

HT43RTJ PRO - HT132RTJ PRO

Maintenance book

HT43RTJ PRO - HT132RTJ PRO

4000392130

E03.16

USA / GB



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You have just purchased a HAULOTTE®
product and we would like to thank you
for your business.

1 - Maintenance book

As indicated on the delivery slip, this maintenance book is one of the documents in our on-board case supplied on delivery of your machine.

Person using this product must do so in accordance with the instruction provided in this manual.

We would particularly like to draw your attention to 2 essential points :

- Compliance with safety instruction (machine, use, environment).
- Use of the equipment within the performance limits.

2 - After Sales Service

Our HAULOTTE Services® After Sales Service is at your disposal throughout your machine's service life to ensure the optimum use of your HAULOTTE product.

- When contacting our After Sales Service, ensure that you provide the machine model and serial number.
- When ordering any consumables or spare parts, please use this manual and the Haulotte Essential catalogue to receive your genuine HAULOTTE spare parts, your only guarantee of parts interchangeability and correct machine operation.
- If there is an equipment malfunction involving a HAULOTTE® product, then contact HAULOTTE Services® immediately even if the malfunction does not involve material and/or bodily damage.
- HAULOTTE® must be informed in the event of an incident that either involves one of these products or has caused bodily injury or significant deterioration of property (personal property or the product); contact HAULOTTE Services® immediately (See : HAULOTTE Services® contact details)

3 - Compliance

We would like to remind you that HAULOTTE® complies with the provisions of any applicable directives applicable to this type of machine.

HAULOTTE advises you that NO modifications carried out without the written permission of HAULOTTE® will void the HAULOTTE warranty..

HAULOTTE® cannot be held liable for any changes to the technical characteristics/specifications contained in this manual.

HAULOTTE® reserves the right to alter technical specifications and to make improvements or modifications to the machine without modifying this manual.



Certain options can modify the machine's operating characteristics and its associated safety. If your machine was originally delivered with options fitted, replacing a safety component associated with a particular options not require any particular precautions other than those associated with the installation itself (static test).

Otherwise, it is essential to follow the manufacturer's recommendations as stated below :

- Installation by authorised HAULOTTE® personnel only.
- Update the manufacturer's identification plate.
- Have stability tests carried out by a certified agency/competent person.
- Ensure decal compliance.

A - Safety precautions

1 - Recommendations

1.1 - MAINTENANCE BOOK

The maintenance book is intended for the on-site maintenance technician.

It is the on-site maintenance technician's duty to carry out the regular maintenance work recommended by HAULOTTE Services®.

This maintenance work is essential for correct machine operation.

If regular maintenance is not carried out, this may :

- Void the warranty.
- Cause machine malfunction.
- Reduce machine reliability and shorten its service life.
- Jeopardize operator safety.

To ensure that the regular maintenance requirements are fully satisfied, contact HAULOTTE Services®.

HAULOTTE Services® technicians are specially trained to carry out extensive repairs, interventions or adjustments on the safety systems or elements of HAULOTTE® machines. They carry genuine HAULOTTE spare parts and tools as required, and also provide fully documented reports on all work completed.

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- Safety precautions

1.2 - SYMBOLS USED

Symbols are used to alert the operator to safety precautions or to highlight practical information.

Symbol meanings

Symbol	Description
	Danger : Risk of injury or death
	Caution : Risk of material damage
	Prohibition relating to work safety and quality
	Reminder : No identified risk, but a reminder of the need for common sense, good practice or pre-action prerequisites
	Cross-reference to another part of the manual (see section or sheet)
	Cross-reference to another manual (see manual)
	Cross-reference to repairs (contact HAULOTTE Services®)
	Maintenance sheet
	Time required for intervention
	Recommended tools
	Recommended part
	Safety
N.B. :	Additional technical information

A - Safety precautions

1.3 - DECAL COLORS

The potential dangers and any specific regulations are indicated around the product by decals and identification plates.



The decals must be kept in good condition. Additional decals can be ordered from HAULOTTE Services®.

Familiarize yourself with the decals and their respective color codes.

Decal color code

Decals	Color	Description
	Red	Potentially fatal danger
	Orange	Risk of serious injury
	Yellow	Risk of material damage and/or minor injury
	Other	Additional technical information
	Green	Maintenance operation or information

Decal color code-For Russia and the Ukraine only

Decals	Color	Description
	Red	Prohibitions - Danger
	Yellow	Warning : Risk of material damage and/or minor injury
	Blue	Precaution
	Blue	Information
	Other	Additional technical information

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- Safety precautions

2 - Manufacturer's warranty

2.1 - WARRANTY ACCEPTANCE

On reception of his machine, the owner or rental company must check the machine's condition and fill out the machine reception slip provided.

2.2 - WARRANTY PERIOD

The present warranty is valid for a period of 12 months or up to a maximum of 1000 operating hours for personnel lifting machines and 12 months or up to a maximum of 1500 operating hours for the other machines, including MJX or the Telescopic Handlers, starting from delivery and terminating when the first limit is reached.

Spare parts are covered by a 6 month warranty.

2.3 - CONDITIONS OF WARRANTY

HAULOTTE® guarantees its products against defects, faults or manufacturing defects when the owner or rental company has informed HAULOTTE® of the defect.

The warranty does not cover the consequences of normal wear, nor any defects, failure or damage resulting from poor maintenance or abnormal usage, in particular overloading, impact by an external source, faulty installation or any modification made to products marketed by HAULOTTE® and performed by the owner or rental company.

In the event of operation or use which does not comply with the instructions or recommendations in the maintenance book, warranty claims will not be accepted.

The machine utilisation period must be recorded by reading the engine hour meter whenever an intervention is made. The engine hour meter must be maintained in good working order to guarantee maximum working life and to justify maintenance at the recommended time.

Warranty obligations for the time period stated above will cease immediately in situations where the defect is due to the following reasons :

- Use of spare parts that are not HAULOTTE® originals.
- If elements or products other than those recommended by the manufacturer are used.
- If the HAULOTTE® name, serial numbers or identification marks are removed or altered.
- After an unreasonably long delay before reporting a manufacturing problem.
- If the owner or rental company continues to use the machine despite problems.
- If damage is caused by modifications that do not comply with HAULOTTE® specifications.
- If lubricants, hydraulic oils or fuels that do not comply with HAULOTTE® recommendations are used.
- If the machine is incorrectly repaired or used by the customer.

If no particular agreement has been made, any claims made after the previously established warranty period has expired will be refused.

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A - Safety precautions

The present warranty does not cover damage that may result directly or indirectly from any flaws or defects covered by the latter :

- Consumables : No claims will be accepted for objects or parts replaced in the context of normal machine usage.
- Settings : Adjustments of all sorts may become necessary at any time. Therefore adjustments are considered a part of normal machine usage conditions and are not covered by the warranty.
- Hydraulic and fuel circuit contamination : Every possible precaution is taken to ensure that fuel and hydraulic liquid delivered is clean. On the other hand, in certain cases it is possible to contaminate fuel and hydraulic circuits, especially when fuel and lubricants are stored on the work site. Moreover, irregular or poor cleaning of the decanting device may also cause fuel/hydraulic circuit contamination and therefore damage the parts in direct contact with these liquids. HAULOTTE® will not accept any claims concerning cleaning of the fuel circuit, filter, injection pump or any other equipment in direct contact with fuel or lubricants.
- Wearing parts (pads, bearings, tires/tyres, connections, etc.) : These parts are, by definition, subject to deterioration during the period of operation. Wearing parts will therefore not be covered by the warranty agreement.

2.4 - WARRANTY CONDITIONS

To benefit from the warranty, the owner or rental company must inform the nearest HAULOTTE® subsidiary or the subsidiary that delivered the machine (the only dealer authorised to carry out an intervention under the manufacturer's warranty agreement) of the defect in writing as quickly as possible.

The subsidiary will decide whether to repair or replace the part that proves to be faulty.

The owner or rental company must present the duly completed maintenance book supplied with the machine as proof that the maintenance operations recommended by the manufacturer have been carried out.

The owner or rental company must ensure that the defect covered by the HAULOTTE® warranty is reported to and acknowledged by the HAULOTTE® subsidiary the only dealer authorised to carry out work covered by the warranty) as rapidly as possible or must report the defect in writing.

Work carried out under the HAULOTTE® warranty will be performed by the subsidiary which delivered the machine, wherever possible.

A - Safety precautions

3 - Scope of intervention

The inspection and maintenance table below, identifies the role and the responsibilities of each party in periodical machine maintenance..



If the machine is operated in a hostile environment or intensively, increase the frequency of maintenance.

Inspections and maintenance

Type of intervention	Frequency	Person-in-charge	Intervenor	Reference document
Pre-delivery inspection	Before each delivery of sold, hired or resold equipment	Owner (or hirer)	Qualified HAULOTTE Services® technician	Operator's manual
Pre-operation inspection	Before operation or when the operator changes	Operator	Operator	Operator's manual
Periodical preventive maintenance	At the specified intervals (250 hours or 1 year)	Owner (or hirer)	On-site technician or qualified HAULOTTE Services® technician	Maintenance book
Periodical visit	2 times a year or at the latest 6 months after the last periodic visit, and according to the local regulations	Owner (or hirer)	Organization or technician approved by the employer or by the intermediary of HAULOTTE Services® in accordance with the HAULOTTE Services® contract	Maintenance book

A - Safety precautions

4 - Instructions for intervention



Do not use the machine during while maintenance work is being completed on it.



For any intervention on the power sources, wear glasses and protective clothes (acid spray).

N.B.-: Acid is neutralized with sodium bicarbonate and water.



Do not operate the product in the following situations :

- Do not work in an explosive or flammable atmosphere (spark, flame, etc.).
- Do not touch the hot parts of the hydraulic power source (engine, filters, etc.).
- Do not bridge the battery terminals with metallic objects.
- Do not service the battery in proximity of spark, open flame, lit cigarettes.
- Never expose the batteries or electrical components to water (pressure cleaner, rain).
- Never disable the safety devices.
- Do not climb onto the covers.
- Do not fill up the fuel tank, when the engine is running and/or near a flame.



Use an oil collection pan to avoid polluting the environment.

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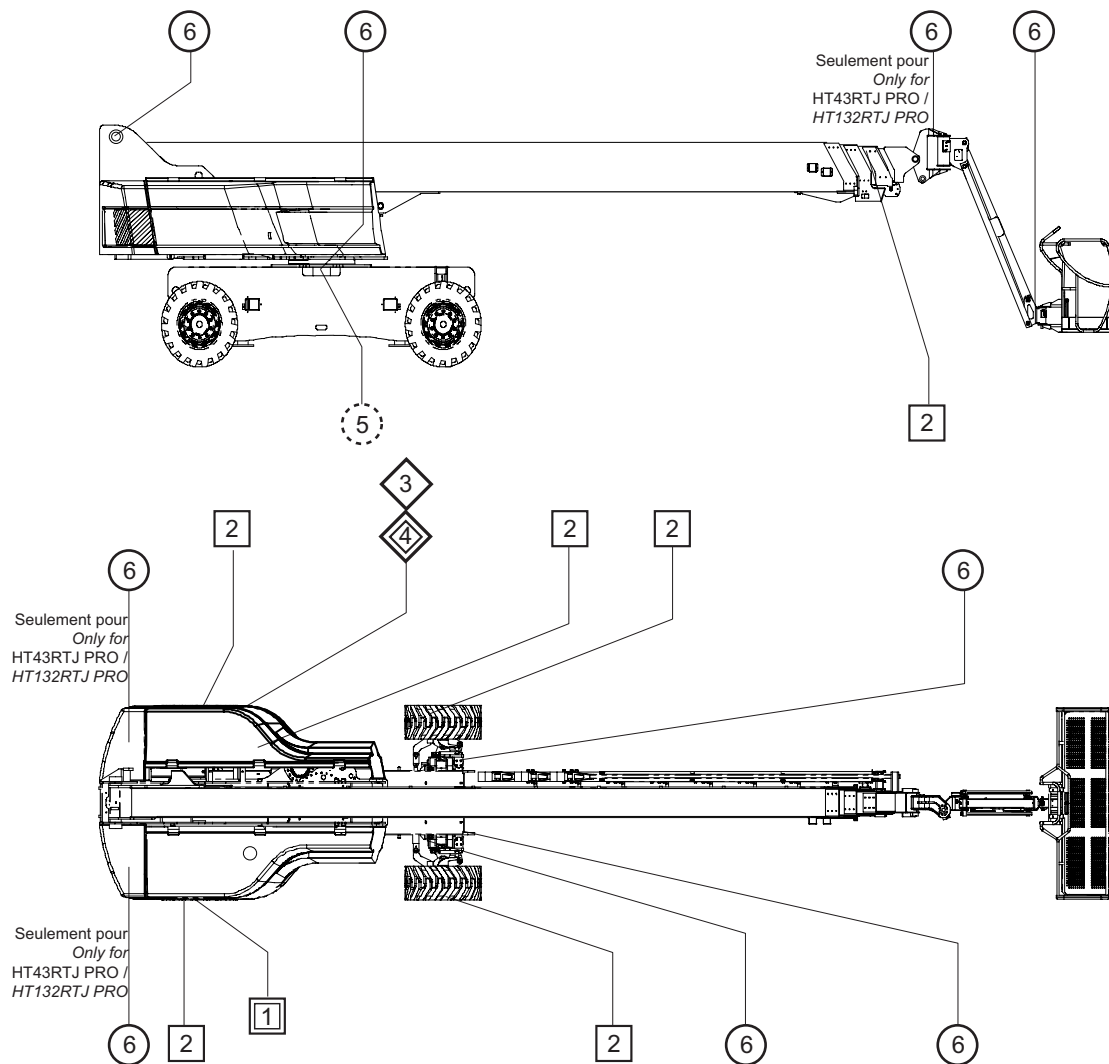
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B - Recommendations

1 - Lubrication diagram

Diagram



B - Recommendations

List of ingredients

Marking	Ingredient	Symbol	HAULOTTE® code
1	Engine oil - Can 20 l(5,3 gal US)		2420801360
	Engine oil - Barrel 209 l(55,2 gal US)		2420801350
	Engine oil (+30° / - 20°)		2820305670
	Engine oil (Winter option)		4000010660
2	Gear box oil - Can 20 l(5,3 gal US)		2420801370
	Gear box oil - Barrel 209 l(55,2 gal US)		2420801380
3	Hydraulic oil (Standard) - Barrel 209 l(55,2 gal US)		2420801310
	Hydraulic oil (Winter option)		2505002640
4	Biological hydraulic oil - Barrel 209 l(55,2 gal US)		2820304310
5	Extreme-pressure lithium grease		2820304320
6	Lead-free grease - Aerosol 0,4 l(0.1 gal US)		2820304330
	Lead-free grease - Can 5 l(1,32 gal US)		2820304340
7	Molybdenum grease		
8	Oil		
9	High-pressure lubricant		

2 - Consumables

List of consumables

Consumable	HAULOTTE® code	Applicability
Hydraulic filter cartridge- Movements	2427002910	HT43RTJ PRO - HT132RTJ PRO
Hydraulic filter cartridge- Driving	2427003110	HT43RTJ PRO - HT132RTJ PRO
Primary air filter	2427003090	HT43RTJ PRO - HT132RTJ PRO
Secondary air filter	2427003100	HT43RTJ PRO - HT132RTJ PRO
Diesel filter	2427003070	HT43RTJ PRO - HT132RTJ PRO
Engine oil filter	2427003080	HT43RTJ PRO - HT132RTJ PRO
Filter pack ⁽¹⁾	KKIT250H-HA32	HT43RTJ PRO - HT132RTJ PRO

(1.) 1 hydraulic filter cartridge + 1 air filter + 1 diesel pre-filter + 1 diesel filter + 1 engine oil filter

B - Recommendations

2.1 - FUELS

These fuels can be used on any type of mechanical injection engine. Please see machine configuration.

N.B.:- The fuel to be used is regulated by national laws; refer to these requirements and to the table below to define the appropriate fuel.

