjust the threshold by TIGHTENING the adjustment screw (2, ***070 - 15***).

- If the pressure switch (1, ***070 - 15***) trips ABOVE the threshold (2, ***070 - 14***), unscrew the adjustment screw by a few turns (2, ***070 - 15***), then adjust it by TIGHTENING.

- Repeat the travel test.

70 - 15

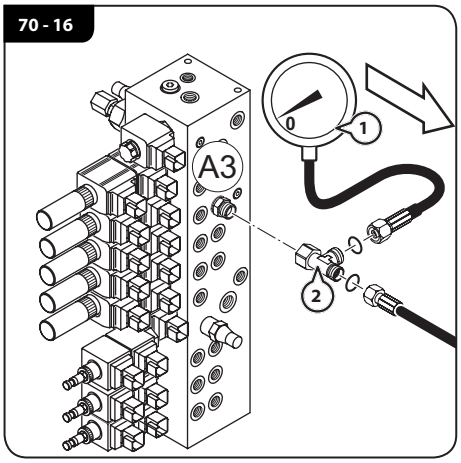


NOTE: For the electrical aspects (6, 5 48)

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70.3.4 TELESCOPIC CIRCUIT - PRESSURE SETTING

70 - 16



PRESSURE REDUCER SETTING

(16, 📷 ***70.1.1***), (18, 📷 ***70.1.2***)

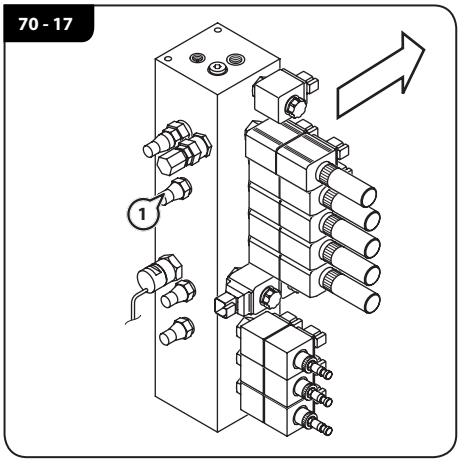
- Decompress the telescopic line (distributor) (◁ ***70.3.10 DISTRIBUTOR - REMOVAL,*** 🗐 ***57***)

- Place a Tee connector on the by-pass at outlet A3 (1***, 070 - 16***) and connect the pressure gauge (2***, 070 - 16***).

- Switch on the access platform.

- Move the telescope extension and keep it moving under it reaches its full extent.

70 - 17



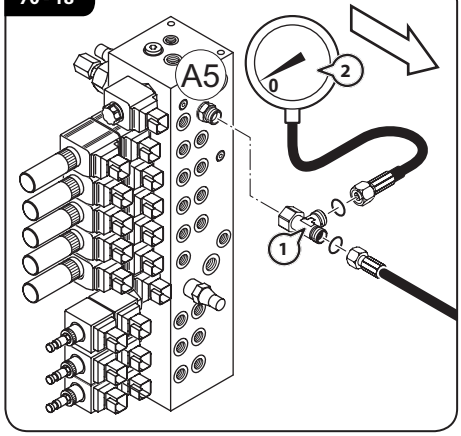
- Check that the pressure gauge displays the pressure recommended in the hydraulic diagram.

- As required, adjust the setting of the pressure reducer (1***, 070 - 17***).

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70.3.5 COMPENSATION/TILTING CIRCUIT - PRESSURE SETTING

70 - 18



DECOMPRESSION OF THE CIRCUIT

- Decompression of the compensation/ tilting circuit (◁ ***COMPENSATION/TILTING CYLINDER REMOVAL,*** 🗐 ***64***)

- Switch off the power to the access platform.

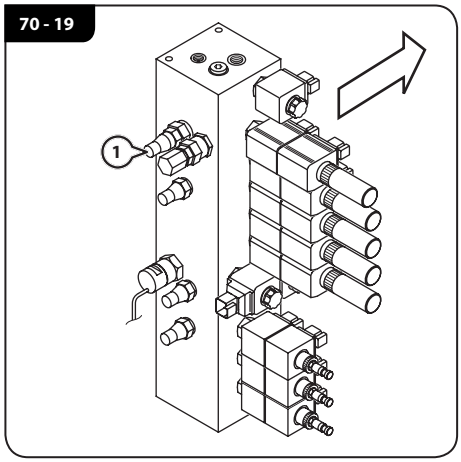
VALVE A ADJUSTMENT

(17,📷 ***70.1.1***), (19,📷 ***70.1.2***)

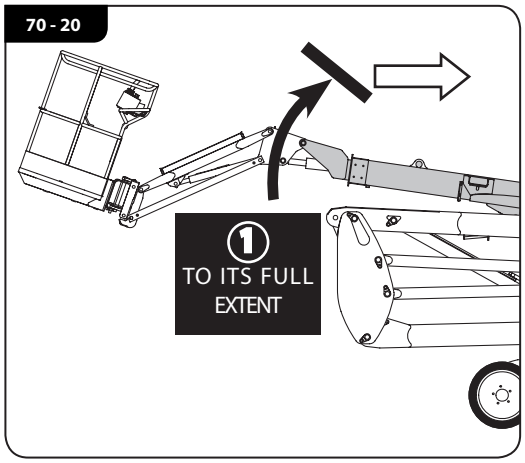
- Place a Tee connector on the by-pass at outlet A5 (1***, 070 - 18***) and connect the pressure gauge (2***, 070 - 18***).

- Switch on the access platform.

70 - 19

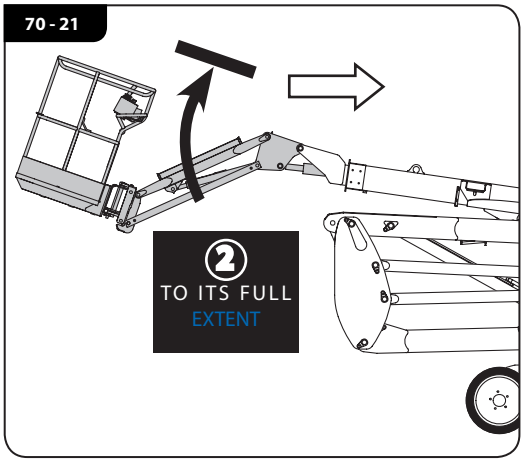


70 - 20

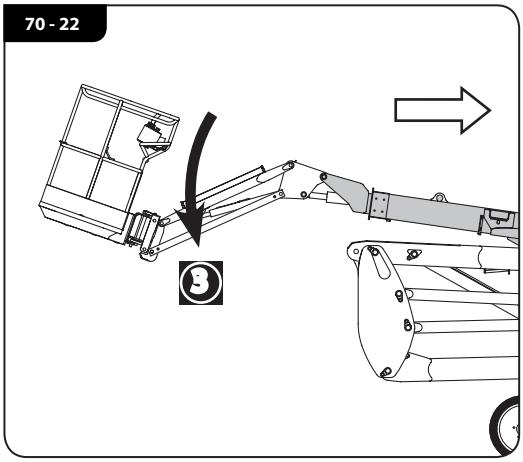


- Follow steps (1***, 070 - 20***), (2***, 070 - 21***) and (3***, 070 - 22***): the verification of the setting of valve A (1***, 070 - 19***) and its adjustment are to be carried out during movement 3.

70 - 21

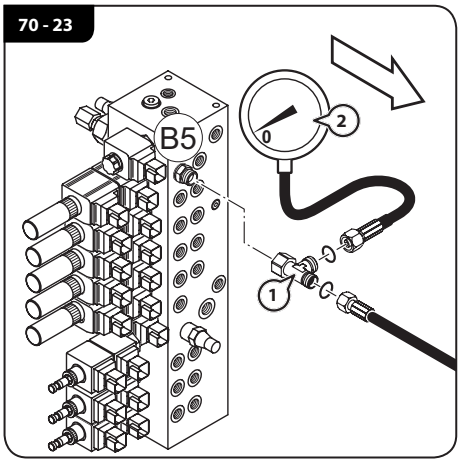


70 - 22



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70 - 23



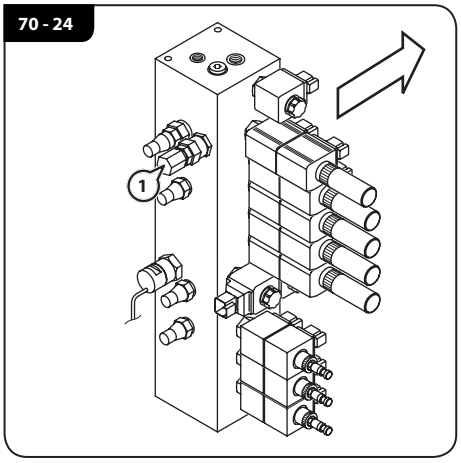
VALVE B ADJUSTMENT

(18,📷 ***70.1.1***), (19,📷 ***70.1.2***)

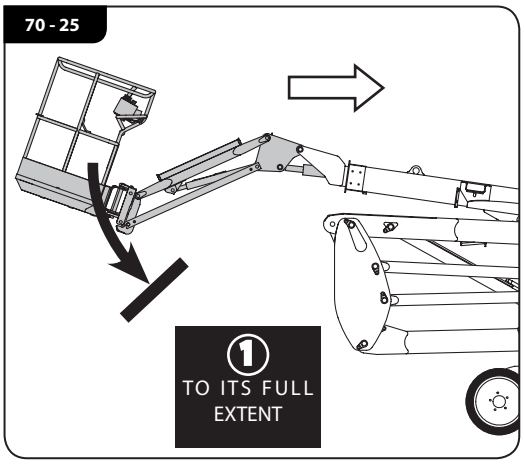
- Place a Tee connector on the by-pass at outlet B5 (1***, 070 - 23***) and connect the pressure gauge (1***, 070 - 23***)).

- Switch on the access platform.

70 - 24

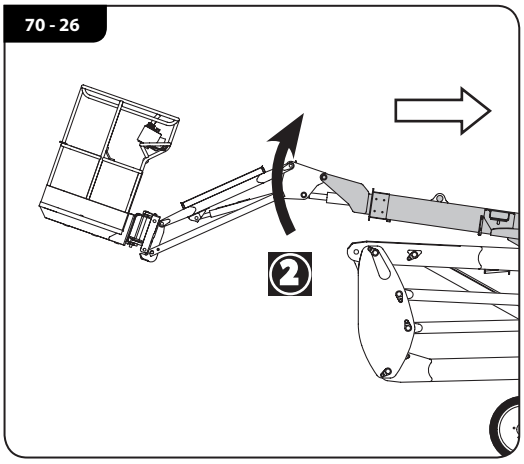


70 - 25



- Follow steps (1***, 070 - 25***) and (2***, 070 - 26***): the verification of the setting of valve A (1***, 070 - 24***) and its adjustment are to be carried out during movement 2.

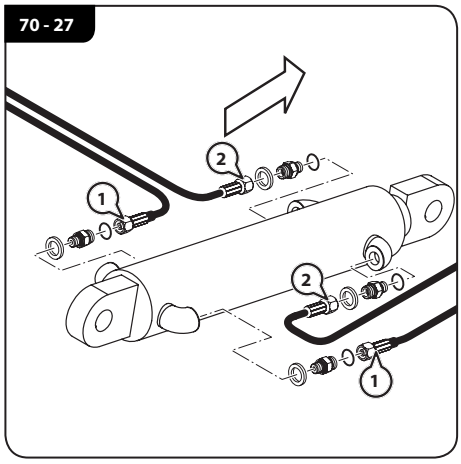
70 - 26



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70.3.6 COMPENSATION/TILTING CIRCUIT - PROBLEM SOLVING

70 - 27



- If the basket does not remain in position and drops under gravity when the access platform is not in operation, perform the following test procedure.

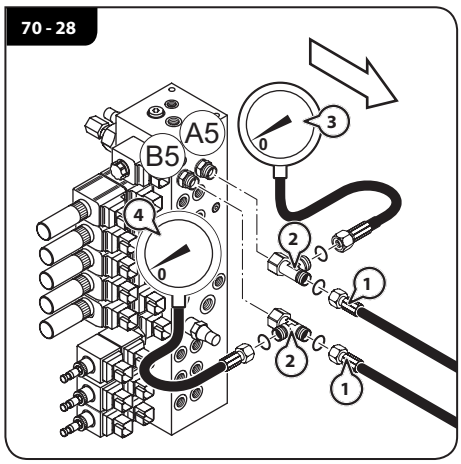
TEST PROCEDURE

- Decompression of the compensation/tilting circuit (◁ ***70.3.11 CYLINDERS - REMOVAL,*** ***60***)

- Switch off the power to the access platform.

- Take a drain pan and place it under the compensating cylinder.

70 - 28



- Identify the hoses connected to the compensating cylinder lower chamber (1, ***070 - 27***) and remove them.

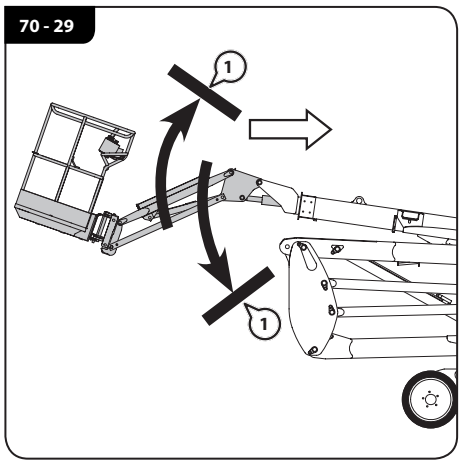
- Take a straight coupler and connect the hoses from the lower chamber.

- Perform the same procedure for the hoses for the upper chamber (2, ***070 - 27***).

- Remove the hoses (1, ***070 - 28***) connected at A5 and B5 from the distributor block.

- Insert tee couplings between the distributor block and the hoses (2, ***070 - 28***).

70 - 29



- Take a 0 - 200 bar (0-2900.75 psi) manometer (3, ***070 - 28***) and connect it to the left-hand tee coupling: outlet A5.

- Take a 0 - 100 bar (0-1450.38 psi) manometer (4, ***070 - 28***) and connect it to the right-hand tee coupling: outlet B5.

- Switch on the access platform.

- Tilt the basket and jib to their maximum extent (1, ***070 - 29***) several times from the base control panel to pressurize the hydraulic circuit.

- Place the basket in the horizontal position.

- Switch off the power to the access platform.

- Note the pressure readings displayed by the two manometers.

- Check that the basket does not drop.

NOTE: This procedure may take a long time (several hours).

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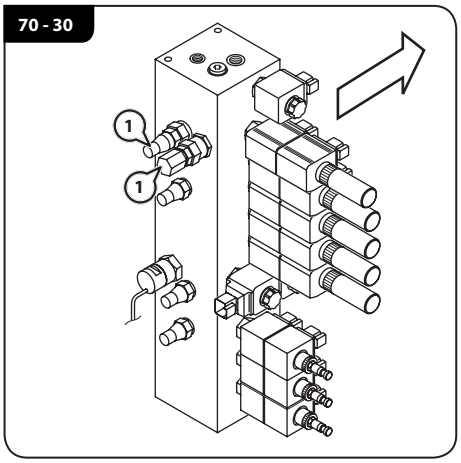
ANALYSIS OF RESULTS

- THE BASKET REMAINS IN POSITION AND THE HYDRAULIC PRESSURE HAS NOT DROPPED: the cylinder or the seals of the compensating cylinder are faulty.

- Remove the compensation cylinder
(◅ ***70.3.11 CYLINDERS - REMOVAL,*** ***60***)

- Remove the cylinder and check the condition of the seals. Change the seals if required (see parts catalog)

70 - 30



- Check the condition of the cylinder barrel. Replace the cylinder if it has scratch marks or traces of rust or pollution (see parts catalog)

- THE BASKET REMAINS IN POSITION AND THE HYDRAULIC PRESSURE HAS DROPPED IN ONE OR BOTH HYDRAULIC LINE(S): there is a problem with the seal or the settings of one or both valves of the distributor block.

- Decompression of the compensation/tilting circuit (◅ ***70.3.11 CYLINDERS - REMOVAL,*** ***60***)

- Remove the valve(s) (1***, 070 - 30***)and check the appearance of the seals. Change the valves if the seals are defective (see parts catalog)

- Refit the valves then check their adjustment.....
(◅ ***70.3.5 COMPENSATION/TILTING CIRCUIT - PRESSURE SETTING,*** ***50***)

- THE BASKET DROPS, THE PRESSURE ON BOTH MANOMETERS TENDS TO BALANCE (+/- 10 BAR (145.1 psi)) OR THE PRESSURE REMAINS CONSTANT IN LINE A5 AND FALLS IN LINE B5.

- Decompression of the compensation/tilting circuit (◅ ***70.3.11 CYLINDERS - REMOVAL,*** ***60***)

- Remove the tilting cylinder (◅ ***70.3.11 CYLINDERS - REMOVAL,*** ***60***)

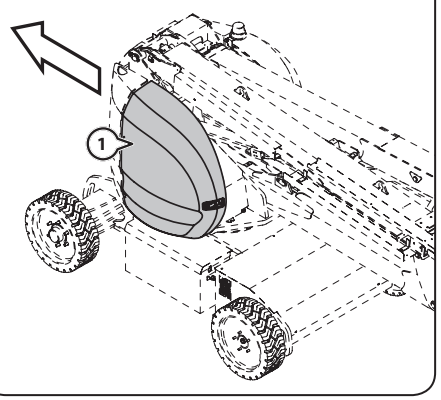
- Remove the cylinder and check the condition of the seals. Change the seals if required (see parts catalog)

- Check the condition of the cylinder barrel. Replace the cylinder if it has scratch marks or traces of rust or pollution (see parts catalog)

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70.3.7 TURRET ROTATION MOTOR - REMOVAL

70 - 31

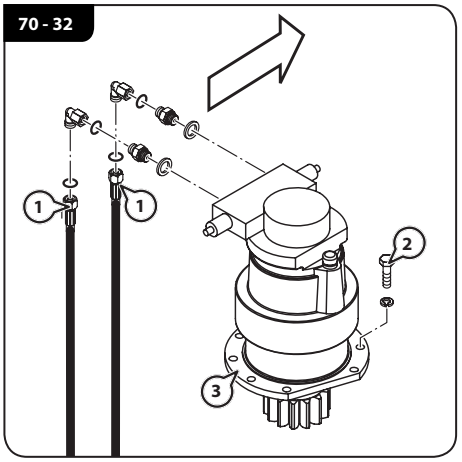


- Open the right-hand turret cover.

- Decompress the turret rotation line (distributor) (◁ ***70.3.10 DISTRIBUTOR - REMOVAL,*** ***57***)

- Open the left-hand turret cover (1, ***070 - 31***).

70 - 32



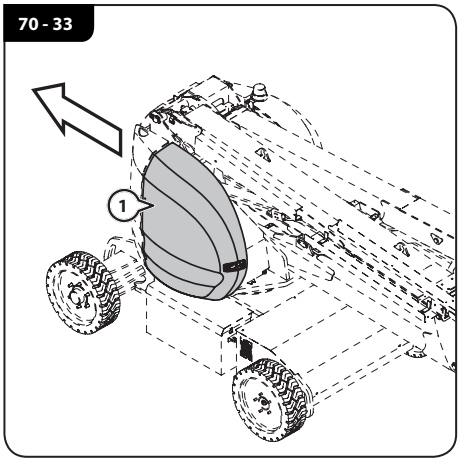
- Remove and plug the two hoses (1, ***070 - 32***).

- Remove the motor attachments (2, ***070 - 32***).

- Remove the steering motor (3, ***070 - 32***)
36kg (80 lbs)

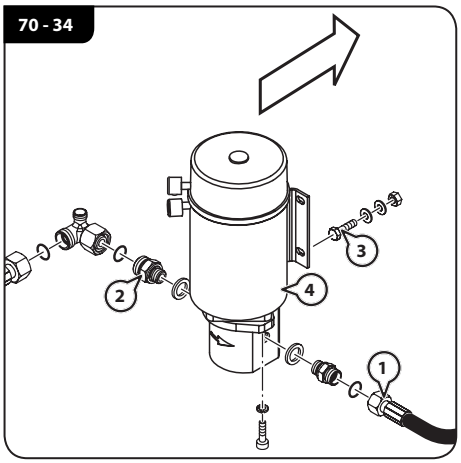
70.3.8 ELECTRIC PUMP - REMOVAL

70 - 33



- Open the left-hand turret cover (1, ***070 - 33***).

70 - 34



Following fitting (see figure, ***070 - 34***), (see figure, ***070 - 35***):

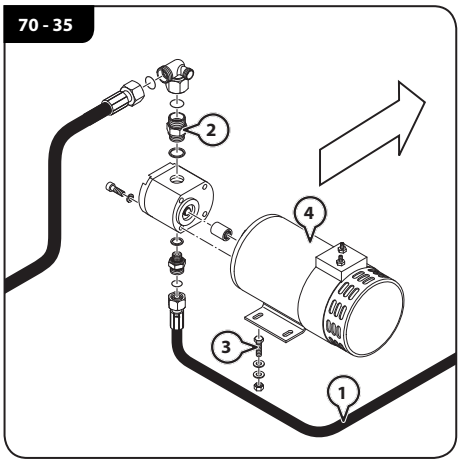
- Remove and plug the hose (1, ***070 - 34***), (1, ***070 - 35***).

- Remove and plug the connector (2, ***070 - 34***), (2, ***070 - 35***).

- Remove the attachments (3, ***070 - 34***), (3, ***070 - 35***) and remove the electric pump (4, ***070 - 34***), (4, ***070 - 35***)

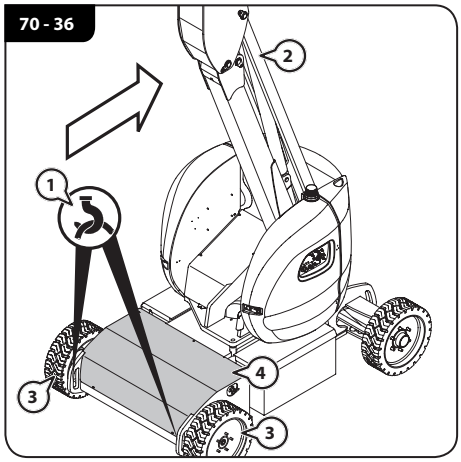
25 kg (55 lbs)

70 - 35



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70.3.9 REDUCING GEARS/WHEEL BRAKES - REMOVAL



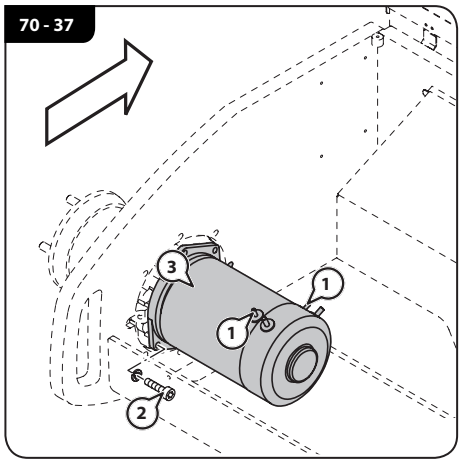
- Raise the rear of the access platform and place blocks under the frame (1, ***070 - 36***):

120 AETJL : ***2680 kg (5908 lbs)***
150 AETJC : ***3770 kg (8311 lbs)***
150 AETJL - 150 AETJC 3D : ***3375 kg (7440 lbs)***
170 AETJL - AETJ49 : ***3842 kg (8470 lbs)***
AETJ43 - AETJ43 3D : ***3775 kg (8323 lbs)***

- Raise arm 1/2 by 3m (118.11 in) (2, ***070 - 36***).

- Remove the fasteners from the rear wheels (3, ***070 - 32***) and remove the wheels.

53 kg (117 lbs)



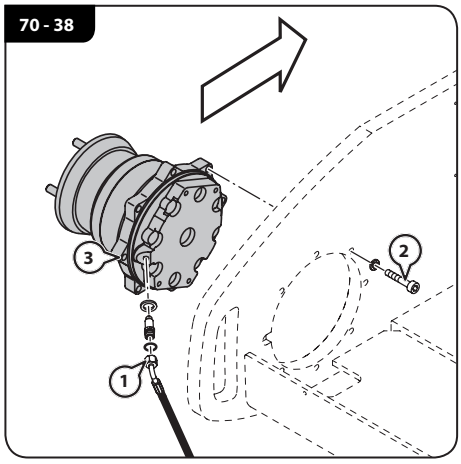
- Remove the cover (4, ***070 - 36***).

- Mark and then remove the electric cables connected to the motors (1, ***070 - 37***).

- Remove the fasteners from one of the motors (2, ***070 - 37***) and remove this motor (B-3).

27 kg (60 lbs)

- Repeat the same procedure on the second engine.



- Remove and plug the hoses (1, ***070 - 38***).

- Remove the fasteners from one of the reducing gears/brakes (2, ***070 - 38***) and remove this assembly (3, ***070 - 38***).

50 kg (110 lbs)

- Repeat the same procedure on the second engine.

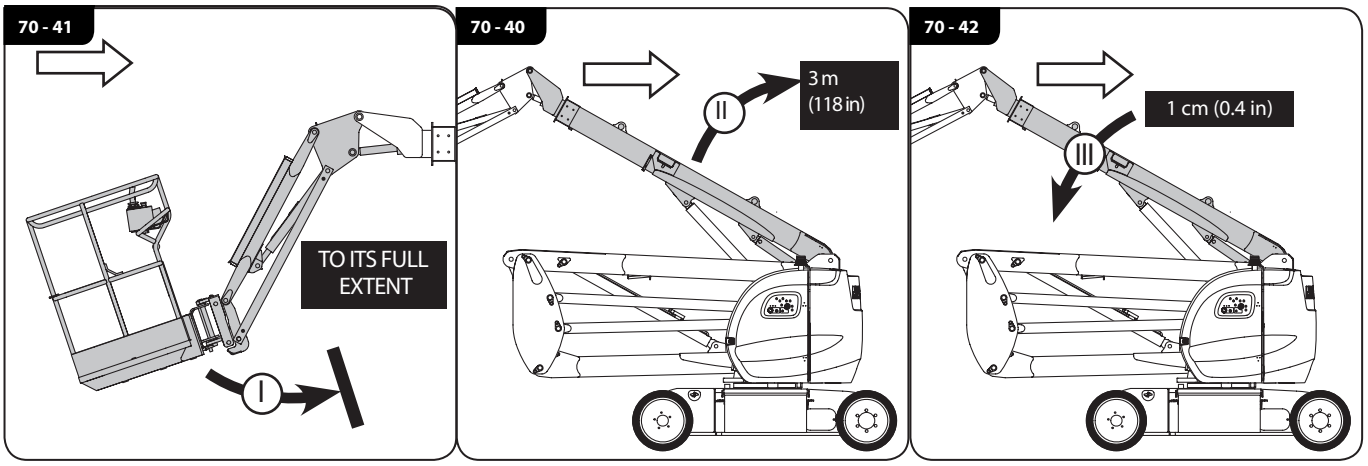
REFIT

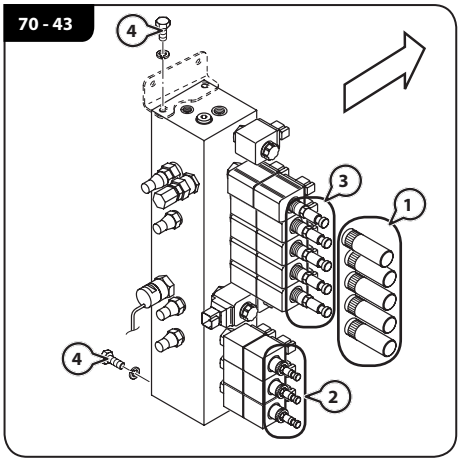
Wheel nut maximum tightening torque **220 N.m** *(1947.2 lb-in).*

70.3.10 DISTRIBUTOR - REMOVAL

⚠ WARNING

The hoses connected to the compensation/tilting cylinders are under pressure EVEN WHEN STOPPED.
*Before carrying out work to remove the distributor, these hoses must be decompressed by following the steps (**I, 070 - 41**), (**II, 070 - 40**) and (**III, 070 - 42**) because this line cannot be decompressed from the distributor.*





- Open the right-hand turret cover.

- Remove the manual indexed control protections (1, ***070 - 43***).

- Decompress the hydraulic lines:

- Pull, push the 3 non-indexed controls (2, ***070 - 43***) and allow them to return to their equilibrium position.

- Pull, push the 5 indexed controls (3, ***070 - 43***) and return them to their center position.

- Replace the manual indexed control protections (1, ***070 - 43***).

- Remove and plug the hoses connected to the distributor.

- Identify the wiring harnesses connected to the solenoids and disconnect them.

- Remove the distributor fasteners (4, ***070 - 43***) and remove the distributor.

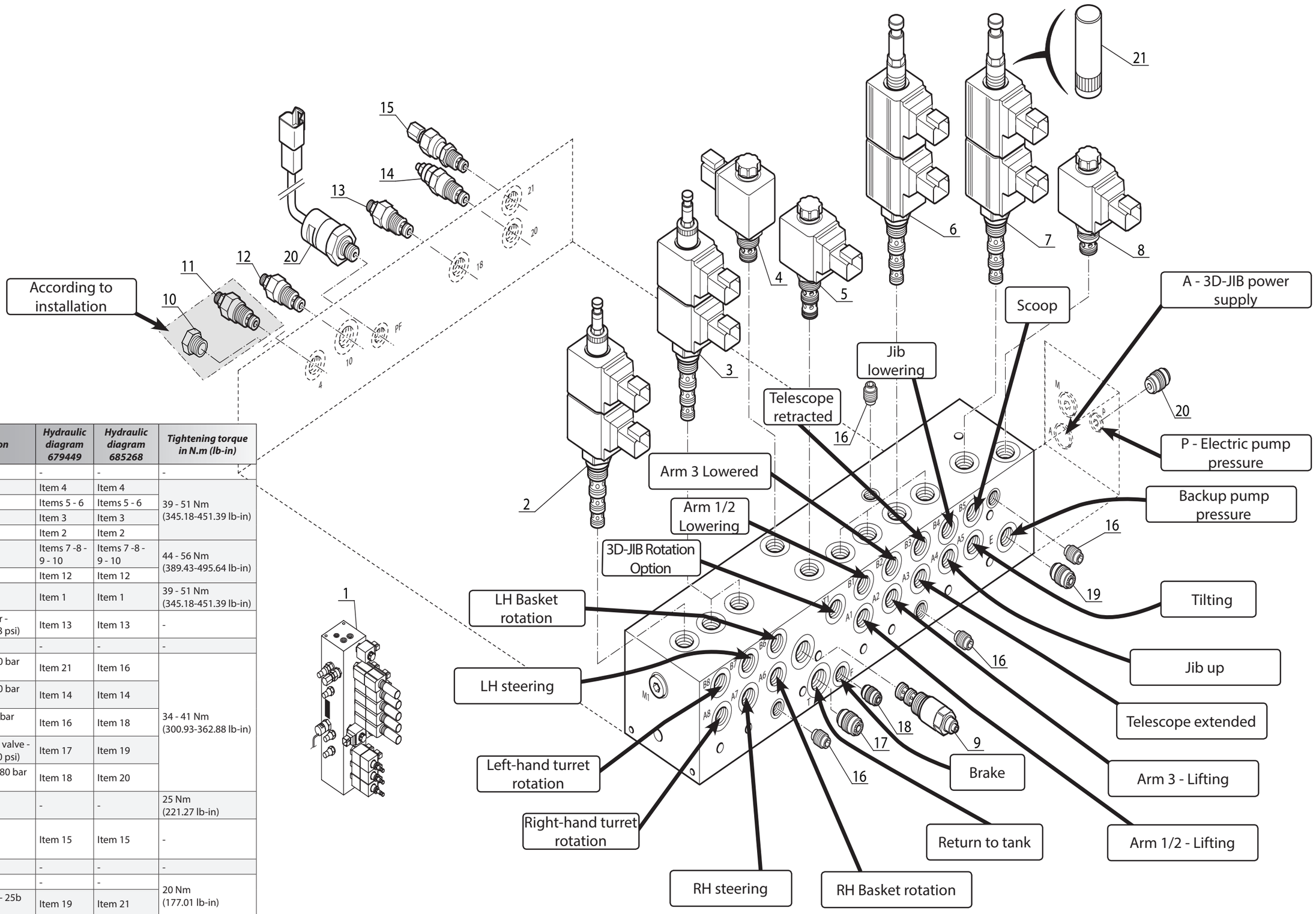
25 kg (55 lbs)

REFIT

- Purge the compensation/tilting circuit (◁ ***COMPENSATION/TILTING CYLINDER REMOVAL,*** ***64***)

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DISTRIBUTOR - DETAILS

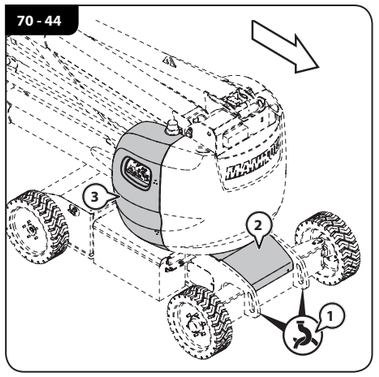


Item	Designation	Hydraulic diagram 679449	Hydraulic diagram 685268	Tightening torque in N.m (lb-in)
1	Distributor	-	-	-
2	Electrovalve	Item 4	Item 4	39 - 51 Nm (345.18-451.39 lb-in)
3	Electrovalve	Items 5 - 6	Items 5 - 6	
4	Electrovalve	Item 3	Item 3	
5	Electrovalve	Item 2	Item 2	
6	Electrovalve	Items 7 -8 - 9 - 10	Items 7 -8 - 9 - 10	44 - 56 Nm (389.43-495.64 lb-in)
7	Electrovalve	Item 12	Item 12	
8	Electrovalve	Item 1	Item 1	39 - 51 Nm (345.18-451.39 lb-in)
9	Pressure reducer - 100 bar (1450.38 psi)	Item 13	Item 13	-
10	Plug	-	-	-
11	Relief valve - 150 bar (2176.50 psi)	Item 21	Item 16	34 - 41 Nm (300.93-362.88 lb-in)
12	Relief valve - 160 bar (2321.60 psi)	Item 14	Item 14	
13	Relief valve - 80 bar (1160.80 psi)	Item 16	Item 18	
14	Counterbalance valve - 180 bar (2611.80 psi)	Item 17	Item 19	
15	Overload valve: 80 bar (1160.80 psi)	Item 18	Item 20	
16	Valve	-	-	25 Nm (221.27 lb-in)
17	Check valve - 2 bar (29.02 psi)	Item 15	Item 15	-
18	Valve	-	-	-
19	Electrovalve	-	-	20 Nm (177.01 lb-in)
20	Pressure switch - 25b (362.75 psi)	Item 19	Item 21	
21	Protector	-	-	-

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70.3.11 CYLINDERS - REMOVAL

STEERING CYLINDER - REMOVAL



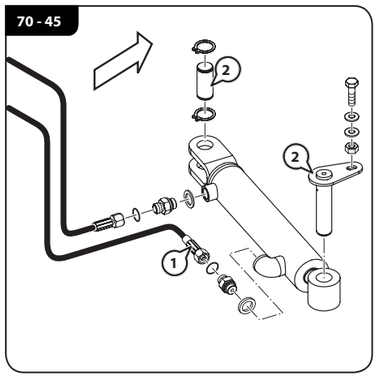
- Raise the front (1, ***070 - 44***) of the access platform and place blocks under the frame:

- *120 AETJL :* ***2400 kg (5291 lbs)***
- *150 AETJC :* ***3000 kg (6614 lbs)***
- *150 AETJL - 150 AETJC 3D :* ***2550 kg (5622 lbs)***
- *170 AETJL - AETJ49 :* ***3100 kg (6834 lbs)***
- *AETJ 43 - AETJ43 3D :* ***3775 kg (8322 lbs)***

- Remove the front cover (2, ***070 - 44***).

- Open the right-hand turret cover (3, ***070 - 44***).

- Decompress the steering line (distributor) (◁ ***70.3.10 DISTRIBUTOR - REMOVAL,*** ***57***)



- Remove and plug the hoses connected to the steering cylinder (1, ***070 - 45***).

- Remove the pivot pins from the steering cylinder (2, ***070 - 45***) and remove the cylinder.

REFIT

- Carry out the removal operations in reverse order, leaving the access platform on supports.

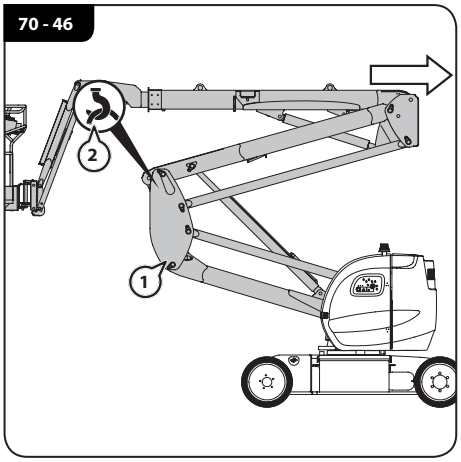
- Drain the steering circuit:

- Control the steering until it reaches its mechanical stop on both sides, simultaneously repeating the operation several times.

- Remove the supports from under the front axle and carry out steering tests while stationary, and then when moving.

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ARM 1/2 LIFTING CYLINDER - REMOVAL



- Raise arm 1/2 so that the intermediate hinge (1, ***070 - 46***) is raised 1m (39.37 in).