Table of technically permitted fuels

Engines	Fuels			
	European gas oil according to EN590	European fuel oil according to BS2869 class 2	American gas oil according to ASTM D975-07b	Japanese gas oil according to NATO F54
HATZ 41C	✓	✓	✓	✓
DEUTZ 2011/2012	✓	✓	✓	✓
PERKINS 403/804/1104	✓	✓	✓	✓
LOMBARDINI LDW 1404	✓	✗	✗	✓
KUBOTA D1105-W1	✓	✗	✓	✗

Compliant



Not compliant



Other fuels :

- Biofuels : According to EN14214 (EU) and ASTM D6751-07a (USA) biofuels are allowed on some engines and under certain conditions. For more information, please contact HAULOTTE Services®.
- Jet engine fuels (kerosene) : F34 and F35 types under OTAN designation are possible on some engines and under certain conditions. For more information, please contact HAULOTTE Services®.

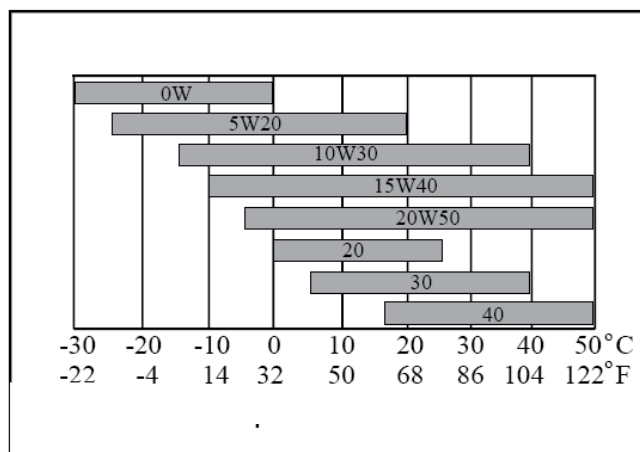
The use of vegetable oils is forbidden.

B - Recommendations

2.2 - MOTOR OILS

In order to ensure that the engine will run properly, it is recommended to use the following oils

Viscosity table



2.3 - HYDRAULIC OILS

Hydraulic oils must comply with the following requirements :

- Oil filterability must be compatible with absolute filters .
- Have properties such as :
- Antifoam and deaeration.
- Anti-wear, anti-shear and antioxydant.
- Rust and corrosion inhibitors (copper).

The recommended viscosity grades depending on the environmental conditions are as follows :

Environmental conditions	ISO Viscosity grade
Ambient temperature between - 15 °C(- 9 °F) and + 40 °C(+ 104 °F)	HV 46
Ambient temperature between - 35 °C(- 31 °F) and + 35 °C(+ 95 °F)	HV 32
Ambient temperature between 0 °C(32 °F) and + 45 °C(+ 113 °F)	HV 68

Biodegradable oils may be used if they comply with the following requirements :

- Ambient operating temperature between -15 °C(-9 °F) and + 40 °C(+ 104 °F) .
- HEES type biodegradable oil only according to standards ISO 15380 and VDMA 24568.
- Necessary characteristics

Viscosity grade	ISO Viscosity grade
Viscosity at + 40 °C(+ 104 °F)	46 +/- 3 mm ² / s
Viscosity at + 100 °C(+ 260 °F)	> 8 mm ² / s
Viscosity index	> 160
Flashpoint	> 220° C (> 572° F)
Pour point	< - 40° C (> - 104° F)

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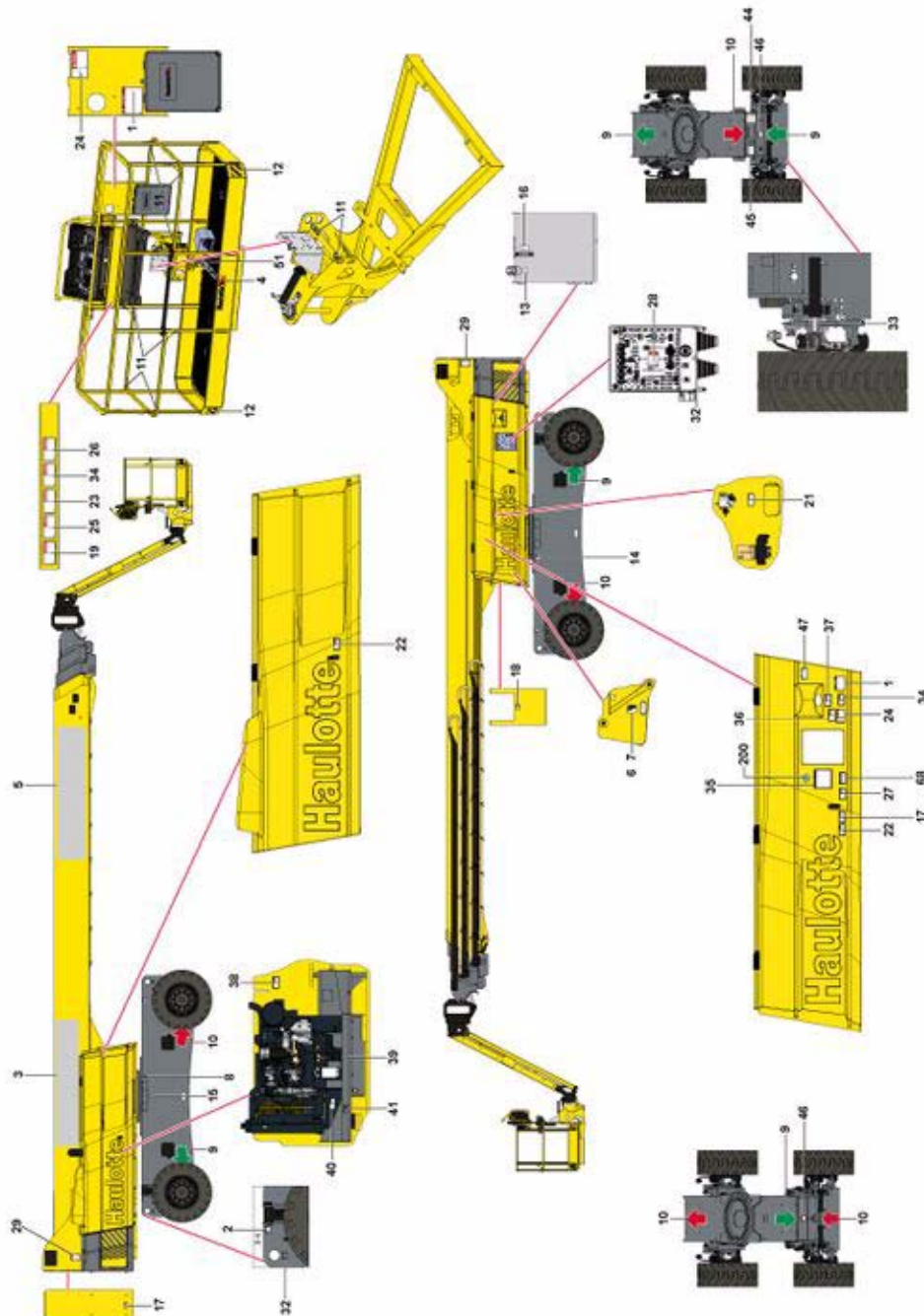
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B - Recommendations

3 - Decals and markings locations

CE standard - HT43RTJ PRO



B - Recommendations

CE standard

Marking	Color	Description	Quantity	HT43RTJ PRO
1	Red	Height of the floor and load	2	4000211900
2	Blue	Maximum Pressure per Tire - Floor Loading	4	4000414300
3	Other	Commercial name - Bright machine	1	4000364410
		Commercial name - Dark machine	1	4000364400
		Small format HAULOTTE® logo - Bright machine	1	307P217080
4	Other	Small format HAULOTTE® logo - Dark machine	1	307P224740
		Small format HAULOTTE® logo - Red machine	1	307P220360
		Large format HAULOTTE® logo - Bright machine	1	4000365570
5	Other	Large format HAULOTTE® logo - Dark machine	1	4000390040
		Large format HAULOTTE® logo - Red machine	1	4000390030
6	Other	Identification plate	1	307P218070
8	Other	Noise emission level	1	3078148740
9	Other	Control of movements - GREEN directional arrow	4	3078143930
10	Other	Control of movements - RED directional arrow	4	3078143940
11	Other	Lanyard attachment points	9	307P216290
12	Other	Material risk - Yellow and black adhesive tape	4	4000421700
13	Other	Hydraulic oil	1	307P221080
14	Red	Remove the blocking pin before rotating	1	4000027080
15	Green	Greasing the turntable rotation gear	1	4000025160
16	Other	Max and min oil level	1	307P221060
17	Red	Risk of crushing	3	4000024800
18	Orange	Hand crushing hazard - Risk of crushed hands	2	4000024890
19	Red	Operation instructions	1	4000025140
21	Red	Prohibited use of the PVG	1	4000027070
22	Orange	Wound foot - Do not place foot	2	4000027090
23	Red	Risk of crushing - Driving direction	1	4000024690
24	Red	Danger of electrocution	2	4000025070
25	Red	Risk of crushing - Closing drop rail	1	4000025080
26	Red	Danger of electrocution - Ground for welding	1	4000027100
27	Red	Verification of tilt operation	1	4000027110
28	Red	Do not interchange	1	3078145180
29	Red	Calibration after dismantling	2	307P216930
32	Blue	Anchorage point - Traction	4	4000027310
33	Blue	Anchorage point - Elevation	4	4000027330
34	Red	Risk of electrocution - Water projection	2	4000025130

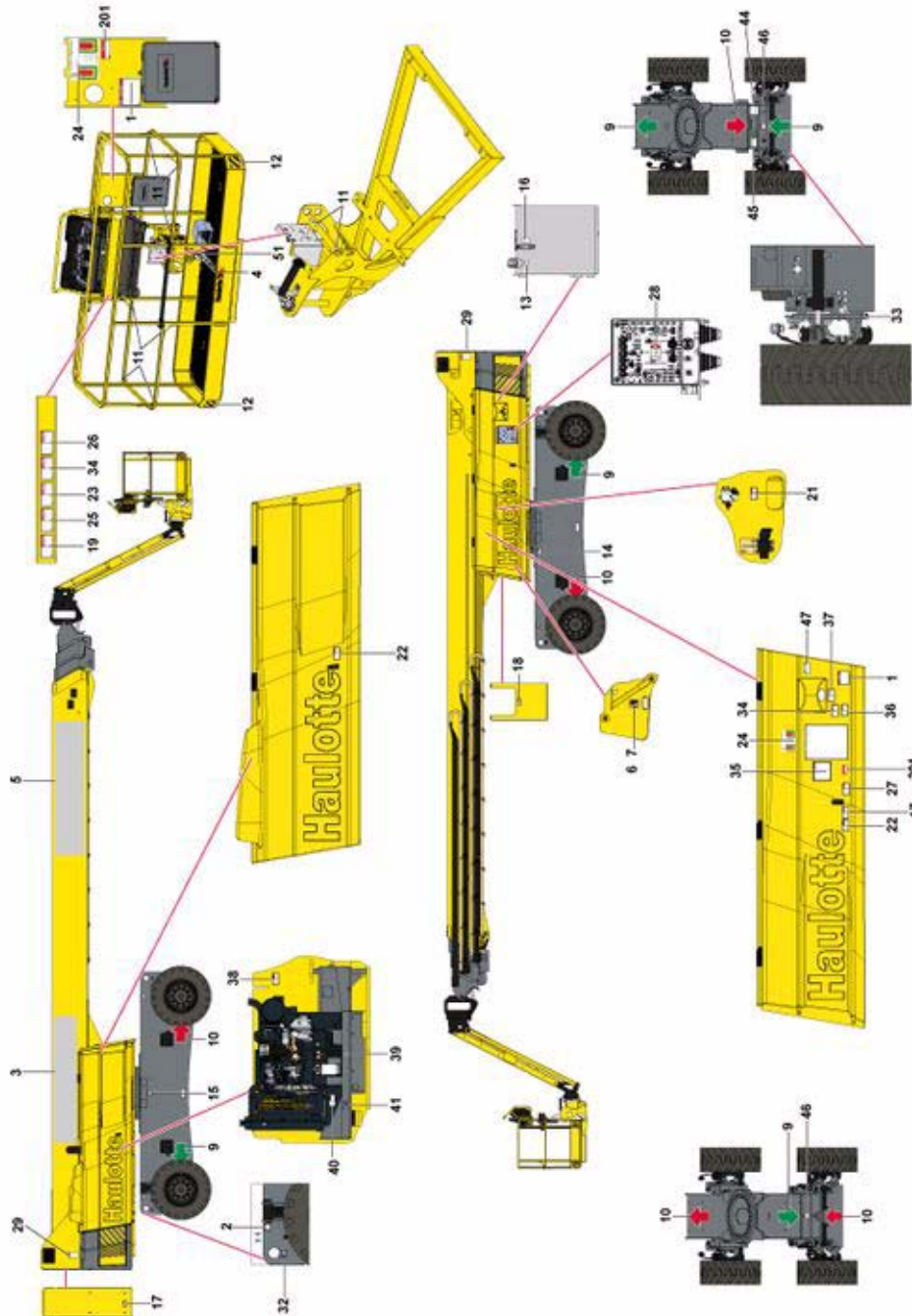
B - Recommendations

Marking	Color	Description	Quantity	HT43RTJ PRO
35	Red	Operation instructions	1	In french (CE standard) : 3078149030
				In english (CE standard) : 307P222740
				In german (CE standard) : 307P222730
				In croatian (CE standard) : 4000360810
				In danish (CE standard) : 307P222760
				In spanish (CE standard) : 307P222770
				In estonian (CE standard) : 4000360870
				In finish (CE standard) : 307P222780
				In dutch (CE standard) : 307P222790
				In hungarian (CE standard) : 4000360890
				In italian (CE standard) : 307P222800
				In japanese (CE standard) : 4000359830
				In latvian (CE standard) : 4000359840
				In lithuanian (CE standard) : 4000359850
				In norwegian (CE standard) : 4000359900
				In polish (CE standard) : 4000359860
				In Portuguese (CE standard) : 307P222810
				In romanian (CE standard) : 4000359870
				In Russian (CE standard) : 4000359920
				In slovakian (CE standard) : 4000359880
				In slovenian (CE standard) : 4000359890
				In swedish (CE standard) : 307P222820
				Ukrainian (CE standard) : 4000359910
36	Red	Risk of crushing - Platform	1	4000027460
37	Red	Explosion hazard	1	4000027370
38	Orange	Hand crushing hazard - Heat burns	1	4000027450
39	Other	Oil CJ 4 (if fitted)	1	4000019700
40	Orange	Hand crushing hazard - Fan	1	4000027430
41	Yellow	Revolving cradle	1	3078151730
44	Other	Oscillating axle extension/retraction	1	307P219990
45	Other	Fixed axle extension/retraction	1	307P219980
46	Red	Maximum effort on the stabilizers	2	307P219880
47	Blue	Information - Explanation - LOW SULFUR	1	307P232480
51	Yellow	Socket - 240 V	1	4000027120
68	Other	Transport height	1	4000417580
200	Other	"Made in Europe"	1	4000137690