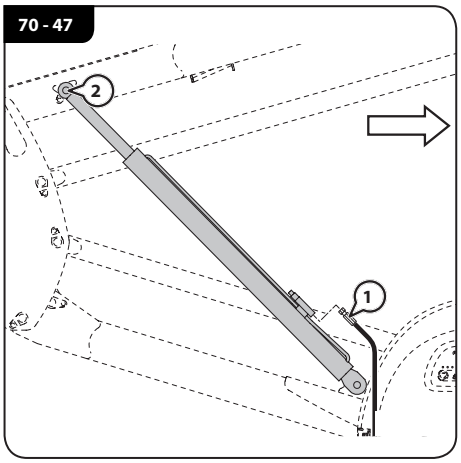
- Switch off the power supply.

- Secure the intermediate hinge with a hoist and a sling (2, ***070 - 46***):

- 120 AETJL: ***1100 kg (2425 lbs)***
- 150 AETJC - 150 AETJL - AETJ43 - AETJ 43 3D : ***1600 kg (3527 lbs)***
- 170 AETJL - AETJ 49: ***1700 kg (3748 lbs)***

- Open the right-hand turret cover.

- Decompress the arm 1/2 lifting line (distributor) (◁ ***70.3.10 DISTRIBUTOR - REMOVAL,*** ***57***)



- Remove and plug the hoses connected to the cylinder (1, ***070 - 47***).

- Remove the pivot pins from the cylinder, starting with the cylinder head pin (2, ***070 - 47***) and remove the cylinder:
- 120 AETJL : ***25 kg (55 lbs)***
- 150 AETJC - 150 AETJL - 150 AETJC 3D - 150 AETJL - AETJ43 - AETJ 43 3D - 170 AETJL - AETJ 49: ***70 kg (154 lbs)***

NOTE: Before attempting to disassemble the removed cylinder (◁ ***VALVE BLOCKS AND VALVES - REMOVAL,*** ***69***)

REFIT

- Carry out the removal operations in reverse order, leaving the intermediate hinge supported by a strap.

- Slowly lower the intermediate hinge until the arms find their equilibrium position.

- Remove the strap.

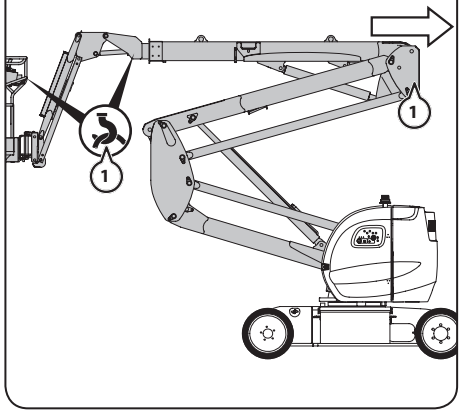
- Lower arms 1/2 to the transport position.

- Raise arms 1/2 to their maximum extent and repeat these operations several times.

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ARM 3 LIFTING CYLINDER - REMOVAL

70 - 48



- Raise the arm 1/2 so that the upper hinge (1, ***070 - 48***) is raised by 1m (39.37 in).

- Switch off the power supply.

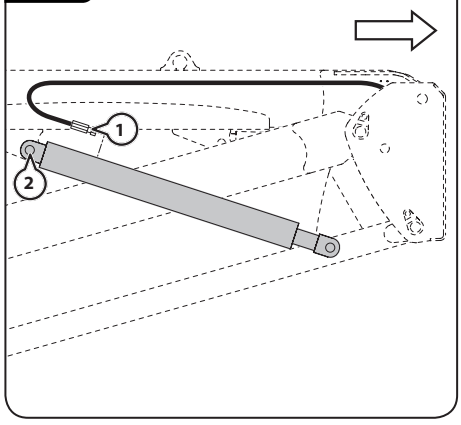
- Secure the basket and arm 3 with a hoist (2, ***070 - 48***) and a sling (stabilize with a support):

- 120 AETJL : ***580 kg (1279 lbs)***
- 150 AETJC - 150 AETJL - 150 AETJC 3D - AETJ 43 - AETJ 43 3D: ***650 kg (1433 lbs)***
- 170 AETJL - AETJ 49 : ***900 kg (1984 lbs)***

- Open the right-hand turret cover.

- Decompress the lifting line of arm 3 (distributor) (◅ ***70.3.10 DISTRIBUTOR - REMOVAL,*** ***57***)

70 - 49



- Remove and plug the hoses connected to the cylinder (1, ***070 - 49***).

- Remove the pivot pins from the cylinder, starting with the cylinder foot pivot pin (2, ***070 - 49***) and remove the cylinder:

- 120 AETJL : ***30 kg (66 lbs)***
- 150 AETJC - 150 AETJL - 150 AETJC 3D - 150 AETJL - AETJ43 - AETJ 43 3D - 170 AETJL - AETJ 49: ***50 kg (111 lbs)***

NOTE: Before attempting to disassemble the removed cylinder (◅ ***VALVE BLOCKS AND VALVES - REMOVAL,*** ***69***)

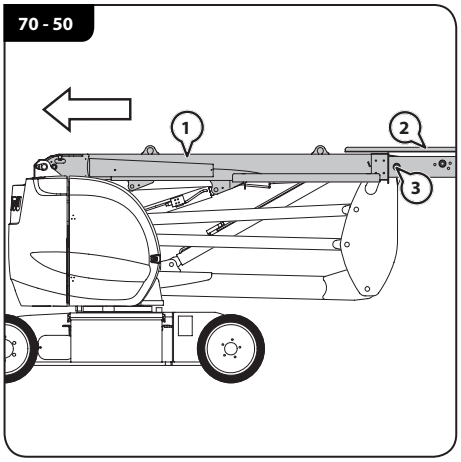
REFIT

- Lower arm 3 to the transport position.

- Raise arm 3 to its maximum extent and repeat these operations several times

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TELESCOPIC CYLINDER - REMOVAL



- Raise arm 3 to the horizontal position (1, ***070 - 50***).

- Move the telescope extension (2, ***070 - 50***) by 1 m (39.37 in).

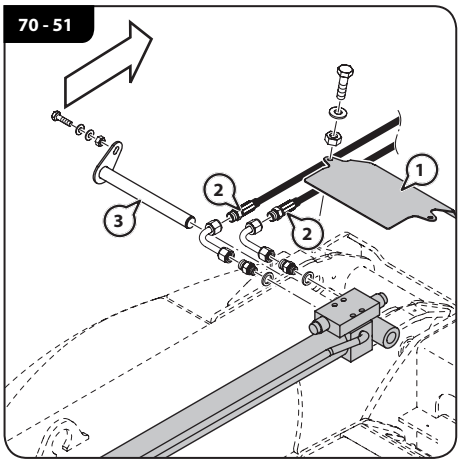
- Remove the cylinder head pivot pin (3, ***070 - 50***).

- Retract the telescope.

- Switch off the power supply.

- Open the right-hand turret cover.

- Decompress the telescopic line (distributor) (◅ ***70.3.10 DISTRIBUTOR - REMOVAL,*** ❐ ***57***)



- Remove the telescope base cover (1, ***070 - 51***).

- Remove and plug the hoses connected to the cylinder (2, ***070 - 51***).

- Remove the cylinder foot pivot pin (3, ***070 - 51***) and remove the telescope cylinder:
  - *120 AETJL :* ***34 kg (75 lbs)***
  - *150 AETJC - 150 AETJC 3D - AETJ 43 - AETJ 43 3D :* ***39 kg (86 lbs)***
  - *150 AETJL :* ***42 kg (93 lbs)***
  - *170 AETJL - AETJ 49 :* ***55 kg (121 lbs)***

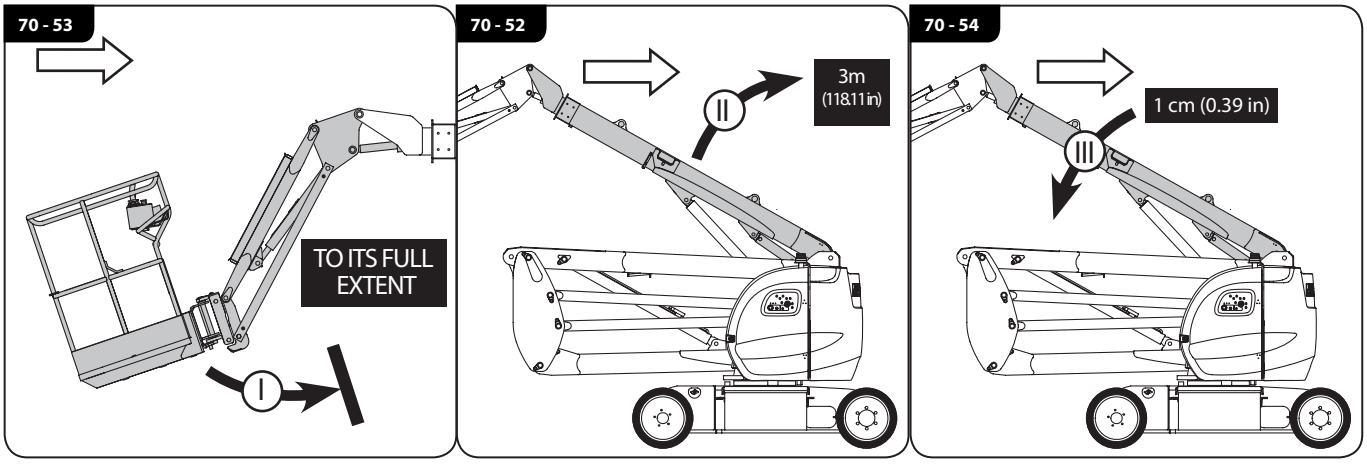
NOTE: Before attempting to disassemble the removed cylinder (◅ ***VALVE BLOCKS AND VALVES - REMOVAL,*** ❐ ***69***)

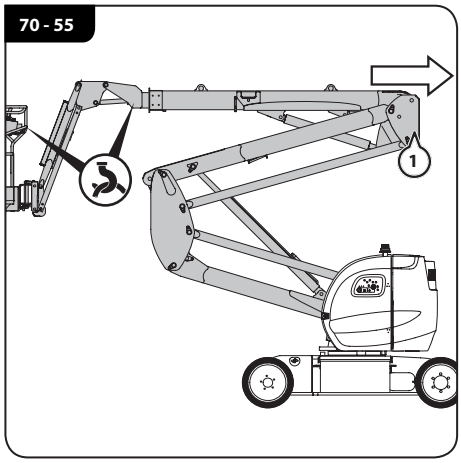
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COMPENSATION/TILTING CYLINDER REMOVAL

⚠ WARNING

The hose connected to the compensation/tilting cylinders are pressurized **EVEN WHEN STOPPED**. Before carrying out work to remove the cylinders, these hoses must be decompressed by following the steps (**I, *070 - 53***), (**II, *070 - 52***) and (**III, *070 - 54***) because this line cannot be decompressed from the distributor.





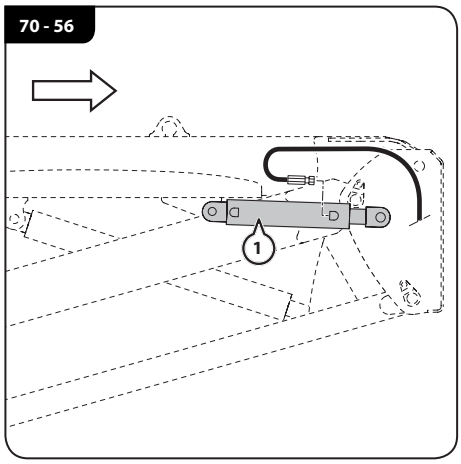
Compensating cylinder

- Raise arm 1/2 so that the intermediate hinge (1, ***070 - 55***) is raised 1m (39.37 in).

- Switch off the power supply.

- Secure the basket/jib assembly with a hoist and a sling:
  - *without rotation cylinder (3D - JIB):* ***230 kg (507 lbs)***
  - *with rotation cylinder (3D - JIB):* ***267 kg (589 lbs)***

- Open the right-hand turret cover.



- Remove the cylinder pivot pins (1, ***070 - 56***) and remove the cylinder from the arms while leaving it connected to the hoses:
  - *- 120 AETJL :* ***18 kg (40 lbs)***
  - *- 150 AETJC - 150 AETJL - 170 AETJL :* ***20 kg (44 lbs)***

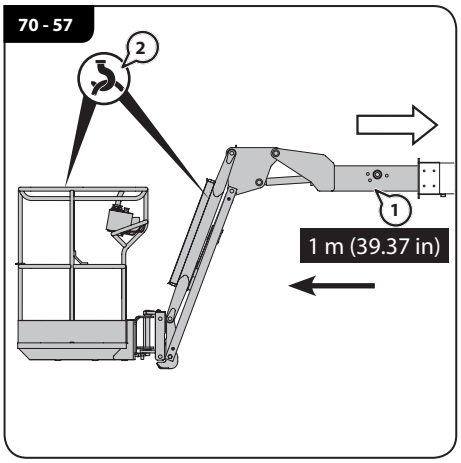
- Remove and plug the hoses connected to the cylinder and remove the cylinder.

NOTE: This cylinder has no valves.

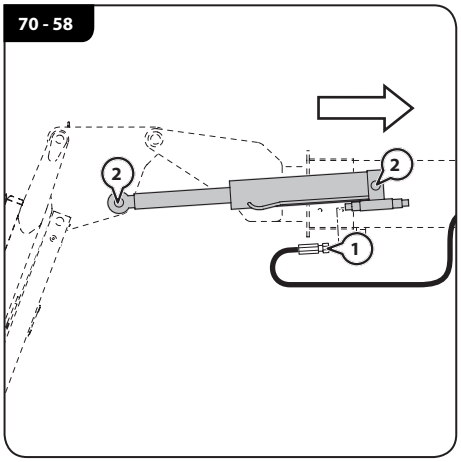
REFIT

- Follow the removal operations in reverse order.
- Purge the compensation/tilting circuit by repeating steps **I** to **VII** several times (**I** & **II**, ***070 - 59***), (**III** & **IV**, ***070 - 62***), (**V** & **VI**, ***070 - 61***), (**VII**, ***070 - 60***).

70 - 57



70 - 58



Tilting cylinder

- Move the telescope extension by 1m (1, ***070 - 57***).
- Switch off the power supply.
- Secure the basket/jib assembly with a hoist and a sling (2, ***070 - 57***):
  - *without rotation cylinder (3D - JIB):* ***230 kg (507 lbs)***
  - *with rotation cylinder (3D - JIB):* ***267 kg (589 lbs)***
- Place the assembly on a stable surface.

- Remove the cylinder pivot pins (2, ***070 - 58***) and remove the cylinder from the arms while leaving it connected to the hoses.
  - ***22 kg (49 lbs)***

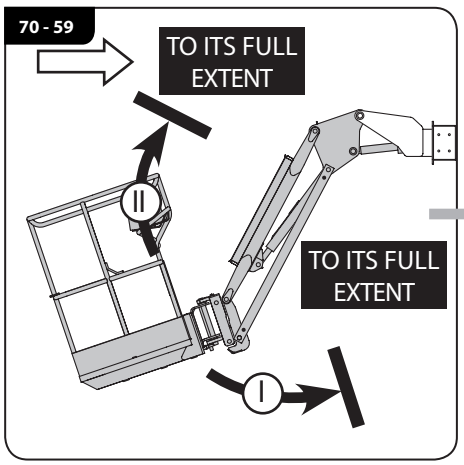
- Remove and plug the hoses connected to the cylinder (1, ***070 - 58***) and remove the cylinder.

NOTE: Before attempting to disassemble the removed cylinder (◁ ***VALVE BLOCKS AND VALVES - REMOVAL,*** ❐ ***69***)

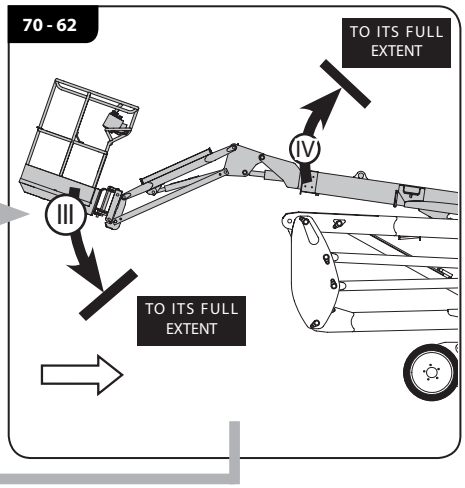
REFIT

- Follow the removal operations in reverse order.
- Purge the compensation/tilting circuit by repeating steps **I** to **VII** several times (**I** & **II**, ***070 - 59***), (**III** & **IV**, ***070 - 62***), (**V** & **VI**, ***070 - 61***), (**VII**, ***070 - 60***).

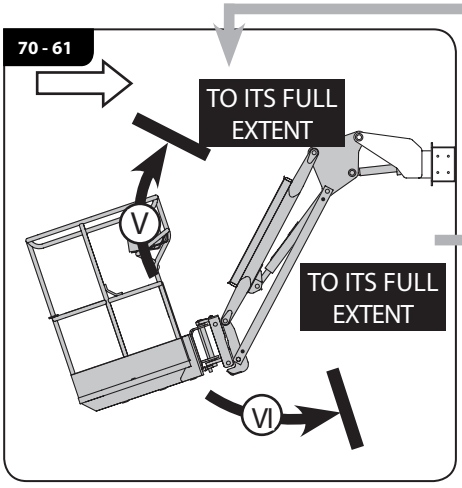
70 - 59



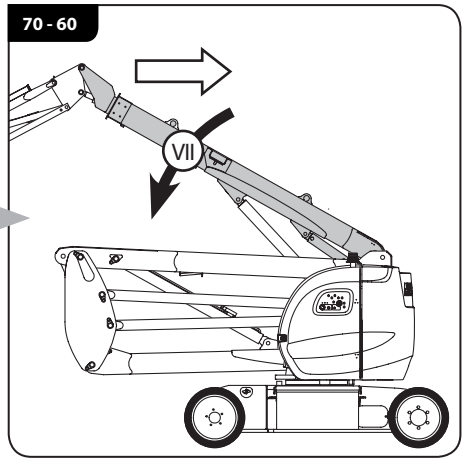
70 - 62



70 - 61



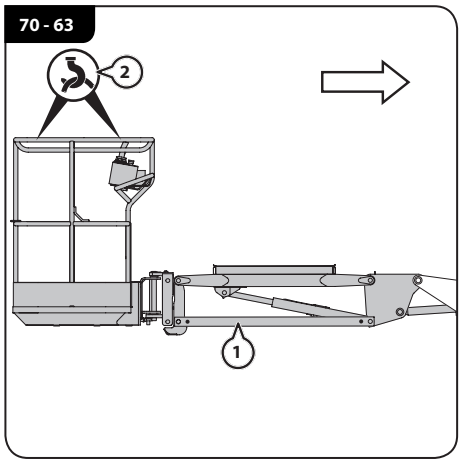
70 - 60



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JIB CYLINDER - REMOVAL

70 - 63



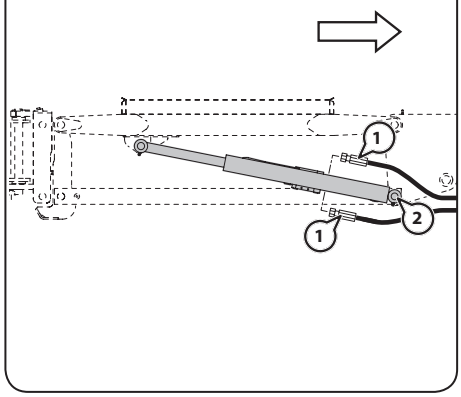
- Lift the jib (1, ***070 - 63***) to the horizontal position.

- Switch off the power supply.

- Secure the basket with a hoist and a sling (2, ***070 - 63***)
  - ***170 kg (375 lbs)***

- Place the assembly on a stable surface.

70 - 64



- Open the right-hand turret cover.

- Decompress the jib lifting line (◁ ***70.3.10 DISTRIBUTOR - REMOVAL,*** ***57***)

- Remove and plug the hoses connected to the cylinder (1, ***070 - 64***).

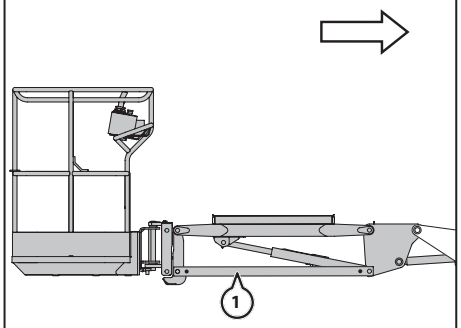
- Remove the pivot pins from the cylinder, starting with the cylinder foot pivot pin (2, ***070 - 64***) and remove the cylinder:
  - ***15 kg (33 lbs)***

NOTE: Before attempting to disassemble the removed cylinder (◁ ***VALVE BLOCKS AND VALVES - REMOVAL,*** ***69***)

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BASKET ROTATION CYLINDER - REMOVAL

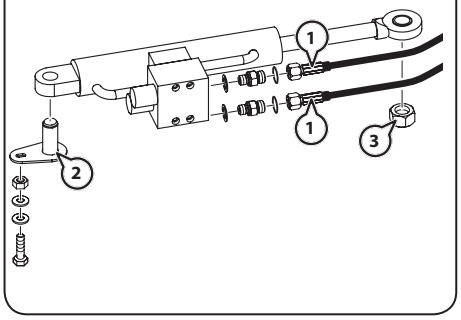
70 - 65



- Lift the jib (1, ***070 - 65***) to the horizontal position.

- Switch off the power supply.

70 - 66



- Open the right-hand turret cover.

- Decompress the basket rotation line (◅ ***70.3.10 DISTRIBUTOR - REMOVAL,*** ***57***)

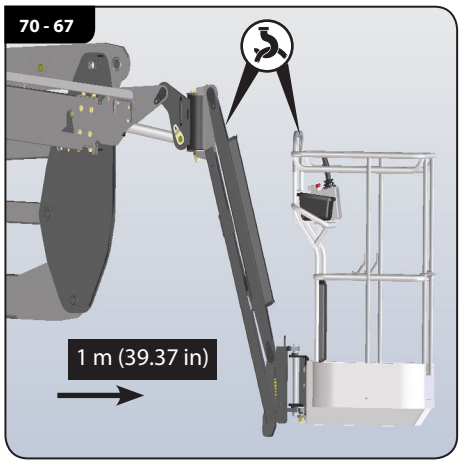
- Remove and plug the hoses connected to the cylinder (1, ***070 - 49***).

- Remove the cylinder foot pivot pin (2, ***070 - 66***) and the nut of the cylinder head pin (3, ***070 - 66***) and remove the cylinder.

NOTE: Before attempting to disassemble the removed cylinder (◅ ***VALVE BLOCKS AND VALVES - REMOVAL,*** ***69***)

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ROTATION CYLINDER (3D - JIB) - REMOVAL



- Decompression of the tilting cylinder circuit (◅ ***COMPENSATION/ TILTING CYLINDER REMOVAL,*** 🗍 ***64***).

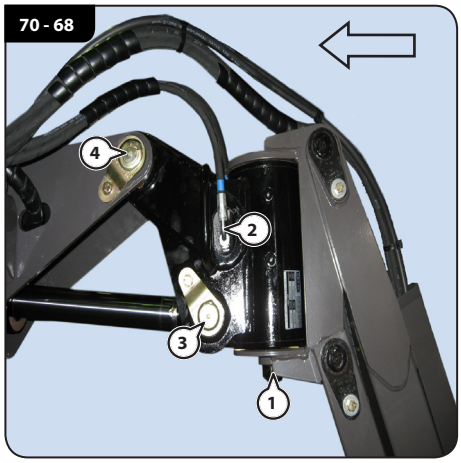
- Move the telescope extension by 1 m (39.37 in)

- Switch off the power supply.

- Open the right-hand turret cover.

- Decompress:
⇒ the jib lifting line
⇒ the 3D rotation cylinder line.

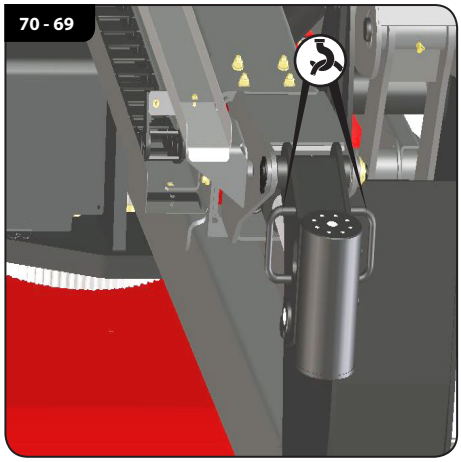
- Secure the basket/jib assembly with a hoist and a sling (see figure, ***070 - 67***).
- ***267 kg*** *(589 lbs).*



- Remove and plug the hoses from the 3D rotation cylinder (2, ***070 - 68***).

- Remove the basket/jib assembly (1, ***070 - 67***), if necessary remove the harnesses and the hoses of the jib cylinder (◅ ***JIB CYLINDER - REMOVAL,*** 🗍 ***66***).

- Remove the 3D rotation cylinder pivot pin (1, ***070 - 68***).



- Secure the 3D rotation cylinder assembly with a hoist and a sling (see figure, ***070 - 69***).
- ***37 kg (82 lbs)***

- Démonter l'axe d'articulation du vérin d'inclinaison (3, ***070 - 68***), et l'axe d'articulation du bras (4, ***070 - 68***).

Remove the 3D rotation cylinder.

REFIT

- Follow the removal operations in reverse order.

- Purge the compensation/tilting circuit by repeating steps **I** to **VII** several times (**I** & **II**, ***070 - 59***), (**III** & **IV**, ***070 - 62***), (**V** & **VI**, ***070 - 61***), (**VII**, ***070 - 60***).

- Purge the 3D rotation cylinder, if it rebounds excessively after being connected. Perform at least 5 rotations to its maximum extent.

VALVE BLOCKS AND VALVES - REMOVAL

⚠ WARNING

A cylinder fitted with valves may have chambers with VERY HIGH PRESSURES, higher than 100 bars (1450.38 psi) (tilting cylinder or cylinder with rod fully retracted or extended) even after being removed. The pressures in the chambers should be released before disassembly.

⚠ CAUTION

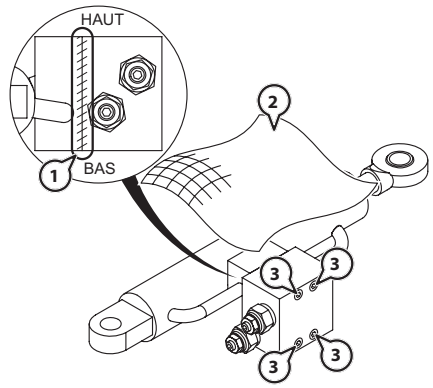
Ideally, this procedure should only be carried out on cylinders whose ROD is at MID-STROKE.
In order to work under optimum safety conditions, the operator must wear protective goggles, rubber gloves, and carry a rubber sheet

Removal of a fitted valve block

⚠ WARNING

*In order to avoid pressurized oil leaks, the operator should position the cylinder with the contact face (1**, 070 - 70**) between the valve block and the cylinder, vertically, and then position a rubber sheet over this face (2**, 070 - 70**).*

70 - 70



- Secure the cylinder body in a vise.

- Loosen the fixing screws of the block (3**, 070 - 70**) one after another, by a MAXIMUM of 1/4 turn for each screw.

- Unscrew the screws by 1/4 turn **WITH A SPANNER** until the pressure has been released.

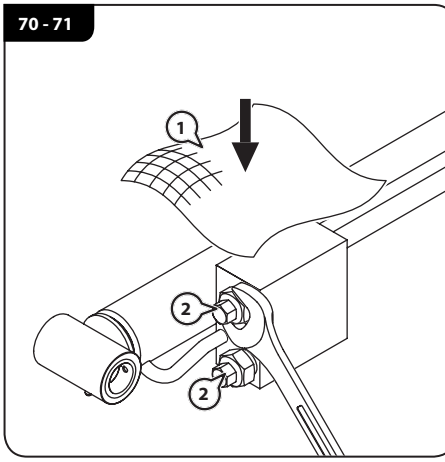
Removal of a valve

- Secure the cylinder body in a vice

⚠ WARNING

*In order to avoid pressurized oil leaks, the operator should position a rubber sheet (1**, 070 - 71**) over the valve seat after positioning its wrench*

70 - 71



Loosen the valves (2**, 070 - 71**) in turn: MAXIMUM 1/4 of a turn per valve.

- Unscrew the valves by 1/4 turn **WITH A SPANNER** until the pressure has been released.

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ELECTRICITY

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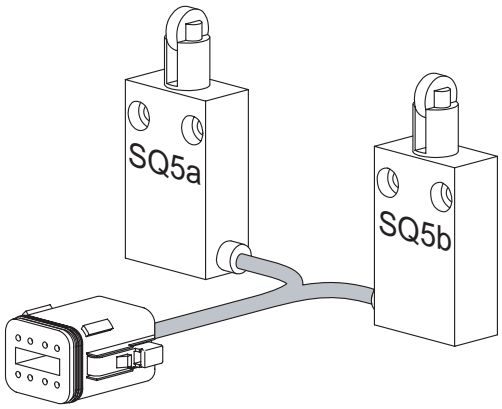
ELECTRICITY

80.1 ELECTRICAL SCHEMATIC DIAGRAMS

⚠ WARNING

Diagram 1st VERSION

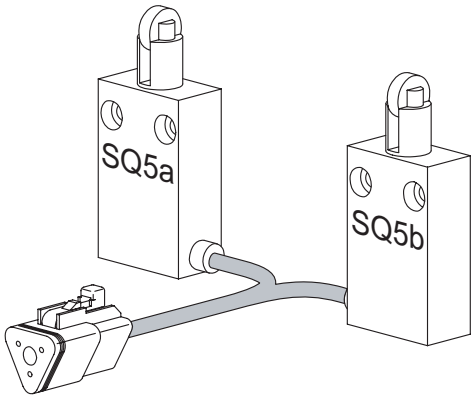
Access platform fitted with an overload sensor harness comprising:
a Deutsch connector with..... 8-way



⚠ WARNING

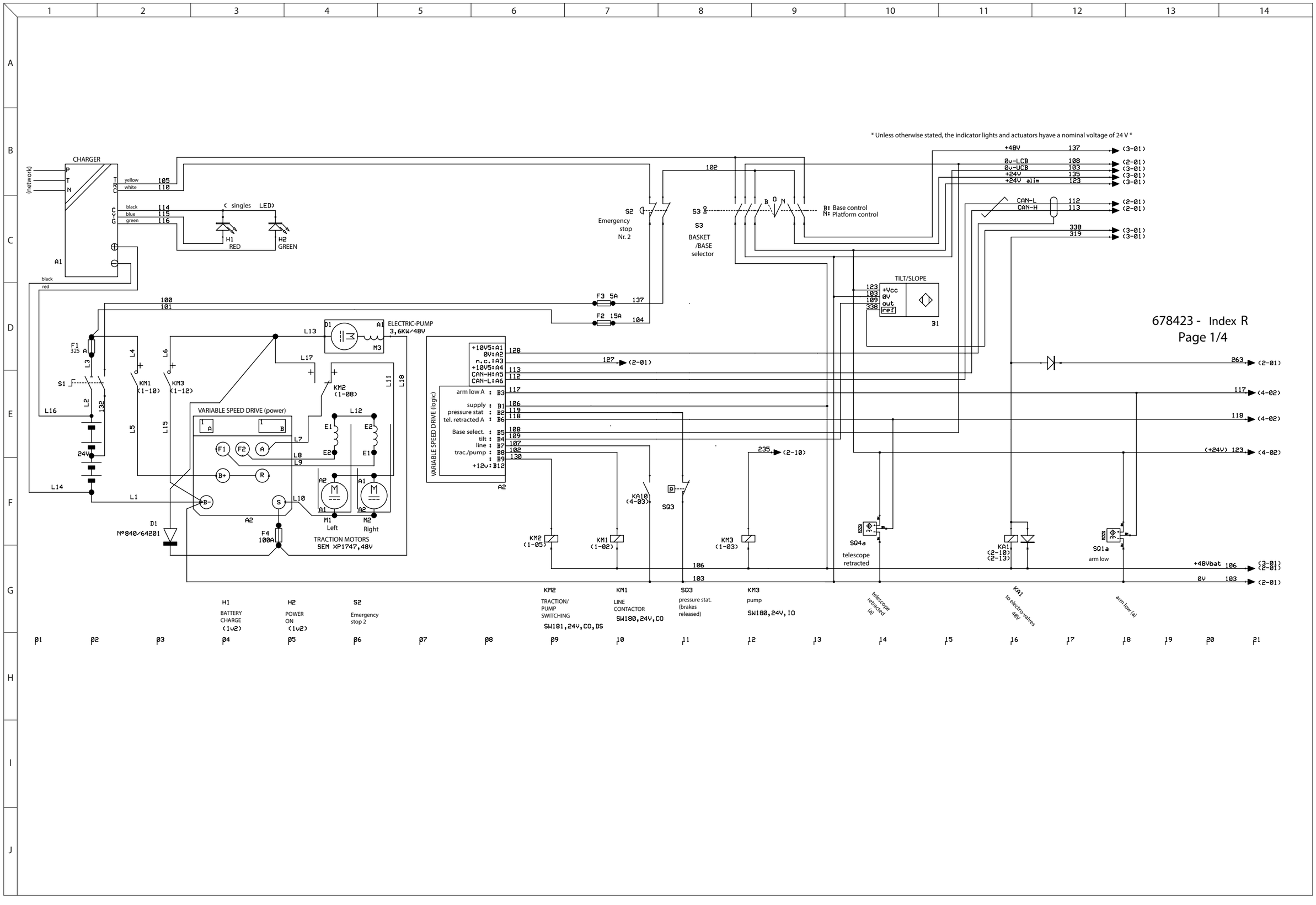
Diagram 2nd VERSION

Access platform fitted with an overload sensor harness comprising:
a Deutsch connector with..... 3-way