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B - Recommendations

AS standard - HT43RTJ PRO



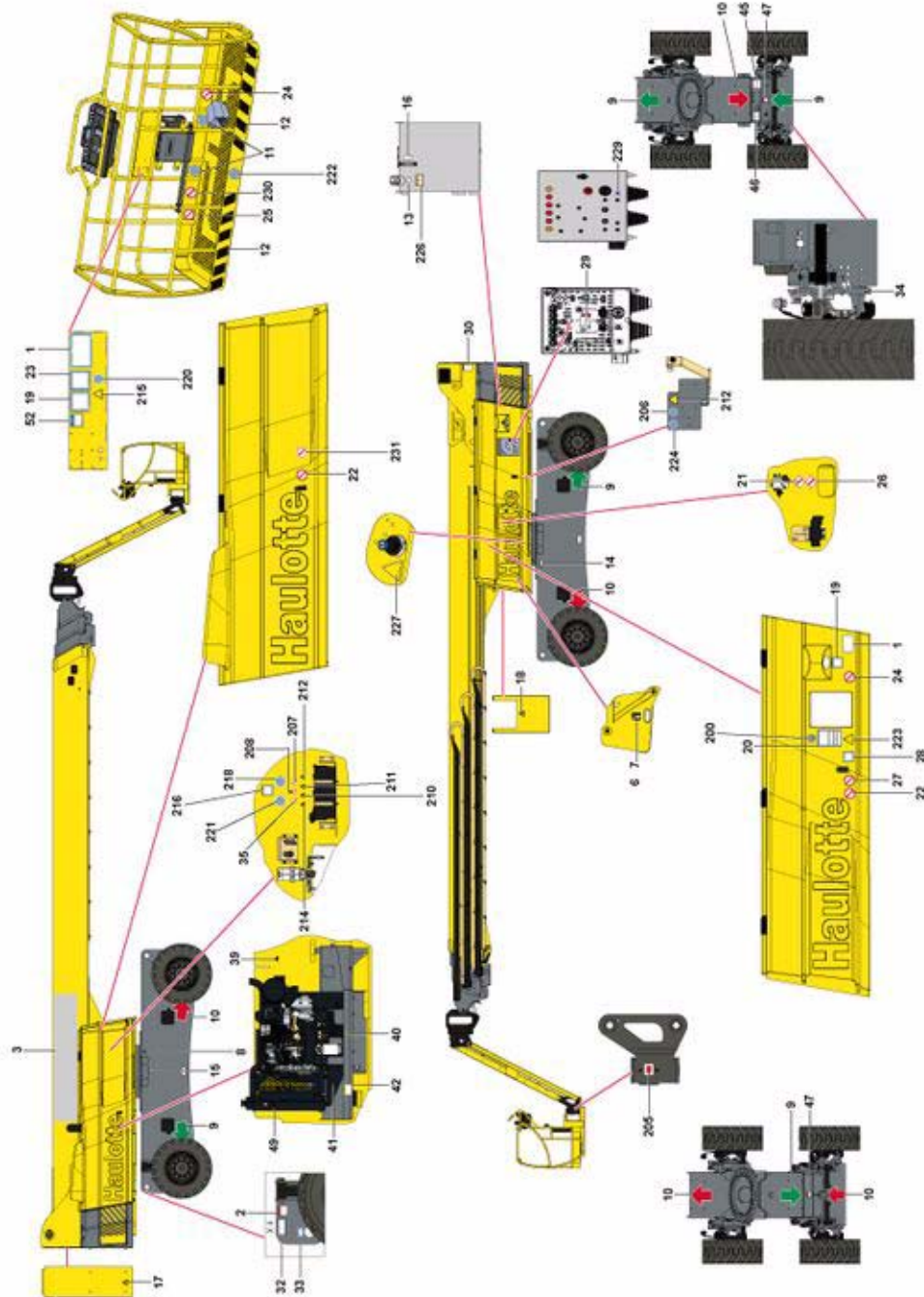
B - Recommendations

AS standard

Marking	Color	Description	Quantity	HT43RTJ PRO
1	Red	Height of the floor and load	2	4000211900
2	Blue	Maximum Pressure per Tire - Floor Loading	4	4000414300
3	Other	Commercial name - Bright machine	1	4000364410
		Commercial name - Dark machine	1	4000364400
4	Other	Small format HAULOTTE® logo - Bright machine	1	307P217080
		Small format HAULOTTE® logo - Dark machine	1	307P224740
		Small format HAULOTTE® logo - Red machine	1	307P220360
		Large format HAULOTTE® logo - Bright machine	1	4000365570
5	Other	Large format HAULOTTE® logo - Dark machine	1	4000390040
		Large format HAULOTTE® logo - Red machine	1	4000390030
6	Other	Identification plate	1	307P218070
9	Other	Control of movements - GREEN directional arrow	4	3078143930
10	Other	Control of movements - RED directional arrow	4	3078143940
11	Other	Lanyard attachment points	9	307P216290
12	Other	Material risk - Yellow and black adhesive tape	4	4000421700
14	Red	Remove the blocking pin before rotating	1	4000027080
15	Green	Greasing the turntable rotation gear	1	4000025160
16	Other	Max and min oil level	1	307P221060
17	Red	Risk of crushing	3	4000024800
18	Orange	Hand crushing hazard - Risk of crushed hands	2	4000024890
19	Red	Operation instructions	1	4000025140
21	Red	Prohibited use of the PVG	1	4000027070
22	Orange	Wound foot - Do not place foot	2	4000027090
23	Red	Risk of crushing - Driving direction	1	4000024690
24	Red	Danger of electrocution	2	4000227500
25	Red	Risk of crushing - Closing drop rail	1	4000025080
26	Red	Danger of electrocution - Ground for welding	1	4000027100
27	Red	Verification of tilt operation	1	4000027110
28	Red	Do not interchange	1	3078145180
29	Red	Calibration after dismantling	2	307P216930
32	Blue	Anchorage point - Traction	4	4000027310
33	Blue	Anchorage point - Elevation	4	4000027330
34	Red	Risk of electrocution - Water projection	2	4000025130
35	Red	Operation instructions	1	307P222740
36	Red	Risk of crushing - Platform	1	4000027460
37	Red	Explosion hazard	1	4000027370
38	Orange	Hand crushing hazard - Heat burns	1	4000027450
39	Other	Oil CJ 4 (if fitted)	1	4000019700
40	Orange	Hand crushing hazard - Fan	1	4000027430
41	Yellow	Revolving cradle	1	3078151730
44	Other	Oscillating axle extension/retraction	1	307P219990
45	Other	Fixed axle extension/retraction	1	307P219980
46	Red	Maximum effort on the stabilizers	2	307P219880
47	Blue	Information - Explanation - LOW SULFUR	1	307P232480
51	Yellow	Socket - 240 V	1	4000027120
201	Red	Wearing of a safety harness is essential	2	3078144520

B - Recommendations

Russia and the Ukraine version - HT43RTJ PRO



B - Recommendations

Russia and the Ukraine version

Marking	Color	Description	Quantity	HT43RTJ PRO
1	Red	Height of the floor and load	2	4000211950
2	Blue	Maximum Pressure per Tire - Floor Loading	4	4000414300
3	Other	Commercial name - Bright machine	1	4000364410
		Commercial name - Dark machine	1	4000364400
6	Other	Identification plate	1	For Russia : 4000278870 For Ukraine : 307P227830
8	Other	Noise emission level	1	3078148740
9	Other	Control of movements - GREEN directional arrow	4	3078143930
10	Other	Control of movements - RED directional arrow	4	3078143940
11	Blue	Lanyard attachment points	9	307P216290
12	Other	Material risk - Yellow and black adhesive tape	4	400421700
13	Other	Hydraulic oil	1	307P221080
14	Red	Remove the blocking pin before rotating	1	307P227810
15	Green	Greasing the turntable rotation gear	1	307P227020
16	Other	Max and min oil level	1	307P221060
17	Yellow	Risk of crushing	3	307P227670
18	Yellow	Hand crushing hazard - Risk of crushed hands	2	307P227660
19	Blue	Operation instructions	1	For Russia : 307P227190 For Ukraine : 307P227840
21	Red	Prohibited use of the PVG	1	4000079680
22	Red	Wound foot - Do not place foot	2	307P227010
23	Blue	Risk of crushing - Driving direction	1	307P227040
24	Red	Danger of electrocution	2	307P226960
25	Red	Risk of crushing - Closing drop rail	1	307P226950
26	Red	Danger of electrocution - Ground for welding	2	307P226970
27	Blue	Verification of tilt operation	1	For Russia : 307P227060 For Ukraine : 307P227870
28	Red	Do not interchange	1	3078145180
29	Red	Calibration after dismantling	2	307P216930
32	Blue	Anchorage point - Traction	4	4000135970
33	Blue	Anchorage point - Elevation	4	4000135960
34	Red	Electrocution Hazard - Water projection	2	307P226780
35	Blue	Operation instructions	1	For Russia : 4000359920 For Ukraine : 4000359910
36	Yellow	Risk of crushing - Platform	1	4000014290
38	Yellow	Hand crushing hazard - Heat burns	1	4000200810
39	Other	Oil CJ 4 (if fitted)	1	4000019700
40	Yellow	Hand crushing hazard - Fan	1	307P226940
41	Yellow	Revolving cradle	1	307P215290
44	Other	Oscillating axle extension/retraction	1	307P219990
45	Other	Fixed axle extension/retraction	1	307P219980
46	Red	Maximum effort on the stabilizers	2	307P219890
47	Blue	Information - Explanation - LOW SULFUR	1	For Russia : 4000416640 For Ukraine : 4000416650
51	Yellow	Socket - 240 V	1	4000027120
200	Blue	"Made in Europe"	1	4000137690
204	Red	Lubrication point	1	307P219370
205	Blue	Caution disconnection compulsory	1	307P226690
206	Red	Flames prohibited	1	307P226750
207	Red	Smoking forbidden	1	307P226760
208	Yellow	Battery danger	1	307P226790
209	Yellow	Fire Hazard	1	307P226800
210	Yellow	Electrical danger	1	307P226810
212	Yellow	Corrosion hazard	1	307P226830

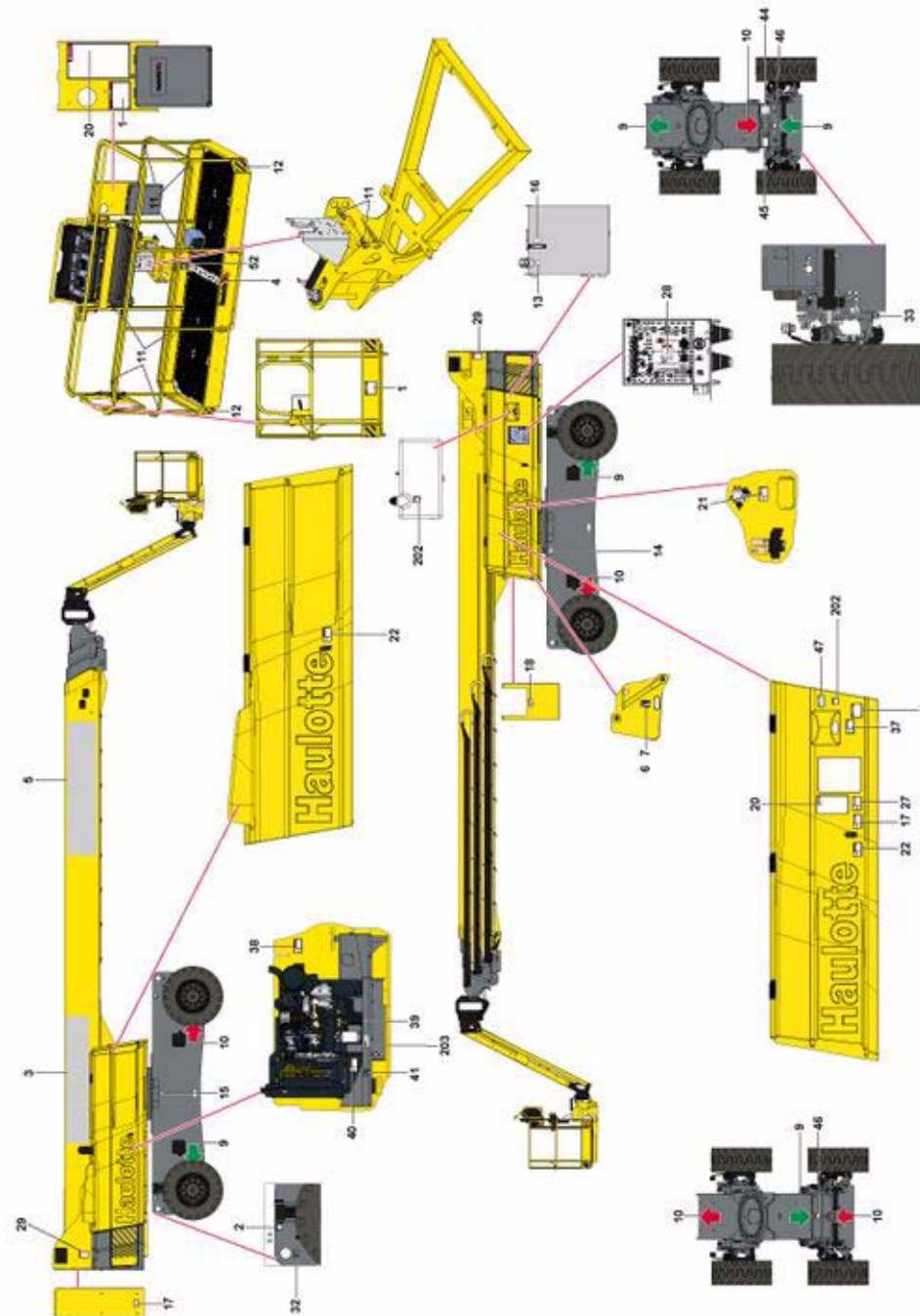
B - Recommendations

Marking	Color	Description	Quantity	HT43RTJ PRO
213	Yellow	Danger unstable side	1	307P226930
214	Blue	Battery maintenance	1	For Russia : 307P227180 For Ukraine : 307P227860
215	Other	Tamper-proof	15	307P227450
216	Blue	Caution glasses	1	307P227460
217	Blue	Caution helmet compulsory	1	307P226680
219	Blue	hand protection compulsory	1	307P227490
220	Blue	Obligatory routing	1	307P227510
221	Yellow	Danger unstable side	1	307P227680
222	Blue	Plug12 V	1	307P227700
224	Yellow	Winter grade hydraulic oil	1	307P223700
225	Yellow	Tilt verification	1	4000011690
227	Blue	Horn	1	4000014830
228	Red	Do not travel down slopes in high speed	1	307P226990
229	Red	No admittance to unauthorized persons	1	307P227560

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B - Recommendations

ANSI and CSA standards - HT132RTJ PRO



B - Recommendations

ANSI and CSA standards

Marking	Color	Description	Quantity	HT132RTJ PRO
1	Red	Height of the floor and load - Single load machine	3	In english : 4000211910 In french : 4000211920 In spanish : 4000211930
2	Blue	Maximum Pressure per Tire - Floor Loading	4	4000414300
3	Other	Commercial name - Bright machine	1	4000364430
		Commercial name - Dark machine	1	4000364420
4	Other	Small format HAULOTTE® logo - Bright machine	1	307P217080
		Small format HAULOTTE® logo - Dark machine	1	307P224740
		Small format HAULOTTE® logo - Red machine	1	307P220360
		Large format HAULOTTE® logo - Bright machine	1	4000365570
5	Other	Large format HAULOTTE® logo - Dark machine	1	4000390040
		Large format HAULOTTE® logo - Red machine	1	4000390030
6	Other	Identification plate	1	In english : 307P218170 In french : 307P218170 + 4000088480 In spanish : 307P218170 + 4000088490
9	Other	Control of movements - GREEN directional arrow	4	3078143930
10	Other	Control of movements - RED directional arrow	4	3078143940
11	Other	Lanyard attachment points	9	307P216290
12	Other	Material risk - Yellow and black adhesive tape	4	4000421700
13	Other	Hydraulic oil	1	307P221080
14	Red	Remove the blocking pin before rotating	1	In english : 4000024830 In french : 4000068080 In spanish : 4000086510
15	Green	Greasing the turntable rotation gear	1	4000025160
16	Other	Max and min oil level	1	307P221060
17	Red	Risk of crushing	3	In english : 4000024640 In french : 4000067680 In spanish : 4000086460
18	Orange	Hand crushing hazard - Risk of crushed hands	2	In english : 4000024770 In french : 4000067110 In spanish : 4000086490
20	Red	Operation instructions	2	In english : 4000027570 In french : 4000068880 In spanish : 4000086640
21	Red	Prohibited use of the PVG	1	In english : 4000024820 In french : 4000067690 In spanish : 4000086470
22	Orange	Wound foot - Do not place foot	2	In english : 4000024840 In french : 4000068180 In spanish : 4000086610
27	Red	Verification of tilt operation	1	In english : 4000024860 In french : 4000068090 In spanish : 4000086520
28	Red	Do not interchange	1	3078145180
29	Red	Calibration after dismantling	2	307P216930
32	Blue	Anchorage point - Traction	4	4000027310
33	Blue	Anchorage point - Elevation	4	4000027330
37	Red	Explosion hazard	1	In english : 4000025010 In french : 4000068130 In spanish : 4000086560
38	Orange	Hand crushing hazard - Heat burns	1	In english : 4000025040 In french : 4000068110 In spanish : 4000086540
39	Other	Oil CJ 4 (if fitted)	1	4000019700

B - Recommendations

Marking	Color	Description	Quantity	HT132RTJ PRO
40	Orange	Hand crushing hazard - Fan	1	In english : 4000025020 In french : 4000068100 In spanish : 4000086530
41	Yellow	Revolving cradle	1	3078151730
44	Other	Oscillating axle extension/retraction	1	307P219990
45	Other	Fixed axle extension/retraction	1	307P219980
46	Red	Maximum effort on the stabilizers	2	307P219880
47	Blue	Information - Explanation - LOW SULFUR	1	307P232480
52	Blue	Socket - 110 V	1	4000027590
202	Blue	Diesel Fuel Only	2	4000201430
203	Other	Internal combustion engine	1	4000097490

C - Maintenance

1 - Maintenance Schedule

	To drain off		Lubrication-Greasing		Tightening
	Levelling		Systematic replacement		Functional adjustments / Checks

Periodicity	First 50 h	6 months or			1 year(s) or	2 year(s) or	3 years	7 years	10 years
		200 h	250 h	300 h	500 h	1000 h			
Work platform, floor, guardrails, access and extensions									
Extension desk, platform fastening									
Frame, axle, steering system, stabilizers arms									
Screw and bolt wheel tightening									
Wheel bearing									
Wheel reducer			 						
Steering system tightening									
Steering system greasing									
Rotation systems : orientation turret, basket and jib									
Exterior gear wheel greasing									
Slewing device tightening									
Pin, pin stop, bearing									
Pin and bushes									
Bushed and bearing									
Pulleys, chains and wire rope									
The strain of chains									
The strain of wire rope									
Chains replacement									
Wire rope replacement							 Star 6 - Star 13		

C - Maintenance

Wear pads and devices of guidance									
Wear pads									
Cylinder and hydraulic component : pump, filters, manifold									
Hydraulic oil									
Hydraulic oil filter									
Adjusting the hydraulic pressure									
Energy storage and motorisation : talns, batteries and engine									
Engine oil filter and replacement		 KUBOTA	 DEUTZ						
Engine air filter		 KUBOTA	 DEUTZ						
Engine fuel filter		 KUBOTA	 DEUTZ						
Batteries acid level									

C - Maintenance

2 - Inspection program

The machine must be inspected on a regular basis at intervals in accordance with the requirements set forth in the Country of use but no less than once a year. The purpose of the inspection is to detect any defect which could lead to an accident during routine use of the machine.

HAULOTTE Services® requires Reinforced and Major Inspections to be carried out on the product to extend its service life.

Inspections must be carried out by a qualified company or person whose selection is the responsibility of the company manager.

The inspection results must be recorded in the safety register or machine log book controlled and overseen by the company manager. This register or machine log book and the list of competent repair persons must be made available to the Government Work Inspector and company safety committee at any time.

When	Responsible	Stakeholder	What
Before sale	Owner (or renter)	Competent technician or qualified technician HAULOTTE Services®	Periodic inspection
Before rent	Owner (or renter)	Competent technician or qualified technician HAULOTTE Services®	Daily inspection
Before use or every change of user	User	User	
6 months or 1 year (*)	Owner (or renter)	Competent technician or qualified technician HAULOTTE Services®	Periodic inspection
5 years	Owner (or renter)	Qualified technician HAULOTTE Services®	Reinforced inspection
10 years	Owner (or renter)	Qualified technician HAULOTTE Services®	Major inspection

(*) According to applicable regulatory requirements. If there are no local requirements, then inspection must be performed at least once a year.

C - Maintenance

3 - Daily inspection

The content and method of inspection must be conducted by operators before using the machine, it includes a visual inspection and functional and security systems testing of the machine.

This inspection is the responsibility of the user.

Each day and before the beginning of a new work period and with each change of operator, the machine must be subjected to a visual inspection and a complete functional test. This inspection is called Daily Inspection.

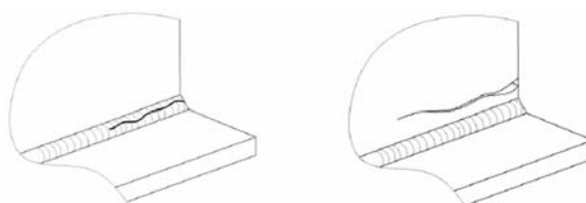
Any repairs required must be performed before the machine is used, its correct operation depends on it.

To tighten loosened hardware, refer to recommended torque value table in maintenance book.

In case of leaks, tighten or replace the damaged part before placing the machine in service.

In case of structural part deformation, cracks, broken weld, paint chipped, replace the part before placing the machine in service.

Sample of broken welds



Inspection Forms are provided to assist your inspection process.

We recommend these forms to be completed daily and stored to assist with your maintenance schedule.

Each action is depicted in the daily inspection sheet using the following symbols.

	Visual inspection without disassembly		Lubrication-Greasing		Functional adjustments / Checks
	To drain off		To check by test		Tightening
	Levelling		Systematic replacement		
	Visual inspection with small disassembly or movement needed to reach the part. Replacement is necessary.		Proof tests. Need HAULOTTE Services® authorization. For countries where machines are not subject to controlled periodic maintenance.		

C - Maintenance

		Daily inspection			
	Visual inspection without disassembly		Levelling		
			To check by test		
		Yes	No	Corrected	Not applicable
Manuals and displays. Clean or replace if necessary.					
	Presence, cleanliness and legibility of the manufacturer's plate				
	Presence, cleanliness and legibility of operator's and maintenance manuals				
	Presence and cleanliness of load chart of the machine				
Control box					
	Presence and cleanliness of the control box				
	No deterioration				
	All decals at the control boxes are clean and legible				
	Operation of start / stop device				
	Operation of E-stop button device				
	Operation of enable switch				
	Operation of horn from platform control box				
	Operation of movement from platform control box				
	Test warning alarm lights and buzzer				
	No abnormal noise and jerky movements from platform control box				
	Joysticks and movement switches return to neutral				
Work Platform. Floor, guardrails, access and extensions					
	No cracks, broken weld, paint chipped				
	No visible damage				
	Harness anchor points are not cracked or damaged, with the decal attached and legible				
	No screws missing / loose parts				
	Entry bar/gate closes automatically and is not prevented from closing.				
	Folding guard-rail (if fitted) is fixed securely in position				
Lift assembly (jib, boom, arm, mast)					
	No cracks, broken weld, paint chipped				
	No visible damage				
	No screws missing / loose parts				
	No foreign items in joints or slides				

C - Maintenance

Presence of securely fitted maintenance devices (safety stand)					
All compartments covers open and lock properly					
Frame, axle, steering system, stabilizers arms ...					
No cracks, broken weld, paint chipped					
No visible damage					
No screws missing / loose parts					
No foreign body in joints or slides					
State of tires (refer to E.4.2 on limits to wear and damage)					
Wheel reducer is undamaged and operates smoothly					
All compartments covers open and lock properly					
Rotation system : orientation turret, basket and jib					
No cracks, broken weld, paint chipped					
No deterioration and visible damage					
No screws missing / loose parts					
No foreign body in joints or slides					
Exterior gear wheel greasing					
Pin, pin stop, bearing ...					
Presence of turret rotation pin and locking device					
No bent, cracked or broken pins, pin stops, bushes or bearings					
Pulleys, chains and wire rope					
No cracked or broken chains, links and fittings					
Pulleys and clamps are not worn, rusted or damaged					
Cylinder and hydraulic component : pumps, filters, manifold					
No leaks on the pump, tank or fittings					
No deformation, visible damage, broken weld or leaks on hydraulic cylinder					
No screws missing / loose parts					
Presence and operation of hydraulic filter (no clogged)					
Hydraulic oil level					
Energy storage and motorisation: tanks, batteries and engine					
Fuel level (add in stowed position)					
No screws missing / loose parts					
Presence and good condition of hydraulic hose					
Presence and good condition of engine components					
Presence and good condition of the batteries: terminations and clamps, electrolyte level ...					

C - Maintenance

Electric cables					
No torn or split wire sheaths					
No evidence of chemical damage or corrosion on all cables					
No oxidation or corrosion on terminals					
Sensors and safety device					
Stabilizers operate correctly and lock securely in position					
Slope limiting device operates properly					
Axle locking device operate properly					
Pothole safety device operate properly (if equipped)					
Test of load sensing system (visual warning at control box)					
Check that the safety devices operates correctly					
Emergency stop					
Enable switch					
Fault detector displays					
Overload sensing system					
Slope sensor					
Travel speed limitation					
Serial number :	Model :				
Hours of operation :					
HAULOTTE Services® contract reference :	Signature :				
Intervention record number :					
Date :					
Name :					

C - Maintenance

4 - Periodic inspection

The Periodic inspection is a thorough inspection of the operation and safety features of the machine. It must take place before the sale / resale of the machine and at a frequency of 6 months or 1 year according to regulations. Local regulations may have specific requirements on frequency, and content of inspections.

Otherwise or in addition, use the detailed program below.

This inspection is the responsibility of the owner, and must be conducted by a qualified technician.

To ensure user safe use and improve the life of machines, HAULOTTE® recommended performing this inspection every HAULOTTE® months.

This inspection should include the daily inspection.

Intervention to be made after :

- Extensive dismantling and reassembly.
- Repairs involving the machine's essential components.
- Any accident causing stress to the machine.

	Visual inspection without disassembly		Lubrication-Greasing		Tightening
	To drain off		Systematic replacement		

C - Maintenance

		Periodic inspection In addition to the daily inspection program					
	Visual inspection without disassembly		To check by test				
	Visual inspection with small disassembly or movement needed to reach the part. Replacement is necessary.		Levelling				
	Proof tests. Need HAULOTTE Services® authorization. For countries where machines are not subject to controlled periodic maintenance.		Functional adjustments / Checks				
			Yes	No	Corrected	Not applicable	
Manuals and displays. Clean or replace if necessary.							
Presence, cleanliness and legibility of the manufacturer's plate							
Control box							
Operation of emergency lowering device							
Work Platform. Floor, guardrails, access and extensions							
No cracks, broken weld, paint chipped							
No deterioration and visible damage							
Harness anchor points are not cracked or damaged, with the decal attached and legible							
No screws missing / loose parts							
Entry bar/gate closes automatically and is not prevented from closing.							
Locking in closed position of folding guard-rail (if equipped)							
Work platform, floor, guardrails, access and extensions							
No cracks, broken weld, paint chipped							
No foreign body in joints or slides							
Entry bar/gate closes automatically and is not prevented from closing							
Locking in closed position of folding guard-rail (if equipped)							
State of extension desk fastening							
Lift assembly (jib, boom, mast, arm, turret)							
No cracks, broken weld, paint chipped							
No deterioration and visible damage							
No screws missing / loose parts							
Presence and fastening of external wire guide							
Anchor points for handling fixed, undamaged and signaled (if equipped)							

C

- Maintenance

No foreign body in joints or slides						
No abnormal gap in joints and slides						
Frame, axle, steering system, stabilizers arms ...						
No cracks, broken weld, paint chipped						
No foreign body in joints or slides						
No abnormal gap in joints and slides						
Condition of tires/tyres (wear, cutting, damage ...)						
Anchor points for handling fixed, undamaged and signaled (if equipped)						
Wheel reducer						
Rotation systems : orientation turret, basket and jib						
No cracks, broken weld, paint chipped						
No foreign body in joints or slides						
Lateral gap of extensible structure seems acceptable (test on slewing system)						
Slewing device screw and bolt presence and tightening (if equipped)						
Pin, pin stop; bearing ...						
Presence of the turret pin and its locking device						
No abrasion, damage or oxidation of pin, pin stop, bushes and bearing						
No radial gap > 0,5mm on the pin						
No bent, cracked or broken pins, pin stops, bushes or bearings						
Position and state of bushes and bearing						
Pulleys, chains and wire rope						
No wear more than 2%						
No radial gap > 0,5 mm on the pulleys on the pin						
Adjustment and maintenance performed correctly						
Cylinder and hydraulic component : pump, filters, manifold						
No deformation, visible damage, and broken weld on hydraulic tank						
Absence of foreign body on surfaces						
Hydraulic oil level (complete if needed)						
No torn or split wire sheaths						
Shielding is not apparent						
No evidence of chemical damage or corrosion on all cables						

C - Maintenance

No oxidation or corrosion on terminals					
No leaks on the pump, tank or fittings					
Absence of rust and shock on cylinder rod					
No deformation, visible damage, broken weld or leaks on hydraulic cylinder					
No screw or missing / loose parts					
Absence of cylinder leakage					
Energy storage and motorisation: tanks, batteries and engine					
No screw or missing / loose parts					
Absence of leaks (battery acid, engine oil, etc.)					
Presence and good condition of the batteries: terminations and clamps, electrolyte level ...					
Presence and state of hydraulic hose					
Absence of deformation, visible damage, and broken weld on fuel tank					
Presence and good condition of the engine oil filter					
Presence and good condition of the engine air filter					
Presence and good condition of the engine fuel filter					
Absence of deformation, visible damage, and broken weld on exhaust system					
Engine at idle and fast-track, the engine runs at steady pace and appropriate					
Electric cables					
No torn or split wire sheaths					
No evidence of chemical damage or corrosion on all cables					
No oxidation or corrosion on terminals					
Sensors and safety device					
Stabilizers and their locking device operate properly					
Slope limiting device operates properly					
The travel speed limiting device operate properly					
Axle loking device operate properly					
Pothole safety device operate properly (if equipped)					
Test and if needed adjustment of load sensing system					
Test and if needed adjustment of work area limitation device (if equipped)					
Presence and good operation of sensors					

C - Maintenance

Sensors and safety device					
Static tests on horizontal ground					
Dynamic test on horizontal ground					
Braking tests					
Movements checking (speed and behavior)					
Slope sensing device adjustment					
Load sensing system adjustment					
Working area limiter device adjustment					
Oscillating axles blocking system					
Absence of non-allowed modifications					
Safety bulletin take into account and OTI applicable performed					
Periodic inspection date stamped					
Owner information provided to the manufacturer					
Serial number :		Model :			
Hours of operation :		Signature :			
HAULOTTE Services® contract reference :					
Intervention record number :					
Date :					
Name :					

C - Maintenance

5 - Reinforced inspection

Reinforced periodic inspection is a thorough inspection of the structure of the machine, to ensure the full functionality. It must occur at a frequency of 5 years or 2500 h.

This inspection is under the responsibility of the owner, and it must be conducted by a Haulotte Service technician or qualified/authorized person.

This inspection should include the daily inspection and periodic inspection, refer to the manual for details.

		Reinforced inspection In addition to the daily inspection program					
	Visual inspection with small disassembly or movement needed to reach the part. Replacement is necessary.						
	Proof tests. Need HAULOTTE Services® authorization. For countries where machines are not subject to controlled periodic maintenance.						
				Yes	No	Corrected	Not applicable
Work Platform. Floor, guardrails, access and extensions							
No deterioration and visible damage							
Lift assembly (jib, boom, mast, arm, turret)							
No deterioration and visible damage							
No abnormal gap in joints and slides							
Frame, axle, steering system, stabilizers arms ...							
No deterioration and visible damage							
No foreign body in joints or slides							
Condition of tires/tyres (wear, cutting, damage ...)							
Rotation systems : orientation turret, basket and jib							
No deterioration and visible damage							
Slewing device screw and bolt presence and tightening (if equipped)							
Pulleys, chains and wire rope							
No deterioration and visible damage							
No wear more than 2%							
Pulleys and clamps are not worn, rusted or damaged							
No radial gap > 0.5 mm on the pulleys on the pin							
Absence of crack, damage or break of the device of fixation of chains and wire rop							

C - Maintenance

Cylinder and hydraulic component : pump, filters, manifold					
No torn or split wire sheaths					
Shielding is not apparent					
No evidence of chemical damage or corrosion on all cables					
Energy storage and motorisation: tanks, batteries and engine					
No screws missing / loose parts					
Additional inspection					
Daily inspection checked					
Periodic inspection checked					
Maintenance program realized					
Serial number :		Model :			
Hours of operation :		Signature :			
HAULOTTE Services® contract reference :					
Intervention record number :					
Date :					
Name :					

C - Maintenance

6 - Major inspection

Major inspection allow determining the suitability, integrity and proper functioning of the machine : It must take place when the machine is 10 years or 5000 h after renewed every 5 years.