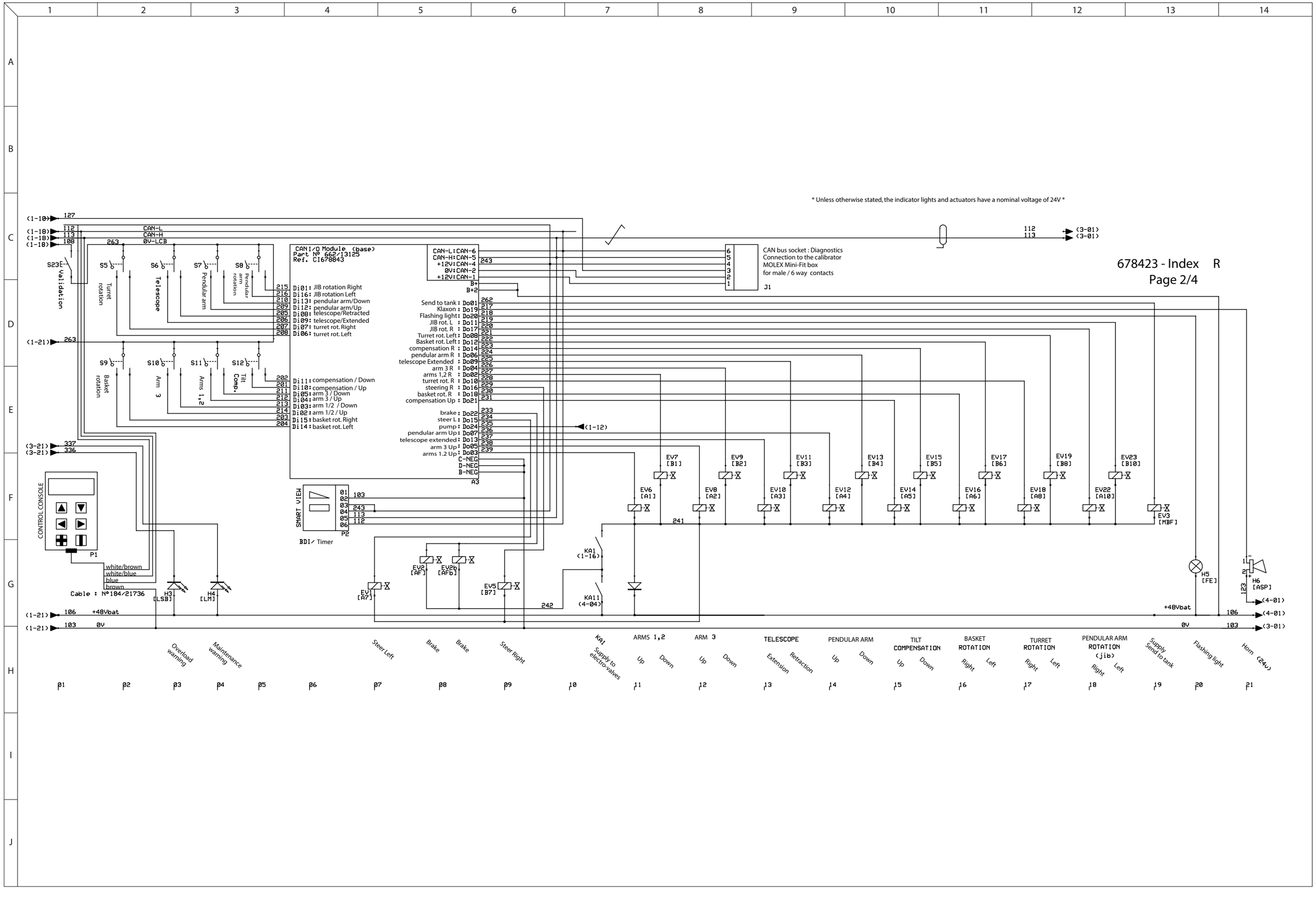
https://truckmanualshub.com/

80.1.1 SCHEMATIC DIAGRAM - POWER PART - 1ST VERSION

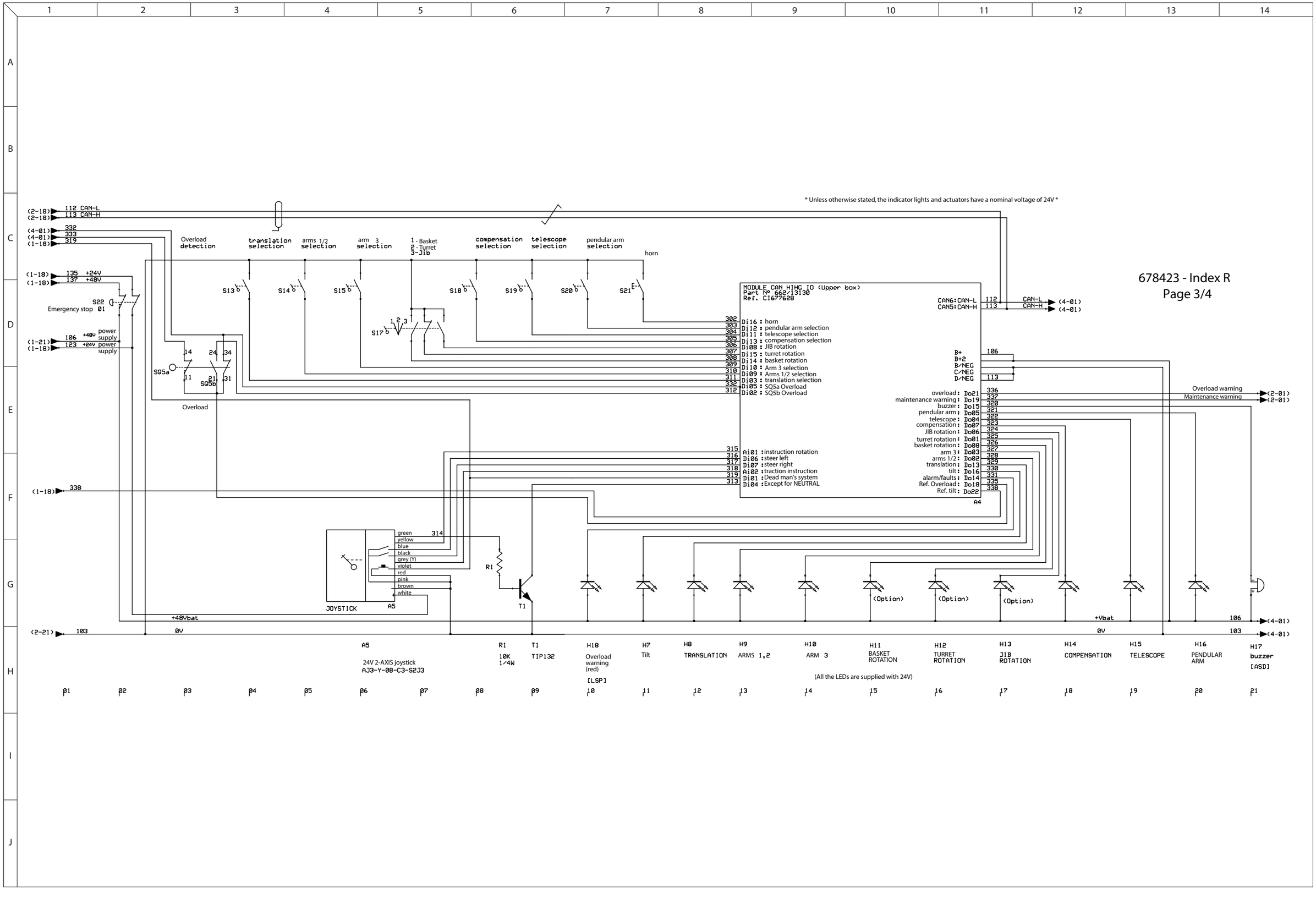


https://truckmanualshub.com/

80.1.2 SCHEMATIC DIAGRAM - BASE CONTROL PART - 1ST VERSION

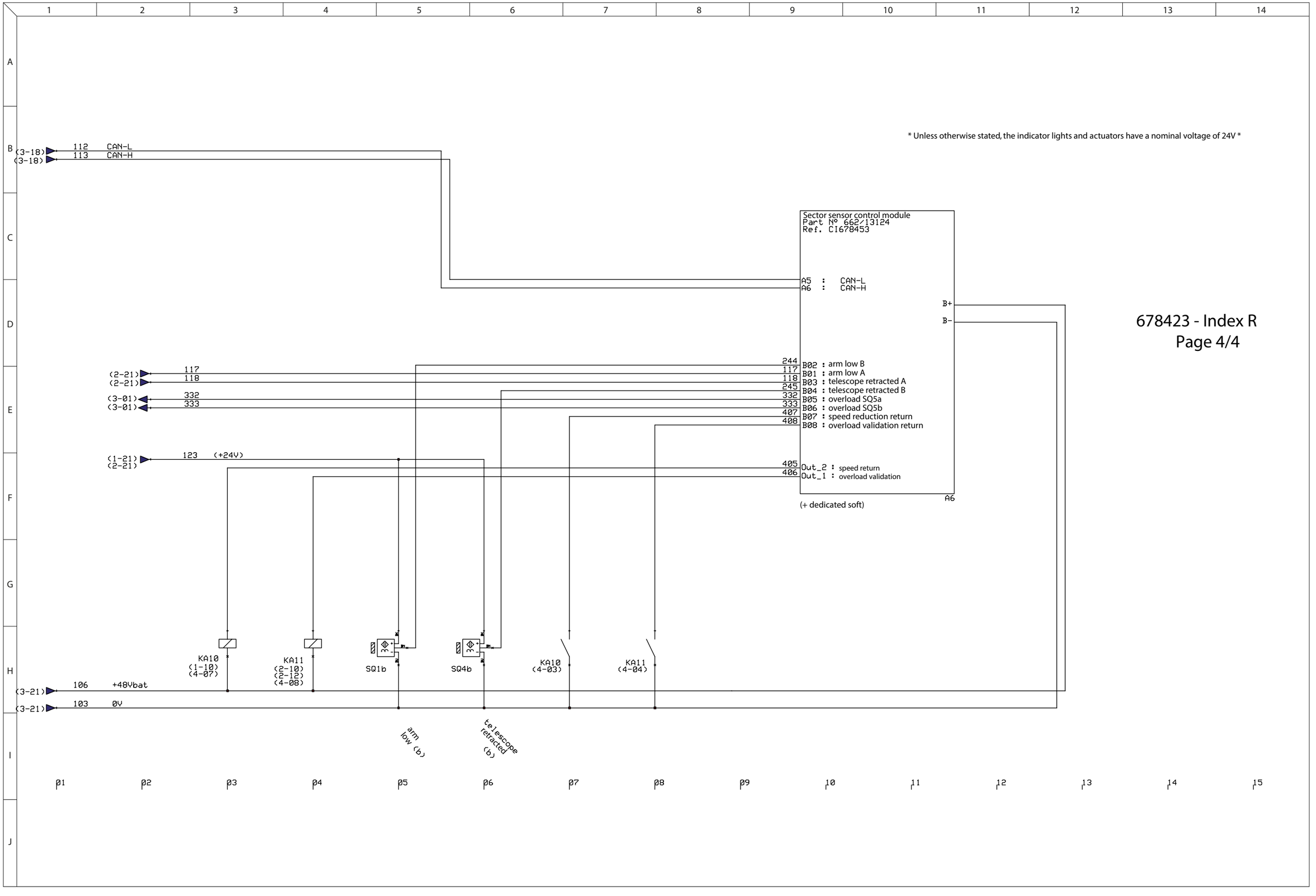


80.1.3 SCHEMATIC DIAGRAM - BASKET CONTROL PART - 1ST VERSION



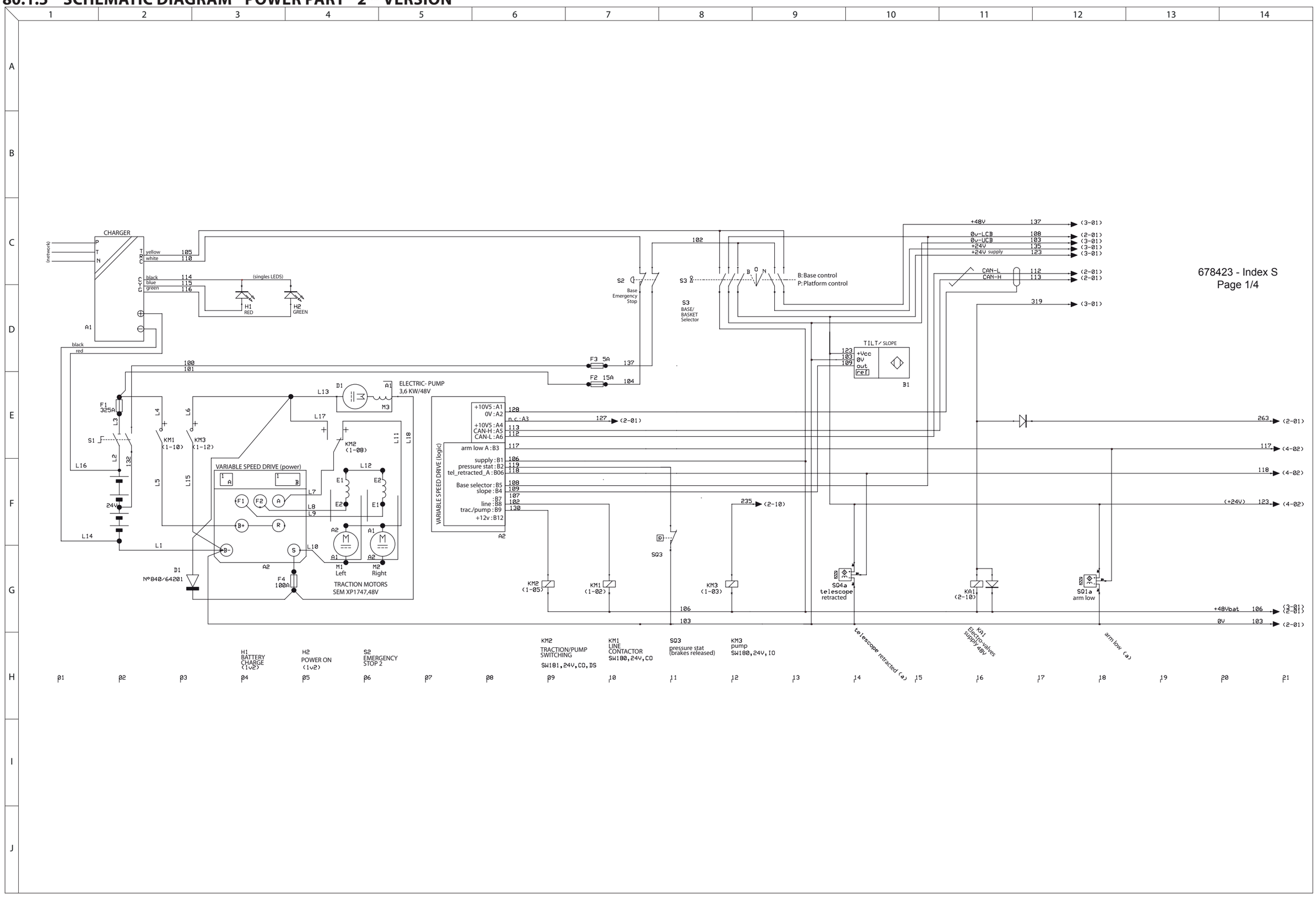
https://truckmanualshub.com/

80.1.4 SCHEMATIC DIAGRAM - SAFETY CONTROL UNIT PART - 1ST VERSION



80

80.1.5 SCHEMATIC DIAGRAM - POWER PART - 2ND VERSION

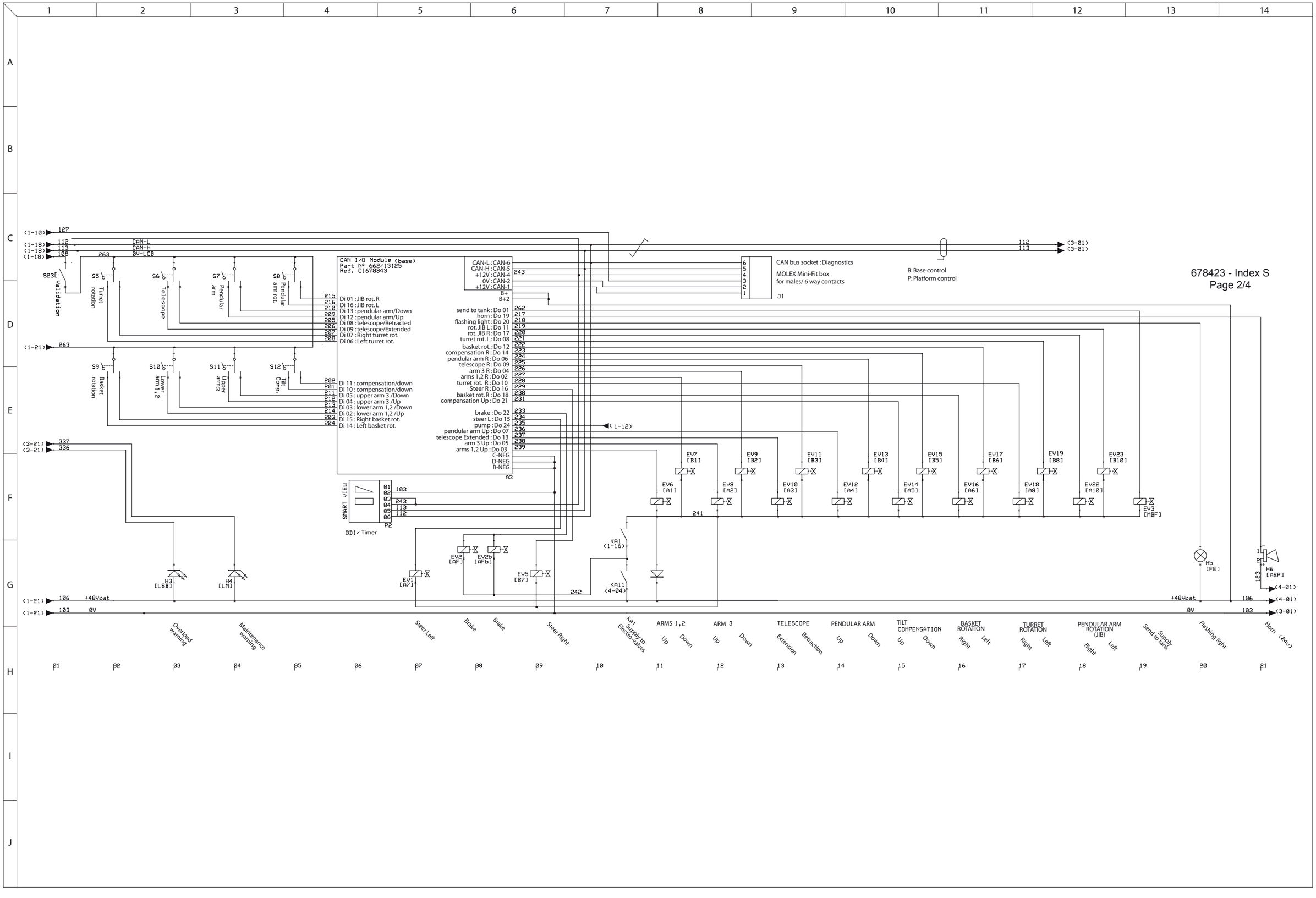


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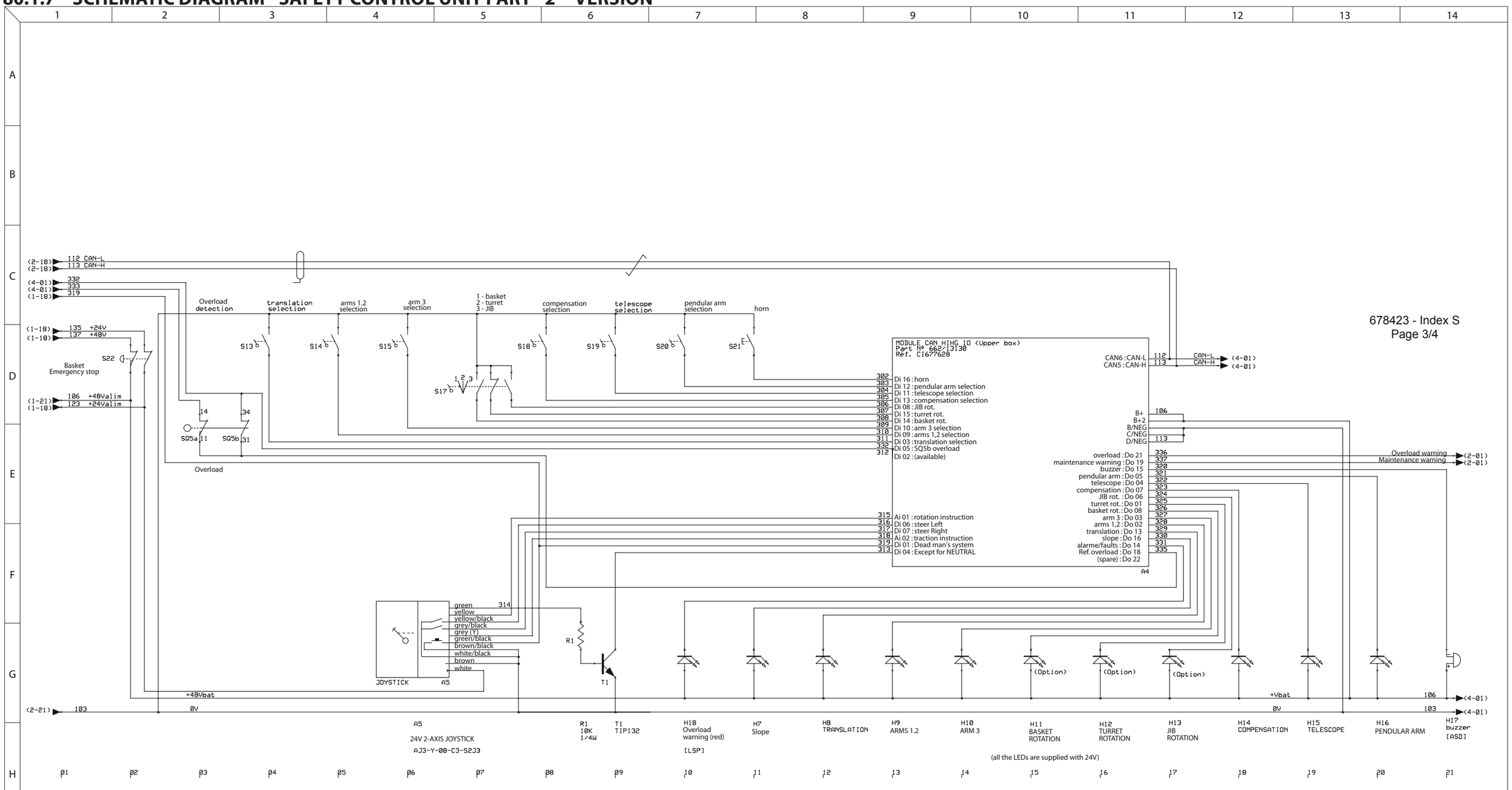
80

https://truckmanualshub.com/

80.1.6 SCHEMATIC DIAGRAM - BASKET CONTROL PART - 2ND VERSION

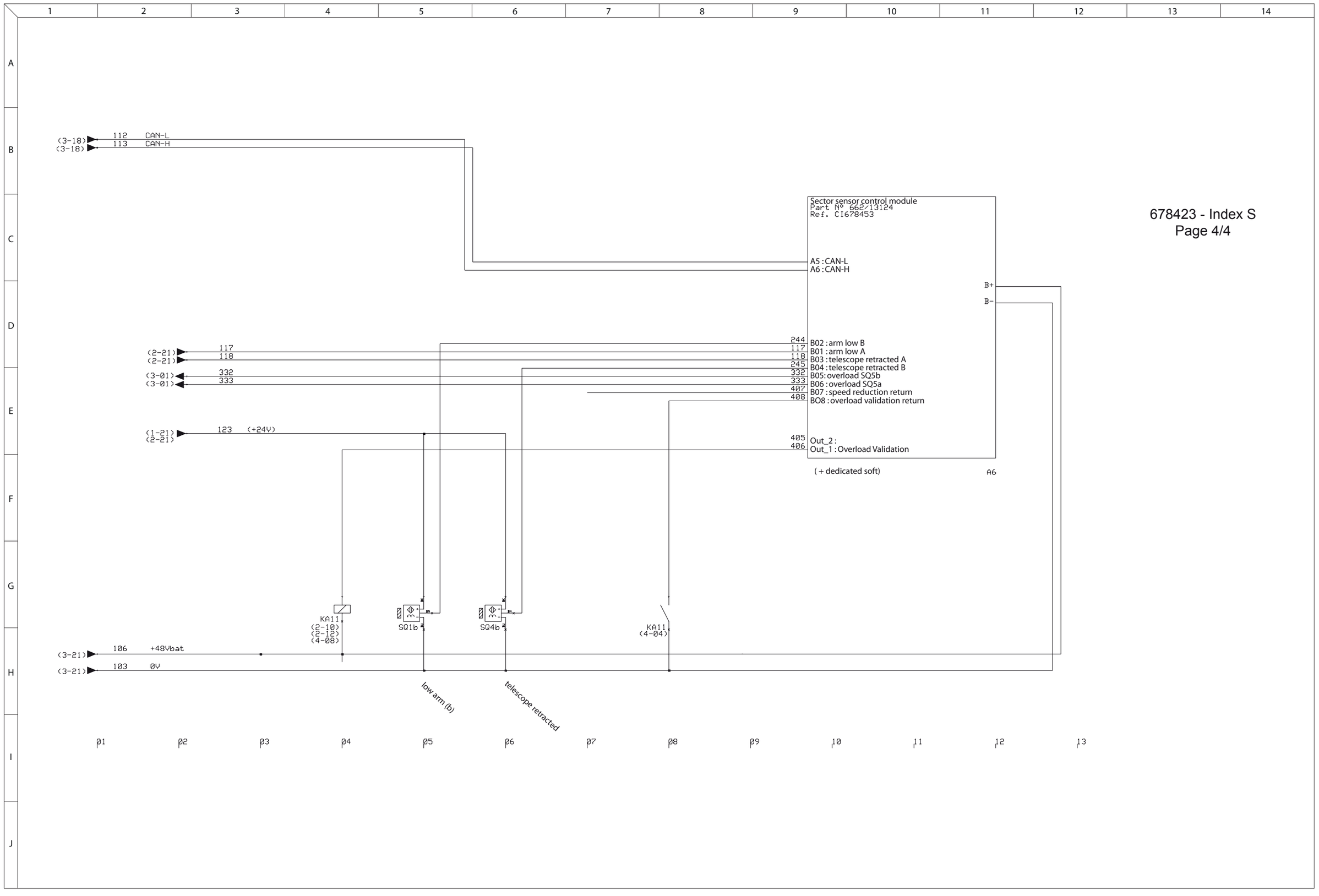


80.1.7 SCHEMATIC DIAGRAM - SAFETY CONTROL UNIT PART - 2ND VERSION



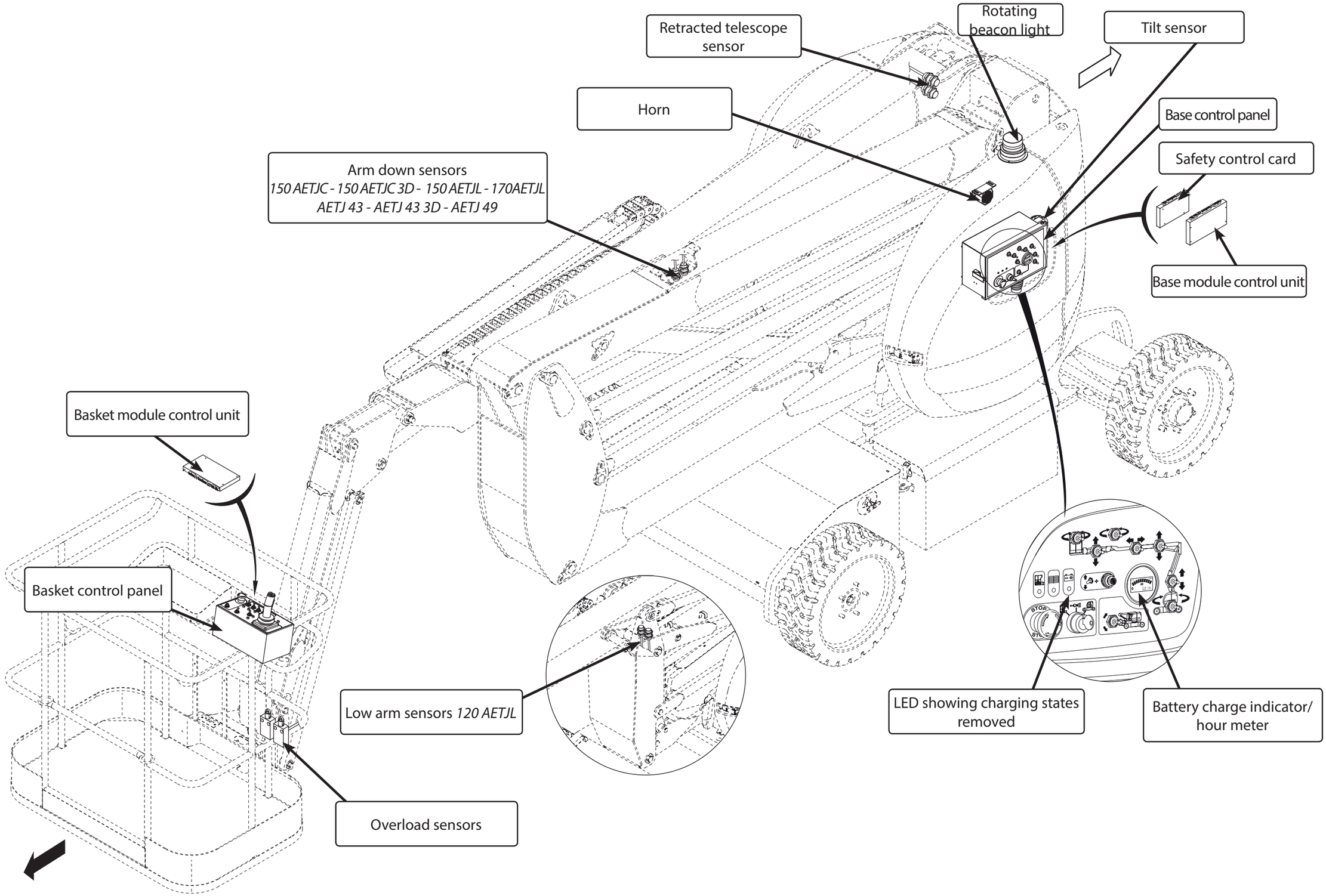
https://truckmanualshub.com/

80.1.8 SCHEMATIC DIAGRAM - SAFETY CONTROL UNIT PART - 2ND VERSION



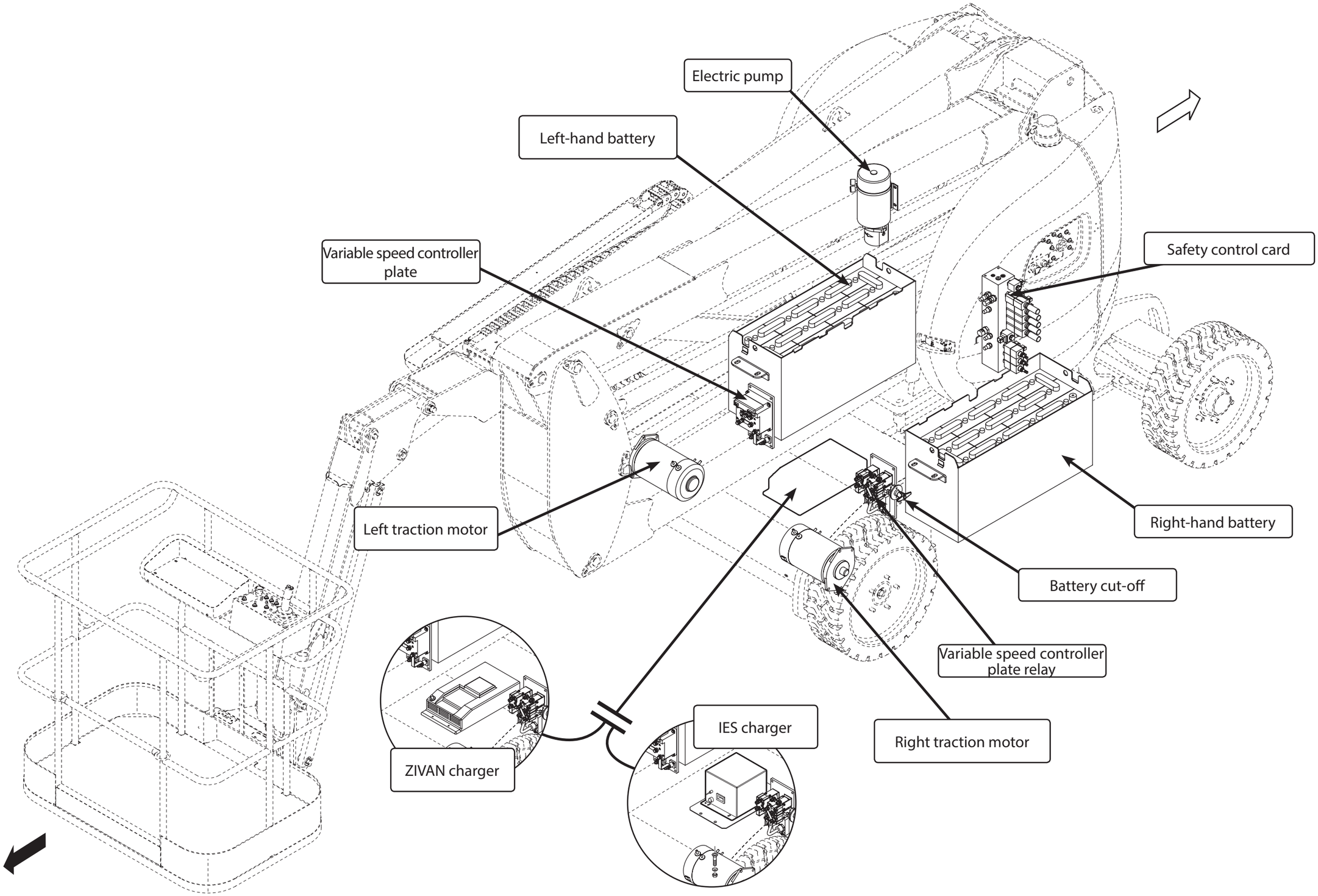
80.2 ELECTRICAL COMPONENTS LOCATION

80.2.1 ELECTRICAL CONTROL COMPONENTS - LOCATION



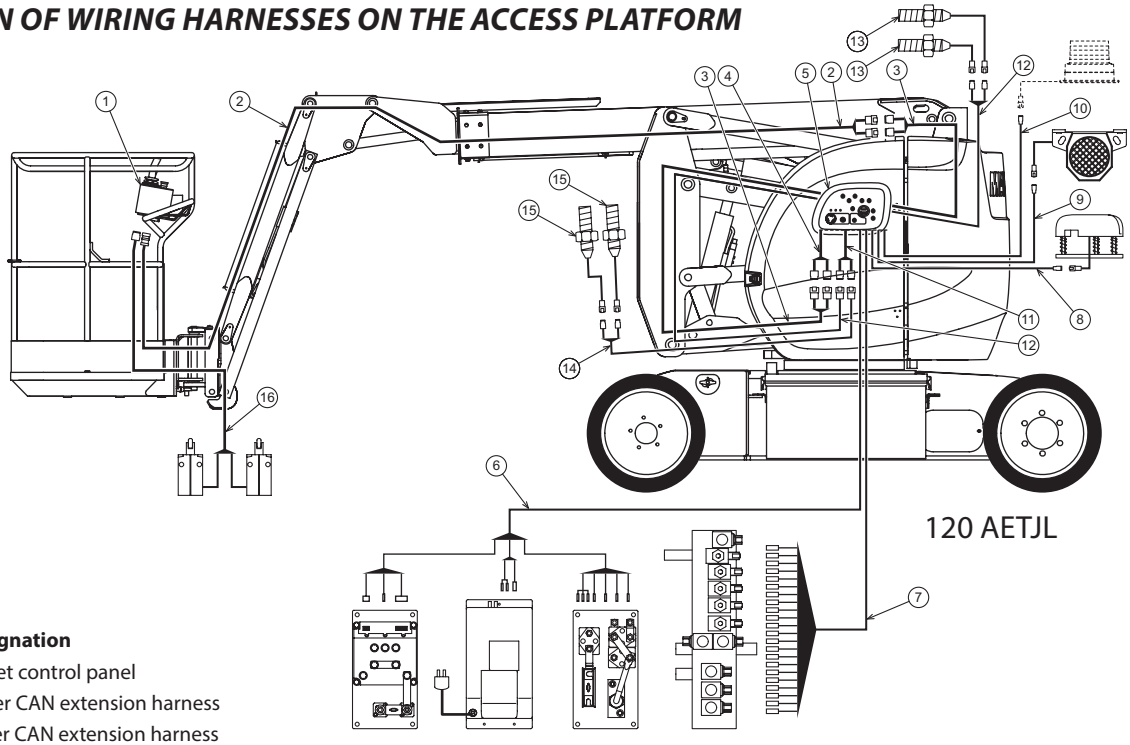
https://truckmanualshub.com/

80.2.2 ELECTRICAL POWER COMPONENTS - LOCATION

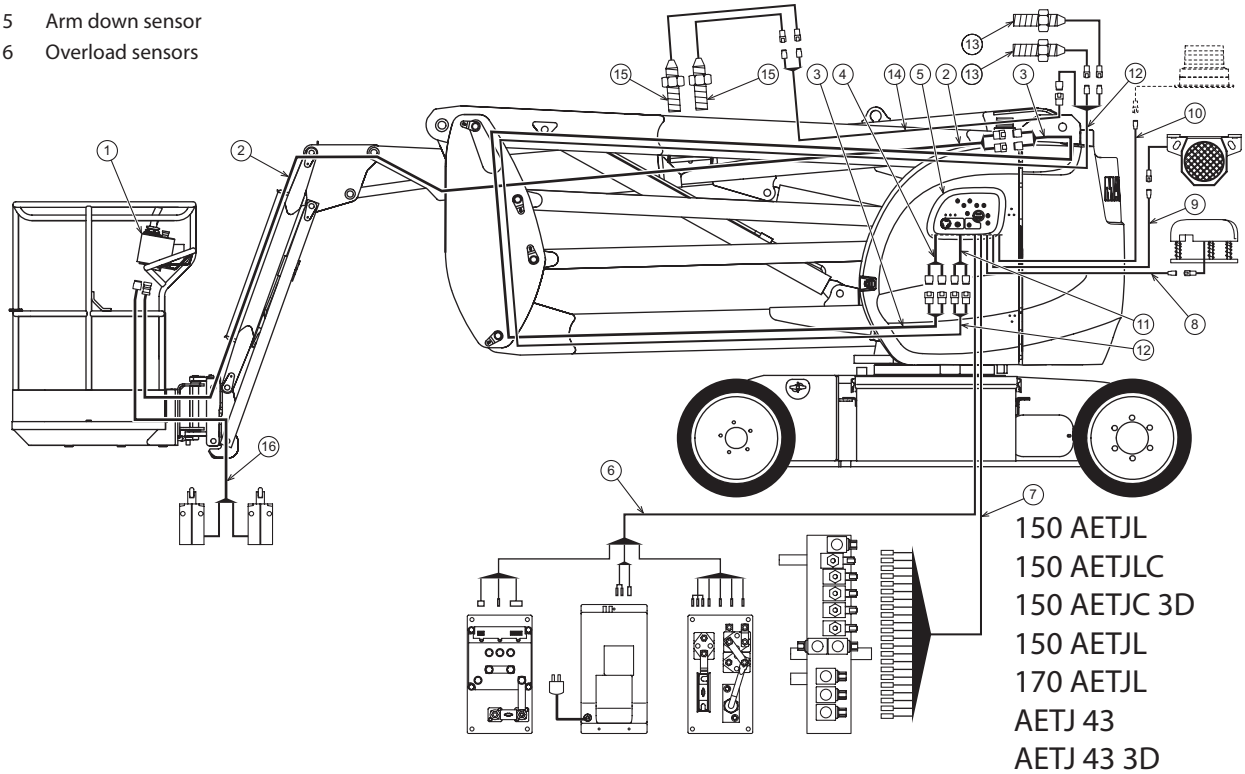


80.4.4 WIRING BASED ON SCHEMATIC DIAGRAM 676423 - 1ST VERSION

LOCATION OF WIRING HARNESSES ON THE ACCESS PLATFORM



Item	Designation
1	Basket control panel
2	Upper CAN extension harness
3	Lower CAN extension harness
4	BUS-CAN harness output
5	Base box
6	Variable speed controller harness
7	Electrovalve harness
8	Tilt wiring harness
9	Horn harness
10	Flashing flight harness
11	Output sensor control panel harness
12	- Intermediate inductive sensors harness (150 AETJC - 150 AETJL - 170 AETJL - AETJ 43 - AETJ 43 3D - AETJ 49) - Telescopic arm sensors harness (120 AETJL)
13	Telescope arm sensor
14	Low arm sensor harness
15	Arm down sensor
16	Overload sensors



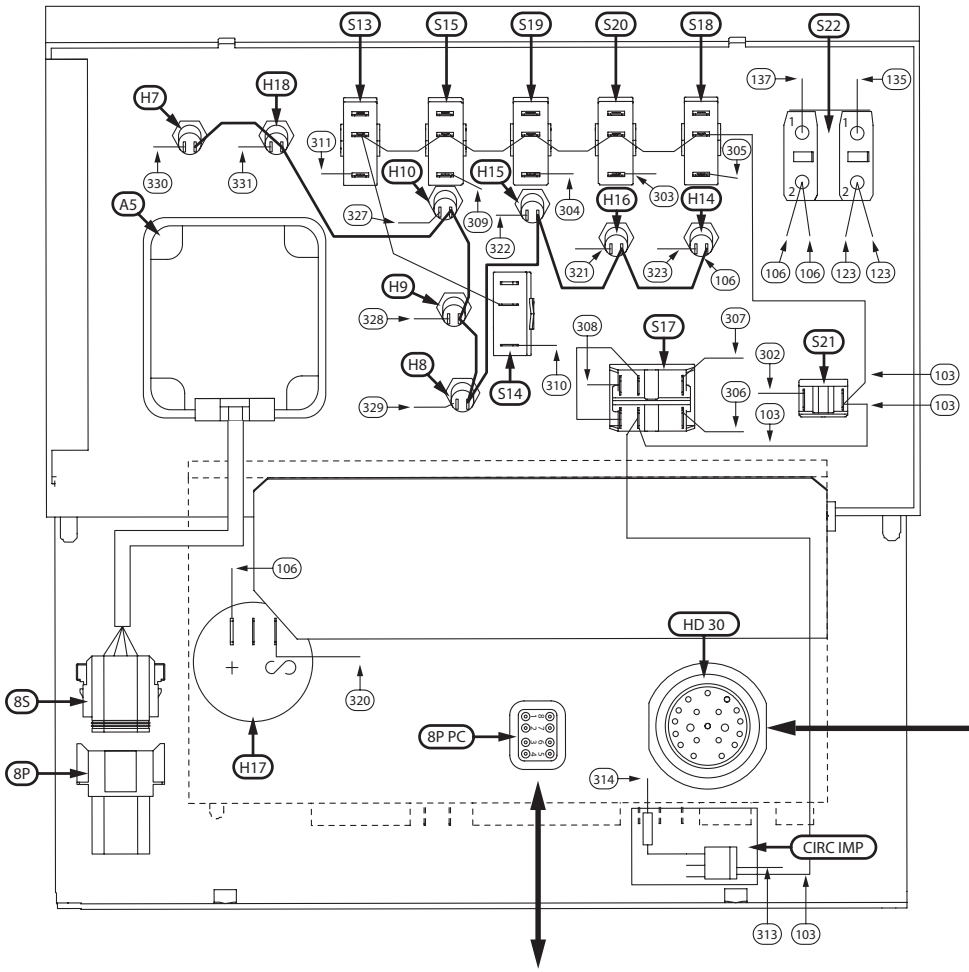
https://truckmanualshub.com/

BASKET CONTROL PANEL HARNESS

- ITEM 1

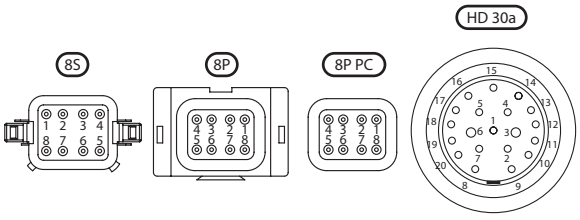
Installation procedure:

- 678383 - C (120 AETJL, 150 AETJC,150 AETJC 3D,150 AETJL,170 AETJL).