This inspection is the responsibility of the owner, and it must be conducted by a HAULOTTE Services® technician.

This inspection includes the daily, periodic and reinforced inspections. Refer to the Operators manual for further information.

		Major inspection In addition with daily, periodic, and reinforced inspections			
	Visual inspection with small disassembly or movement needed to reach the part. Replacement is necessary.		Systematic replacement		
	Proof tests. Need HAULOTTE Services® authorization. For countries where machines are not subject to controlled periodic maintenance.				
		Yes	No	Corrected	Not applicable
Frame, axle, steering system, stabilizers arms ...					
No deterioration and visible damage					
Pin, pin stop, bearing ...					
Bushes and bearing replacement realized					
Pulleys, chains and wire rope					
Chains and wire rope replacement realized					
Wear pads and devices of guidance					
Wear pads replacement realized					
Cylinder and hydraulic component : pump, filters, manifold					
Adjusting the hydraulic pressure realized					
Additional inspection					
Daily inspection checked					
Periodic inspection checked					
Maintenance program realized					

C - Maintenance

Serial number :	Model :
Hours of operation :	
HAULOTTE Services® contract reference :	Signature :
Intervention record number :	
Date :	
Name :	

C - Maintenance

7 - Maintenance sheets

Each specific procedure is described in the following maintenance instructions.

Before performing any maintenance interventions, place the machine in maintenance configuration.

Report that the machine is under maintenance by tagging the platform and ground control boxes.

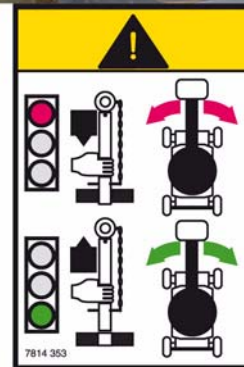
Using the machine during maintenance is strictly forbidden.

Return the machine to operating configuration after maintenance has been completed.

N.B.:-For Russia and the Ukraine only : All the fillings, drain and lubrication points (tanks caps, engines drain plugs, ...) are red.

7.1 - PLACING THE MACHINE IN MAINTENANCE CONFIGURATION

1. Place the machine on firm, level ground.
2. Stow the machine completely.
3. Push the E-stop button to cut off the electricity supply.
4. Insert the turntable rotation locking pin.



7.2 - PLACING IN OPERATING CONFIGURATION

1. Remove the turntable rotation locking pin.
2. Pull the E-stop button.

C - Maintenance

7.3 - GENERAL POINTS

7.3.1 - Recommendations on the conditions of maintenance

- Your safety and the safety of the people around are essential. The handling of parts must be carried out using appropriate equipment (Chains, Lifting slings, Lifting anchors, ...).
- Keep the elements of the machine in configuration of maintenance thanks to mechanics devices (Supports, ...).
- Make sure the work area is clean in order to not to pollute the system of the machine.
- Plug the end of any hoses removed, and cap any open ports to prevent contamination during maintenance.

7.3.2 - Mechanical

7.3.2.1 - Bolts and Tightening torques

- Bolts that become damaged and need to be replaced, must be replaced with bolts of identical specification : Type, Length, Diameter, Class .
- Tighten to the torque indicated when reassembling.
- If there are no specific requirements, apply the normalized tightening torques( Section C 3 - Maintenance sheets E007).

7.3.2.2 - Pins and bearings

Except maintenance schedule, check pins and bearings in the following cases :

- Abnormal noise during the movements of the structure.
- Observance of excessive amounts of foreign material around the bearing extremities during the daily visual inspections.
- Poor or no maintenance.

Replace slew ring in the following cases :

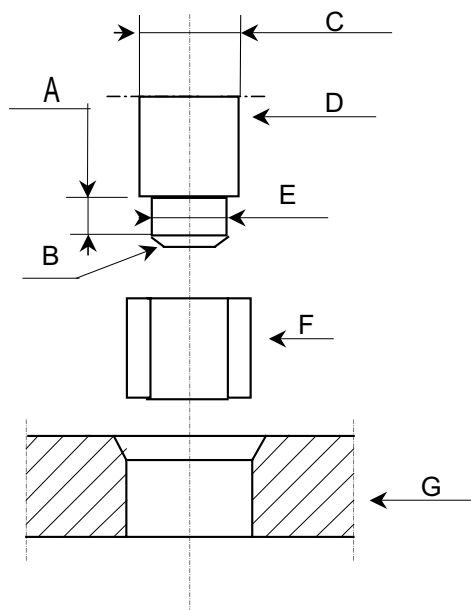
- Deformations, fatigue failure of the bearings and/or the pins.
- Presence of excessive clearance between the pin and housing(> at 0,5 mm).
- Presence of deformations, cracks or breakage of the bearings and/or the pins.
- Presence of scoring on the surface of the bearing.
- If there is excessive friction.

C - Maintenance

When reassembling bearings and pins ensure that :

- Lightly lubricate the housing into which the bearing is to be installed.
- Insert the bearing using a bearing drift, preferably out of mild steel.
- The bearing, the bearing drift and the bearing housing must be correctly aligned during the assembly process.
- The recommended values for the bearing drift are given on the diagram below :

Recommended Values



Marking	Description
A	At least 0,5 times the nominal diameter
B	Make a chamfer
C	Nominal diameter of the bearing - 0,2 / - 0,3 mm
D	Bearing drift
E	Diameter of the bearing guide - 0,20 / - 0,25 mm
F	Bearing
G	Housing

- After inserting the bearing, lubricate and fit the pin.

C

 - Maintenance

7.3.2.3 - Bearings

Action on bearings needs to be taken outside the normal maintenance schedule if the following occurs :

- Abnormal noise during the movements of the structure.
- Machine not use for a period of 6 months or more.
- Environment of storage and specific uses(Strong moisture and salinity of the air).

Checking procedure :

- After disassembling the affected pivot, protect the bearing from external pollutants and potential damage.
- Clean the bearing with a suitable solvent.
- Replace the bearing in the following cases :
 - Presence of abrasions in the bearing housing and/or inside the bearing itself.
 - Presence of abrasion, wear, oxidation, deformations of the balls (or rollers) and the ring rollers.
- Reassembly of the bearing/pivot :
 - Clean the bearing housing or pin in order to remove all the foreign objects/abrasions.
 - Lightly lubricate the bearing housing and/or pin.
 - Lightly lubricate the outer ring of the bearing.
 - Fit a bearing in a boring, take support on the external ring of the bearing.
 - Fit a bearing on a pin, take support on the interior ring of the bearing.

C - Maintenance

7.3.2.4 - Brakes

The brake system is an important component of the safety of the machine. It is essential to carry out functional tests periodically (every 6 month).



For safety reasons, ensure that the following precautions are taken prior to testing commencing :

- **Set up barriers to define the test area.**
- **Place the machine in transport position (Jib in horizontal position accepted)**
- **Wearing of a safety harness is essential.**

First test : High speed :

- This test must be completed on flat ground or on ground that has a incline (less than that for which the machine is rated. Refer to the manufacturers ID plate on the machine to determine the maximum incline).
- Draw a line on the ground to create a stopping reference.
- Drive forward until the maximum speed is reached (Between 3 km/h (1,9 mph) or 6 km/h (3,7 mph) depending on the machine being tested (Check the specification in the Operation Manual)).
- Release the joystick when the front wheels make contact with the stopping line previously drawn.
- When the machine comes to a stop, measure the distance between the middle of the front wheels and the reference mark on the ground :
- If the distance is between 0,2 m (0 ft 8 in) and 1,5 m (4 ft 11 in), the test validates correct operation.
- Otherwise, contact HAULOTTE Services® to repair the system.

Second test : On ramp :

- On non slipping loading ramp (maximum slope 20 %).
- Draw a line on the slope to create a stopping reference.
- Climb on the ramp at microspeed.
- Release the joystick when the front wheels make contact with the stopping line previously drawn.
- When the machine comes to a stop, measure the distance between the middle of the front wheels and the reference mark on the ground :
- If the distance is lower than 0,5 m (1 ft 8 in) : the test validates correct operation.
- If the machine goes down again (skids, slips) of a distance higher than 0,5 m (1 ft 8 in) : Contact HAULOTTE Services® to repair the system.

C - Maintenance

7.3.3 - Hydraulics

7.3.3.1 - Oil replacement

Replace oil after each major intervention, and each time an anomaly has been detected.

Take an oil sample each year, check the viscosity, ensure there are no foreign bodies and change if necessary. Systematically change the oil in the hydraulic circuit every 2 years.

- Only use oils that match the technical characteristics that correspond to HAULOTTE® recommendations ( Section B 1 - Lubrication diagram - List of ingredients) or contact HAULOTTE Services®.
- Do not mix two oils with different characteristics : If necessary, drain and clean the whole system.
- Check the cleanliness of the oil filter cartridge (no metal shavings, rubber, plastic, ...) : If necessary, drain and clean the whole system.
- Respect the following step during filling :
 - The machine must be completely stowed (For machines fitted with : Stabilisers raised).
 - Fill the tank.
 - 1 : Perform a complete cycle (fully extend and retract) of each cylinder.
 - 2 : Fill the tank if necessary(Never above of the maximum level).
 - Repeat the step (1) and (2) for each cylinder on the machine.

7.3.3.2 - Replacing damaged of hoses

Replace hoses in the following circumstances :

- Tears in the outer casing.
- Cracks in the outer casing.
- Apparent shielding.
- Visible leak in the hose.
- Damage to the outer casing caused by chemical reaction from a foreign source.



To protect personal safety, observe the following conditions when disassembling or reassembling components :

- **Stow and park the machine on level cleared ground(The machine should not be tilted. The boom at horizontal position).**
- **Stow the machine completely.**
- **Place barriers around the perimeter of the work area (risk area = maximum height of the machine).**
- **Locate the faulty hose/s and their end connection points, to ensure proper machine operation after intervention.**
- **Identify and memorise the hose path of the hose to be replaced.**



Use an oil collection pan to avoid polluting the environment.

N.B.-:Slowly undo the hose end fitting to allow the residual hydraulic pressure to dissipate.

C - Maintenance



- After hose removal, plug the the hose ends and components the ports from which the hose was removed, to avoid polluting the hydraulic system.
- Check the cleanliness of the hoses and hydraulic components (no metal cutting, rubber, plastic, ...).
- If necessary, drain and clean the whole system (tank included).
- Tighten to the torque indicated when reassembling.

Tightening torque table

Description	Torque (JIC)	Torque (ORFS)
Hose 1/4" (diameter 6mm)	1,5 daN.m(11,08 lbf.ft)	2,6 daN.m(19,22 lbf.ft)
Hose 3/8" (diameter 10mm)	3,5 daN.m(25,86 lbf.ft)	4,2 daN.m(31,04 lbf.ft)
Hose 1/2" (diameter 12mm)	5 daN.m(36,95 lbf.ft)	5,7 daN.m(42,12 lbf.ft)
Hose 5/8" (diameter 16mm)	8 daN.m(59,12 lbf.ft)	8,5 daN.m(62,82 lbf.ft)
Hose 3/4" (diameter 19)	10 daN.m(73,91 lbf.ft)	12,2 daN.m(90,17 lbf.ft)



- Place the machine in its operating configuration.
- To purge the hydraulic system, operate the function/s on the machine that correspond to the hose/s that has/have been replaced, a few times.
- Check the oil level in the hydraulic oil tank.
- Check the pressure.

7.3.3.3 - Evaluation of leaks on hydraulic cylinders

These measures must be taken each time an anomaly has been detected in the hydraulic cylinder during daily inspection and periodic maintenance checks.

Generic Control :

- Position a load equal to the rated capacity on the cage (or platform).
- Raise the cage (or the platform) using the ground control box. To activate the cylinder to be tested, proceed as follows :
- Lift Arm hydraulic cylinder : Lift the arm to approximately half full height. The telescopic boom should be fully extended and in the horizontal position. (For machines fitted with).
- Boom lifting cylinder or Jib cylinder : Lift the concerned equipment (boom or jib) of approximately half way. Extend the telescope to its maximum.
- Telescoping cylinder : Lift the boom to its maximum angle and telescope approximately 50 cm.
- Measure the distance between the floor of the cage (or of the platform) and the ground.
- Leave the machine in this condition for 15 mn (minutes).
- Measure the distance between the floor of the cage (or of the platform) and the ground.
- If the difference between two measurements does not exceed 4 cm : the test validates correct operation.
- If the difference between two measurements exceeds 4 cm, contact HAULOTTE Services® or carry out the additional tests described below.

C - Maintenance

Control cylinder by cylinder :

- Position a load equal to the rated capacity on the cage (or platform).
- Perform the movement of the concern cylinder to half of its stroke.
- Fix the cylinder with a comparator :
- Attach the body of the comparator on the cylinder rod.
- The needle of the comparator must be in contact with the end of the casing of the cylinder.
- The target is to measure the creep of the cylinder rod.
- If the creep of the cylinder rod is higher than the values indicated in the table below, replace the cylinder.

Type of cylinders	Maximum drift authorised due to an internal leak of the cylinder	
Lift cylinder arm or boom (Machine with working heights > 26 m(85 ft4 in))	After 10 mn, creep < 0,2 mm	After 60 mn, creep < 1 mm
Outriggers cylinder, Oscillating axle locking, Lift cylinder arm or boom (Machine with range-limiting system)	After 10 mn, creep < 0,5 mm	After 60 mn, creep < 2,5 mm
Lift cylinder arm or boom, Telescoping, Compensation, ...	After 10 mn, creep < 1 mm	After 60 mn, creep < 6 mm
Steering cylinder	After 10 mn, creep < 1,5 mm	After 60 mn, creep < 9 mm

7.3.4 - Electric

7.3.4.1 - Replacing damaged cables

- Locate the faulty wire/s and its/their points of connection to ensure continuity of machine operation after the wire is replaced.
- Note the cable path to facilitate reassembly.
- Respect the order (configuration) of origin during the reassembly.



1 - You will need



- Standard tool kit
- Protective goggles
- Gloves
- Oil collection pan



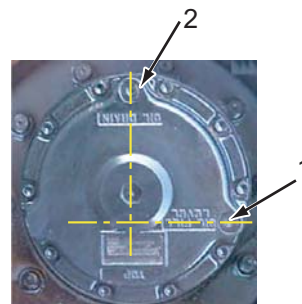
- Place barriers around the perimeter of the work area

2 - Preliminary procedure

1. Place the machine in maintenance configuration.  3.3.1-Placing the machine in maintenance configuration

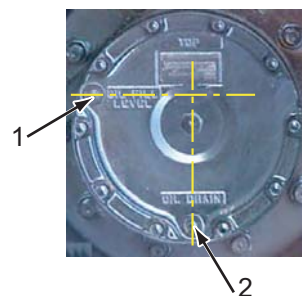
3 - Control

1. Turn the wheel to obtain the following configuration :
2. Plug (1) is on a horizontal line.
3. Plug (2) is on a vertical line.
4. Loosen and remove plug (1).
5. Check the oil level.
6. Top up the oil level to the hole, if necessary.
7. Refit and tighten plug (1).



4 - Oil change

1. Turn the wheel until plug (2) is directed downwards.
2. Loosen and remove plugs (1) and (2).
3. Let the oil drain out.
4. Refit and tighten plug (2).
5. Turn the wheel again to the level control position.
6. Fill the wheel reducer with oil up to hole (1)
7. Refit and tighten plug (1).



Use an oil collection pan to avoid polluting the environment.

5 - Additional operation

1. Place the machine in its operating configuration.  3.3.2-Placing in operating configuration



15 mn



E002



Notes

[illegible]



1 - You will need



- Standard tool kit
- Protective goggles
- Gloves



- Place barriers around the perimeter of the work area

2 - Preliminary procedure

1. Place the machine in maintenance configuration.  3.3.1-Placing the machine in maintenance configuration

3 - Replacement

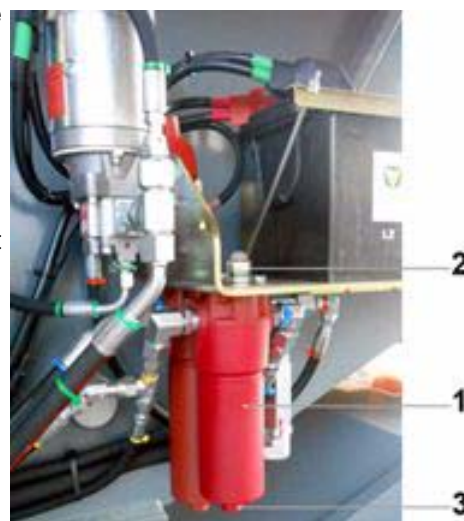


Clogging must be checked when hot. When cold, oil viscosity may simulate filter clogging.



Do not touch the hot parts of the hydraulic power source (engine, filters, etc.).

1. When the clogging indicator (2) comes on, replace the cartridge (1).
2. Loosen and remove the base nut (3).
3. Loosen and remove the cartridge (1).
4. Screw in a new cartridge.
5. Refit and tighten the base nut (3).
6. Reset the clogging indicator (2) by pressing it until it becomes green again.



4 - Additional operation

1. Place the machine in its operating configuration.  3.3.2-Placing in operating configuration



15 min



E003



Notes

[illegible]



15 mn



E004

1 - You will need



- Standard tool kit
- Protective goggles
- Gloves



- Place barriers around the perimeter of the work area

2 - Preliminary procedure

1. Place the machine in maintenance configuration.  3.3.1-Placing the machine in maintenance configuration

3 - Filling-up



Touch the exterior of the filling hole with the pump spout before starting pouring to avoid any risk of static electricity causing sparks.

Make sure you are standing up-wind to avoid being splashed by the fuel.



Do not smoke.

- Loosen and remove the tank cap .
- Fill up the tank.
- Refit and tighten the tank cap .
- Clean up any fuel that may have escaped from the tank.



4 - Additional operation

1. Place the machine in its operating configuration.  3.3.2-Placing in operating configuration

[illegible]

Slew ring



15 mn



E005

1 - You will need



- Standard tool kit
- Steel shims
- Protective goggles
- Gloves



- Place barriers around the perimeter of the work area

2 - Preliminary procedure

1. Place the machine in maintenance configuration.  3.3.1-Placing the machine in maintenance configuration

3 - Lubrication



The illustrations in this paragraph do not necessarily correspond to the range of products designated in the manual.

The maintenance of the slew ring is essential for the safety of the machine and to guarantee its service life. Whatever the type of system installed on the machine, interior or external teeth, follow the recommendations of greasing as indicated in the program.

1. Check for the presence of all the locating bolts.
2. Check that the accessible screws are not loosened. If necessary, tighten the screws (Refer to the "tightening torque" table).
3. Visually check the presence of the teeth and gear (if possible).
4. Check the appearance of the teeth.
5. Grease the (internal and external) crown gear teeth.
6. Grease the raceways (access to greasers via the holes situated on the turntable, until the oil escapes from the crown lip seal).



Slew ring


15 mn

E005

4 - Tightening

Machine type	Metric	Imperial
HA16PE	21,5 daN.m	(158 lbf.ft)
HA12IP - HA33JE	9 daN.m	(66 lbf.ft)
HA15IP - HA43JE	9 daN.m	(66 lbf.ft)
HA12CJ - HA32CJ	9 daN.m	(66 lbf.ft)
HA12CJ+ - HA32CJ+	9 daN.m	(66 lbf.ft)
HA120PX (N/A)	9 daN.m	(66 lbf.ft)
HA16X (N/A)	21,5 daN.m	(158 lbf.ft)
HA16SPX - HA46SJRT	21,5 daN.m	(158 lbf.ft)
HA16PX - HA46JRT	21,5 daN.m	(158 lbf.ft)
HA18SPX - HA51SJRT	21,5 daN.m	(158 lbf.ft)
HA18PX - HA51JRT	21,5 daN.m	(158 lbf.ft)
HA20PX - HA61JRT	21,5 daN.m	(158 lbf.ft)
HA260PX - HA80JRT	21,5 daN.m	(158 lbf.ft)
HA32RTJ PRO - HA100RTJ PRO	21,5 daN.m	(158 lbf.ft)
HA41RTJ PRO - HA130RTJ PRO	21,5 daN.m	(158 lbf.ft)
H14TX - HB40	8,7 daN.m	(64 lbf.ft)
H16TPX - HB44J	8,7 daN.m	(64 lbf.ft)
H21TX - HB62	21,5 daN.m	(158 lbf.ft)
H23TPX - HB68J	32 daN.m	(236 lbf.ft)
H25TPX - HB76J	21,5 daN.m	(158 lbf.ft)
H28TJ+ - HB86TJ+	21,5 daN.m	(158 lbf.ft)
HT43RTJ PRO - HT132RTJ PRO	21,5 daN.m	(158 lbf.ft)
STAR 8 - STAR 22J - Ring on plate	13.5 daN.m	(100 lbf.ft)
STAR 8 - STAR 22J - Plate on mast foot	19.5 daN.m	(144 lbf.ft)
STAR 8 - STAR 22J - Ring on chassis	13.5 daN.m	(100 lbf.ft)
STAR 10 - STAR 26J - Ring on plate	13.5 daN.m	(100 lbf.ft)
STAR 10 - STAR 26J - Plate on mast foot	19.5 daN.m	(144 lbf.ft)
STAR 10 - STAR 26J - Ring on chassis	13.5 daN.m	(100 lbf.ft)



5 - Criteria of replacement

Check the slewing system every 500 h or each major intervention done on the machine.

Step 1 : Visual and sound check :

Replace slew ring in the following cases :

- Abnormal noise during the turntable rotation.
- Movement jolts during the rotation of the turret.
- Gear teeth missing or damaged.
- Presence of metal particles in the grease.
- Wear on gear teeth.

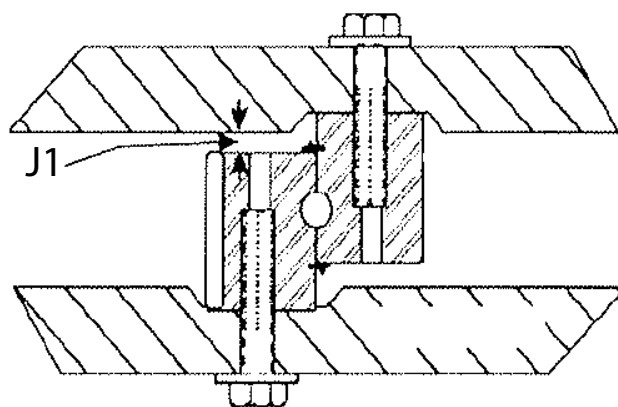
Step 2 : Measurement of the clearance :

Place the machine in the following conditions :

- On flat ground, Set up barriers to define the test area.
- No load in the platform.
- From the ground control box, align the turret at 90 ° to the chassis.
- Lift the boom approximatively 30 ° from the ground.
- Completely retract the boom.
- Jib in horizontal position(if fitted).

From the magnetic comparator, note the clearance (J1) between chassis (or turret) and the slew ring.

Clearance between chassis (or turret) and slew ring



After having carried out the measurement :

- Lower the boom at horizontal position.
- Lift the arm (if exists) as its maximum position. Don't extend the telescopic boom.
- The telescopic boom should be fully extended and in the horizontal position..
- Jib in horizontal position(if fitted).

In its new configuration, note the clearance (J1) between chassis (or turret) and the slew ring as previously.

- If the difference between two measurements does not exceed 2 mm : the test validates correct operation.
- Otherwise, contact HAULOTTE Services® to repair the system.



15 mn



E005

6 - Clearance check



Consult the After-Sales Service HAULOTTE Services®.

7 - Additional operation

1. Place the machine in its operating configuration.  3.3.2-Placing in operating configuration
2. Rotate the slew ring by one complete turn.



A tight spot or grinding sound during rotation or the presence of metal particles escaping from the lip seal are signs of abnormal wear in the raceway (Contact HAULOTTE Services®).



1 - You will need



- Standard tool kit
- Protective goggles
- Gloves
- Jack
- Hoist
- Torque spanner



- Place barriers around the perimeter of the work area

2 - Preliminary procedure

1. Place the machine in maintenance configuration.  3.3.1-Placing the machine in maintenance configuration

3 - Criteria of replacement

Replace the wheels and the tires/tyres if any of the following conditions exist :

- Presence of cracks, damage, deformation or other faults on the hub
- Damage to the tire :

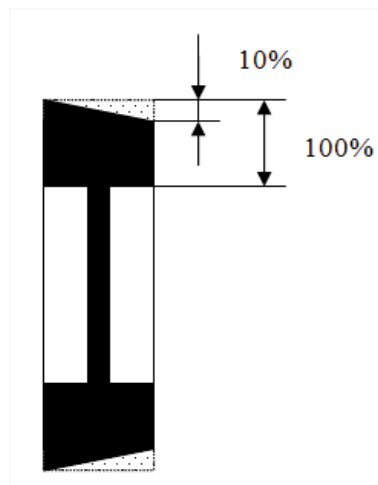
Cut or hole > 3 cm (2 in) in the rubber side wall.

Blister or pronounced lump on the external and lateral wall.

Damaged wheel stud.

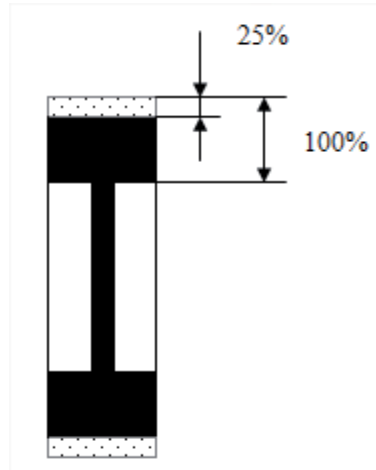
Damage or wear on the side wall to the extent that the reinforcing wire is visible.

- Nonlinear wear of the ground contact surface greater than 10 %.



**15 min****E006**

- Consistent wear of the ground contact surface greater than 25 %.



For safety reasons, always use original HAULOTTE® spare parts that are specific to this machine. Refer to the spare parts catalog.

4 - Replacement

1. Loosen the wheel nuts on the wheel to be removed.
2. Raise the machine using a jack or a hoist.
3. Remove the wheel nuts.
4. Remove the wheel.
5. Install the new wheel.
6. Lower the machine to the ground.
7. Tighten the wheel nuts to the recommended torque





5 - Torque

Machine type	Wheel type	Torque in N.m - lbf.ft
HA12CJ - HA32CJ	Drive wheel	210-155
	Steer wheel	210-155
HA12CJ+ - HA32CJ+	Drive wheel	210-155
	Steer wheel	210-155
HA120PX (N/A)	Drive wheel	320-236
	Steer wheel	320-236
HA16X	Drive wheel	320-236
	Steer wheel	320-236
HA16SPX - HA46SJRT	Drive wheel	320-236
	Steer wheel	320-236
HA16PX - HA46JRT	Drive wheel	320-236
	Steer wheel	320-236
HA18SPX - HA51SJRT	Drive wheel	320-236
	Steer wheel	320-236
HA18PX - HA51JRT	Drive wheel	320-236
	Steer wheel	320-236
HA20PX - HA61JRT	Drive wheel	320-236
	Steer wheel	320-236
HA260PX - HA80JRT	Drive wheel	320-236
	Steer wheel	320-236
HA32RTJ PRO - HA100RTJ PRO	Drive wheel	650-479
	Steer wheel	650-479
HA41RTJ PRO - HA130RTJ PRO	Drive wheel	570-420
	Steer wheel	570-420
H14TX - HB40	Drive wheel	320-236
	Steer wheel	320-236
H16TPX - HB44J	Drive wheel	320-236
	Steer wheel	320-236
H21TX - HB62	Drive wheel	320-236
	Steer wheel	320-236
H23TPX - HB68J	Drive wheel	320-236
	Steer wheel	320-236
H25TPX - HB76J	Drive wheel	320-236
	Steer wheel	320-236
H28TJ+ - HB86TJ+	Drive wheel	650-479
	Steer wheel	650-479
HT43RTJ PRO - HT132RTJ PRO	Drive wheel	570-420
	Steer wheel	570-420
STAR 6 - STAR 13 - STAR 6 P	Drive wheel	127-94
	Steer wheel	127-94
STAR 8 - STAR 22J	Drive wheel	80-59
	Steer wheel	115-85
STAR 10 - STAR 26J	Drive wheel	80-59
	Steer wheel	115-85
COMPACT 10DX - COMPACT 12DX -	Drive wheel	190-140
COMPACT 2668RT -COMPACT 3368RT	Steer wheel	190-140

6 - Additional operation

- Place the machine in its operating configuration.  3.3.2-Placing in operating configuration

[illegible]



1 - Torque (coarse thread)

Nominal diameter	Torque in N.m - lbf.ft		
	Class 8.8	Class 10.9	Class 12.9
M6x1	9 - 11-6,64 - 8,11	13 - 14-9,59 - 10,33	15 - 17-11,06 - 12,54
M7x1	15 - 19-11,06 - 14,01	21 - 24-15,49 - 17,7	26 - 28-19,18 - 20,65
M8x1.25	22 - 27-16,23 - 19,91	31 - 34-22,86 - 25,08	37 - 41-27,29 - 30,24
M10x1.5	43 - 45-31,72 - 33,19	61 - 67-44,99 - 49,42	73 - 81-53,84 - 59,74
M12x1.75	75 - 94-55,32 - 69,33	110 - 120-81,13 - 88,51	130 - 140-95,88 - 103,26
M14x2	120 - 150-88,51 - 110,63	170 - 190-125,39 - 140,14	200 - 220-147,51 - 162,26
M16x2	190 - 230-140,14 - 169,64	260 - 290-191,77 - 213,89	320 - 350-236,02 - 258,15
M18x2.5	260 - 320-191,77 - 236,02	360 - 400-265,52 - 295,02	440 - 480-324,53 - 354,03
M20x2.5	370 - 450-272,9 - 331,9	520 - 570-383,53 - 420,41	620 - 680-457,29 - 501,54
M22x2.5	500 - 620-368,78 - 457,29	700 - 770-516,29 - 567,92	840 - 930-619,55 - 685,93
M24.3x3	630 - 790-464,66 - 582,67	890 - 990-656,43 - 730,19	1070 - 1180-789,19 - 870,32
M27x3	930 - 1150-685,93 - 848,2	1300 - 1400-958,83 - 1032,59	1560 - 1730-1150,6 - 1275,98
M30x3.5	1260 - 1570-929,33 - 1157,97	1770 - 1960-1305,49 - 1445,62	2200 - 2350-1622,64 - 1733,27

2 - Torque (fine thread)

Nominal diameter	Torque in N.m - lbf.ft		
	Class 8.8	Class 10.9	Class 12.9
M8x1	24 - 29-17,7 - 21,39	33 - 37-24,34 - 27,29	40 - 44-29,5 - 32,45
M10x1.25	46 - 57-33,93 - 42,04	64 - 71-47,2 - 52,37	77 - 85-56,79 - 62,69
M12x1.25	83 - 100-61,22 - 73,76	120 - 130-88,51 - 95,88	140 - 150-103,26 - 110,63
M14x1.5	130 - 160-95,88 - 118,01	180 - 200-132,76 - 147,51	220 - 240-162,26 - 177,01
M16x1.5	200 - 250-147,51 - 184,39	280 - 310-206,52 - 228,64	340 - 370-250,77 - 272,9
M18x1.5	290 - 360-213,89 - 265,52	410 - 450-302,4 - 331,9	490 - 540-361,41 - 398,28
M20x1.5	410 - 510-302,4 - 376,16	570 - 630-420,41 - 464,66	690 - 760-508,92 - 560,55
M22x1.5	550 - 680-405,66 - 501,54	780 - 870-575,3 - 641,68	920 - 1000-678,56 - 737,56
M24x1.5	690 - 860-508,92 - 634,3	970 - 1070-715,44 - 789,19	1160 - 1290-855,57 - 951,46
M27x2	1000 - 1300-737,56 - 958,83	1400 - 1560-1032,59 - 1150,6	1690 - 1880-1246,48 - 1386,62
M30x2	1400 - 1700-737,56 - 958,83	1960 - 2180-1032,59 - 1150,6	2350 - 2610-1246,48 - 1386,62



15 min



E007



Notes

[illegible]



15 mn



E008

1 - You will need



- Standard tool kit
- Protective goggles
- Gloves
- Oil collection pan



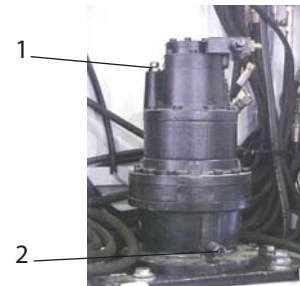
- Place barriers around the perimeter of the work area

2 - Preliminary procedure

1. Place the machine in maintenance configuration.  3.3.1-Placing the machine in maintenance configuration

3 - Control

1. Loosen and remove the filling cap (1).
2. Check that the oil level is between the indicated minimum and maximum levels.
3. Top up the oil level, if necessary.
4. Refit the filling cap (1).