BASKET CONSOLE HARNESS

Ref. 1



Pos.	*Wire*
1	green
2	yellow
3	yellow/black
4	grey/black
5	white
6	white/black
	brown/black
	brown
7	green/black
8	grey

Pos.	*Wire*
1	314
2	315
3	316
4	317
5	123
6	103
7	319
8	318

Pos.	*Wire*
1	332
2	335
3	312
4	335
5	333
6	335
7	*spare*
8	*spare*

Pos.	*Wire*	
1	112	
2	113	
3	*spare*	
4	135	
5	137	
6	*spare*	
7	332	
8	333	
9	338	
10	103	
11	106	
12	123	
13	336	
14	337	
15	319	
16	400	*Optional spare*
17	401	*Optional spare*
18	402	*Optional spare*
19		*spare*
20		*spare*

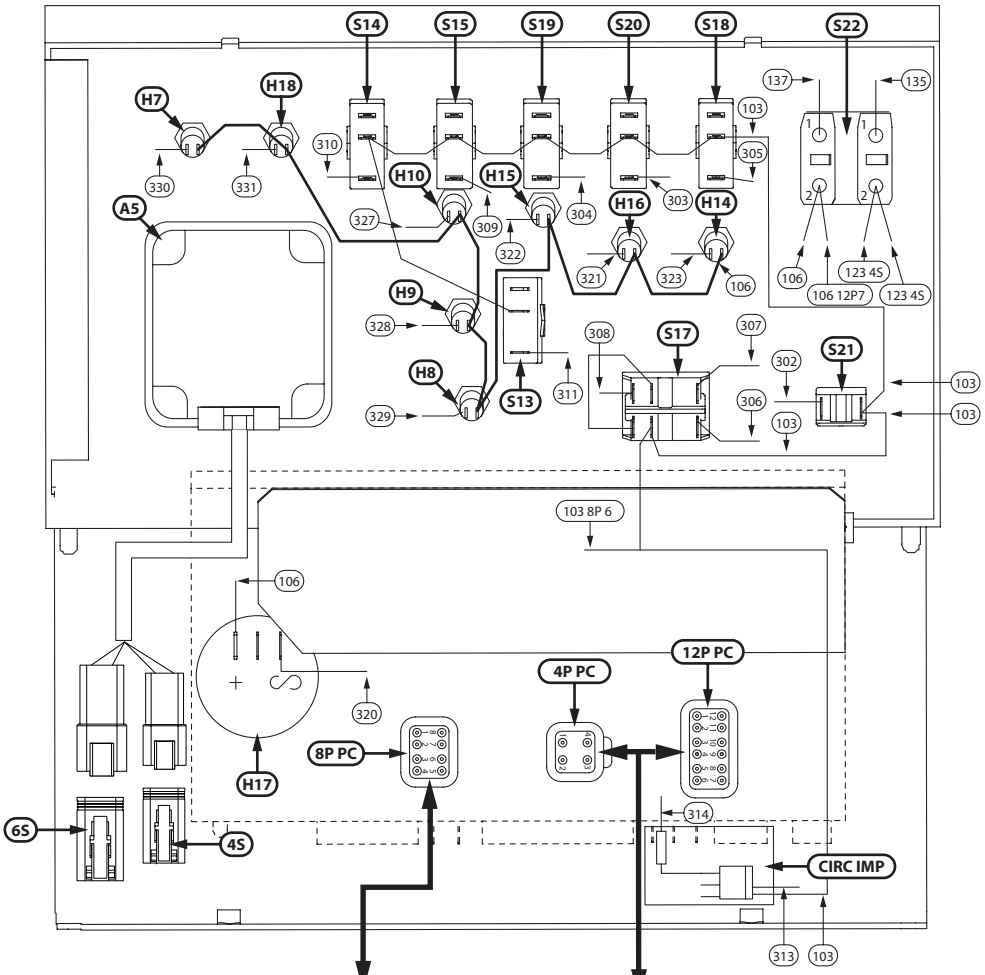
Ref.	*Designation*
A4	Basket module card
A5	Manipulator
PRINT.CIRC	Printed circuit
H7	Tilt LED
H8	Translation LED
H9	Arm 1/2 up LED
H10	Arm 3 up LED
H14	Tilt / reverse tilt LED
H15	Telescope LED
H16	Pendular arm up LED
H17	Buzzer
H18	Overload LED
HD30	20-port female Deutsch through-partition connector

Ref.	*Designation*
S13	Translation selector
S14	Arm 1/2 up / down selector
S15	Arm 3 up / down selector
S17	Pendular arm / turret / basket rotation selector
S18	Tilt / reverse tilt selector
S19	Telescope extension / retraction selector
S20	Pendular arm up / down selector
S21	Horn button
S22	Emergency Stop
8S	8-port male Deutsch connector
8P	8-port female Deutsch connector
8P PC	8-port female Deutsch through-partition connector

- ITEM 1

Installation procedure:

- 52501871. (150 AETJC,150 AETJC 3D,150 AETJL,170 AETJL)
- 52556918. (AETJ 43,AETJ 43 3D, AETJ 49)



6S

Pos	Wire
1	318
2	315
3	316
4	317
5	314
6	319

4S

Pos	Wire
1	123
2	103
3	103
4	103

8P PC

Pos	Wire
1	332
2	335
3	312
4	335
5	333
6	335
7	libre
8	libre

4P

Pos	Wire
1	338
2	400
3	401
4	402

12P

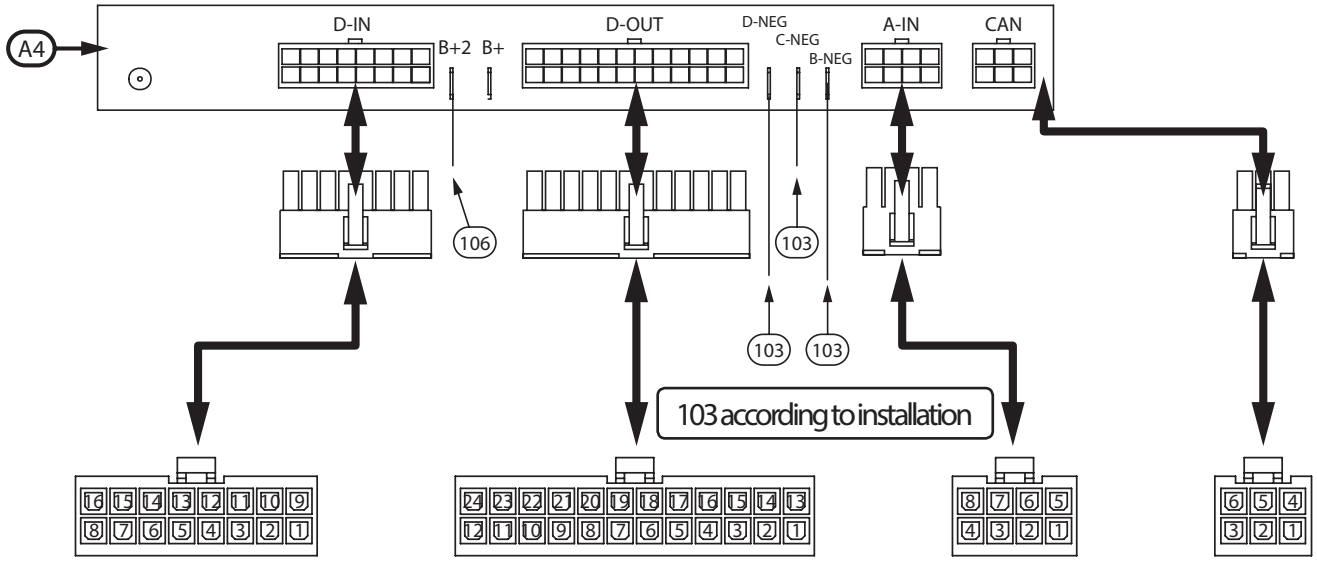
Pos	Wire
1	112
2	113
3	135
4	137
5	333
6	103
7	106
8	123
9	336
10	337
11	319
12	332

Ref.	Designation
A4	Basket module card
A5	Manipulator
PRINT.CIRC	Printed circuit
H7	Tilt LED
H8	Translation LED
H9	Arm 1/2 up LED
H10	Arm 3 up LED
H14	Tilt / reverse tilt LED
H15	Telescope LED
H16	Pendular arm up LED
H17	Buzzer
H18	Overload LED
4P PC	4-port female Deutsch through-partition connector
12P PC	12-port female Deutsch through-partition connector

Ref.	Designation
S13	Translation selector
S14	Arm 1/2 up / down selector
S15	Arm 3 up / down selector
S17	Pendular arm / turret / basket rotation selector
S18	Tilt / reverse tilt selector
S19	Telescope extension / retraction selector
S20	Pendular arm up / down selector
S21	Horn button
S22	Emergency Stop
4S	4-port male Deutsch connector
6S	6-port male Deutsch connector
8P PC	8-port female Deutsch through-partition connector

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Basket module control unit



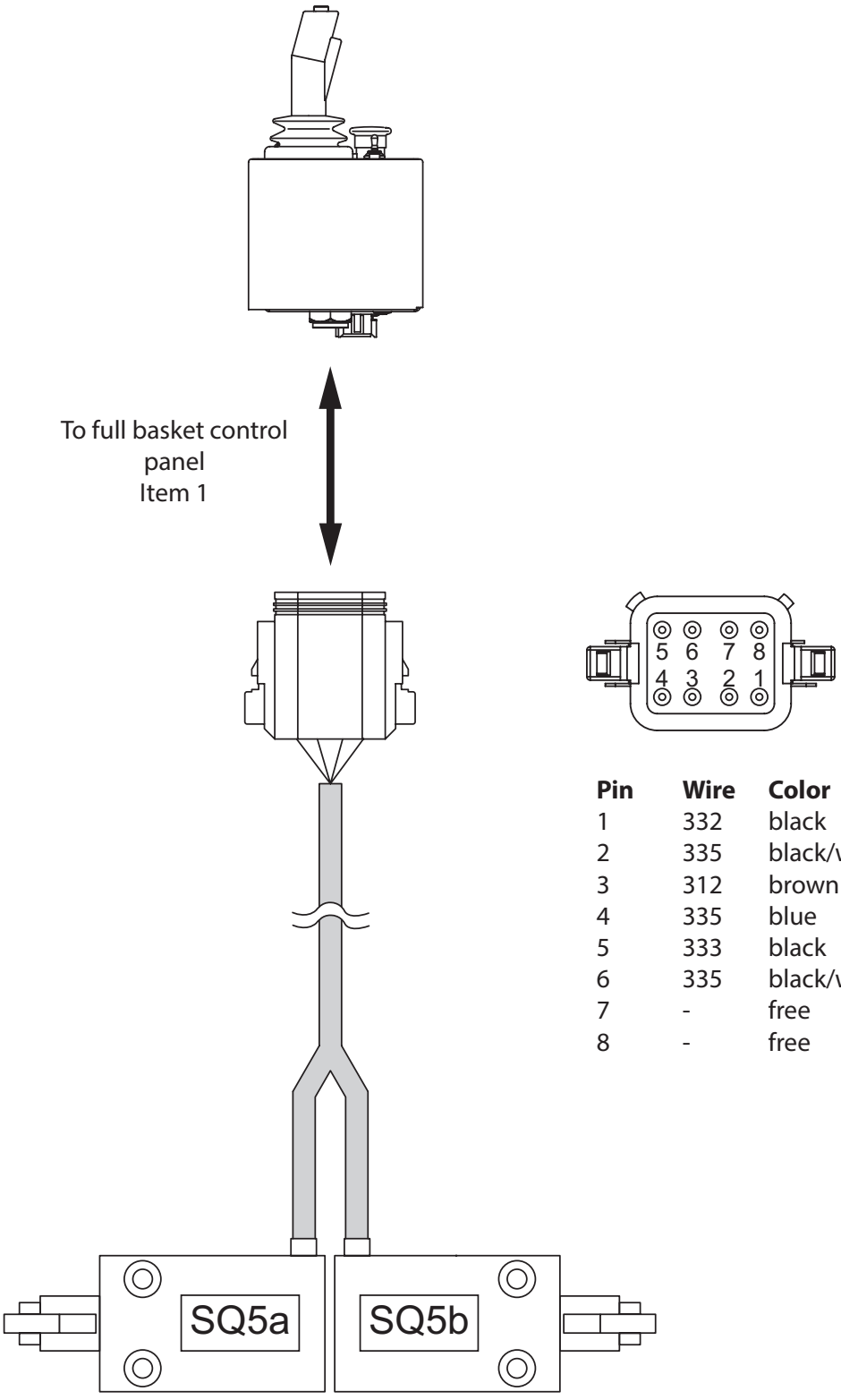
Pos.	Wire
1	319
2	312
3	311
4	313
5	332
6	316
7	317
8	306
9	310
10	309
11	304
12	303
13	305
14	308
15	307
16	302

Pos.	Wire
1	*spare*
2	328
3	327
4	322
5	321
6	*spare*
7	323
8	*spare*
9	*spare*
10	*spare*
11	*spare*
12	*spare*
13	329
14	331
15	320
16	330
17	*spare*
18	335
19	337
20	*spare*
21	336
22	338
23	*spare*
24	*spare*

Pos.	Wire
1	315
2	318
3	*spare*
4	*spare*
5	*spare*
6	*spare*
7	*spare*
8	*spare*

Pos.	Wire
1	*spare*
2	*spare*
3	*spare*
4	*spare*
5	113
6	112

OVERLOAD SENSORS HARNESS
- ITEM 16



OVERLOAD SENSORS HARNESS
678849 - D
Item 16

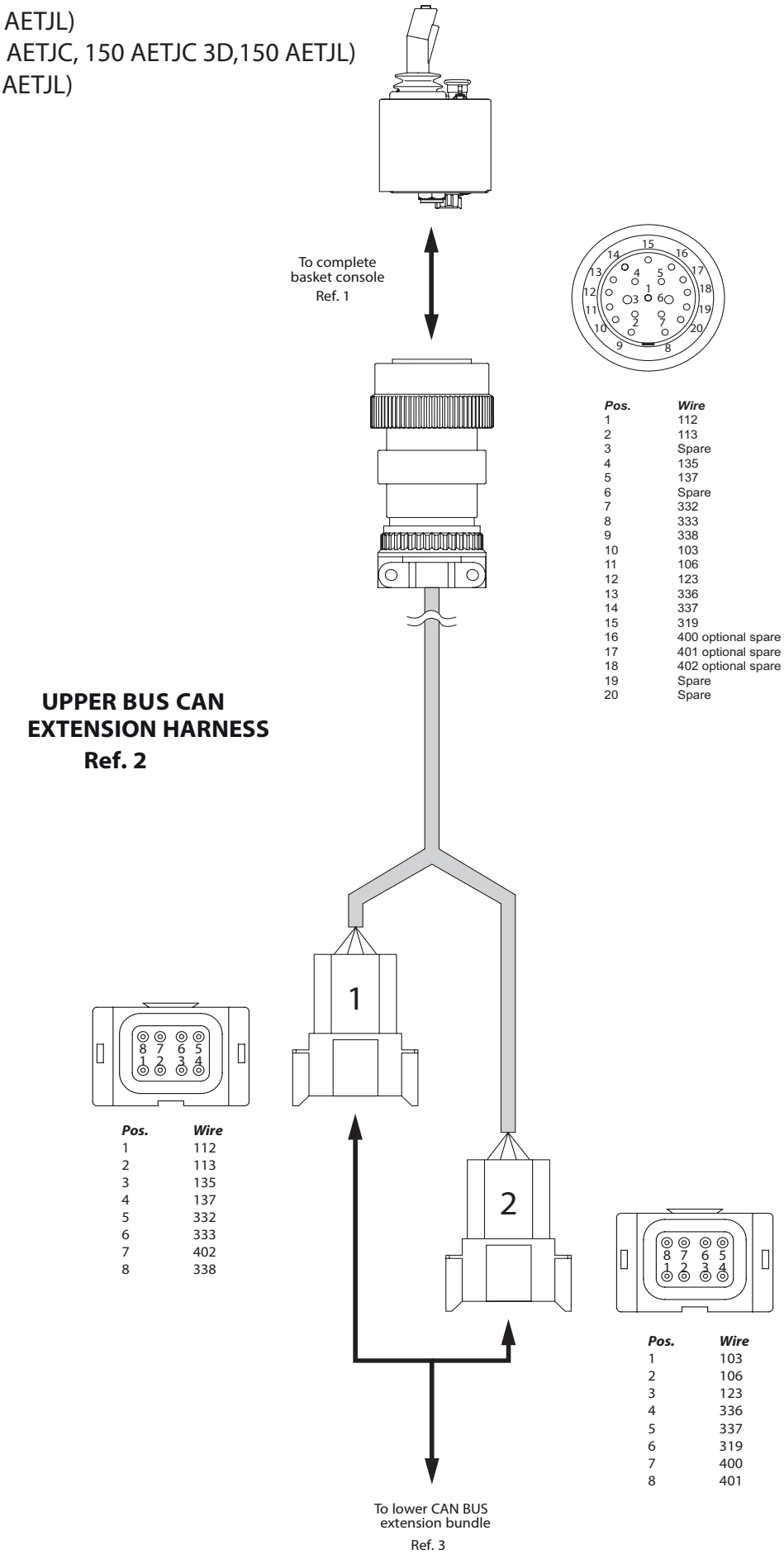
Pin	Wire	Color
1	332	black
2	335	black/white
3	312	brown
4	335	blue
5	333	black
6	335	black/white
7	-	free
8	-	free

UPPER BUS-CAN EXTENSION HARNESS

- ITEM 2

Installation procedure:

678855 - C (120 AETJL)
678387 - D (150 AETJC, 150 AETJC 3D,150 AETJL)
678643 - E (170 AETJL)



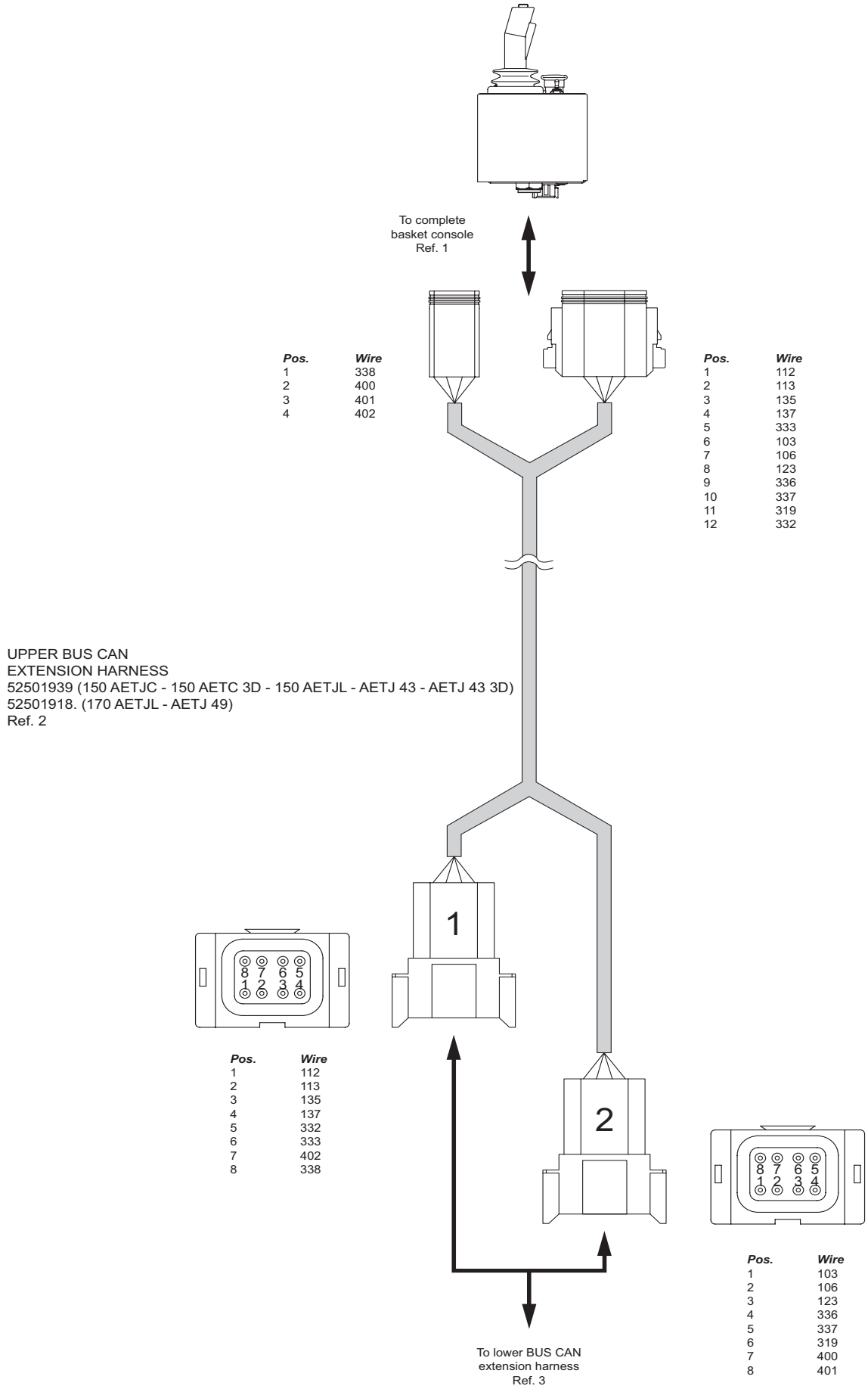
Pos.	*Wire*
1	112
2	113
3	Spare
4	135
5	137
6	Spare
7	332
8	333
9	338
10	103
11	106
12	123
13	336
14	337
15	319
16	400 optional spare
17	401 optional spare
18	402 optional spare
19	Spare
20	Spare

Pos.	*Wire*
1	112
2	113
3	135
4	137
5	332
6	333
7	402
8	338

Pos.	*Wire*
1	103
2	106
3	123
4	336
5	337
6	319
7	400
8	401

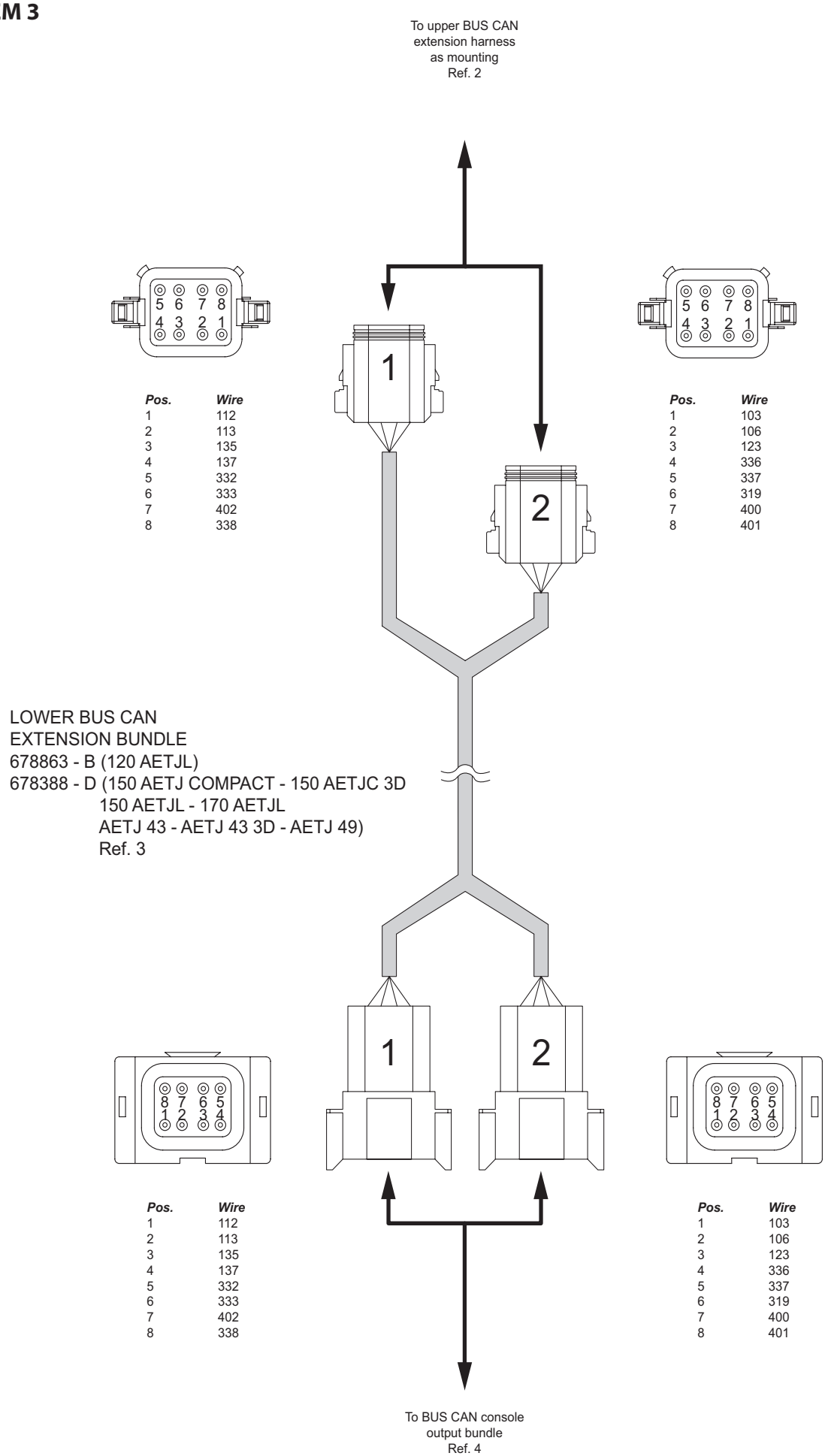
Installation procedure:

52501939.(150 AETJC, 150 AETJC 3D,150 AETJL, AETJ 43, AETJ 43 3D)
52501918. (170 AETJL, AETJ 49)

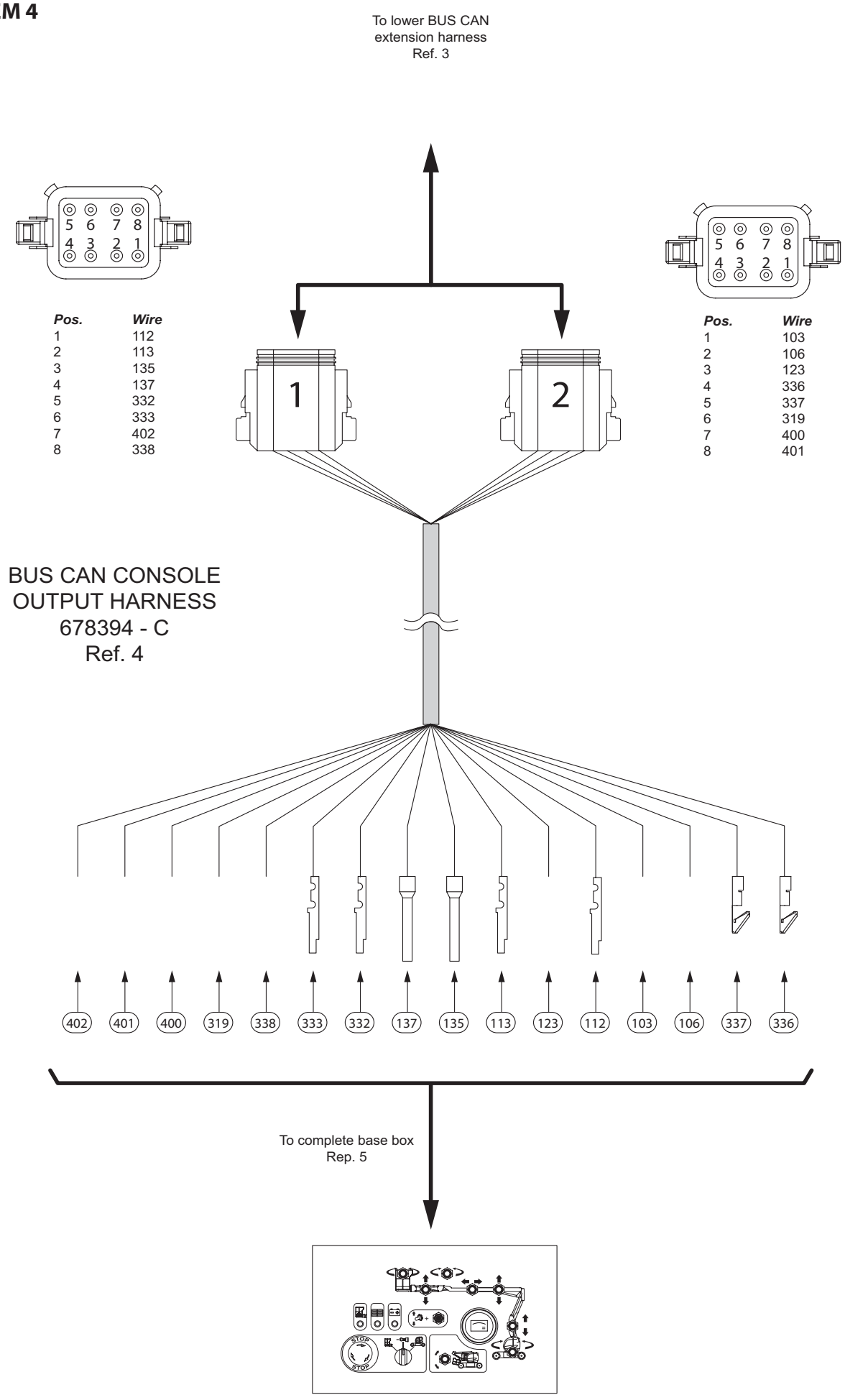


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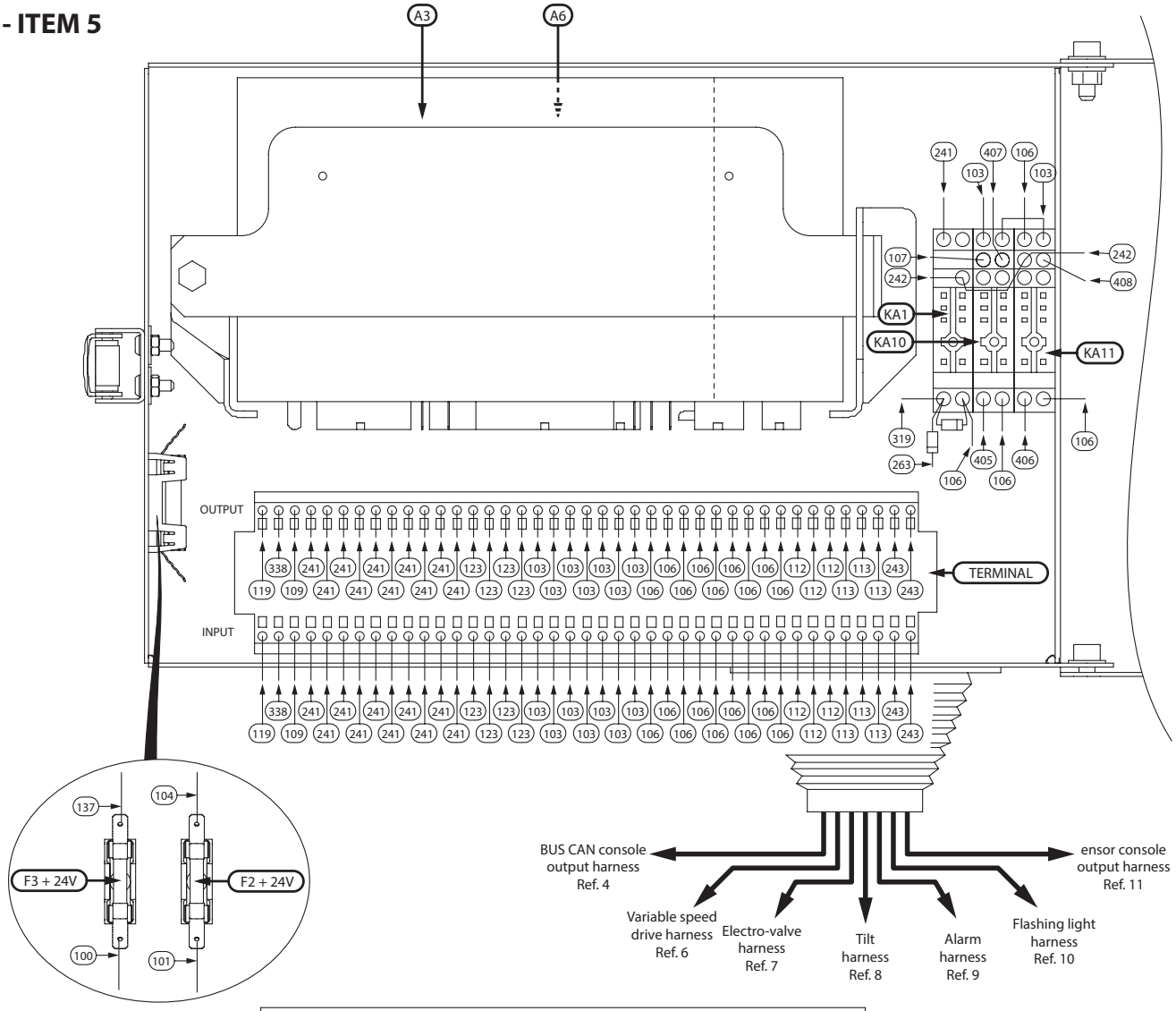
LOWER BUS-CAN EXTENSION HARNESS
- ITEM 3

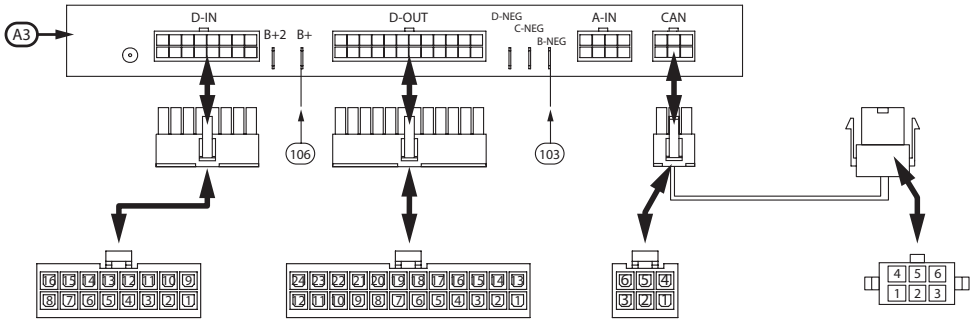


UPPER BUS-CAN CONTROL PANEL OUTPUT HARNESS - ITEM 4



BASE BOX HARNESS
- ITEM 5





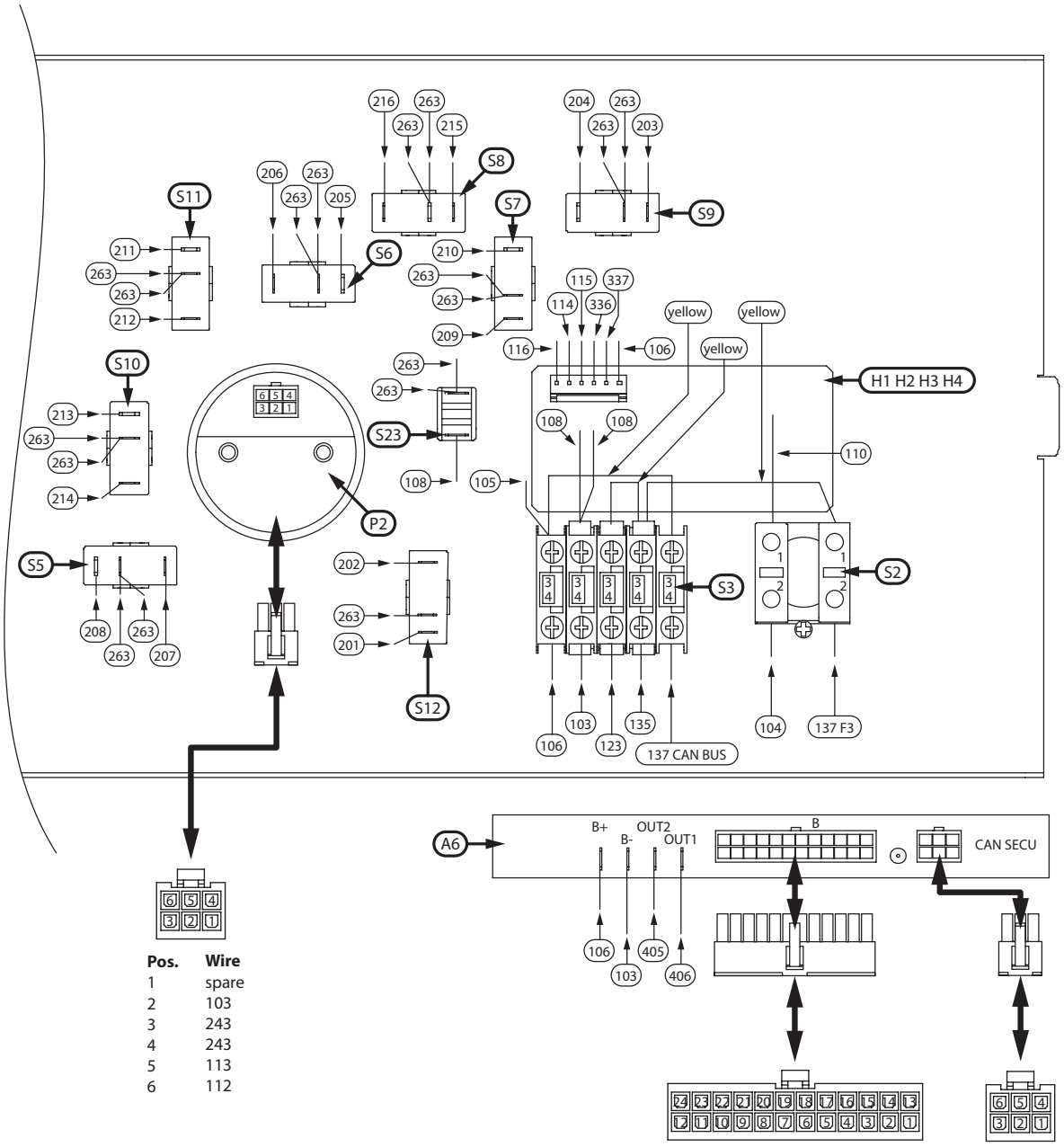
Pos.	Wire
1	215
2	214
3	213
4	212
5	211
6	208
7	207
8	205
9	206
10	201
11	202
12	209
13	210
14	204
15	203
16	216

Pos.	Wire
1	262
2	227
3	239
4	226
5	238
6	224
7	236
8	221
9	225
10	228
11	219
12	222
13	237
14	223
15	234
16	229
17	220
18	230
19	217
20	218
21	231
22	233
23	spare
24	235

Pos.	Wire
1	jaune J1-1
2	jaune J1-2
3	127
4	243
5	113
6	112

Pos.	Wire
1	jaune J1-1
2	jaune J1-2
3	127
4	243
5	113
6	112

BASE BOX
HARNESS
679459 - G (120 AETJL
- 150 AETJC - 150 AETJC 3D - 150 AETJL - 170 AETJL
52556928. (AET 43 - AETJ 43 3D - AETJ 49)
Ref. 5



Pos.	Wire
1	spare
2	103
3	243
4	243
5	113
6	112

Pos.	Wire
1	117
2	244
3	118
4	245
5	332
6	333
7	407
8	408
9	spare
10	spare
11	spare
12	spare
13	spare
14	spare
15	spare
16	spare
17	spare
18	spare
19	spare
20	spare
21	spare
22	spare
23	spare
24	spare

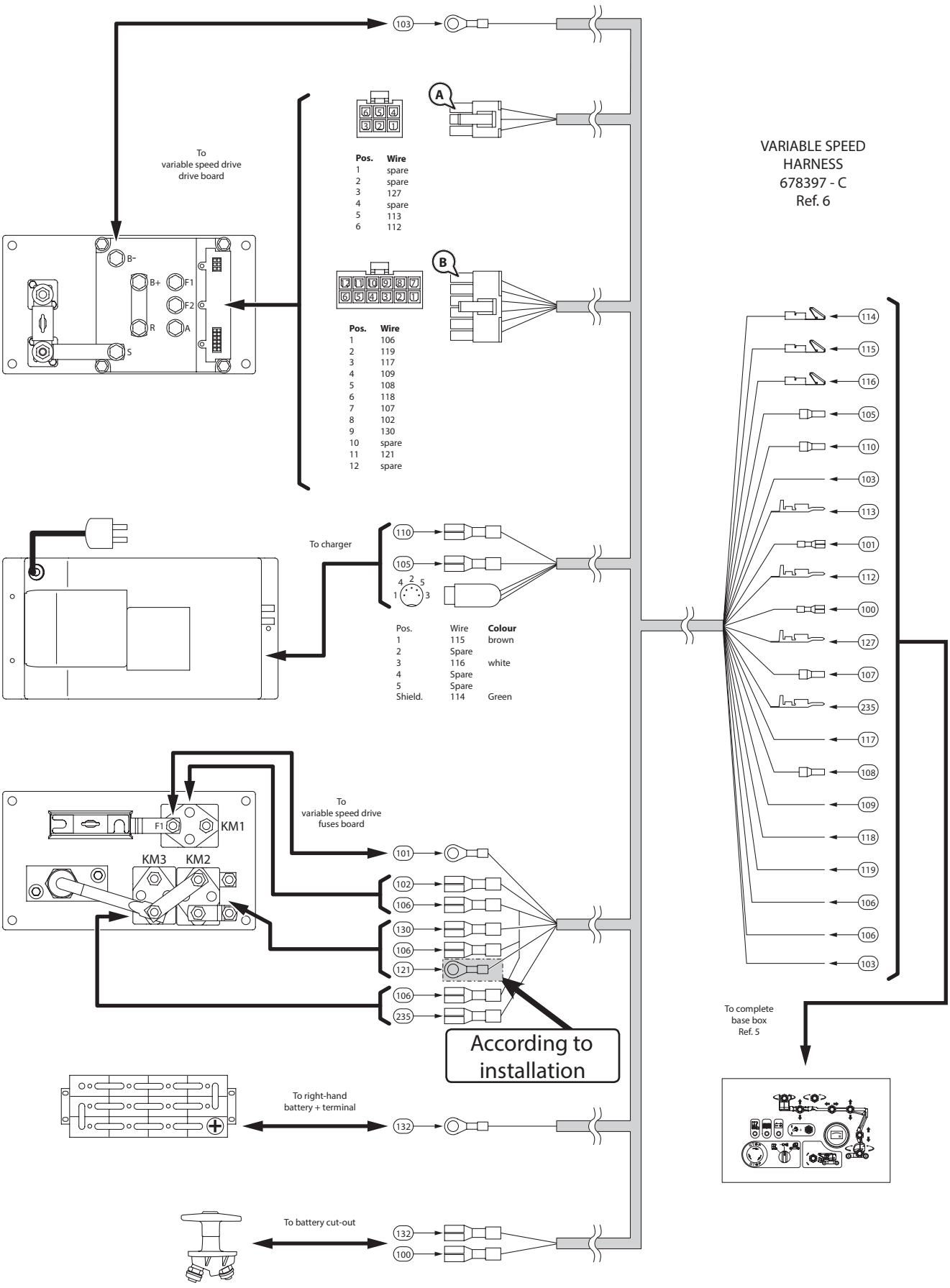
Pos.	Wire
1	spare
2	spare
3	spare
4	spare
5	113
6	112

Pos.	Designation
A3	Base module card
A6	Security control card
F2	15A fuse
F3	5A fuse
H1	Offset LED indicator - red LED
H2	Offset LED indicator - green LED
H3	Overload warning LED
H4	Maintenance warning LED
KA1	Electro-valve supply relays
KA10	Relay
KA11	Relay
P2	Timer

Pos.	Designation
S2	Emergency Stop
S3	Base/basket selector
S5	Turret rotation selector
S6	Telescope extension / retraction selector
S7	Pendular arm up / down selector
S8	Pendular arm rotation selector
S9	Basket rotation selector
S10	Arm 3 up / down selector
S11	Arm 1/2 up / down selector
S12	Tilt / reverse tilt selector
S23	Dead man's button

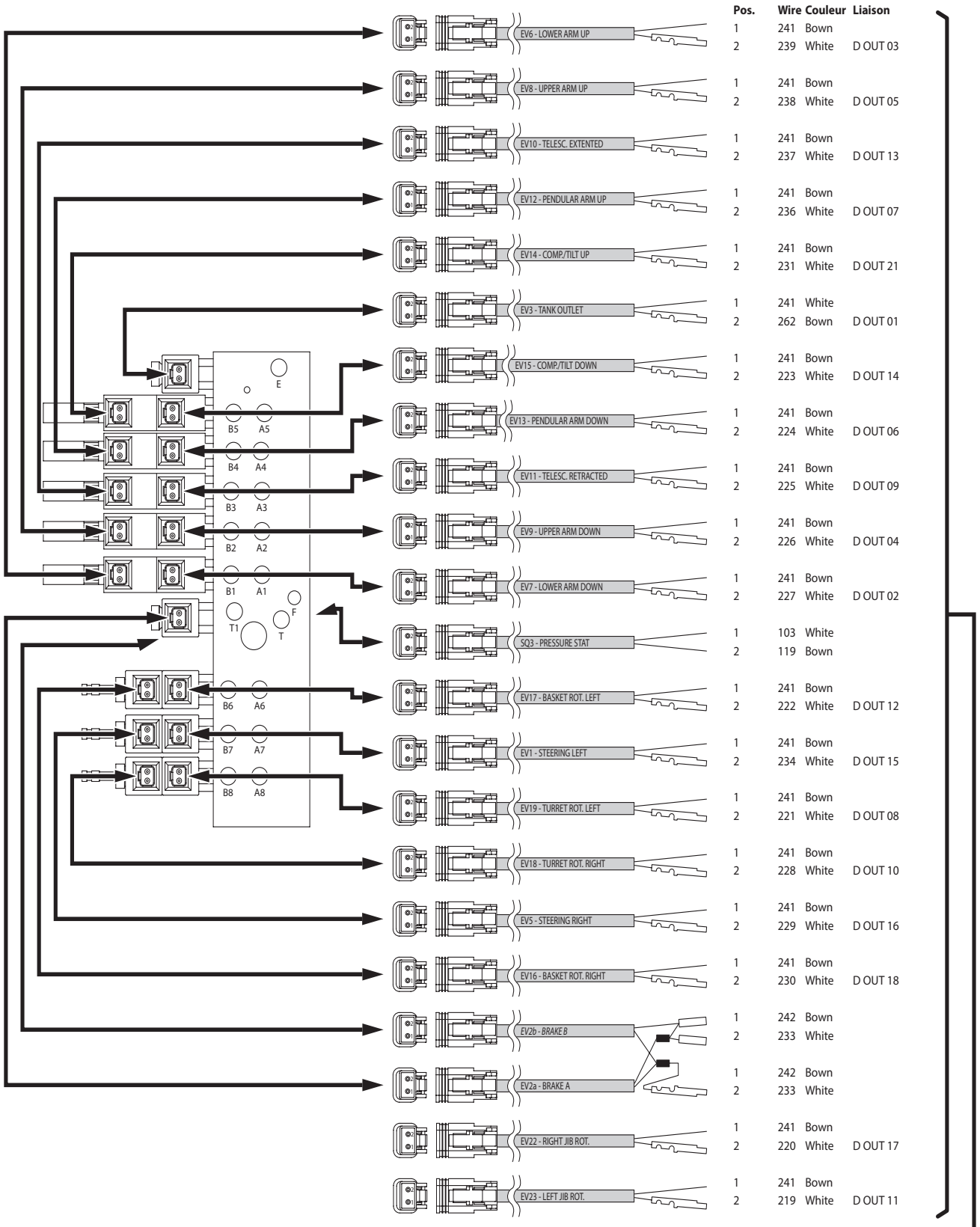
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VARIABLE SPEED CONTROLLER HARNESS
- ITEM 6

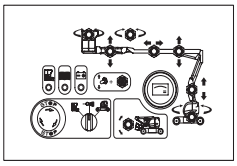


ELECTROVALVE HARNESS
- ITEM 7

ELECTRO-VALVE HARNESS
678393 - E
Ref. 4



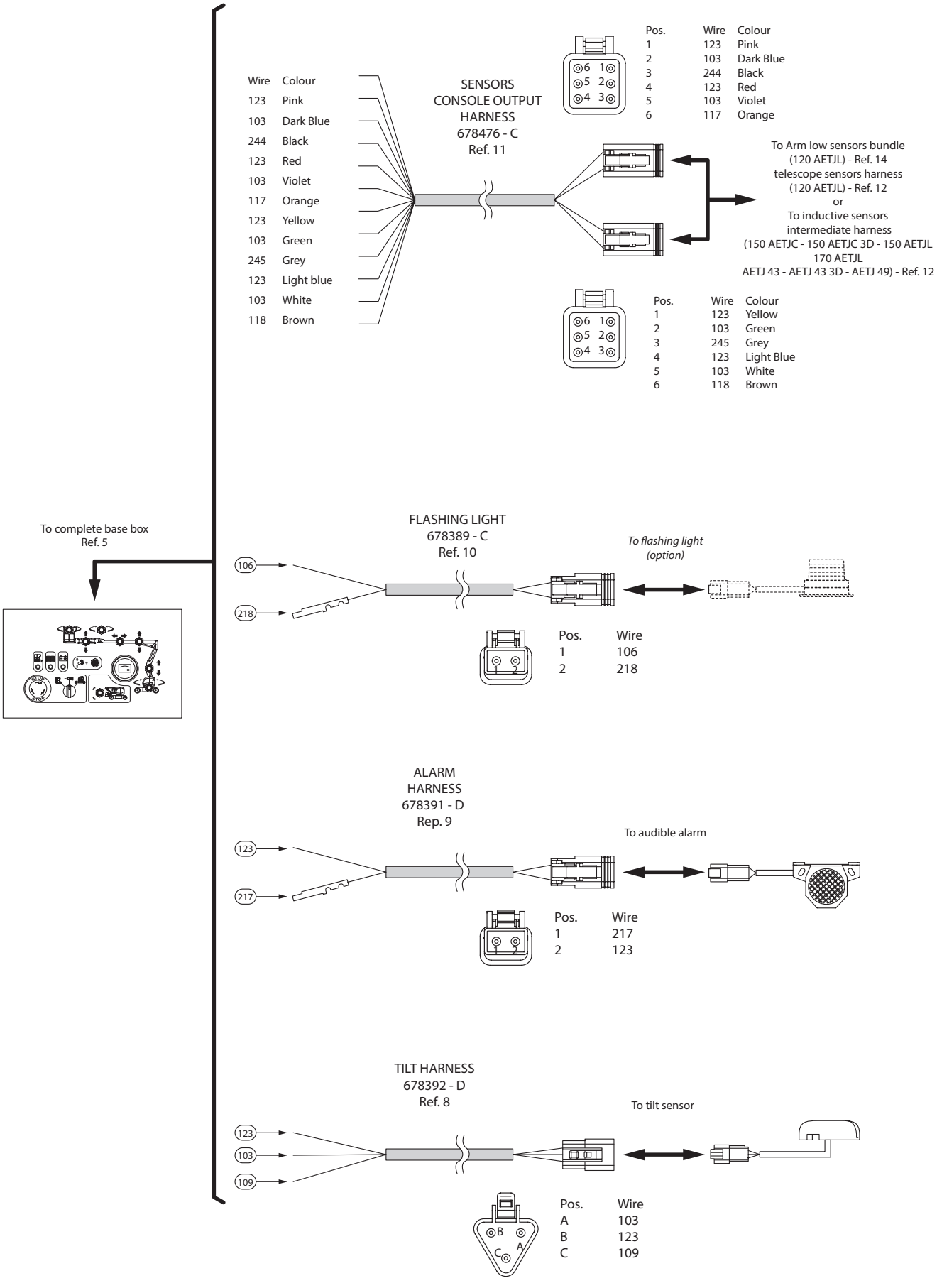
Pos.	Wire	Couleur	Liaison
1	241	Bown	
2	239	White	D OUT 03
1	241	Bown	
2	238	White	D OUT 05
1	241	Bown	
2	237	White	D OUT 13
1	241	Bown	
2	236	White	D OUT 07
1	241	Bown	
2	231	White	D OUT 21
1	241	White	
2	262	Bown	D OUT 01
1	241	Bown	
2	223	White	D OUT 14
1	241	Bown	
2	224	White	D OUT 06
1	241	Bown	
2	225	White	D OUT 09
1	241	Bown	
2	226	White	D OUT 04
1	241	Bown	
2	227	White	D OUT 02
1	103	White	
2	119	Bown	
1	241	Bown	
2	222	White	D OUT 12
1	241	Bown	
2	234	White	D OUT 15
1	241	Bown	
2	221	White	D OUT 08
1	241	Bown	
2	228	White	D OUT 10
1	241	Bown	
2	229	White	D OUT 16
1	241	Bown	
2	230	White	D OUT 18
1	242	Bown	
2	233	White	
1	242	Bown	
2	233	White	
1	241	Bown	
2	220	White	D OUT 17
1	241	Bown	
2	219	White	D OUT 11



To complete
base box
Ref. 5

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MISCELLANEOUS HARNESS
- ITEMS 8, 9, 10, 11



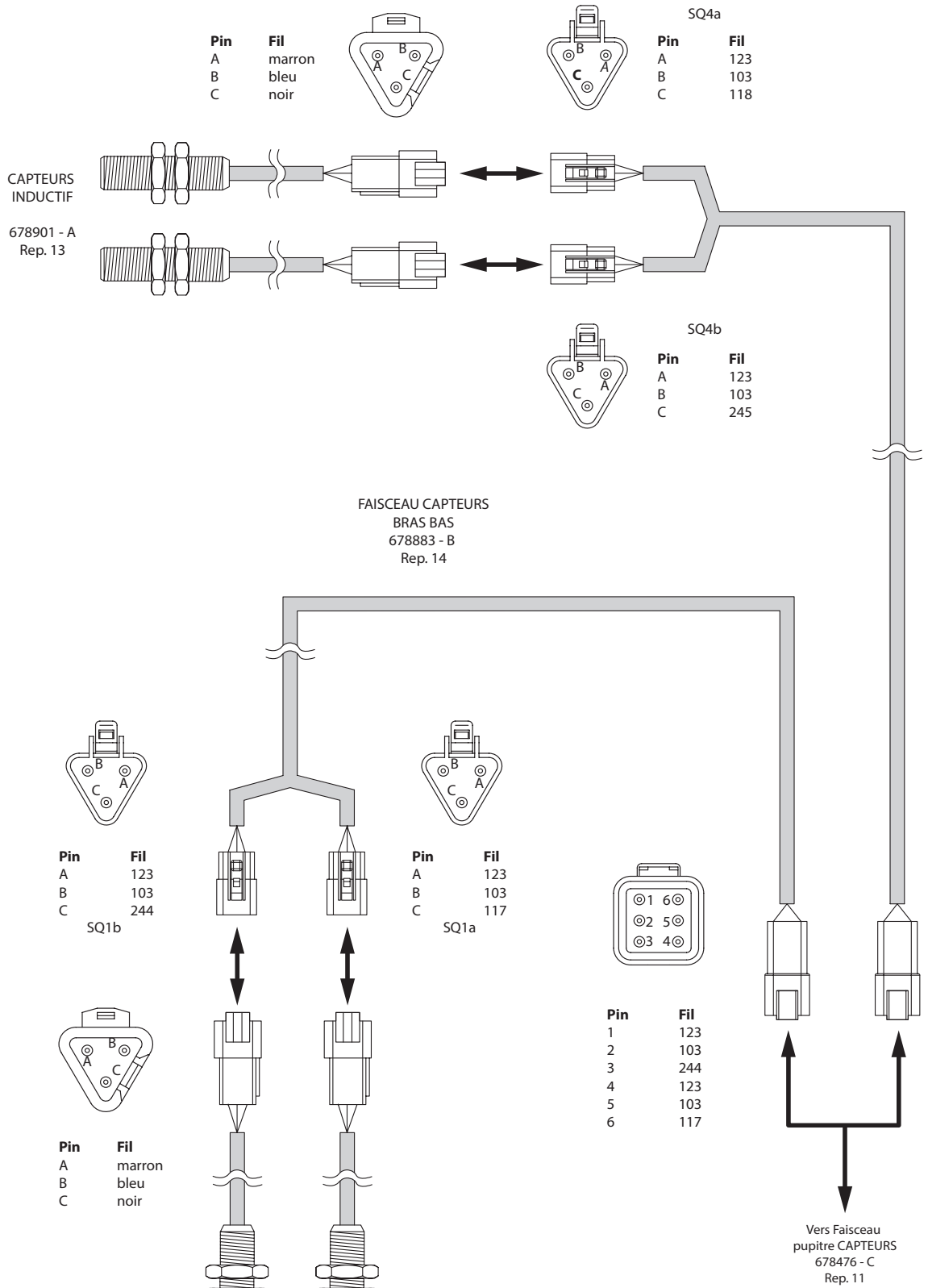
https://truckmanualshub.com/

MISCELLANEOUS HARNESS

- ITEMS 12, 13, 14, 15

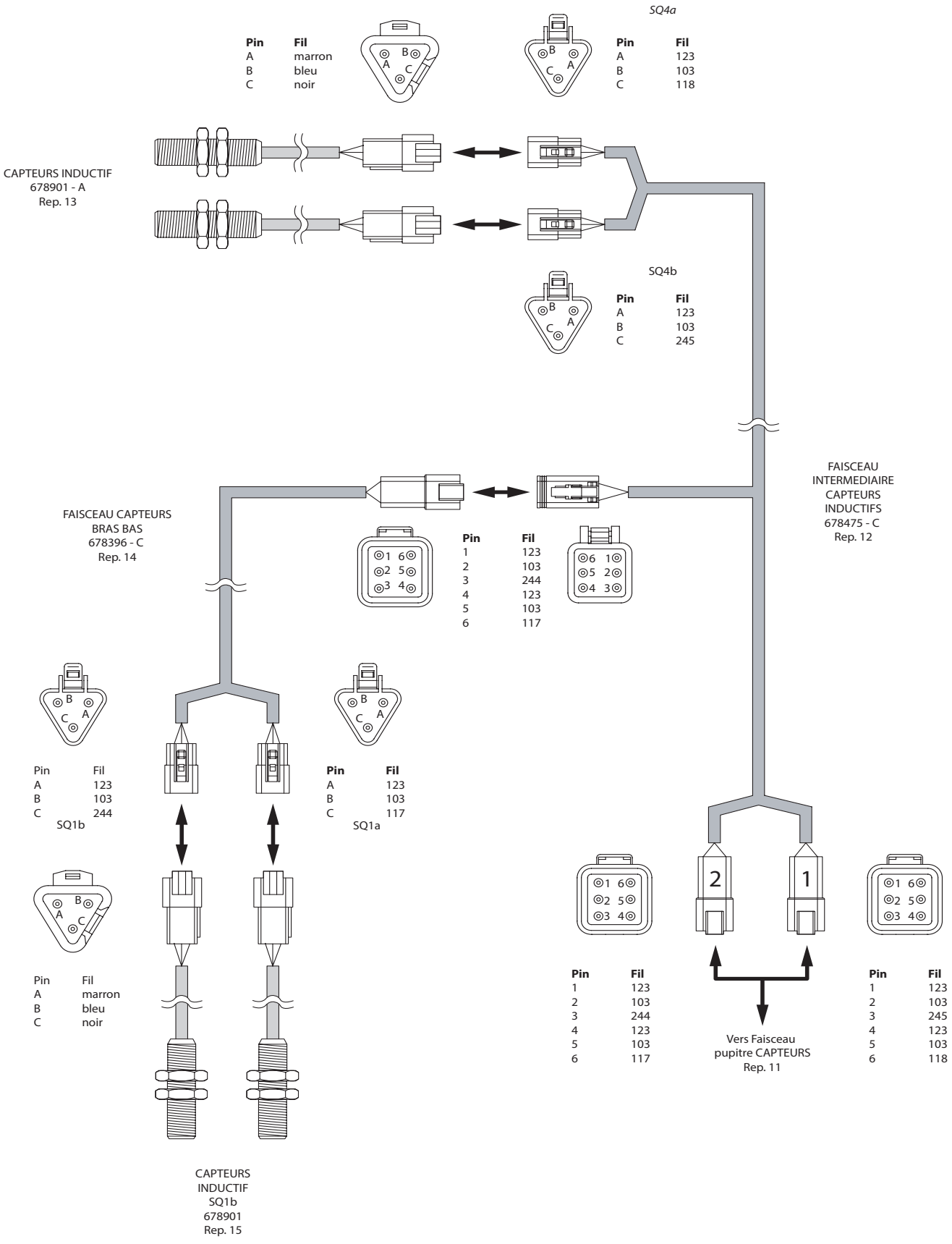
Installation procedure:

- 120 AETJL



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- ITEMS 12, 13, 14, 15
Installation procedure:
- 150 AETJC - 150 AETJC 3D - 150 AETJL - 170 AETJL - AETJ 43 - AETJ 43 3D - AETJ 49

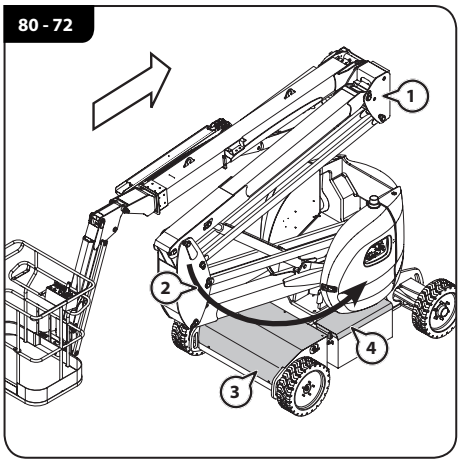


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80.3 ELECTRICAL CONTROL AND ADJUSTMENT

80.3.1 ZIVAN BATTERY CHARGER

ZIVAN BATTERY CHARGER REMOVAL



- Raise the arm 1/2 so that the upper hinge (1, 080 - 72) is raised by 1 m (39.37 in).

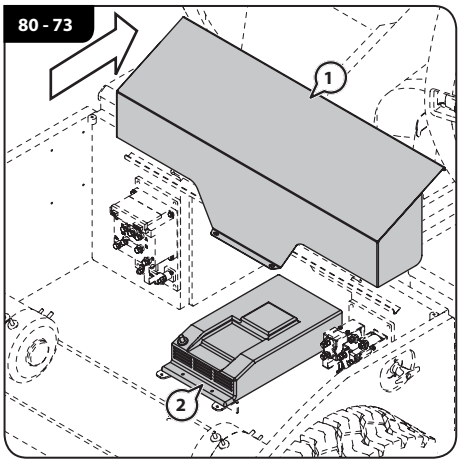
-Turn the turret by 1/4 turn (2, 080 - 73)

- Switch off the power supply.

- Remove the cover (3, 080 - 74).

- Remove the battery protective casings (4, 080 - 72).

- Remove the cables connected to the charger from the battery (*80.4.2 BATTERIES - REMOVAL, 137*)

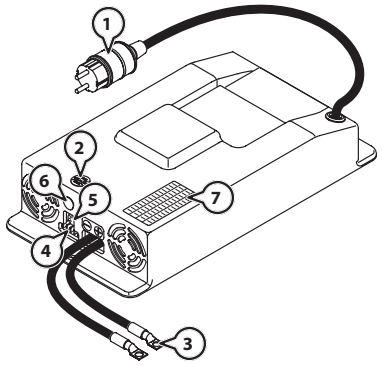


- Remove the cover plate (1, 080 - 73).

- Remove the charger (2, 080 - 73).

ZIVAN BATTERY CHARGER DESCRIPTION

80 - 74

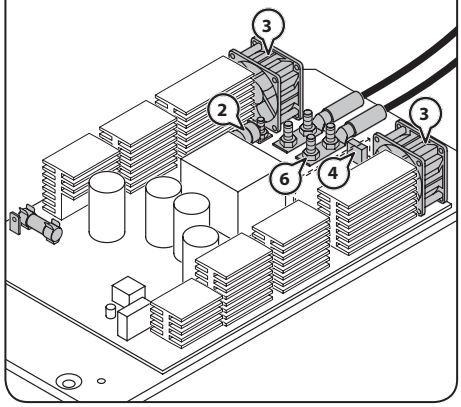


EXTERNAL VIEW

- Mains power supply cable..... (1, 080 - 74)
- LED indicator ..... (2, 080 - 74)
- Charging cables .....(3, 080 - 74)
- Auxiliary contacts ..... (4, 080 - 74)
- 5-pin plug..... (5, 080 - 74)
- Capacity switch protective plug ..... (6, 080 - 74)
- Sticker: indication of settings (position of capacity switch) made during first installation ..... (7, 080 - 74)

NOTE: ignore this sticker when configuring the settings for the charger (*ZIVAN BATTERY CHARGER CONNECTIONS LOAD CURVES, 104*)

80 - 75



INTERNAL VIEW

- Input fuse F1 (1, 080 - 75): 20 A (see parts catalog)

- Output fuse F2 (2, 080 - 75): 45 A (see parts catalog)

- Fans ..... (3, 080 - 75)

- Battery capacity switch C ..... (4, 080 - 75)

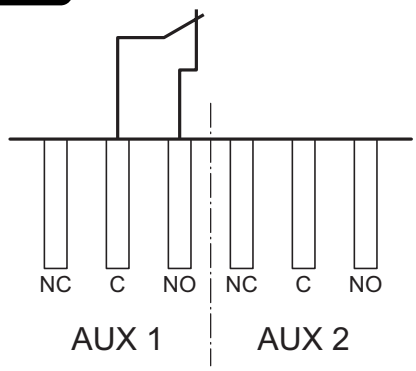
- Input terminals ..... (5, 080 - 75)

- Output terminals ..... (6, 080 - 77)

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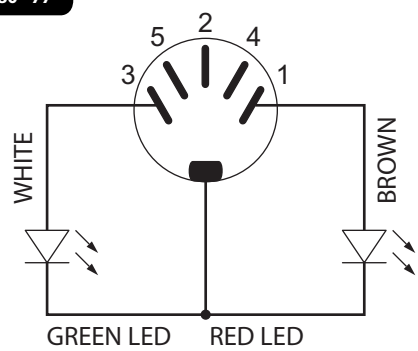
ZIVAN BATTERY CHARGER CONNECTIONS

80 - 76



- Auxiliary contacts to cut-off load movements: internal diagram (see figure, 080 - 76).

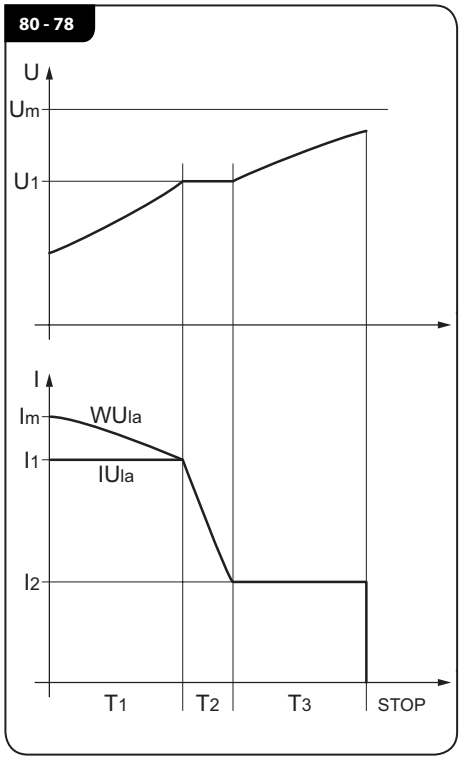
80 - 77



- 5-pin plug to connection the removed LED harness: external diagram (see figure, 080 - 77).

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ZIVAN BATTERY CHARGER CONNECTIONS LOAD CURVES



- Voltage curve:

- Amperage curve:

- Properties:

Intensity: Im = 43 A I1 = 36 A I2 = 4% C5
Voltage: U1 = 57.6 V Um = 66 V
Other: C = C5

Type of charger	IULa								WULa							
Capacity switch position	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
Capacity (Ah)	345	315	290	260	230	200	175	145	345	315	290	260	230	200	175	145
I2 (A)	138	127	115	104	92	81	69	58	138	127	115	104	92	81	69	58

Charging time	IULa								WULa							
Capacity switch position	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
T1max (h)	10hr 45min	10hr	9hr	8hr	7hr 15min	6hr 15min	5hr 30min	4hr 30min	10hr 45min	10hr	9hr	8hr	7hr 15min	6hr 15min	5hr 30min	4hr 30min
T2max (h)	3hr	3hr	3hr	3hr	3hr	3hr	3hr	3hr	3hr	3hr	3hr	3hr	3hr	3hr	3hr	3hr
(T1+T2+T3)max (h)	15hr 45min	15hr	14hr	13hr	12hr 15min	11hr 15min	10hr 30min	9hr 30min	15hr 45min	15hr	14hr	13hr	12hr 15min	11hr 15min	10hr 30min	9hr 30min

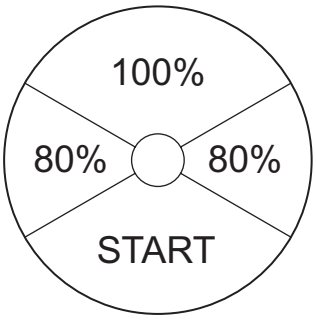
⚠ CAUTION

The capacity Switch is to be configured based on the battery properties shown on the stick affixed to the battery.

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ZIVAN BATTERY CHARGER - INDICATORS

80 - 79

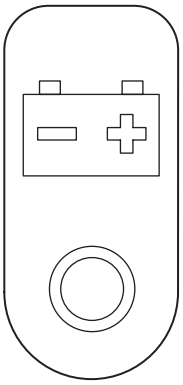


LED charger indicator (see figure, 080 - 79)

- Red permanently on: initial charging phase.
- Yellow permanently on: battery at 80% charge.
- Green permanently on: battery at 100% charge.