4 - Oil change

1. Remove the filling cap (1).
2. Loosen the drain plug (2).
3. Let the oil drain out.
4. Refit and tighten the drain out (2).
5. Top up the oil level as indicated above.
6. Refit the filling cap (1).



Use an oil collection pan to avoid polluting the environment.

5 - Additional operation

1. Place the machine in its operating configuration.  3.3.2-Placing in operating configuration



15 mn



E008



Notes

[illegible]



15 mn



E013

1 - You will need



- Standard tool kit
- Protective goggles
- Gloves



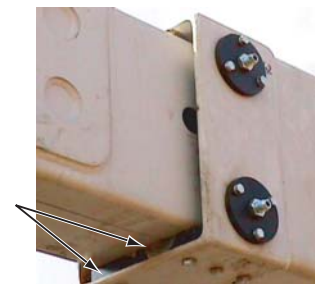
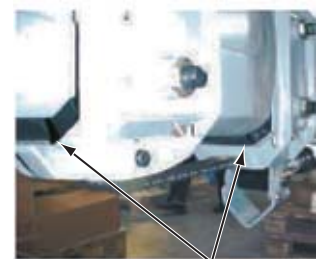
- Place barriers around the perimeter of the work area

2 - Preliminary procedure

1. Place the machine in maintenance configuration.  3.3.1-Placing the machine in maintenance configuration

3 - Control

Check the telescoping friction pad wear indicators. Change the pad if the indicator is not visible.



N.B.:-Packers of different thicknesses can be used for adjustment

4 - Lubrication

Lubricate the pad surface greasing box



5 - Replacement

Replace the friction pads.

6 - Additional operation

1. Place the machine in its operating configuration.  3.3.2-Placing in operating configuration



15 mn



E013



Notes

[illegible]



1 - You will need



- Standard tool kit
- Protective goggles
- Gloves



- Place barriers around the perimeter of the work area

Use only adapted tools and auxiliary resources.

Always wear the required protective clothing.



This procedure must be performed after the first 50 hours and then every 250 hours or every 6 months.

2 - Preliminary procedure

All disassembly operations, if possible, must only be performed on equipment that has been completely deactivated and only by personnel with the necessary technical knowledge.

In addition to the safety precautions indicated in these instructions, follow all regulations concerning safety and accident prevention that are generally applicable.

Every precaution must be taken before working on or near the machine.

After work has been completed, all casings and safety devices must be restored completely and operational.

3 - Lubrication

Lubricant must be applied with a brush to the external chains at least every 250 hours or every 6 months. The frequency of application depends on surrounding conditions and conditions of use. The frequency of application must ensure that a sufficient quantity of fluid oil is present in the chain links.

If the chain has been exposed to corrosive fluids, clean the chain immediately and apply lubricant.

N.B.:-Telescoping operations may be necessary to access elements.

Before applying new lubricant, remove any foreign particles from the chain. Use recommended lubricants  Section B 1 Recommendations-Lubrication diagram.

When cleaning chains, follow regulations concerning the environment.



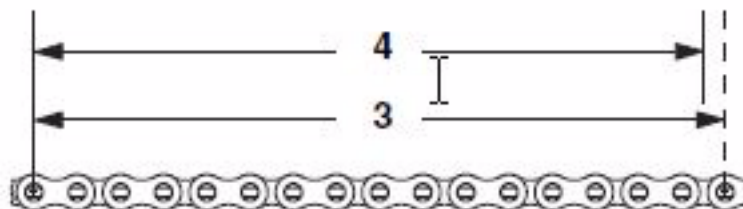
4 - Check the condition of the chains

To carry out the following operations, perform a complete telescoping.

- Check that the lifting chains and safety chains are clean.
- Check that there are no foreign particles on the chains and guide.
- Check that there are no signs of corrosion on chain elements.

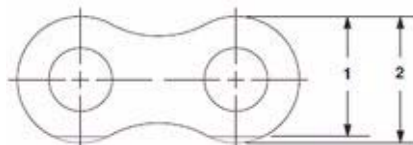
Chains with any of the defects described below must be replaced.

- Check for elongation wear :
 - Elongation of up to 2 %, over 12 segments, of the original chain length is permitted.
 - Measure the value of (3) using an appropriate method. Compare with the value of *1 indicated in the table below.

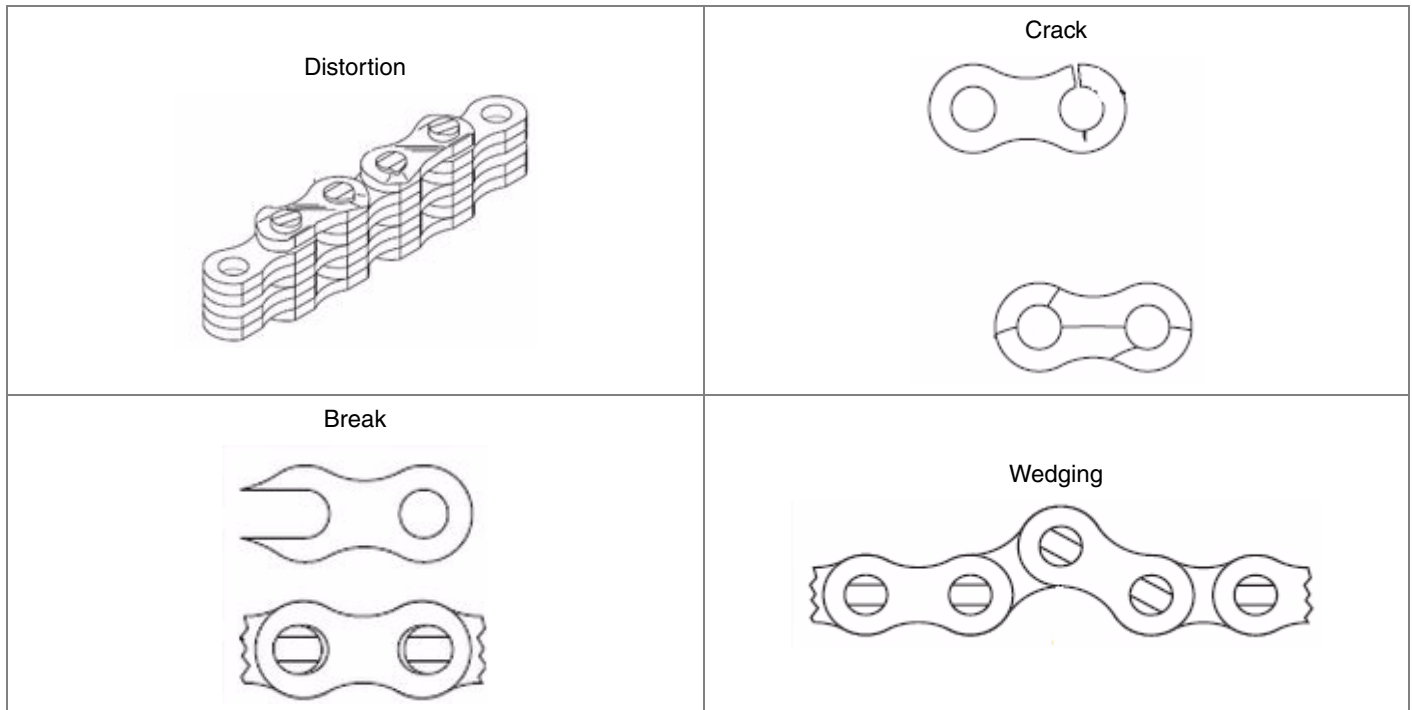


Machine	Link width (2)	Length of 12 links (4)
Star 6 - 8 - 10 HA32RTJ PRO - HA41RTJ PRO H28TJ+ - HT43RTJ PRO	11.5 mm	152.40 mm
Star 8 - 10	14.50 mm	190.50 mm
HTL 4014 - HTL 4017 - HTL 3614 - HTL 3617	24 mm	304.80 mm

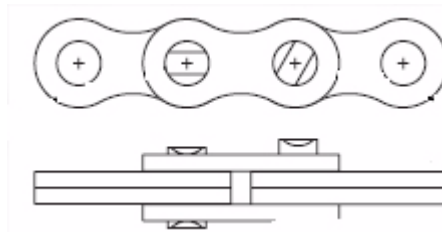
- Check for external wear on rollers and links :
 - External wear must not measure more than 2 % from the section of the original link (2), see table above.
 - Measure the value of (1) using an appropriate method.



- Check that no line or element is damaged or missing.
- Check that links are not distorted, deformed or broken.



- Check the connection points of links (the lines must be parallel).



5 - Check the tension of the chains

Refer to the technical data sheet for your product following this sheet. To make any other adjustments not detailed in this maintenance logbook : Contact Haulotte Services for further advice.

6 - Replacing the chains

The chains must imperatively be changed every 10 years.

Contact Haulotte Services for further advice.

Les chains and chain elements are made from case hardened steel in a high-quality process. Deliver any scrap chains or chain elements to a dealer specialised in metal recycling in compliance with regulations.



E016



Notes

[illegible]



1 - You will need



- Standard tool kit
- Protective goggles
- Gloves



- Place barriers around the perimeter of the work area

Use only adapted tools and auxiliary resources.

Always wear the required protective clothing.

2 - Preliminary procedure

All disassembly operations, if possible, must only be performed on equipment that has been completely deactivated and only by personnel with the necessary technical knowledge.

In addition to the safety precautions indicated in these instructions, follow all regulations concerning safety and accident prevention that are generally applicable.

Every precaution must be taken before working on or near the machine.

After work has been completed, all casings and safety devices must be restored completely and operational.

3 - Checking the cable transmission system

In order to ensure safe use of machinery, Haulotte Group recommends that you perform the following inspections :

Daily inspection

- Place the machine on flat and firm ground.
- Power up the machine and select the console located on the turntable.
- Raise the boom to horizontal (For machines fitted with).
- Execute a complete extension/retraction cycle of the telescope assembly over approximately 2 m(6 ft7 in) or a complete lifting/lowering cycle for mast-type machines.
- Check that the movement is synchronized and symmetrical, and that there are no abnormal sounds. If you encounter a problem or suspect there may be a problem, carry out a more detailed inspection as described below.

Regular inspection

This operation must be performed after the first 50 hours, then :

- STAR : Every 250 hours or 3 months.
- other machines : Every 250 hours or 6 months.

Cables

**E016**

To access parts :

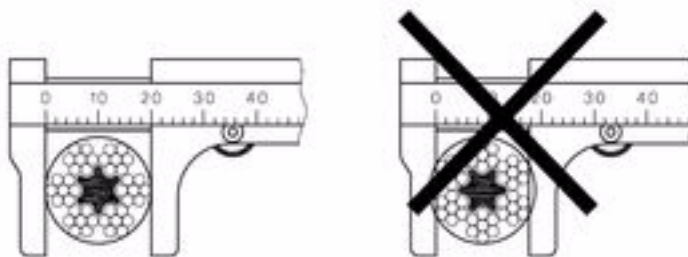
- Place the machine on flat and firm ground.
- Remove the protection covers and/or inspection flaps.
- Power up the machine and select the console located on the turntable.
- Raise the boom to horizontal (For machines fitted with)
- Check that the attachment device for the cables is in place and tight at all visible attachment points.
- Extend the structure to gain access to the cables :
 - Extend the boom at least 3 m (9 ft 10 in) for telescopic machines.
 - Raise the mast assembly up to the inspection flaps.

Using a flash light, perform a visual inspection of the following items :

- Check that cables are properly aligned with one another.
- Check that the cables under are equal tension.
- Check that the pulleys are properly aligned with the cables.
- Check that the cable is properly seated in the pulley.



- Check that nothing blocks the chain guides.
- Check the condition of the cables. If any of the following defects are observed, replace the pair of cables.
 - The maximum reduction in diameter from the original diameter must not exceed 1 mm.



Machine	Original diameter
STAR 6 - 8 - 10	3 mm
H21TX - H23TPX - H25TPX	9 mm
HT43RTJ PRO	19 mm

Cables

**E016**

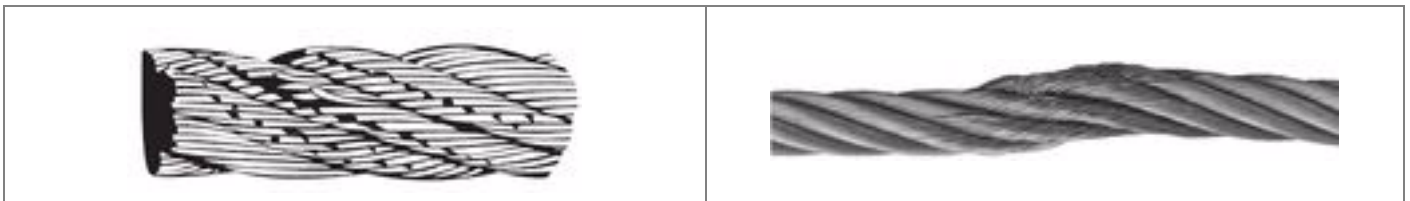
No broken strands must be observed, in particular at the ends.

Replacement is compulsory when 3 strands or more are broken along the length of the cable.

Replacement is compulsory when 1 strand is broken near the ends.



No deformed folds or frayed strands must be observed.



No signs of corrosion must be observed.



4 - Check the tension of the cables

Refer to the technical data sheet for your product following this sheet. To make any other adjustments not detailed in this maintenance logbook : Contact Haulotte Services for further advice.



5 - Replacing the cables

Cables with a diameter measuring less than 6 mm (STAR) must be replaced every 5 years.

All other cables must imperatively be replaced every 7 years.

Replacement may be required more frequently for the following reasons :

- Machine operates in a particularly hostile environment.
- Abnormal noises are produced during movement of structure.
- Machine has been in storage for more than 6 months.
- Machine has been submitted to an abusive load or serious collision.
- Machine has been exposed to an electrical arc.

Contact Haulotte Services for further advice.

Cables and cable elements are made from case hardened steel in a high-quality process. Deliver any scrap cables or cable elements to a dealer specialised in metal recycling in compliance with regulations.



1 - You will need



- Standard tool kit
- Protective goggles
- Gloves



- Place barriers around the perimeter of the work area

2 - Preliminary procedure



This procedure must be performed every 250 h imperatively.

Every precaution must be taken before working on or near the machine. Comply with the recommendations in the maintenance book for your machine.

For all tightening actions quoted in this document, ensure the symmetry of the cable tension is complied with by tightening the threaded rods one by one in quarter turns.

1. Place the machine in maintenance configuration.  3.3.1-Placing the machine in maintenance configuration

3 - Cable and chain tension

- Fully stow the machine on flat ground with the boom fully retracted.
- Lift the cover at the rear of the turntable.

Remove the cable nut stops and unscrew the nuts from the cables and chains until they can be lifted from the contact surface :

- either by pulling the threaded rod by hand.
- Or by sliding a screwdriver under the nut.