- LED flashing + intermittent audible signal from the charger: alarm situation (***80.5 TROUBLESHOOTING - ELECTRICAL,*** ***139***)

80 - 80



LED indicator removed (see figure, 080 - 80)

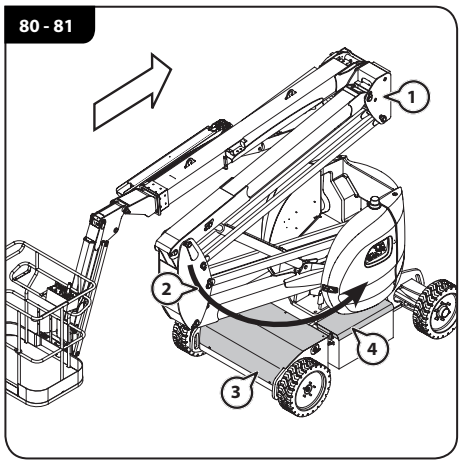
- Red permanently on: initial charging phase.
- Yellow permanently on: battery at 80% charge.
- Green permanently on: battery at 100% charge.

- LED flashing + intermittent audible signal from the charger: alarm situation (***80.5 TROUBLESHOOTING - ELECTRICAL,*** ***139***)

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80.3.2 IES BATTERY CHARGER

80 - 81



IES BATTERY CHARGER REMOVAL

- Raise the arm 1/2 so that the upper hinge (1, 080 - 81) is raised by 1 m (39.37 in).

-Turn the turret by 1/4 turn (2, 080 - 81)

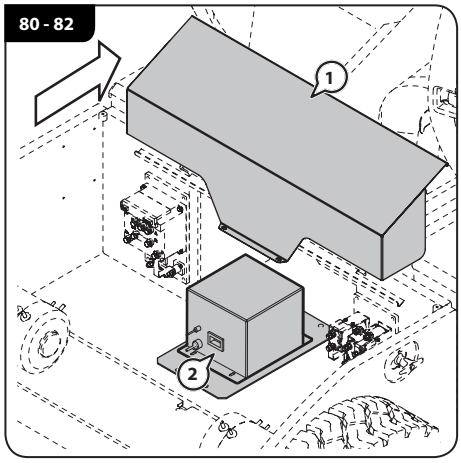
- Switch off the power supply.

- Remove the cover (3, 080 - 81).

- Remove the battery protective casings (4, 080 - 81).

- Remove the cables connected to the charger from the battery (***80.4.2 BATTERIES - REMOVAL, 137***)

80 - 82



- Remove the cover plate (1, 080 - 82).

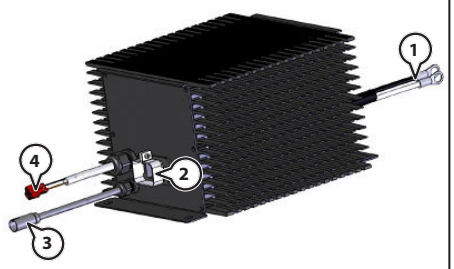
- Remove the charger (2, 080 - 82).

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IES BATTERY CHARGER DESCRIPTION

EXTERNAL VIEW

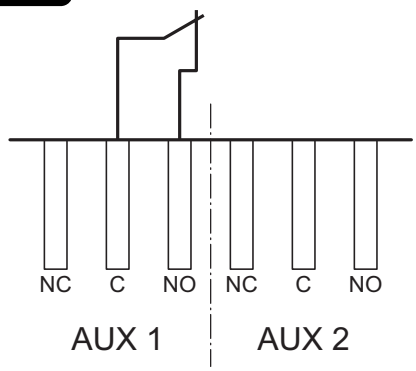
80 - 83



- Charging cables .....(1, 080 - 83)
- Mains power supply cable..... (2, 080 - 83)
- Auxiliary contacts ..... (3, 080 - 83)
- 5-pin plug..... (4, 080 - 83)

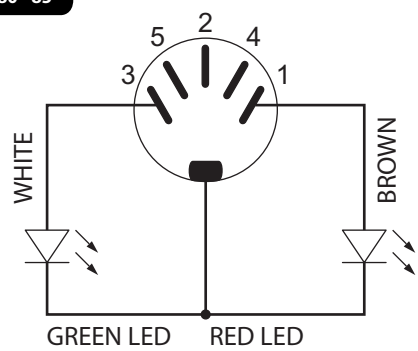
IES BATTERY CHARGER CONNECTIONS

80 - 84



Auxiliary contacts to cut-off load movements: internal diagram (see figure, 080 - 84).

80 - 85



- 5-pin plug to connection the removed LED harness: external diagram (see figure, 080 - 85).

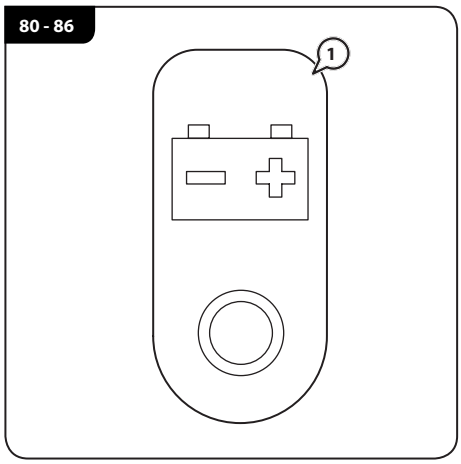
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IES BATTERY CHARGER CONNECTIONS LOAD CURVES

The charging current is selected automatically.

IES BATTERY CHARGER - INDICATOR

80 - 86



LED indicator removed (see figure, 080 - 86)
- Off: charger not powered
- Red permanently on: initial charging phase.
- Yellow permanently on: battery at 80% charge.
- Green permanently on: battery at 100% charge.

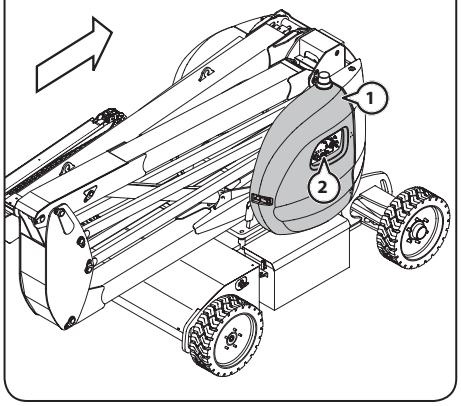
- LED flashing:
Yellow: battery balancing cycle
Red: alarm situation (***80.5 TROUBLESHOOTING - ELECTRICAL,*** ***139***)

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80.3.3 ELECTRONIC MODULES - CONTROL AND SETTINGS

ELECTRONIC CONTROL UNITS - REMOVAL

80 - 87

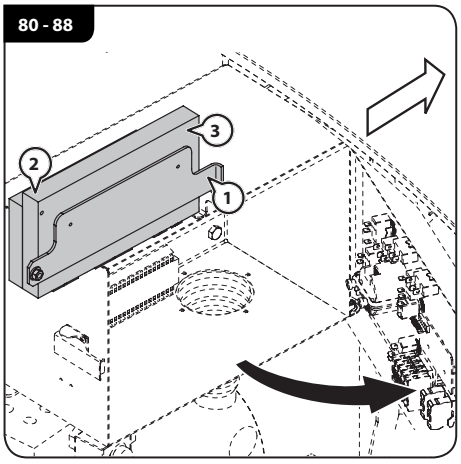


Base module control unit + safety control card

- Open the right-hand turret cover (1, 080 - 87).

- Open the front face of the base control panel (2, 080 - 87).

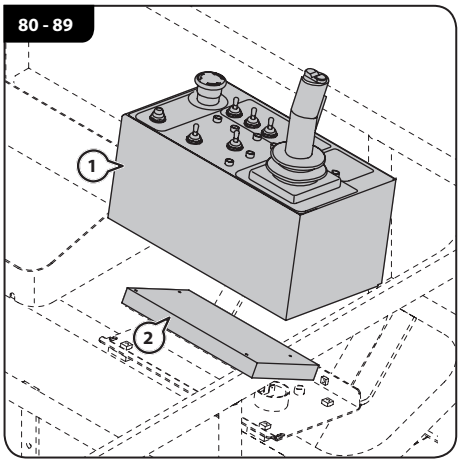
80 - 88



- Remove the plate holding the card in place (1, 080 - 88) and remove the cards:

- Safety control card (2, 080 - 88).
- Base module control unit (3, 080 - 88).

80 - 89



Basket module control unit

- Remove the front face from the basket control panel (1, 080 - 89).

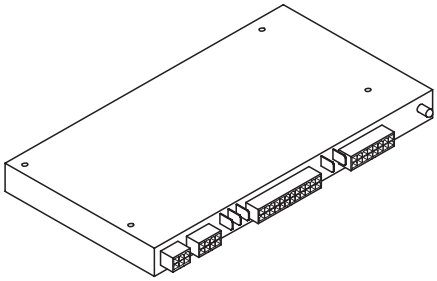
- Remove the basket module control unit (2, 080 - 89).

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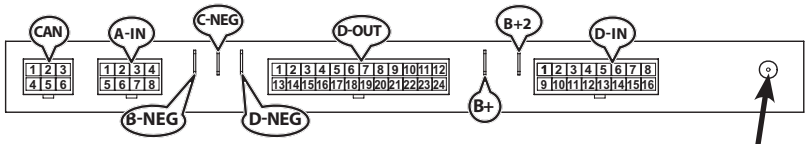
ELECTRONIC CONTROL UNITS DESCRIPTION AND WIRING

Base module control unit

80 - 90



80 - 91



LED RUN :
- ON, control unit powered.
- OFF, control unit switched off, defective or BUS-CAN problem.

Base module control unit				Measure using the calibrator				Multimeter	
Connector	PIN	WireN°	Signal	Menu	Description	Not activated	Activated	Not activated	Activated
CAN	1	243	+12V		NOT MEASURABLE				
	2		0V		NOT MEASURABLE				
	3		Free		NOT MEASURABLE				
	4		+12V		NOT MEASURABLE				
	5	113	CAN-H		NOT MEASURABLE				
	6	112	CAN-L		NOT MEASURABLE				
A-IN	1		Free		NOT MEASURABLE				
	2		Free		NOT MEASURABLE				
	3		Free		NOT MEASURABLE				
	4		Free		NOT MEASURABLE				
	5		Free		NOT MEASURABLE				
	6		Free		NOT MEASURABLE				
	7		Free		NOT MEASURABLE				
	8		Free		NOT MEASURABLE				
B-NEG		103	0V (masse)		NOT MEASURABLE				
C-NEG		103	0V (masse)		NOT MEASURABLE				
D-NEG		103	0V (masse)		NOT MEASURABLE				
D-IN	1	215	JIB - Right Rotation	Measurement to be performed using multimeter					0V
	2	214	Arm 1/2 - Raised	2.6.1	Boom 1 up	Open	Closed		0V
	3	213	Arm 1/2 - Lowered	2.6.2	Boom 1 down	Open	Closed		0V
	4	212	Arm 3 - Raised	2.6.3	Boom 2 up	Open	Closed		0V
	5	211	Arm 3 Lowered	2.6.4	Boom 2 down	Open	Closed		0V
	6	208	Turret - Left Rotation	2.6.9	Slew left	Open	Closed		0V
	7	207	Turret - Right Rotation	2.6.10	Slew right	Open	Closed		0V
	8	205	Telescope - Retracted	2.6.7	Tele in	Open	Closed		0V
	9	206	Telescope - Extended	2.6.8	Tele out	Open	Closed		0V
	10	201	Tilt - Raised	2.6.12	Cage level forward	Open	Closed		0V
	11	202	Tilt - Lowered	2.6.13	Cage level reverse	Open	Closed		0V
	12	209	Jib - up	2.6.5	Jib up	Open	Closed		0V
	13	210	Jib - down	2.6.6	Jib down	Open	Closed		0V
	14	204	Basket - Left Rotation	2.6.14	Cage rotate left	Open	Closed		0V
	15	203	Basket - Right Rotation	2.6.15	Cage rotate right	Open	Closed		0V
	16	216	JIB - Left Rotation	Measurement to be performed using multimeter					
B+		106	+48V bat		NOT MEASURABLE				
B2+		106	+48V bat		NOT MEASURABLE				

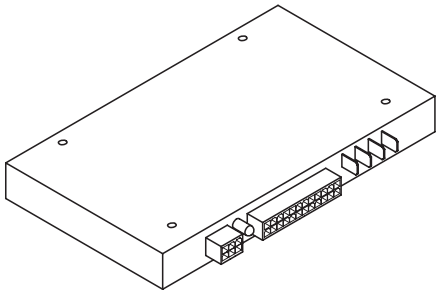
Base module control unit				Measure using the calibrator				Multimeter	
Connector	PIN	WireN°	Signal	Menu	Description	Not activated	Activated	Not activated	Activated
D-OUT	1	262	Tank return		NOT MEASURABLE				
	2	227	Arm 1/2 - Lowered		NOT MEASURABLE				
	3	239	Arm 1/2 - Raised		NOT MEASURABLE				
	4	226	Arm 3 Lowered		NOT MEASURABLE				
	5	238	Arm 3 - Raised		NOT MEASURABLE				
	6	224	Jib - down		NOT MEASURABLE				
	7	236	Jib - up		NOT MEASURABLE				
	8	221	Turret - Left Rotation		NOT MEASURABLE				
	9	225	Telescope - Extended		NOT MEASURABLE				
	10	228	Turret - Right Rotation		NOT MEASURABLE				
	11	219	JIB - Left Rotation		NOT MEASURABLE				
	12	222	Basket - Left Rotation		NOT MEASURABLE				
	13	237	Telescope - Extended		NOT MEASURABLE				
	14	223	Compensation - Lowered		NOT MEASURABLE				
	15	234	Steering - Left		NOT MEASURABLE				
	16	229	Steering - Right		NOT MEASURABLE				
	17	220	JIB - Right Rotation		NOT MEASURABLE				
	18	230	Basket - Right Rotation		NOT MEASURABLE				
	19	217	Horn		NOT MEASURABLE				
	20	218	Flashing Lights		NOT MEASURABLE				
	21	231	Compensation - Raised		NOT MEASURABLE				
	22	233	Brake		NOT MEASURABLE				
	23		Free		NOT MEASURABLE				
	24	235	Pump		NOT MEASURABLE				

NOTE: When powered on, the LED flashes once, then switches on or remains off depending on the results of the test phase.
- The operation of the base and basket fail-safes is checked using input 2.4.5 (◁ ***80.3.4 VARIABLE SPEED CONTROLLERS - CONTROL AND SETTINGS,*** ***115***)
- To check the inputs on the base control unit, it is imperative that the fail-safe button is pressed, then proceed by holding down the movement selector.

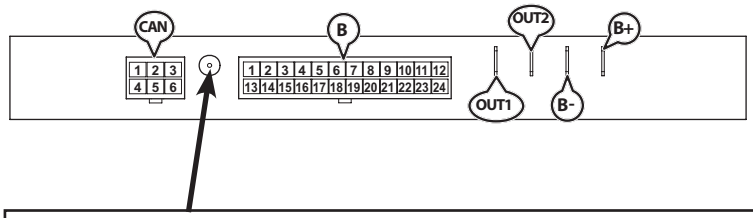
https://truckmanualshub.com/

Safety control card

80 - 93



80 - 92



LED RUN :
ON, control unit powered.
FLASHING, fault on the overload circuit.
OFF, control unit switched off, defective, or BUS-CAN problem.

Base module control unit				Measure using the calibrator				Multimeter	
Connector	PIN	Wire N°	Signal	Menu	Description	Not activated	Activated	Not activated	Activated
B	1	117	Arm 1/2 down - SQ1a	1.3.11	Boom rest	Open	Closed		0V (1)
	2	244	Arm 1/2 down - SQ1b	1.3.17	Boom rest 2	Open	Closed		0V (1)
	3	118	Telescope retracted - SQ4a	1.3.12	Tele sw	Open	Closed		0V (1)
	4	245	Telescope retracted - SQ4b	1.3.15	Tele sw 2	Open	Closed		0V (1)
	5	332	Overload - SQ5a	2.4.9	Cage over	see overload			_ (2)
	6	333	Overload - SQ5b	1.3.16	Cage over 2	see overload			_ (2)
	7		Free		NOT MEASURABLE				
	8	408	Return to overload validation	1.3.14	SFTY Rel	Open	Closed		0V (3)
	9		Free		NOT MEASURABLE				
	10		Free		NOT MEASURABLE				
	11		Free		NOT MEASURABLE				
	12		Free		NOT MEASURABLE				
	13		Free		NOT MEASURABLE				
	14		Free		NOT MEASURABLE				
	15		Free		NOT MEASURABLE				
	16		Free		NOT MEASURABLE				
	17		Free		NOT MEASURABLE				
	18		Free		NOT MEASURABLE				
	19		Free		NOT MEASURABLE				
	20		Free		NOT MEASURABLE				
	21		Free		NOT MEASURABLE				
	22		Free		NOT MEASURABLE				
	23		Free		NOT MEASURABLE				
	24		Free		NOT MEASURABLE				
CAN	1				NOT MEASURABLE				
	2				NOT MEASURABLE				
	3				NOT MEASURABLE				
	4				NOT MEASURABLE				
	5	112	CAN-L		NOT MEASURABLE				
	6	113	CAN-H		NOT MEASURABLE				
OUT 1		406	Validation overload Ka11						0V
OUT 2		405	Free		NOT MEASURABLE				
B-		103	0V		NOT MEASURABLE				
B+		106	+48V		NOT MEASURABLE				

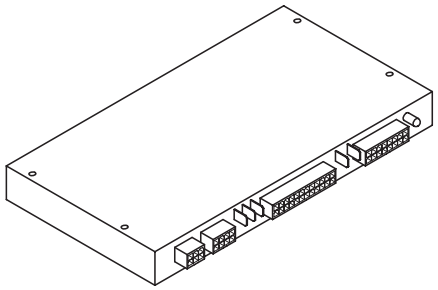
1: 0 V in transport position only.
2 : .....(*80.3.5 SAFETY COMPONENTS - CONTROL AND SETTINGS,* 126).
3: Input must be in the "closed" state in order to obtain all movements.

NOTE: When powered on, the LED flashes once, then switches on or remains off depending on the results of the test phase.
NOTE: There are no parameters for displaying the outputs, measurements must be taken with a multimeter.

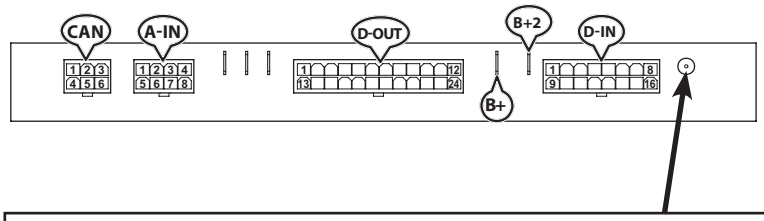
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Basket module control unit

80 - 94



80 - 95



LED RUN :
- ON, control unit powered.
- OFF, control unit switched off, defective or BUS-CAN problem.

Base module control unit				Measure using the calibrator				Multimeter	
Connector	PIN	Wire N°	Signal	Menu	Description	Not activated	Activated	Not activated	Activated
CAN	1		Free		NOT MEASURABLE				
	2		Free		NOT MEASURABLE				
	3		Free		NOT MEASURABLE				
	4		Free		NOT MEASURABLE				
	5	112	CAN-L		NOT MEASURABLE				
	6	113	CAN-H		NOT MEASURABLE				
A-IN	1	315	Rotation set-point (%)	2.4.3	Y Axis Joystick %				_ (1)
			Rotation set-point V)	2.4.4	Y Axis Joystick Voltage				_ (1)
	2	318	Traction set-point (%)	2.4.1	X Axis Joystick %				_ (1)
			Traction set-point (V)	2.4.2	X Axis Joystick Voltage				_ (1)
	3		Free		NOT MEASURABLE				
	4		Free		NOT MEASURABLE				
	5		Free		NOT MEASURABLE				
	6		Free		NOT MEASURABLE				
	7		Free		NOT MEASURABLE				
	8		Free		NOT MEASURABLE				
B-NEG		103	0V (masse)		NOT MEASURABLE				
C-NEG		103	0V (masse)		NOT MEASURABLE				
D-NEG		103	0V (masse)		NOT MEASURABLE				
D-IN	1	319	Fail-safe	2.4.5	Deadman	Open	Closed		0V (9)
	2	312	Overload 1 NO		NOT MEASURABLE				_ (2)
	3	311	Travel selection	2.4.10	Traction select	Open	Closed		0V (3)
	4	313	Not neutral	1.3.18	Joystick NTRL sw	Open	Closed		0V (8)
	5	332	Overload **SQ5b** NF	2.4.9	NOT MEASURABLE				
	6	316	Steering G	1.3.6	Steer left	Open	Closed		0V (3)
	7	317	Steering D	1.3.7	Steer right	Open	Closed		0V (3)
	8	306	JIB Rotation		NOT MEASURABLE				0V (3)
	9	310	Select arm 1/2	2.4.11	Boom 1 select	Open	Closed		0V (3)
	10	309	Select arm 3	2.4.12	Boom 2 select	Open	Closed		0V (3)
	11	304	Telescope selection	2.4.14	Tele select	Open	Closed		0V (3)
	12	303	Jib selection	2.4.13	Jib select	Open	Closed		0V (3)
	13	305	Compensation selection	2.4.16	Cage level select	Open	Closed		0V (3)
	14	308	Basket rotation selection	2.4.17	Cage rotate	Open	Closed		0V (10)
	15	307	Turret rotation selection	2.4.15	Slew select	Open	Closed		0V (10)
	16	302	Horn		NOT MEASURABLE				0V (3)
B+		106	+48V battery		NOT MEASURABLE				
B2+		106	+48V battery		NOT MEASURABLE				

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Base module control unit				Measure using the calibrator				Multimeter	
Connector	PIN	Wire N°	Signal	Menu	Description	Not activated	Activated	Not activated	Activated
D-OUT	1	325	Turret rotation	NOT MEASURABLE					0V
	2	328	Arm 1/2	NOT MEASURABLE					0V
	3	327	Arm 3	NOT MEASURABLE					0V
	4	322	Telescope	NOT MEASURABLE					0V
	5	321	Jib	NOT MEASURABLE					0V
	6	324	JIB Rotation	NOT MEASURABLE					0V
	7	323	Compensation	NOT MEASURABLE					0V
	8	326	Basket rotation	NOT MEASURABLE					0V
	9		Free	NOT MEASURABLE					
	10		Free	NOT MEASURABLE					
	11		Free	NOT MEASURABLE					
	12		Free	NOT MEASURABLE					
	13	329	Traveling	NOT MEASURABLE					0V
	14	331	Alarm/faults	NOT MEASURABLE					_ (4)
	15	320	Buzzer	NOT MEASURABLE					_ (5)
	16	330	Tilt	NOT MEASURABLE					_ (6)
	17			NOT MEASURABLE					
	18	335	Overload ref.	NOT MEASURABLE					_ (7)
	19	338	Maintenance alarm	NOT MEASURABLE					0V
	20			NOT MEASURABLE					
	21	336	Overload	NOT MEASURABLE					_ (7)
	22	338	Tilt ref.	NOT MEASURABLE				not used	
	23		Free	NOT MEASURABLE					
	24		Free	NOT MEASURABLE					

1 - (◁ ***80.3.6 MANIPULATOR - OPERATION AND SETTINGS,*** 🗍 ***133***)
2 - See overload settings (◁ ***80.3.5 SAFETY COMPONENTS - CONTROL AND SETTINGS,*** 🗍 ***126***)
3 - Keep the selection to measure the signal.
4 - Negative signal (0 V) intermittent: LED overload.
5 - Negative signal (0 V) intermittent if in tilt, continue if overload.
6 - Negative signal (0 V) intermittent (tilt LED + variable speed controller redundancy).
7 - See overload (◁ ***80.3.5 SAFETY COMPONENTS - CONTROL AND SETTINGS,*** 🗍 ***126***)
8 - Joystick in neutral position if parameter displayed is **Open**.
Each time the joystick is moved, the parameter turns to Closed.
9 - The operation of the base and basket failsafes is checked using input 2.4.5 (◁ ***80.3.4 VARIABLE SPEED CONTROLLERS - CONTROL AND SETTINGS,*** 🗍 ***115***)
10 - Based on the position of the selector at the time of the check.

NOTE:
- When powered on, the LED flashes once, then switches on or remains off depending on the results of the test phase.

- There are no parameters for displaying the outputs of the basket module control unit, measurements must be taken with a multimeter.

ELECTRONIC MODULES - DIAGNOSTICS AND SETTINGS

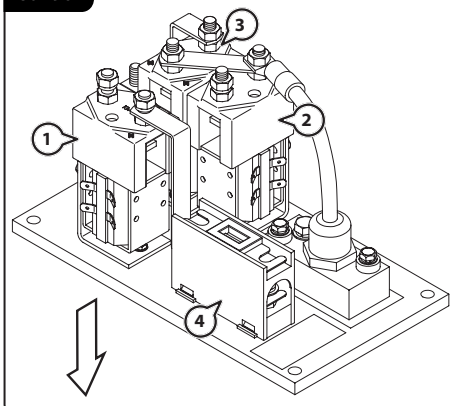
(◁ ***80.3.4 VARIABLE SPEED CONTROLLERS - CONTROL AND SETTINGS,*** 🗍 ***115***)

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80.3.4 VARIABLE SPEED CONTROLLERS - CONTROL AND SETTINGS

VARIABLE SPEED CONTROLLERS - DESCRIPTION

80 - 96



Relay and fuse holder plate

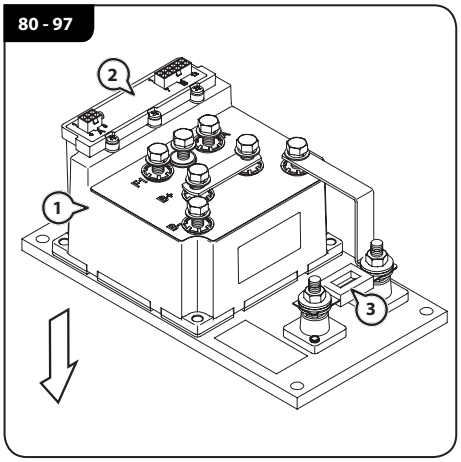
- Power contacts:

- Line contact KM1 (A1-1) - Resistance ..... 46.1 Ω
- Electric pump KM3 (2, 080 - 96) - Resistance ..... 46.1 Ω
- Traction/pump motors KM2 (3, 080 - 96) - Resistance ..... 19.2 Ω

- Free wheel diode (4, 080 - 96) - Resistance ..... 44 Ω

- Fuse of power circuit (4, 080 - 96): 325 A (see parts catalog)

80 - 97



Variable speed controller plate

- Variable speed controller (1, 080 - 97).

- Electronic module (2, 080 - 97).

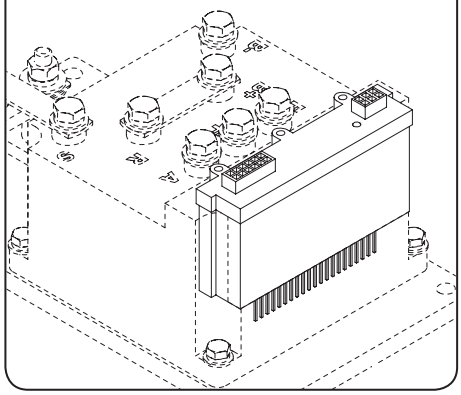
- Fuse (3, 080 - 97): 100A (see parts catalog)

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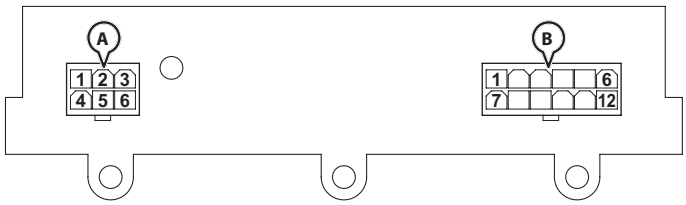
VARIABLE SPEED CONTROLLERS - WIRING

Control circuit - Electronic module

80 - 98



80 - 99



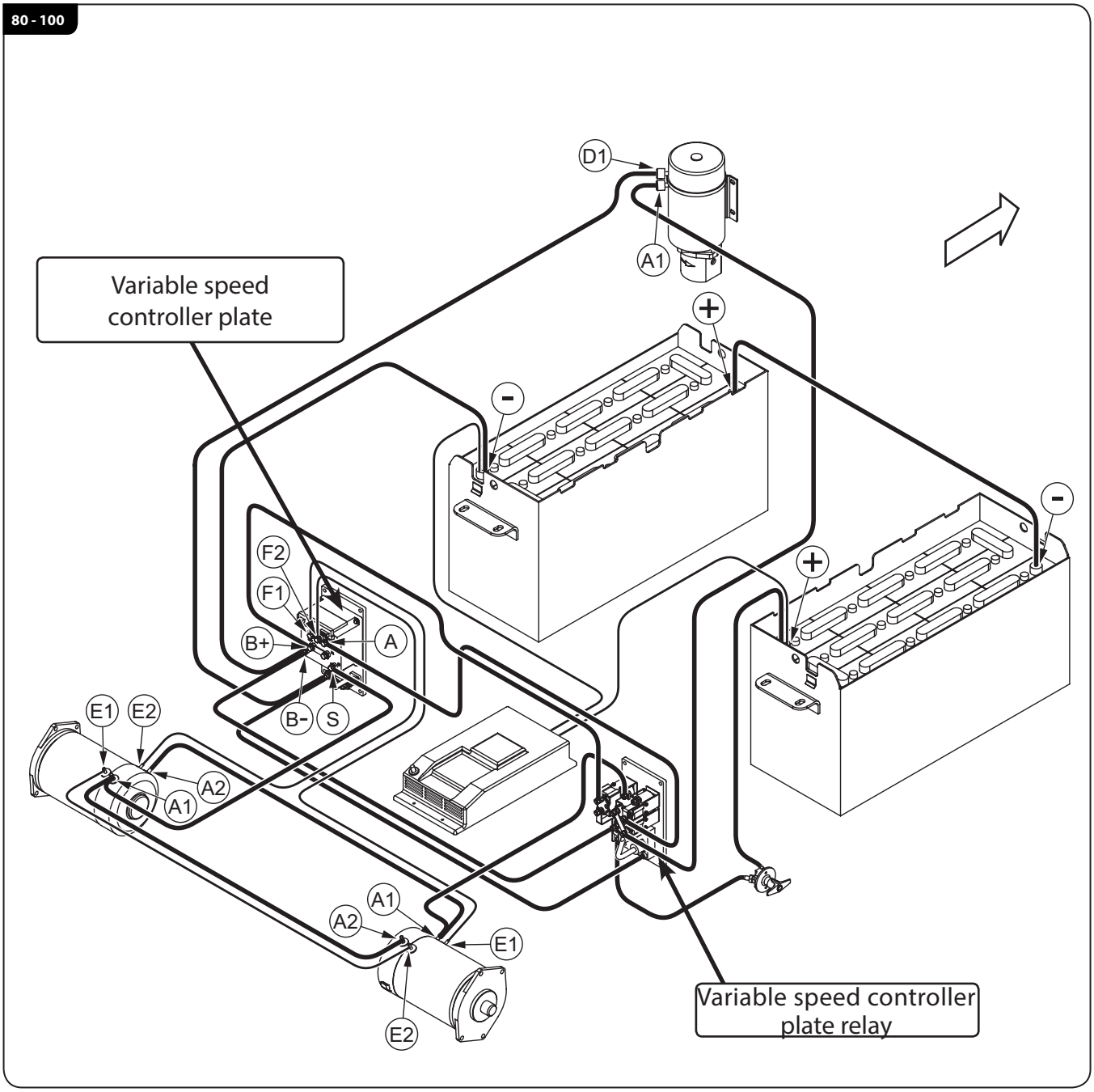
Base module control unit					Measure using the calibrator				Multimeter	
Connector	*PIN*	*Wire N°*	*Signal*	*Type of signal*	*Menu*	*Description*	*Not activated*	*Activated*	*Not activated*	*Activated*
A	1	128	+10.5V	Not used		NOT MEASURABLE				
	2	128	0V			NOT MEASURABLE				
	3			Free		NOT MEASURABLE				
	4		+10.5V	Not used		NOT MEASURABLE				
	5	113	CAN-L			NOT MEASURABLE				
	6	112	CAN-H			NOT MEASURABLE				
B	1	106	Power supply	Incoming						
	2	119	Pressure switch	Incoming	1.3.13	Brake release	Open	Closed		+48V
	3	117	Arm down SQ1a	Incoming	1.3.11	Boom rest	Open	Closed		_ (1)
	4	109	Tilt	Incoming	1.3.10	Tilt	Open	Closed		0V (3)
	5	108	Base selector	Incoming	2.6.11	Lower box select	Open	Closed		0V (5)
	6	118	Telescope retracted SQ4a	Incoming	1.3.12	Tele sw	Open	Closed		0V (2)
	7			Free						
	8	102	Line switch	Outgoing						0V
	9	130	Pump/traction switch	Outgoing						0V (4)
	10			Free						
	11	121	Switch KM2	Outgoing						
	12		+12V							

1 - See operation of brake release electrical circuit.
2 - 0 V when the base/basket selector is set to base.
3 - 0 V in transport position only.
4 - 0 V only during hydraulic movements (except for travel, left/right steering, and supplying brakes).
5 - See tilt sensor settings for operating conditions (◁ ***TILT SENSOR - SETTINGS,*** ***126***)

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Power circuit

80 - 100



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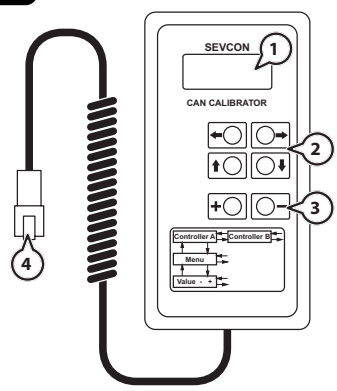
VARIABLE SPEED CONTROLLERS - DIAGNOSTIC AND ADJUSTMENT TOOLS

CALIBRATOR

⚠ CAUTION

The calibrator is also used for:
- The adjustment of the switches. (◅ ***80.3.4 VARIABLE SPEED CONTROLLERS - CONTROL AND SETTINGS,*** ***115***)
- Testing the manipulators. (◅ ***80.3.6 MANIPULATOR - OPERATION AND SETTINGS,*** ***133***)
- Troubleshooting. (◅ ***80.5 TROUBLESHOOTING - ELECTRICAL,*** ***139***)

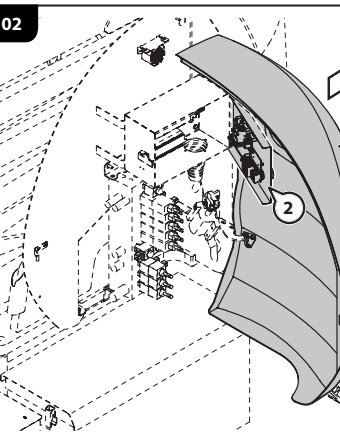
80 - 101



Description

- Screen (1, 080 - 101).
- Scrolling buttons (2, 080 - 101) (◅ ***VARIABLE SPEED CONTROLLERS - USE OF CALIBRATOR,*** ***120***)
- Incrementation buttons (3, 080 - 101) (◅ ***VARIABLE SPEED CONTROLLERS - USE OF CALIBRATOR,*** ***120***)
- Connection socket (4, 080 - 101).

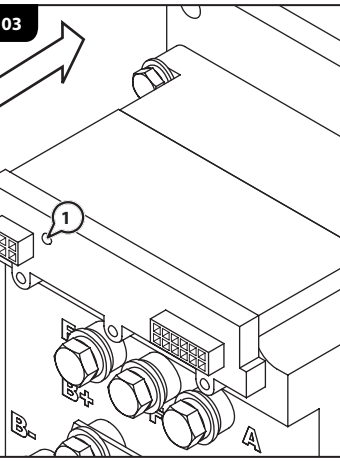
80 - 102



Fitting

- Open the right-hand turret cover (1, 080 - 102).
- Open the front face of the base control panel (2, 080 - 102).
- Identify the connection cable and attach to it the connection socket (4, 080 - 101).
- Switch on the access platform.
- Adjust or check the variable speed controllers (◅ ***CONFIGURATION MENUS,*** ***121***)

80 - 103



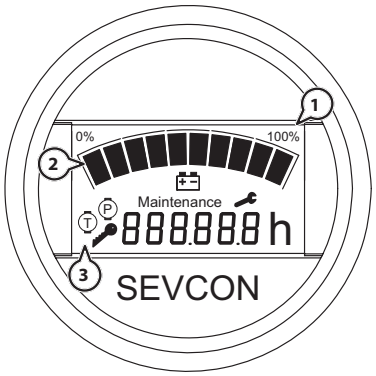
DIAGNOSTIC LED

- LED (1, 080 - 103).

- Status of LED and meaning (◅ ***80.1 ELECTRICAL SCHEMATIC DIAGRAMS,*** ***73***)

BATTERY CHARGE INDICATOR/HOUR METER

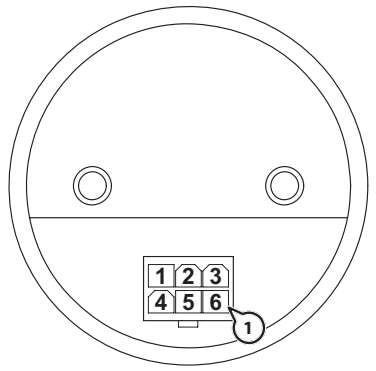
80 - 104



Description

- Screen (1, 080 - 104).
- Battery charge indicator (2, 080 - 104).
- Hour meter and variable speed controller fault display screen (3, 080 - 104).

80 - 105



- Connection socket (1, 080 - 105).

Operation (see instruction manual).

Connection

PIN	*Signal*
1	Free
2	0V (masse)
3	+12V (back-lit)
4	+12V (power supply)
5	CAN_H
6	CAN_L

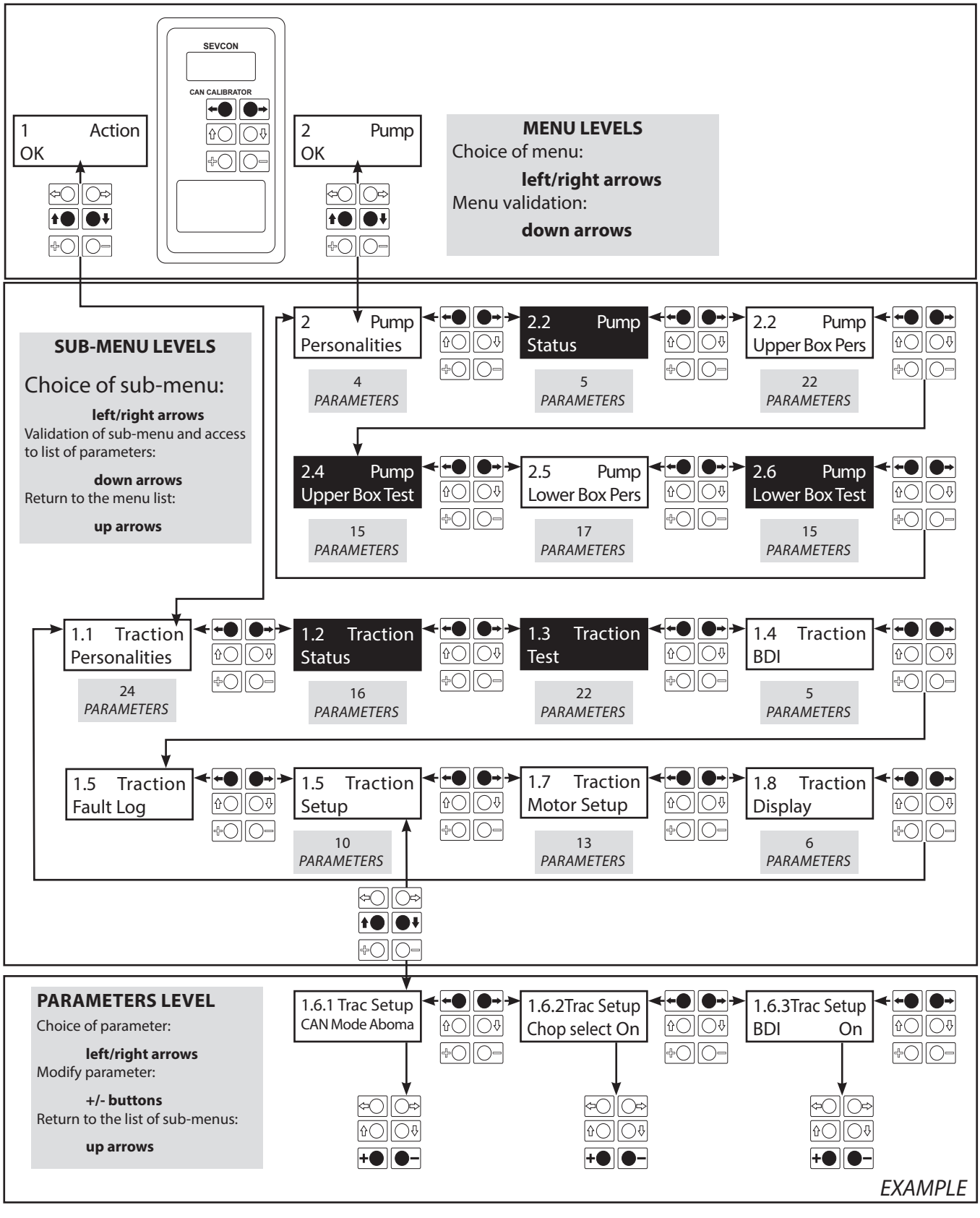
Error messages variable speed controller (◁ *80.1 ELECTRICAL SCHEMATIC DIAGRAMS,* ▯ *73*)

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VARIABLE SPEED CONTROLLERS - USE OF CALIBRATOR

Structure of electronic module menu

- Configuration submenus:
Black text on white background (◁ ***CONFIGURATION MENUS,*** 🗍 ***121***).
- Test submenus:
White text on black background (◁ ***TEST MENUS,*** 🗍 ***124***).



CONFIGURATION MENUS

Menu	*Traction Personalities*	*Travel parameters*	*Mini display*	*Maxi display*	*Pitch*	*Value*
1.1.1A	Armature I Max (A)	Armature limit current (A)	50	500	10	(*)
1.1.1F	Field I Max (A)	Field limit current (A)	10	50	1	50
1.1.2	Traction Accel Delay (s)	Acceleration curve (s)	0.1	5.0	0.1	1.8
1.1.3	Traction Decel Delay (s)	Deceleration curve (s)	0.1	5.0	0.1	0.1
1.1.3A	Traction Direction Decel Delay (s)	Deceleration curve current (A)	0.1	5.0	0.1	0.8
1.1.4	Traction Creep Speed (%)	Zero speed (offset0) (%)	0	25	1	3
1.1.5	Flat Regen Direction Braking (A)	Braking regeneration current on flat (A)	50	500	10	400
1.1.6	Tilt Regen Direction Braking (A)	Braking regeneration current in tilt (A)	50	500	10	500
1.1.7	Traction Regen Time (ms)	Recup time (mS)	0	300	10	10
1.1.8	Brake Threshold (V)	Threshold voltage (V)	0.09	3.20	0.016	0.8
1.1.9	Traction Maximum Speed (%)	Maximum speed (%)	0	100	1	100
1.1.10	Elevated Speed (%)	Working speed (%)	0	100	1	13
1.1.11	Tilt Speed (%)	Tilt speed (%)	0	100	1	100
1.1.12	Traction Cut 3 Speed (%)	Speed limit 3 (%)	0	100	1	100
1.1.13	Review delay (h)	Maintenance intervals (H)	0	100	1	50
1.1.14	Customers Options	Customizable settings	0	31	1	(+)
1.1.15	Low Speed Traction Speed (%)	Slow speed (%)	0	100	1	100
1.1.16	Low Battery Start (V)	Low battery safe start (V)	14.5	48.0	0.5	18
1.1.17	Low Battery Cutout (V)	Low battery cutout (V)	14.5	48.0	0.5	14.5
1.1.18	High Battery Start (V)	High battery safe start (V)	14.5	75.0	0.5	65
1.1.19	High Battery Cutout (V)	High battery cutout (V)	14.5	75.0	0.5	70
1.1.20	Battery Protection Level (V)	Battery protection (V)	14.5	48.0	0.5	14.5
1.1.21	Battery Protection Delay (s)	Battery protection delay (S)	0.1	2.5	0.1	0.5
1.1.22	Traction Alarm	Battery alarm				ON

(*) According to motor type.

(+) According to Beep option.

Menu	Traction BDI	Check Battery Charge	Mini display	Maxi display	Pitch	Value
1.4.1	BDI Level (%)	BDI battery charge level (%)	/	/	/	/
1.4.2	BDI Reset Level (V)	BDI battery nominal voltage (V)	2.00	2.50	0.01	2.10
1.4.3	BDI Discharge Level (V)	BDI Re enclenchement (V)	1.50	1.99	0.01	1.70
1.4.4	BDI Warning Level (%)	BDI empty battery (V)	0	90	1	30
1.4.5	BDI Cutout Level (%)	BDI Threshold warning (%)	0	90	1	20

Menu	***1.5 Traction Fault Log***	***Check Fault Log***	Mini display	Maxi display	Pitch	Value

Menu	Traction BDI	Check Battery Charge	Mini display	Maxi display	Pitch	Value
1.6.1	CAN Mode	Configuration of CAN system				Aboma
1.6.2	Chop Select	Select voltage of digital output codes				On
1.6.3	BDI	Battery Charge Indicator				On
1.6.4	Fault Log	Fault log				On
1.6.5	Service Log	Manage fault log				On
1.6.6	EU/US Functionality	Select specific functionality Europe/US				EU
1.6.7	Traction Full Speed (KPH)	Traction Max. Speed (Km/h)	0	160	1	21
1.6.8	Traction Full Speed (MPH)	Traction Max. Speed (mph)	0	100	0	13
1.6.9	Accelerator Characteristic	Select type of accelerator curve set-point				Centre-Pot
1.6.10	BDI Battery Voltage (V)	Battery rated voltage (V)	24	96	2	48

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Menu	Traction Motor Setup	Motor setup	Mini display	Maxi display	Pitch	Value
1.7.1	Armature I Low (A)	Armature low current (A)	10	240	10	90
1.7.2	Field I Low (A)	Field low current (A)	5	25	1	6
1.7.3	Armature I Mid (A)	Armature mid current (A)	90	400	10	200
1.7.4	Field I Mid (A)	Field mid current (A)	6	40	1	25
1.7.5	Armature I High (A)	Armature high current (A)	260	500	10	400
1.7.6	Field I High (A)	Field high current (A)	25	50	1	40
1.7.7	Armature Resistance (mOhm)	Armature resistance (mOhm)	0	255	1	13
1.7.8	Field Resistance (Ohm)	Field resistance (Ohm)	0.25	2.50	0.01	1.26
1.7.9	Drive Proportional Gain	Translation proportional gain	0	255	1	2
1.7.10	Drive Integral Gain	Travel total gain	0	16	1	6
1.7.11	Brake Proportional Gain	Brake proportional gain	0	255	1	40
1.7.12	Brake Integral Gain	Brake total gain	0	16	1	15
1.7.13	Speed Estimate Gain	Speed estimated gain	0	2.50	0.01	1.5

Menu	Traction BDI	Check Battery Charge	Mini display	Maxi display	Pitch	Value
1.8.1	Display Default Hours	Select hour meter to display				Aboma
1.8.2	Display Status Type	Select type of status data to display				On
1.8.3	Display Contrast	Set contrast level standard display screen	0	127	1	On
1.8.4	FFD Indicator 1	Select indicator 1 to display for advanced display screen				On
1.8.5	FFD Indicator 2	Select indicator 2 to display for advanced display screen				On
1.8.6	Display Fault Messages	Validate display of default messages				EU

Menu	Pump Personalities	Properties (hydraulic functions)	Mini display	Maxi display	Pitch	Value
2.1.1	Pump I Max	Pump max current (A)	50	500	10	350
2.1.2	Ramp Up Delay	Ramp up time (S)	0.1	5.0	0.1	1.8
2.1.3	Ramp Down Delay	Ramp down time (S)	0.1	0.5	0.1	0.5
2.1.4	Pump Creep Speed	Speed (%)	0	25	1	10

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Menu	Pump Upper Box Pers	Parameters Hydraulic Functions Basket codes	Average value			Time target		
			120AETJL	150AETL/C	170AETJL	120AETJL	150AETL/C	170AETJL
2.3.1	Boom 1 Up Speed (%)	Lifting speed arm 1 & 2	100			17	45	
2.3.2	Boom 1 Down Speed (%)	Lowering speed arm 1 & 2	42		65	26	45	
2.3.3	Boom 1 Cutback Speed (%)	Speed limit arm 1 & 2	100			100		
2.3.4	Boom 2 Up Speed (%)	Lifting speed arm 3 telescope extended	73	70	67	24	38	48
2.3.5	Boom 2 Down Speed (%)	Lowering speed arm 3 telescope extended	42	38	30	24	34	36
2.3.6	Boom 2 Cutback Speed (%)	Speed limit arm 3	100			100		
2.3.7	Jib Up Speed (%)	Speed jib lifting (%)	36			16		
2.3.8	Jib Down Speed (%)	Jib lowering speed (%)	20			18		
2.3.8A	Jib Rotate Left Speed (%)	Jib left rotation speed (%)	1			1		
2.3.8B	Jib Rotate Right Speed (%)	Jib right rotation speed (%)	1			1		
2.3.9	Tele In Speed (%)	Speed telescope retraction (%)	100			12	15	17
2.3.10	Tele Out Speed (%)	Speed telescope extension (%)	100			24	19	23
2.3.11	Slew Left Speed (%)	Speed left rotation turret (%)	29	23	26	80	88	120
2.3.12	Slew Right Speed (%)	Speed right rotation turret (%)	29	23	26	80	88	120
2.3.13	Cage Rotate Left Speed (%)	Speed left rotation basket (%)	24			7		
2.3.14	Cage Rotate Right Speed (%)	Speed right rotation basket (%)	24			7		
2.3.15	Cage Level Forward Speed (%)	Speed tilting bucket (%)	62			25		
2.3.16	Cage Level Reverse Speed (%)	Speed tilting spill (%)	28			25		
2.3.17	Y-Axis Forward Voltage (V)	Front travel voltage (V)	4.06			4.06		
2.3.18	Y-Axis Reverse Voltage (V)	Rear travel voltage (V)	0.52			0.52		
2.3.19	X-Axis Left Voltage (V)	Zero position (X-axis) voltage (V)	0.52			0.52		
2.3.20	X-Axis Right Voltage (V)	Max voltage (X-axis) (V)	4.06			4.06		
		Speed travel movement over 10 m (s)	100			8		
		Speed travel working over 10 m (s)	13			60		

Menu	Pump Lower Box Pers	Parameters Hydraulic Functions Base Codes	Mini display	Maxi display	Pitch	Value
2.5.1	Boom 1 Up Speed (%)	Lifting speed arm 1 & 2	0	100	1	100
2.5.2	Boom 1 Down Speed (%)	Lowering speed arm 1 & 2	0	100	1	90
2.5.3	Boom 1 Cutback Speed (%)	Speed limit arm 1 & 2	0	100	1	100
2.5.4	Boom 2 Up Speed (%)	Lifting speed arm 3 telescope extended	0	100	1	100
2.5.5	Boom 2 Down Speed (%)	Lowering speed arm 3 telescope extended	0	100	1	70
2.5.6	Boom 2 Cutback Speed (%)	Speed limit arm 3	0	100	1	25
2.5.7	Jib Up Speed (%)	Speed jib lifting (%)	0	100	1	90
2.5.8	Jib Down Speed (%)	Jib lowering speed (%)	0	100	1	75
2.5.9	Tele In Speed (%)	Speed telescope retraction (%)	0	100	1	100
2.5.10	Tele Out Speed (%)	Speed telescope extension (%)	0	100	1	100
2.5.11	Slew Left Speed (%)	Speed left rotation turret (%)	0	100	1	60
2.5.12	Slew Right Speed (%)	Speed right rotation turret (%)	0	100	1	60
2.5.13	Cage Level Forward Speed (%)	Speed left rotation basket (%)	0	100	1	50
2.5.14	Cage Level Reverse Speed (%)	Speed right rotation basket (%)	0	100	1	60
2.5.15	Cage Rotate Left Speed (%)	Speed tilting bucket (%)	0	100	1	50
2.5.16	Cage Rotate Right Speed (%)	Speed tilting spill (%)	0	100	1	50
2.5.17	Overload Cutback Speed (%)	Overload speed limit (%)	0	100	1	50

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TEST MENUS

Menu	Traction Status	Status (Variable Speed Controller)	Mini display	Maxi display	Pitch	Log. Info
1.2.1	Battery Voltage	Battery voltage	0 V	127 V	0.1	+
1.2.2	Armature Motor Voltage	Armature Voltage	0 V	127 V	0.5	
1.2.3	Field Motor Voltage	Field voltage	0 V	127 V	0.5	
1.2.4	Armature Motor Current	Armature current	0	625 A	0.20833333	+
1.2.5	Field Motor Current	Field current	0	64 A	0.25	+
1.2.6	Armature MOSFET Voltage	MOSFET voltage	0 V	127 V	0.5	
1.2.7	Controller Temp.	Temperature variable speed controller	-30 °C (-22 °F)	+225 °C (+437 °F)	1	+ –
1.2.8	Capacitor Voltage	Capacitor Voltage	0 V	127 V	0.5	
1.2.9	Speed estimation	Speed measurement	0	1	0.005	
1.2.10	Speed estimation	Speed measurement	0Km/H(0mph)	60Km/H(37.28mph)	1.0	
1.2.11	Speed estimation	Speed measurement	0 MPH	60 MPH	1.0	
1.2.12	Key Switch Hours Count	Hour meter operation	0 Hrs	65279.9 Hrs	0.1	
1.2.13	Traction Pulsing Hours Count (Drive)	Hour meter travel	0 Hrs	65279.9 Hrs	0.1	
1.2.14	CAN fail node	CAN fault note: 2	None	Output, EOutput	n/a	
1.2.15	CAN error count	CAN meter error	-	-	-	
1.2.16	CAN error code	CAN coding error	-	-	-	
	Service Log Reset	RAZ memory faults	Press + then - to reset Service Log			

Menu	Traction Test	Variable speed controller	Mini display	Maxi display	Pitch	Log. Info
1.3.1	Accelerator %	Accelerator %	0%	100%	1%	range
1.3.2	Accelerator Voltage	Accelerator Voltage	0.0 V	5.0 V	0.02 V	range
1.3.3	Deadman	Fail-safe	Open	Closed	–	Switch
1.3.6	Steer left	LH steering	Open	Closed	–	Switch
1.3.7	Steer Right	RH steering	Open	Closed	–	Switch
1.3.8	Horn	Horn	Open	Closed	–	Switch
1.3.9	Traction select	Traction select	Open	Closed	–	Switch
1.3.10	Tilt	Tilt input	Open	Closed	–	Switch
1.3.11	Boom Rest	Arm down sensor	Open	Closed	–	Switch
1.3.12	Tele sw.	Extended telescope sensor	Open	Closed	–	Switch
1.3.13	Brake Release	Brake sensor released	Open	Closed	–	Switch
1.3.14	BDI Input	BDI Input	Open	Closed	–	Switch
1.3.15	Frame Fault	Earth detection	Open	Closed	–	Switch
1.3.16	Cage Ovl2	Overload detection no. 2	Open	Closed	–	Switch
1.3.18	Joystick NTRL sw	Contact joystick not neutral	Open	Closed	–	Switch
1.3.19	LS Traction sw	Select low speed traction	Open	Closed	–	Switch
1.3.20	Ver xxxxxxx	Software version	xxxxxx	xxxxxx		
1.3.21	Controller Serial Number	Variable speed controller serial number	0	99999999	–	
1.3.22	Controller type	Power type		xxnnn	–	

Menu	Pump Status	Variable speed controller (hydraulic functions)	Mini display	Maxi display	Pitch	Log. Info
2.2.1	Battery Voltage	Battery voltage	0 V	127 V	0.1 V	+
2.2.2	Motor Voltage	Motor Voltage	0 V	127 V	0.5 V	
2.2.3	Motor Current	Motor Current	0	625 A	0.20833333	+
2.2.4	MOSFET Voltage	MOSFET voltage	0 V	127 V	0.5 V	
2.2.5	Controller Temp.	Microprocessor temperature	-30 °C (-22 °F)	+225 °C (+437 °F)	1 °C (33.8 °F)	+ –
	Service Log Reset	RAZ memory faults	Press + then - to reset Service Log			

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Menu	Pump Upper Box Test	Test Hydraulic Functions Basket Codes	Mini display	Maxi display	Pitch	Type
2.4.1	Y axis Joystick %	Joystick - Y-axis %	0	1	0.01	range
2.4.2	Y axis Joystick Voltage	Joystick - Y-Axis Voltage	0.0 V	5.0 V	0.02 V	range
2.4.3	X axis Joystick %	Joystick - X-axis %	0	1	0.01	range
2.4.4	X axis Joystick Voltage	Joystick - X-Axis Voltage	0.0 V	5.0 V	0.02 V	range
2.4.5	Deadman	Joystick - Deadman pedal	Open	Closed	–	Switch
2.4.8	Jib extension	Jib detection	Open	Closed	–	Switch
2.4.9	Cage over	Overload detection no. 1	Open	Closed	–	Switch
2.4.10	Traction select	Travel selection	Open	Closed	–	Switch
2.4.11	Boom 1 Select	Select arm 1/2	Open	Closed	–	Switch
2.4.12	Boom 2 Select	Select arm 3	Open	Closed	–	Switch
2.4.13	Jib select	Jib selection	Open	Closed	–	Switch
2.4.14	Tele Select	Telescope selection	Open	Closed	–	Switch
2.4.15	Slew Select	Turret rotation selection	Open	Closed	–	Switch
2.4.16	Cage Level Select	Compensation selection	Open	Closed	–	Switch
2.4.17	Cage Rotate	Basket rotation selection	Open	Closed	–	Switch

Menu	Pump Upper Box Test	Test Hydraulic Functions Basket Codes	Mini display	Maxi display	Pitch	Type
2.6.1	Boom 1 Up	Arm 1 Lifting Control	Open	Closed	–	Switch
2.6.2	Boom 1 Down	Arm 1 Lowering Control	Open	Closed	–	Switch
2.6.3	Boom 2 Up	Arm 2 Lifting Control	Open	Closed	–	Switch
2.6.4	Boom 2 Down	Arm 2 Lowering Control	Open	Closed	–	Switch
2.6.5	Jib Up	Control jib raising	Open	Closed	–	Switch
2.6.6	Jib Down	Control jib lowering	Open	Closed	–	Switch
2.6.7	Tele In	Control telescope retraction	Open	Closed	–	Switch
2.6.8	Tele Out	Control telescope extension	Open	Closed	–	Switch
2.6.9	Slew Left	Control turret right rotation	Open	Closed	–	Switch
2.6.10	Slew Right	Control turret left rotation	Open	Closed	–	Switch
2.6.11	Lower Box select	Selection BASE controls	Open	Closed	–	Switch
2.6.12	Cage Level Forward	Control forward compensation selection	Open	Closed	–	Switch
2.6.13	Cage Level Reverse	Control backwards compensation selection	Open	Closed	–	Switch
2.6.14	Cage Rotate Left	Control turret left rotation	Open	Closed	–	Switch
2.6.15	Cage Rotate Right	Control turret right rotation	Open	Closed	–	Switch

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80.3.5 SAFETY COMPONENTS - CONTROL AND SETTINGS

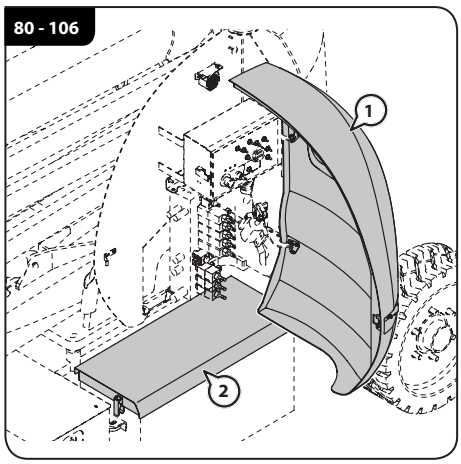
SWITCHES - LOCATION

- (*80.2.2 ELECTRICAL POWER COMPONENTS - LOCATION, 84*)

TILT SENSOR - SETTINGS

CAUTION

The tilt sensors are pre-configured by the manufacturer.
The only parameter that can be adjusted is sensor initialization.



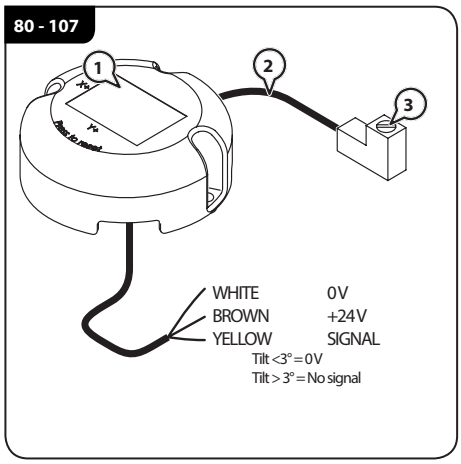
- Place the access platform on level ground and leave the power switched on.

- Open the right-hand turret cover (1, 080 - 106).

- Locate the tilt sensor located between the base control panel box and the counterweight.

CAUTION

Check that the angle of the sensor written in (2, 080 - 107) matches that of the manufacturer's plate on the machine.



- Take the disconnected wire (2, 080 - 107) protruding from the sensor.

- Take off the plastic cap (3, 080 - 107) at the end of the wire.

- Remove the right-hand battery protective cover (2, 080 - 107).

- Take an electric wire 0.5 m (19.69 in) long with its ends stripped, connect it to the wire (2, 080 - 107) and connect it to the – terminal of the right-hand battery (3, 080 - 106):

- The green LED located under the sensor should flash several times.
- It stops when the sensor has initialized.
- It remains continuously lit.

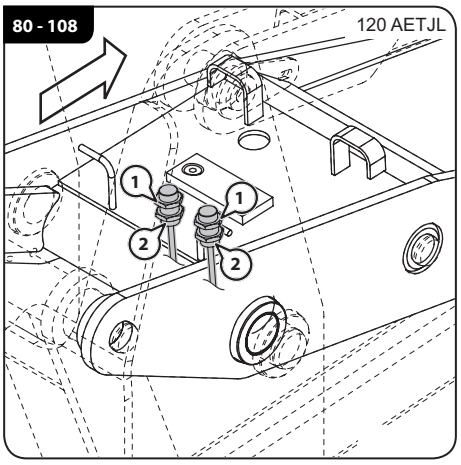
CAUTION

During normal operation, the green LED is lit, and only switches off if the angular tilt value is exceeded.

Checking

Tilt sensor		*Audible signal*	*Measure using the calibrator*			*Authorized movements*		*Multimeter*
Tilt	*LED status*		*Menu*	*Description*	*Message*	*Transport position*	*Working position*	*Signal wire*
< 3°	Lit	None	1.3.10	Tilt switch	CLOSED	Travelling Lifting/lowering	Travelling Lifting/lowering	0V
> 3°	Not lit	Intermittent			OPEN	Travelling	None	~V

ARM DOWN SENSORS - SETTINGS

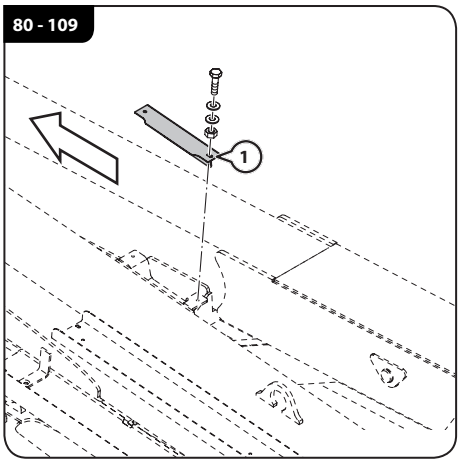


-- Set the telescope to the down position, ensuring the control is activated for as long as necessary, keeping the access platform switched on.

ACCESS PLATFORM 120 AETJL

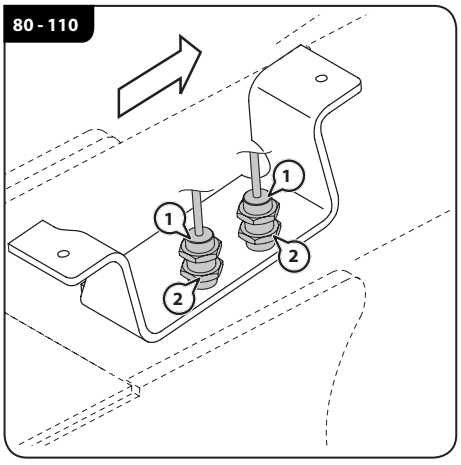
- Loosen the lock nuts (1, 080 - 108).
- Screw or unscrew the sensors (2, 080 - 108) until their LED, located next to the power supply wire, switches from off to on (orange); the clearance remaining between the support and the sensor is approximately 3 mm (0.11 in).

- Tighten the lock nuts.



ACCESS PLATFORMS 150 AETJC, 150 AETJC 3D, 150 AETJL, 170 AETJL, AETJ 43, AETJ 43 3D, AETJ 49

-Remove the sensor protective covers from arm 3 (1, 080 - 109).



- Loosen the lock nuts (1, 080 - 110).

- Screw or unscrew the sensors (2, 080 - 110) until their LED, located next to the power supply wire, switches from off to on (orange); the clearance remaining between the support and the sensor is approximately 3 mm (0.11 in).

- Tighten the lock nuts.

Checking

Retracted telescope sensor SQ4a			*Measure using the calibrator*			*Multimeter*
Telescope	***LED status***	***Wire N°***	***Menu***	***Description***	***Message***	***Display***
Retracted*	Orange	118	1.3.12	Tele sw	Closed	0V
Extended	Not lit	118			Open	~V

Retracted telescope sensor SQ4b			*Measure using the calibrator*			*Multimeter*
Telescope	***LED status***	***Wire N°***	***Menu***	***Description***	***Message***	***Display***
Retracted*	Orange	245	1.3.15	Tele sw	Closed	0V
Extended	Not lit	245			Open	~V

* Access platform in transport position.

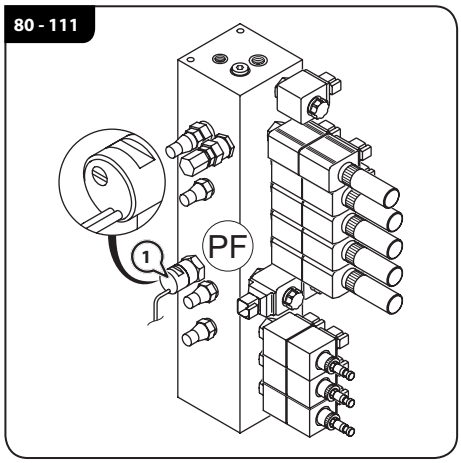
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BRAKE RELEASE CIRCUIT - CHECKING

⚠ CAUTION

The configuration of the pressure switch (1, 080 - 111) is hydraulic and not electrical (◁ ***70.3.3 BRAKE RELEASE CIRCUIT - PRESSURE SETTING,*** 🗐 ***48***)
This chapter does not deal with verification of the signals.

80 - 111



Checking

Pressure switch SQ3			*Measure using the calibrator*			*Multimeter*
Pressure in braking circuit	***Wire N°***	***Wire N°***	***Menu***	***Description***	***Message***	***Display***
0 to 25 bar* (0 to 362.59 psi)	119	119	1.3.13	Brake release	Open	~V
> 25 bar* (362.59 psi)	119	119			Closed	0V

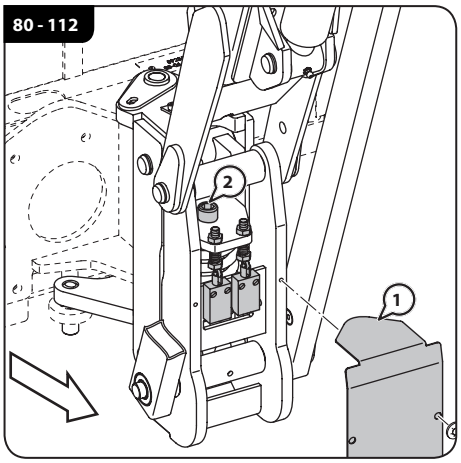
* Based on pressure switch setting.

NOTE: in the absence of a signal from the brakes pressure switch (parameter 1.3.13 = open), the electric pump is permanently active = incorrect operation of the access platform due to excess power consumption of the batteries.

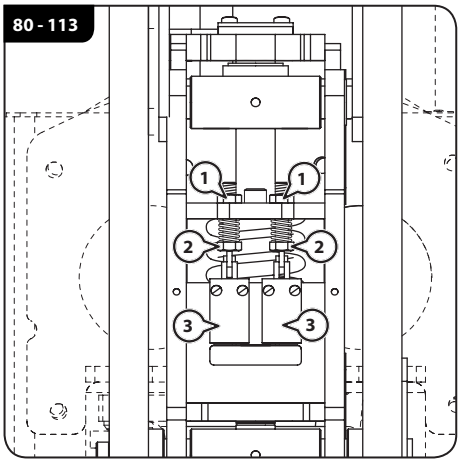
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OVERLOAD SENSORS - SETTINGS

80 - 112



80 - 113



PROCEDURE

- Set the basket to the low position, keeping the access platform switched on.

- Remove the cover (1, 080 - 112).

- Connect the calibrator to the access platform (◁ ***80.3.4 VARIABLE SPEED CONTROLLERS - CONTROL AND SETTINGS,*** 115)

Overload spring pre-tensioning adjustment

- Place a load in the basket and distribute it evenly across the floor.

- *120 AETJL :* ***170 kg (375 lbs)***
- *150 AETJC - 150 AETJC 3D - AETJ43 - AETJ 43 3D :* ***170 kg (375 lbs)***
- *150 AETJL :* ***200 kg (441 lbs)***
- *170 AETJL :* ***170 kg (375 lbs)***

- Tighten the bolt (2, 080 - 112) in such a way that it remains free to rotate at the end of the operation with minimum play.

Overload sensor adjustment

- Undo the lock nuts (1, 080 - 113) then tighten the overload screws (2, 080 - 113) to their maximum extent.

- Place a load in the basket and distribute it evenly across the floor.
- *120 AETJL:* ***230 kg (507 lbs)***
- *150 AETJC - 150 AETJC 3D :* ***230 kg (507 lbs)***
- *150 AETJL:* ***250 kg (551 lbs)***
- *170 AETJL - AETJ 49:* ***230 kg (507 lbs)***

- Sensor **SQ5a**: test menu 1.3.16
- Sensor **SQ5b**: test menu 2.4.9

- Identify sensor **SQ5a** (yellow ring on the power cable) and loosen the overload screw (2, 080 - 113) until the calibrator displays OPEN instead of CLOSED.
- Identify sensor **SQ5b** (yellow ring on the power cable) and loosen the overload screw (2, 080 - 113) until the calibrator displays CLOSED instead of OPEN.

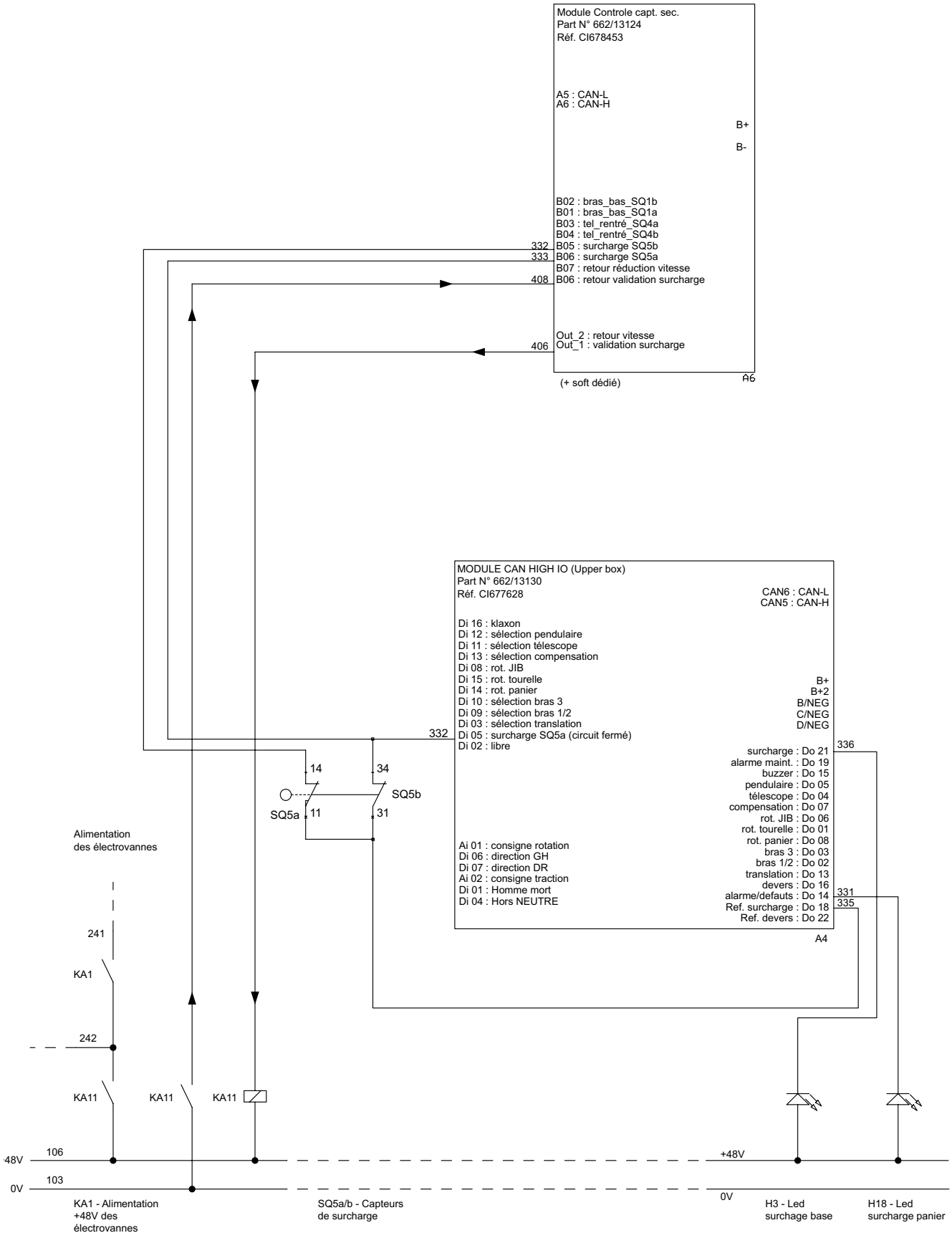
https://truckmanualshub.com/

Overload test

- Of the load still in the basket, take out **20 kg (44 lbs)** and check that:

- The alarm switches off.
- The calibrator displays CLOSED in test menu 1.3.16 (**SQ5a**).
- The calibrator displays OPEN in test menu 2.4.9 (**SQ5b**).
- Replace the **20 kg (44 lbs)**, the alarm triggers (permanent tone), tighten the lock nuts (1, 080 - 113) and put a paint mark on them to confirm the configuration.

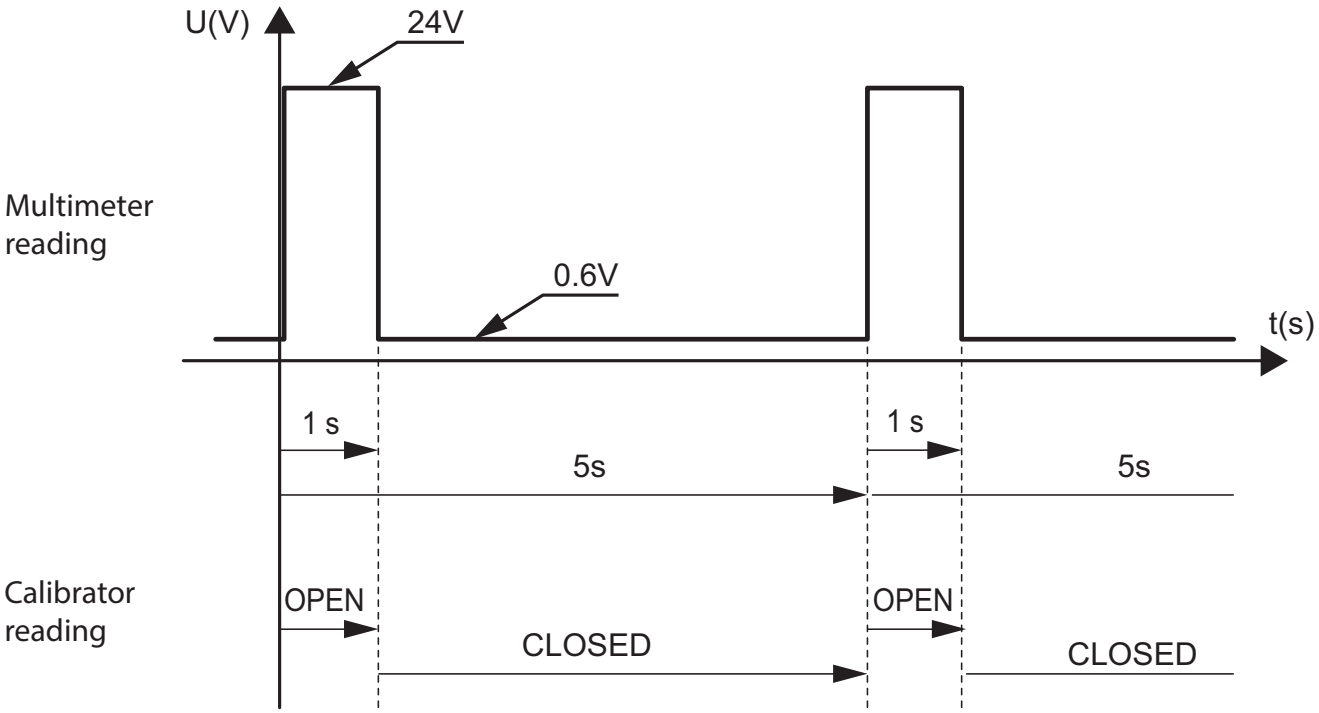
SIMPLIFIED OVERLOAD WIRING DIAGRAM



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OVERLOAD SIGNAL

- The reference of the overload signal is emitted by the basket card, output Do 18 (wire 335)..... (680.1 ELECTRICAL SCHEMATIC DIAGRAMS, 5 73)



MULTIMETER TEST

Overload sensor SQ5a		*Measure using the calibrator*			*Multimeter*	
Weight in the basket	*Wire N°*	*Menu*	*Description*	*Message*	*To card*	*Display*
< 200 kg (441 lbs)	333	1.3.16	Cage Ovl 2	(F4)	Safety	(F4)
> 200 kg (441 lbs)	333			Open	Safety	No signal

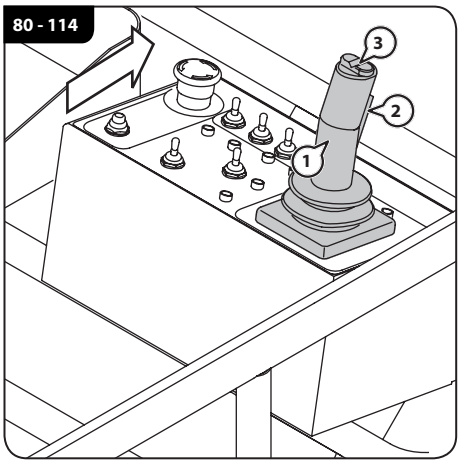
Overload sensor SQ5b		*Measure using the calibrator*			*Multimeter*	
Weight in the basket	*Wire N°*	*Menu*	*Description*	*Message*	*To card*	*Display*
< 200 kg (441 lbs)	332	2.4.9	Cage Ovl 2	(F4)	Safety	(F4)
> 200 kg (441 lbs)	332			Open	Safety	No signal

80.3.6 MANIPULATOR - OPERATION AND SETTINGS

MANIPULATOR - TESTS USING CALIBRATOR

⚠ CAUTION

The manipulator test from the basket base requires the presence of two operators.



- Connect the calibrator to the access platform and display test menu 2-4 (*80.3.4 VARIABLE SPEED CONTROLLERS - CONTROL AND SETTINGS, 115*)

- Switch on the access platform.

- Climb into the basket, then perform the following actions:

- Move the manipulator (1, 080 - 114) forwards and then backwards without operating the trigger (2, 080 - 114).

- Press the upper left-hand button then the upper right-hand button (3, 080 - 114) without operating the trigger.

- Operate the trigger (2, 080 - 114) on its own.

- For each action, check on the sub-menu in question the status of the inputs/outputs at the neutral point, then when the manipulators or switches are operated.

TEST

- Lastly, select menu 2-4-1 and 2-4-3 (UPPER BOX TEST) on the calibrator and check:

- That the proportional signal progresses steadily (i.e. from 0 to 100%).
- That it is at 0% in neutral and 100% only when the manipulator almost reaches its limit.

Manipulator test when lifting/lowering and travelling (Y)				
Calibrator (measurement)		Position of Joystick		
Menu	Description	Front*	Neutral	Rear*
2.4.1	Y-axis voltage %	100	0	100
2.4.2	Y Axis joystick voltage	45	25	5
1.3.1	Accelerator %	100	0	100
1.3.2	Accelerator Voltage	45	25	5

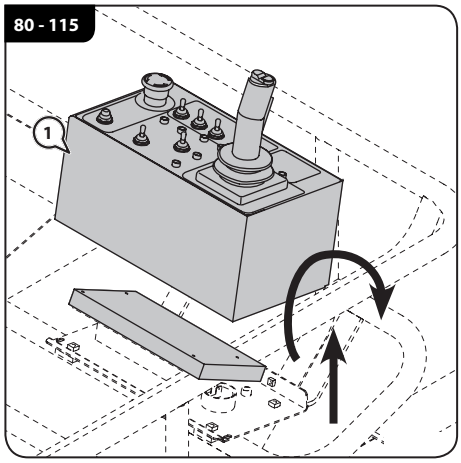
* Manipulateur au maximum

Manipulator test with turret/basket rotation (X)				
Calibrator (measurement)		Position of Joystick		
Menu	Description	Left*	Neutral	Right*
2.4.3	X Axis Joystick %	100	0	100
2.4.4	X Axis Joystick Voltage	0.5	2.5	4.5

* Manipulateur au maximum

MANIPULATOR - TEST WITH A VOLTMETER

80 - 115



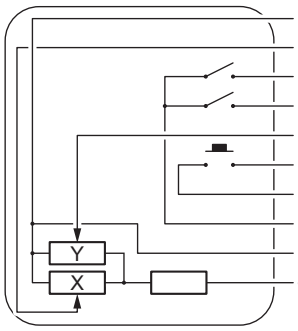
- Climb into the access platform with a voltmeter.

- Remove the front face from the basket control panel (1, 080 - 115) and replace it.

- Locate the colored wires at the manipulator connector (see figure, 080 - 116).

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

80 - 116



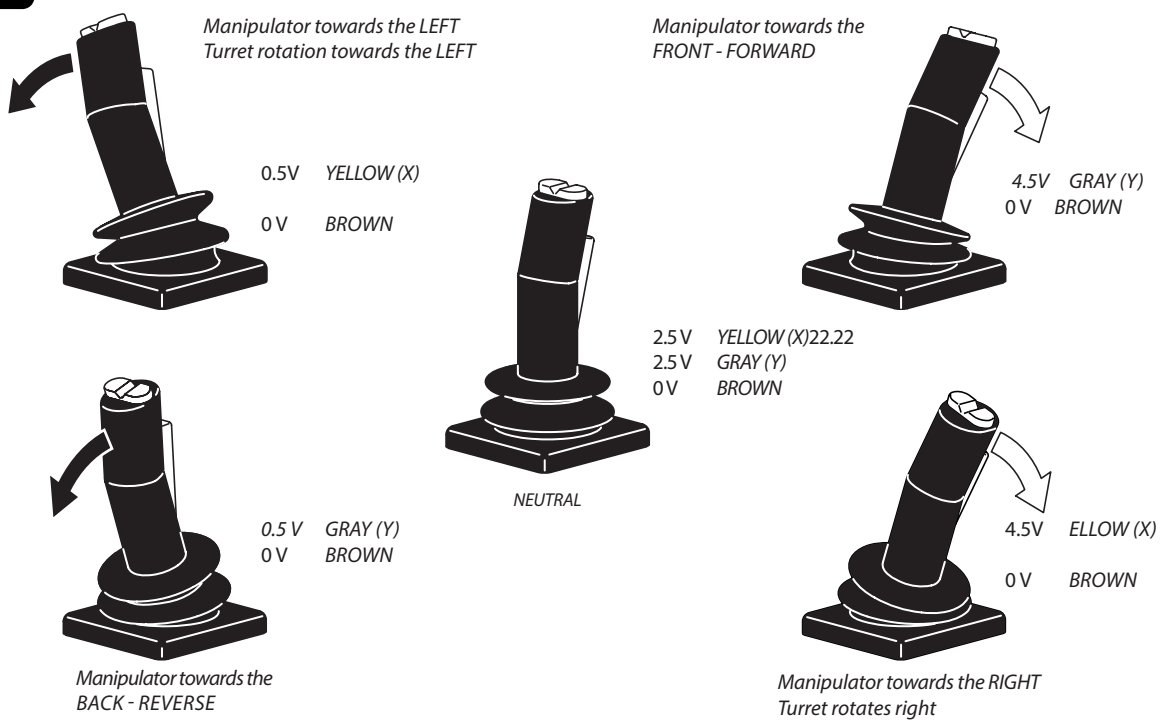
	OLD STANDARD	NEW STANDARD	
	GREEN	GREEN	(NOT NEUTRAL - MANIPULATOR)
	YELLOW (X)	YELLOW (X)	(TURRET ROTATION CONTROL)
	BLUE	YELLOW/BLACK	(LH STEERING PB)
	BLACK	GRAY/BLACK	(RH STEERING PB)
	GRAY (Y)	GRAY (Y)	(TRAVEL CONTROL)
	PURPLE	GREEN/BLACK	(DEADMAN TRIGGER)
	RED	BROWN/BLACK	(POWER SUPPLY - TRIGGER)
	PINK	WHITE/BLACK	(POWER SUPPLY - STEERING PB)
0V	BROWN	BROWN	(GROUND)
+24V	WHITE	WHITE	(+ BATTERY)

Testing the analog outputs

- Move the manipulator (1, 080 - 114) forwards and then backwards without operating the trigger (2, 080 - 114) and check the values displayed by the voltmeter (see figure, 080 - 117).

80

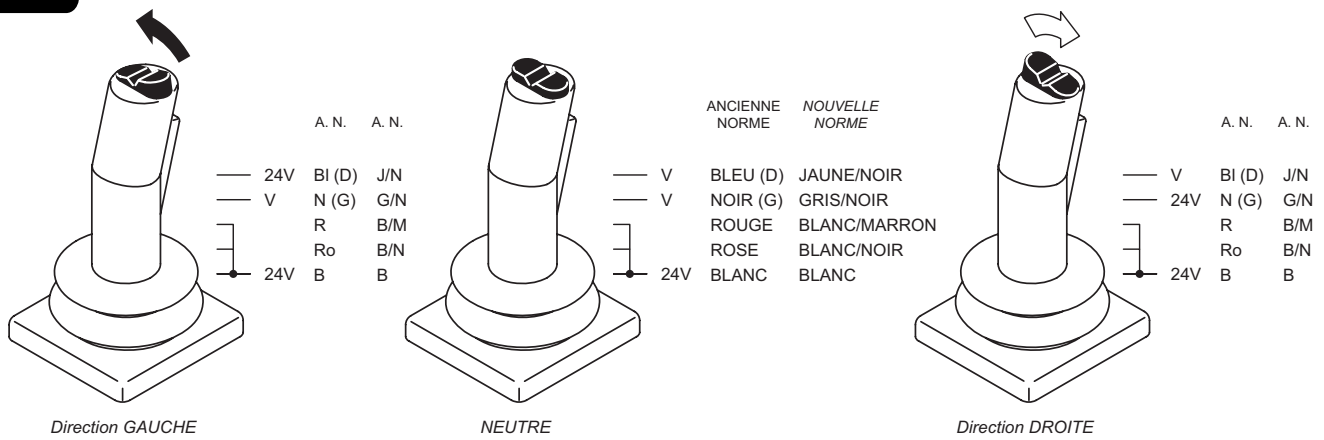
80 - 117



Testing the logic outputs

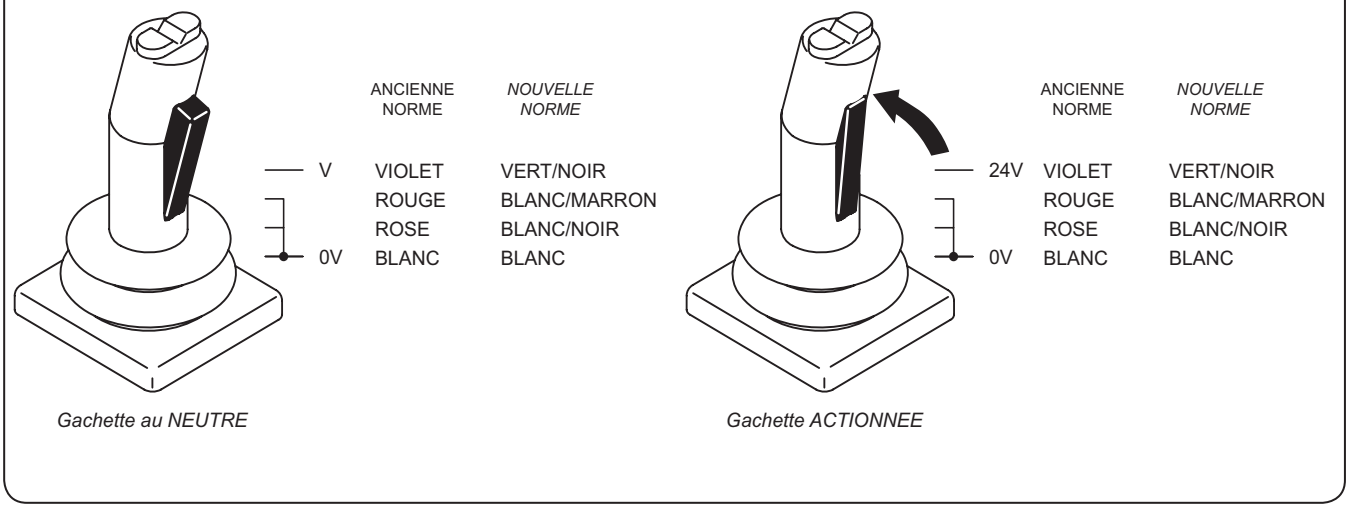
- Press the top left-hand button followed by the top right-hand button (3, 080 - 114) without activating the trigger, and check the values displayed by the voltmeter (see figure, 080 - 118).

80 - 118



- Activate the trigger (2, 080 - 114) only alone and check the values displayed by the voltmeter (see figure, 080 - 119).

80 - 119



CAUTION

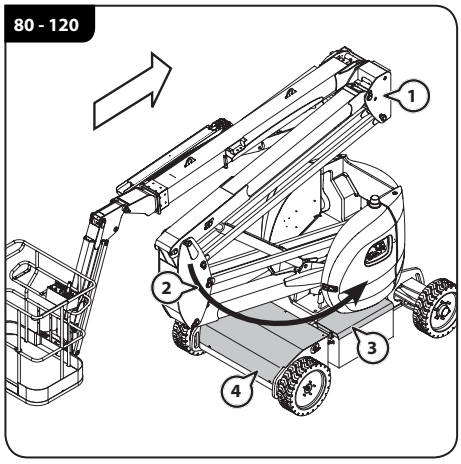
The "V"s mean that an uncertain voltage can be measured on the wire indicated.
"NS" means that there is no signal on the wire indicated".

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80.4 ELECTRICITY REMOVALS - REFITTING

80.4.1 VARIABLE SPEED CONTROLLERS - REMOVAL

80 - 120



- Raise arm 1/2 so that the upper hinge (1, 080 - 120) is raised by 1 m (39.37 in).

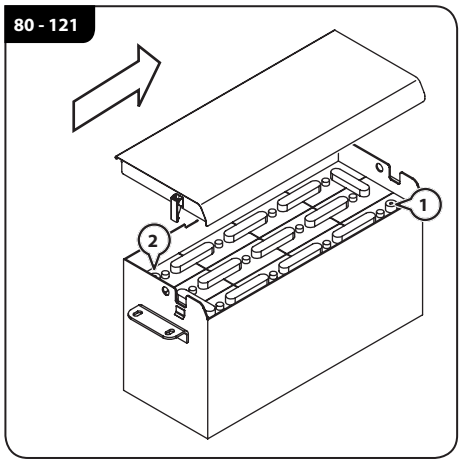
-Turn the turret by 1/4 turn (2, 080 - 120).

- Switch off the power supply.

- Disconnect the right-hand battery:

- Remove the right-hand battery protective cover (4, 080 - 120).
- Disconnect the - earth (1, 080 - 121).
- Disconnect the + (2, 080 - 121).

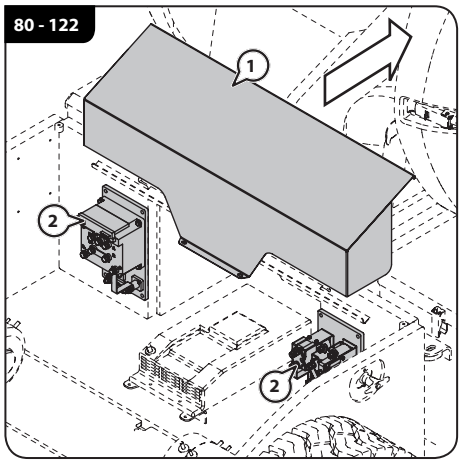
80 - 121



- Disconnect the left-hand battery, following the same procedure.

- Remove the cover (4, 080 - 120).

80 - 122



- Remove the cover plate (1, 080 - 122).

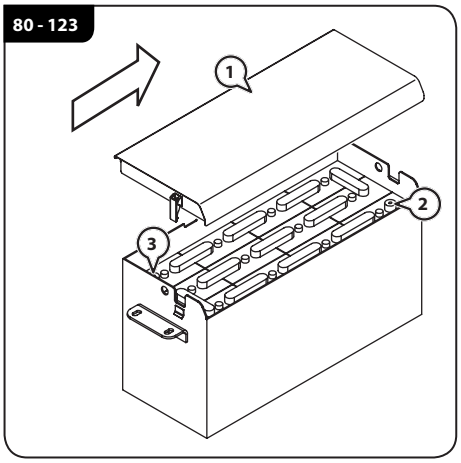
- Mark and then remove the harnesses connected to the variable speed controllers (2, 080 - 122) (***80.3.4 VARIABLE SPEED CONTROLLERS - CONTROL AND SETTINGS, 115***)

- Remove the variable speed controllers.

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80.4.2 BATTERIES - REMOVAL

80 - 123

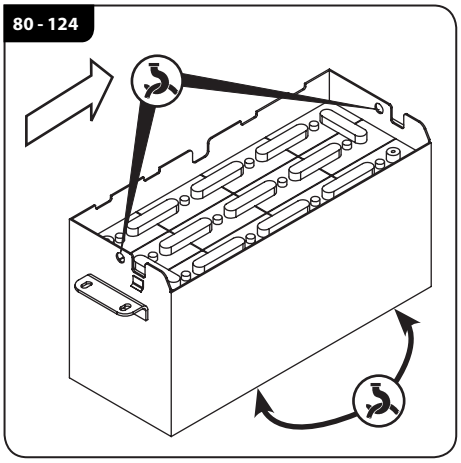


- Disconnect the right-hand battery:

- Remove the right-hand battery protective cover (1, 080 - 123).
- Disconnect the - earth (2, 080 - 123).
- Disconnect the + (3, 080 - 123).

- Disconnect the left-hand battery, following the same procedure.

80 - 124



- Remove the right-hand battery (see figure, 080 - 124), then the left-hand battery:

- 120 AETJL : ***220 kg (485 lbs)***
- 150 AETJC - 150 AETJC 3D - 150 AETJL - 170 AETJL : ***265 kg (584 lbs)***
- AETJ 43 - AETJ43 3D : ***268 kg (591 lbs)***

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80.4.3 ELECTRICAL HARNESSES - REMOVAL

A - Wiring based on the schematic diagrams (◁ ***80.1.3 SCHEMATIC DIAGRAM - BASKET CONTROL PART - 1ST VERSION,*** ***77***)

⚠ CAUTION

In this chapter, all of the connectors are shown on the wire insertion side.

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80.5 TROUBLESHOOTING - ELECTRICAL

80.5.1 VARIABLE SPEED CONTROLLERS - FAULTS AND FIXES

Led Variable Speed Controller	Message Hour meter	Message Calibrator	Description and Comments	Investigations
Lit		**OK**	Traction operational and OK.	No action required.
Not lit	**F05003**	**Internal Fault**	Variable speed controller unusable.	Variable speed controller needs replacing.
	F05004	**12V Supply Low**		
	F05011	**Drive 0 on**		
	F05012	**Drive 1 on**		
	F05013	**Drive 0 off**		
	F05014	**Drive 1 off**		
	F05019	**Stack Corrupted**		
		No message	No power to variable speed controller.	- Check: • Battery voltage. • Electrolyte-specific gravity by elements. • The wiring of the batteries, polarities, and tightening of the terminals. • The fuses. • The emergency shutdowns. • The battery cut-off. • That the battery charger is not connected to the mains. - Check: • The battery connections (B-). • The presence of the "+" battery on the "B1" input of the variable speed controller logic (+24 V). • The presence of the "+12 V" output of the B12 pin of the variable speed controller: availability "+12 V" internal (pre-set).
1 Flash PARAMETERS	**F04012**	**Pers Error**	Parameter outside valid range. The fault is removed by adjusting the value using the calibrator.	- Search for and fix the parameter where the following value is displayed "- - -". - Switch the variable speed controller off and on: check the parameters.
	F04013	**CRC Error**	Checksum parameter value incorrect. The fault is removed by adjusting the value using the calibrator.	- Check: the value of all parameters. - Force the update of the CRC by changing any parameter. - Switch the variable speed controller off and on: check the parameters.
	F05001	**EEPROM Fault**	Parameters memory fault.	- Check the value of the parameters.
2 Flashs INCORRECT INPUT SEQUENCE	**F04003**	**Sequence Fault**	Input(s) active when powered on: status "CLOSED".	- Check that the input(s) are in the "CLOSED" status when switched on in the following menus: • Traction test (1.3). • Upper box test (2.4). • Lower box test (2.6). - Check the input(s) which are in error.
	F04005	**SRO Fault**	Sequence error: non-compliance with the start-up procedure.	- Re-start the start-up procedure for the required movement.
		Sequence Fault or SRO Fault	Variable speed controller internal or external fault.	- Measure the voltages on the "D-IN" connector inputs of the electronic control units and "B" of the variable speed controller: • 0 V = Contact CLOSED. • > (greater) than 4.5 V = Contact OPEN.

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Led Variable Speed Controller	Message Hour meter	Message Calibrator	Description and Comments	Investigations
3 Flashs MOSFET	**F05009**	**PUp Trac MOS**	Failure of power test when switching on.	- Check the following points: • With the line switch (KM1) CLOSED, the voltage at terminal "A" of the variable speed controller must be equal to the battery voltage (if no movement activated). • With the line switch (KM1) OPEN, the voltage at terminal "A" of the variable speed controller is around 7-8 V. **1 - If one of the two points above is correct, the problem originates outside the variable speed controller**. In this case, perform the following checks (list not exhaustive): • No negative voltage on the chassis. • The electric pump must be isolated from the chassis. • The electrical power harnesses must not be in short circuit. **2 - If any of the points described above is not proven, the problem originates inside the variable speed controller**. In this case, perform the following checks. 2 - 1 - With the line switch (KM1) CLOSED, the voltage at terminal "A" of the variable speed controller is <3 V: • Disconnect the travel motor cables (terminal A, S F1 & F2 on the variable speed controller). • Switch the variable speed controller off and on. • Check if the problem persists. • Disconnect connector 'B' of the variable speed controller logic module, connect a wire from plug "B1" of the variable speed controller logic module to a positive battery. • Switch the variable speed controller off and on. • Check the status of the LED: if the problem persists, change the variable speed controller or otherwise check the insulation of the variable speed controller and the switch (KM3). 2 - 2 - With the line switch (KM1) OPEN, the voltage at terminal "A" of the variable speed controller is <3 V: • Internal fault in the variable speed controller, replace it.
	F05006	**Mosfet s/c**	Failure of power test when switching on	- Turn off the machine: if the problem persists, repeat the procedure described above
4 Flashs SWITCH OPEN OR CLOSED	**F05008**	**PUp Trac Weld**	Line switch (KM1) "CLOSED" (stuck or welded) when switched on: the variable speed controller measures a voltage on terminal "A" 2 volts less than the battery's rated voltage.	- Check if the line switch (KM1) is OPEN when the power supply is cut: • KM1 OPEN: variable speed controller OK. • KM1 CLOSED: switch stuck, check the switch, check its power supply and replace if necessary. - Check that there is a delay of 2 seconds between switching on and the closure of the line switch (KM1). • DELAY = 2s: variable speed controller OK. • Delay ≠ 2s: variable speed controller defective, driver of LINE switch out of service. - Check the power cables.
	F05020	**Line Cont O/C**	Line switch (KM1) "OPEN": the variable speed controller measures a voltage on terminal "A" 3 volts less than the battery's rated voltage.	- Check: • The mechanical condition of the switch. • The coil of the switch. • The control of the switch coil. • The power and auxiliary fuses. • The wiring of the motors. - Check output B8 of the variable speed controller logic module, the signal is negative, if this is not the case, the line switch driver is out of service: change the variable speed controller.
	F05021	**Coil s/c (std)**	Digital output in short circuit on the E/S module: BASE	- Check: • The wiring. • The elements controlled by the module.

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Led Variable Speed Controller	Message Hour meter	Message Calibrator	Description and Comments	Investigations
5 Flashs FAULTS SENSORS		**C_OVL Ssr Flt**	This fault is detected when there is a fault on the overload sensors.	- Check: • The status of the overload circuits. • The electrical circuit and connections. • Basket electronic control unit and safety electronic control unit.
	F02004	**C_OVL Sync Flt**	This fault is detected when the two overload sensors are not in the same status.	- Check: • The status of the sensors: parameters: 1.3.16 and 2.4.9. • The overload settings. • The electronic control unit and connections of the sensors. • Basket electronic control unit and safety electronic control unit.
	F02005	**ElvTd Ssr Fault**	Signals an inconsistency between the "working/travel" position sensors (telescope or arm 2/3).	- Check: • The settings of the "Working/Travel" position sensors. • The correct operation of the sensors. • The electronic control unit and connections of the sensors. • Logic module of the variable speed controller and safety electronic control unit.
	F05010	**Bypass pump**	Fault switch KM3 stuck	- Check KM3 switch
6 Flashs ACCELERATOR	**F02001**	**Accel. Fault**	Voltage fault in the joystick on one of the X or Y axes. Accelerator Value >20% on start-up for one of the X or Y axes.	- Check: • That the joystick is activated when switched on. • The joystick supply voltage. • The values of the manipulator parameters for each of the X and Y axes. • The configuration of the joystick potentiometer values. • That the gray (Y) and yellow (X) harnesses of the joystick and their connections are in good condition.
	F02000	**Accel. Fault**	Accelerator fault (out of range).	- Check the manipulator, its wiring.
7 Flashs VOLTAGE BATTERY	**F04010**	**Battery High**	Battery voltage high on "High V cut" parameter.	- Check the correct operation of the battery charger.
	F04009	**Battery Low**	Battery voltage higher than the "High V cut" parameter. Battery voltage lower than the "Low V cut" parameter. Battery voltage lower than the "battery protection" parameter, beyond the delay specified by the parameter "protection delay".	- Check: • The state of the battery charge (voltage, electrolyte density, water level). • The correct operation of the battery charger, its connectors. - Put the access platform on charge.
	F01004	**BDI Cutout**	Battery charge level lower than "BDI CUTOUT" parameter.	- Check: • The battery electrolyte-specific gravity. • The condition of the battery cables. • The tightening of the cable terminals. • The BDI parameters. - Put the access platform on charge.
8 Flashs TEMPERATURE	**F01005**	**Thermal Cutback**	The temperature of the power unit is higher than 75°C (167 °F).	- Check: • The operating conditions (motor overload, etc.). • The tightening of the power terminals (motor, battery). • The fitting of the variable speed controller plate on the chassis (heat-conducting grease, etc.). - Leave the variable speed controller to cool
9 Flashs COIL SWITCH	**F05000**	**Coil s/c**	The intensity of the current is higher than the acceptable limit for one of the following outputs: - Coil of switch KM1. - Relay. - Electrovalves. - LEDs. - Buzzer. - Harnesses.	- Check the current limit on the following digital inputs and outputs: • 2A for the connector outputs of the variable speed controller logic module (Plug 8 and 9 of connector B). • 2A for the outputs of the connector "D-OUT" of the CAN electronic control unit of the BASE. • 2A & 100 mA for the outputs of the connector "D-OUT" of the CAN electronic control unit of the BASKET.
	F05022	**Coil s/c (ext)**	Digital output in short circuit on the E/S module: BASKET	- Check: • The wiring. • The elements controlled by the module.

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<table>
<tr><th>Led
Variable Speed Controller</th><th>Message
Hour meter</th><th>Message
Calibrator</th><th>Description and
Comments</th><th>Investigations</th></tr>
<tr><td>12 Flashs CANBUS</td><td>F05005</td><td>Can Bus Fault</td><td>There is no dialog between one or more electronic control units.</td><td>
- Check for each of the electronic control units if their LED is permanently on:
• If all of the LEDs are lit: perform tests §1-1 and §1-2.
• If at least one LED is switched off: perform test §2.

1-1 Tests to be performed 5 BUS-CAN connectors connected.
- Access platform switched on: measure the voltage between the BUS-CAN wires and the negative (wire 103).

<table>
<tr><th>BUS-CAN wire</th><th>Theoretical voltage (V)</th><th>The signal must be between</th></tr>
<tr><td>112</td><td>~2.4V</td><td>2.3V < < 2.7V</td></tr>
<tr><td>113</td><td>~2.6V</td><td>2.3V < < 2.7V</td></tr>
</table>
- Access platform switched off: measure the resistance of the BUS-CAN circuit between wires 112 and 113 at the diagnostics plug:
• The resistance is 95 Ω.

<table>
<tr><th>Disconnect successively</th><th>Theoretical resistance between wires 112/113</th></tr>
<tr><td>Smart view</td><td>118 Ω</td></tr>
<tr><td>Base control unit</td><td>156 Ω</td></tr>
<tr><td>Safety control unit</td><td>235 Ω</td></tr>
<tr><td>Variable speed controller</td><td>470 Ω</td></tr>
<tr><td>Basket control unit</td><td>---</td></tr>
</table>
- Access platform switched off: for each of the electronic control units, measure the resistance between the 112 and 113 inputs at the CAN connector:
• The resistance is 470 Ω.

1-2 Tests to be performed 5 BUS-CAN connectors disconnected.
- Disconnect the BUS-CAN harnesses (wires 113 and 112) at each end (variable speed controller, base electronic control unit, basket electronic control unit).
- For wires 113 and 112, check the continuity between each of them and each end: check that there is no continuity between wires 113 and 112.
- Check the connections, the shielding (variable speed controller section - BASE box).
- Put the contact bomb on the BUS-CAN connections, bypass the BUS-CAN lines with external wires to determine if the wires or connections are defective.

2-Test to be performed if at least one LED is switched off
- Check when switched off if the LED flashes for 0.5 seconds:
• Check the power supply between terminals B+, B+2 (positive terminals) and B/NEG, C/NEG, D/NEG (negative terminals) of the control unit which is causing the problem.
• Check the connections of all power supplies mentioned above
- Check the quality of the battery negative signal: wire no. 103.
• Ensure that all of the connections of wire 103 are correctly attached and connected (crimping of wires not damaged, quality of contacts, etc.) in the electrical sockets, the terminal blocks, the terminals, etc.
- Check the quality of the battery positive signal: wire no. 106.
• Ensure that all of the connections of wire 106 are correctly attached and connected (crimping of wires not damaged, quality of contacts, etc.) in the electrical sockets, the terminal blocks, the terminals, etc.
</td></tr>
</table>

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80.5.2 ZIVAN BATTERY CHARGER - ERROR SIGNALS

SYMPTOMS	CAUSES	TO BE DONE IMMEDIATELY	CAUSES TO CHECK
Acoustic signal + RED LED flashing	Battery disconnected or not compliant.	Check the connection or the rated voltage.	Output fuse and if the battery has been connected with the correct polarities
Acoustic signal + YELLOW LED flashing	Temperature probe disconnected during recharging or out of operational range.	Check the connection of the probe and measure the battery temperature.	The voltage on the temperature probe and measure the temperature of the battery.
Acoustic signal + GREEN LED flashing	Phase 1 and/or Phase 2 more than the maximum permitted.	Check the capacity of the battery.	Does the charge curve for the battery comply with that of the battery charger?
Acoustic signal + RED-YELLOW LED flashing	Loss of control of output current	Logic control unit fault.	Stage of reading current or shunt.
Acoustic signal + RED-YELLOW LED flashing	Loss of control of output voltage	Battery disconnected or fault on logic control unit.	Stage of reading voltage or resistance of reading voltage of open battery.
Acoustic signal + YELLOW-GREEN LED flashing	An unavailable configuration has been selected.	Check the position of the selector.	
Acoustic signal + RED-YELLOW-GREEN LED flashing	Over-heating of semi-conductors.	Check the operation of the ventilation system.	Operation of the fan, fan pilot circuit, good connections with PTC sensor.

80.5.3 IES BATTERY CHARGER

SYMPTOMS	CAUSES	TO BE DONE IMMEDIATELY	CAUSES TO CHECK
RED LED flashing	Battery temperature high		Ambient temperature > 65°C
	Battery element in short circuit	Disconnect the charger from the mains	Battery condition Power supply connector Mains voltage Select the voltages on the charger Charger defective
	Charge cycle greater than 20 hours	Disconnect/Reconnect the charger to the mains	

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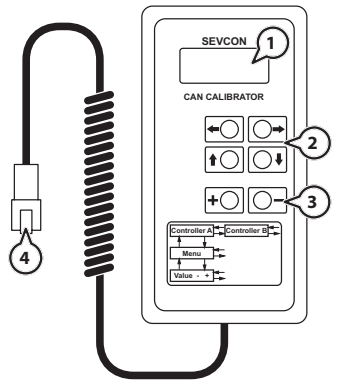
80.6 SPECIFIC TOOLING - ELECTRICITY

80.6.1 CALIBRATOR

⚠ CAUTION

The calibrator is also used for:
- The adjustment of the switches.
(◁ ***80.3.4 VARIABLE SPEED CONTROLLERS - CONTROL AND SETTINGS,*** ***115***)***131***
- Testing the manipulators.
(◁ ***80.3.6 MANIPULATOR - OPERATION AND SETTINGS,*** ***133***)***138***
- Troubleshooting.
(◁ ***80.5 TROUBLESHOOTING - ELECTRICAL,*** ***139***)***160***

80 - 125



DESCRIPTION

- Screen (1, 080 - 125).
- Scrolling buttons (2, 080 - 125) (◁ ***VARIABLE SPEED CONTROLLERS - USE OF CALIBRATOR,*** ***120***)
- Incrementation buttons (3, 080 - 125) (◁ ***VARIABLE SPEED CONTROLLERS - USE OF CALIBRATOR,*** ***120***)
- Connection socket (4, 080 - 125).

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