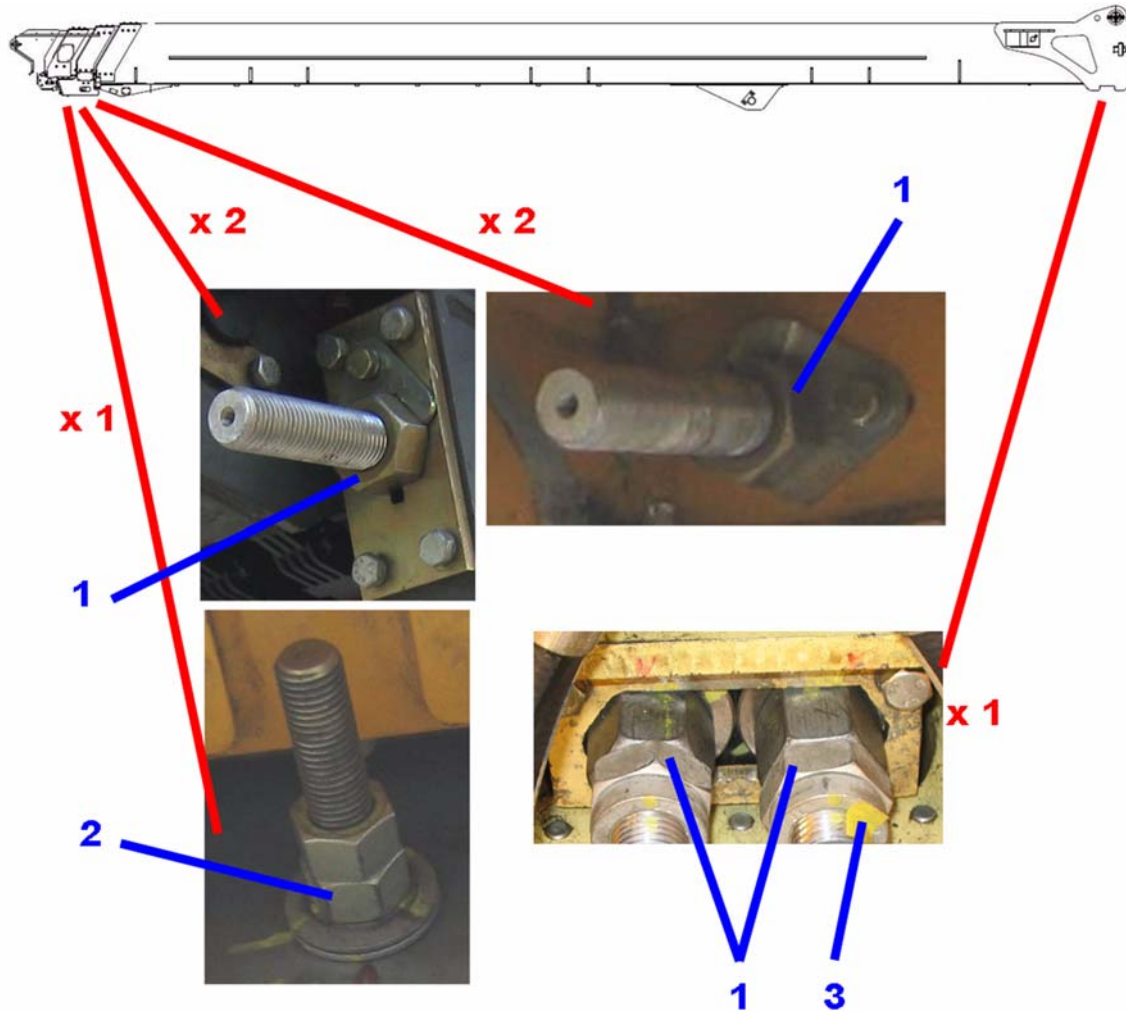


Specific adjustment procedure HT43RTJ PRO - HT132RTJ PRO



E053

Location of the cable nuts and chains



1. Wrench No. 46
2. Wrench No. 30
3. Flat bar 19

Start the thermal engine :

- Lift the boom to the highest position (without telescoping) to ensure that the sections are fully retracted.
- Come back to horizontal position.
- Stop the engine.
- Tighten the extension cables at the rear of the boom until element N° 3 moves, complying with the measurement of 301 +/- 15 mm.

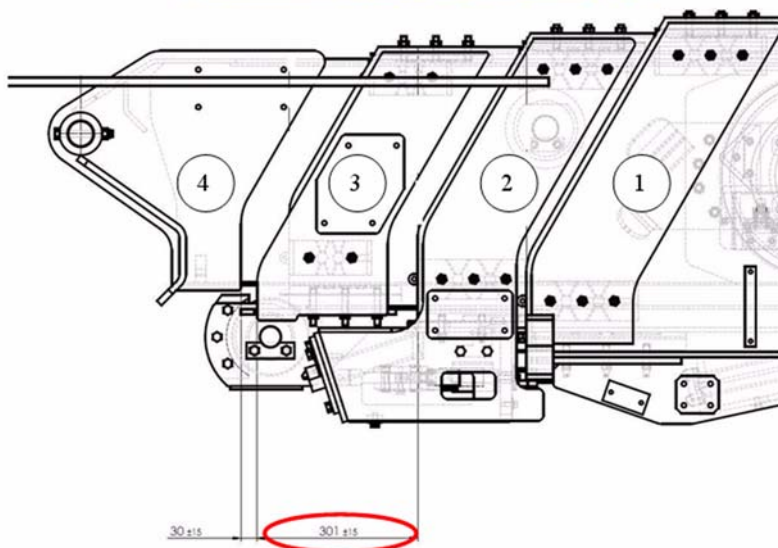
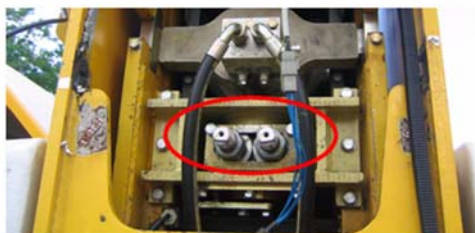
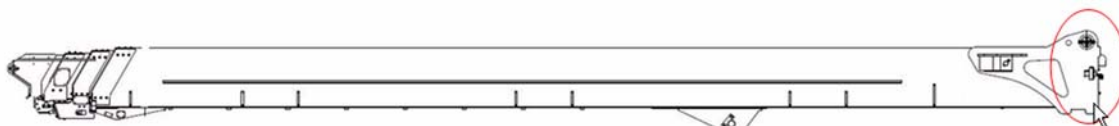


Do not turn the cables *1 during the tightening operation. Prevent them from turning using a 19 wrench on the flat bars or if there are no flat bars, jam them using a pin wrench, protecting the threads.

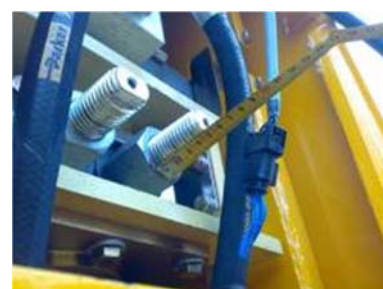


E053

Element No. 3



N.B.:- In this position, the threaded rod must extend beyond the nut by at least 50 mm.



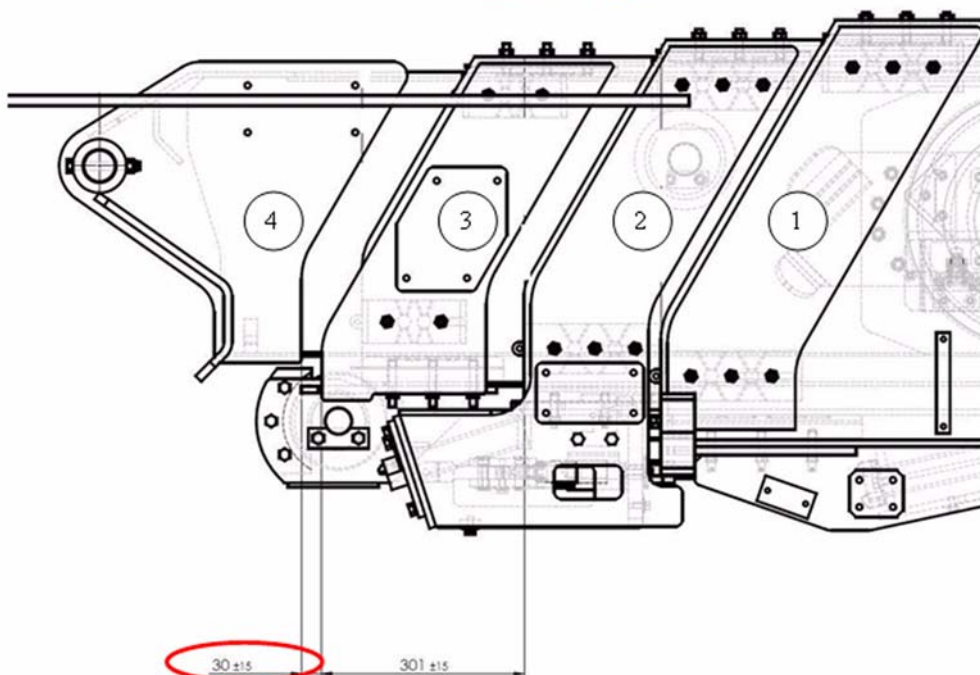
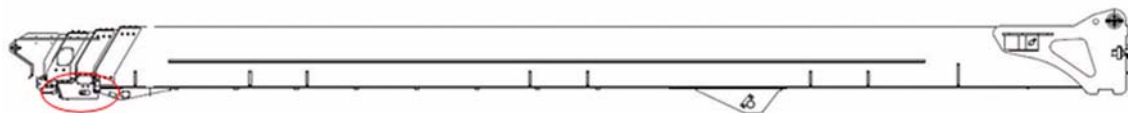
- Tighten the extension chains from the end of element No. 2 to element No. 4 complying with the measurement of 30 +/- 15 mm.

Specific adjustment procedure HT43RTJ PRO - HT132RTJ PRO



E053

Element No. 4



Specific adjustment procedure HT43RTJ PRO - HT132RTJ PRO



E053

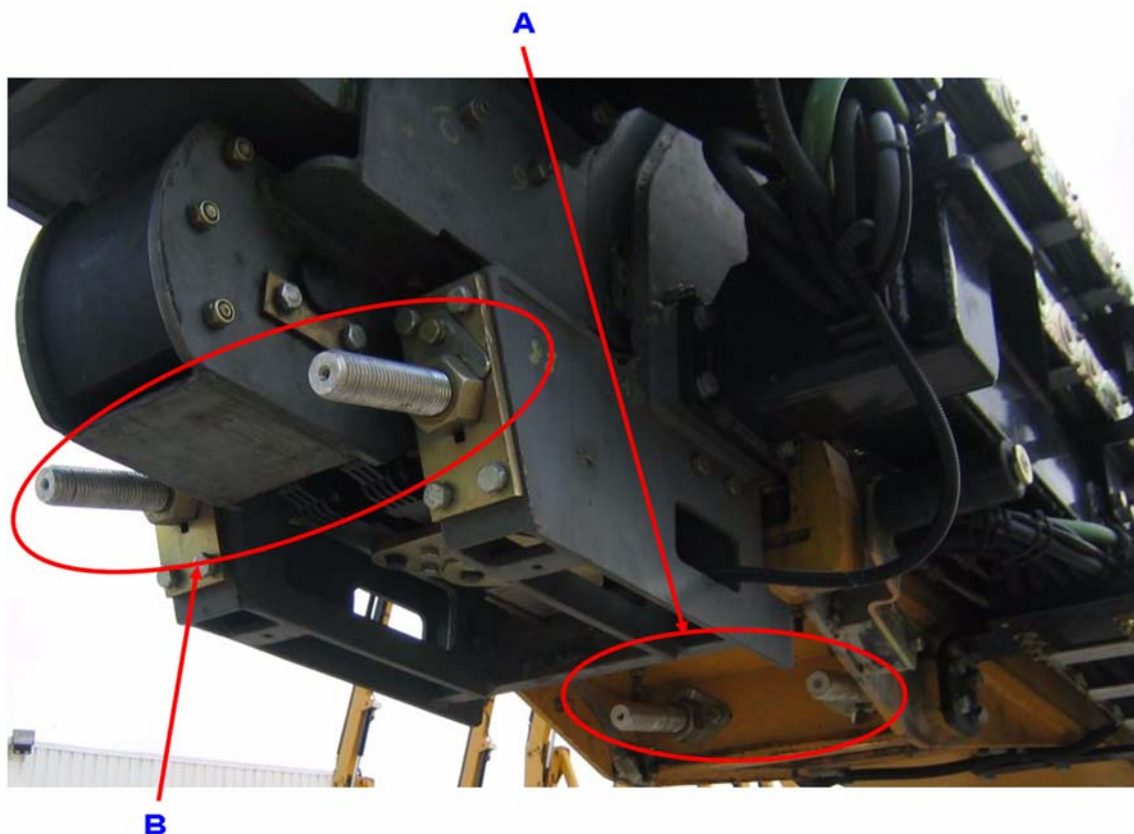
- Unscrew the extension chain and cable nuts by exactly 3. Make a mark on the nut to count the number of turns.



- Tighten the retraction cables at the end of element No. 1 until element No. 3 moves.



Do not turn the cables A during the tightening operation. Prevent the cables from rotating.



- Tighten retraction cables B at the ends of elements No. 1 and 2.

Specific adjustment procedure HT43RTJ PRO - HT132RTJ PRO

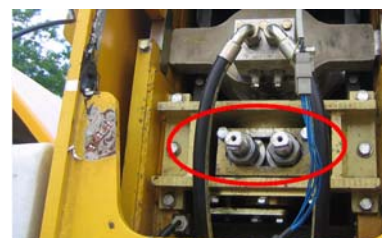


E053

- Refit the retraction cable nut stops at the ends of elements No. 1 and 2.



- Tighten the extension cables and chains by 2,5 turns.



Specific adjustment procedure HT43RTJ PRO - HT132RTJ PRO



E053

- remount the fastening locknut at the end of element No. 2.



- Refit the stop plate for the extension cable nuts at the rear of the boom and the locknuts for each cable.
- Move each telescope forwards and backwards 3 times by approximately 1 metre, ensuring that the movements are synchronised.
- Check that the measurements of 301 +/- 15 mm and 30 +/- 15mm are complied with.
- If these dimensions are not compliant, repeat the adjustment procedure above starting at the paragraph concerning removal of the cable nut stops.



4 - Additional operation

1. Place the machine in its operating configuration.  3.3.2-Placing in operating configuration



E053



Notes

[illegible]



1 - You will need



- Standard tool kit
- Protective goggles
- Gloves



- Place barriers around the perimeter of the work area

2 - Preliminary procedure



The battery manufacturer's safety instructions must be followed.

1. Place the machine in maintenance configuration.  3.3.1-Placing the machine in maintenance configuration

3 - Control

Loosen the caps located on the top of the battery.

The level of electrolyte in the battery must be approx. 0,01 m(0 ft39 in) above the plates.

4 - Filling-up

Loosen the caps located on the top of the battery.

If the level of electrolyte is below the level of the plates :

1. Top up with distilled water.
2. Refit and tighten the battery caps.





5 - Battery charge

Battery discharged :

- Never discharge the batteries to more than 80 % of their capacity in 5 h (hours).
- Never leave the batteries discharged.
- Do not put off recharging the batteries in cold weather as the electrolyte may freeze.

Battery to be charged :

- When should the batteries be charged ?
 - When the batteries are discharged to between 35 % and 80 % of their nominal capacity.
 - After a long period of non-use.
- How to charge the batteries ?
 - Ensure that the mains supply is compatible to the charger's consumption.
 - Top up the batteries with distilled water to the minimum electrolyte level if any of the elements are below this minimum level.
 - Work in a clean and well-ventilated area away from naked flames.
 - Open the bay.
 - Use the machine's on-board charger. The charger has a charge rate compatible to the battery capacity.
- During charging :
 - The machine's electric system is automatically deactivated while the external power supply is connected to the machine.
 - Ensure that the battery are at a temperature not exceeding 45 °C(113 °F) (be careful in summer or in places with a high ambient temperature).
 - Do not remove or open the caps on the elements.
- After charging :
 - Top up the electrolyte level, if necessary.
 - Avoid overflowing.
 - Wash the top of the batteries without removing the caps.
 - Dry with compressed air or clean cloths.
 - Oil the terminals.



10 min



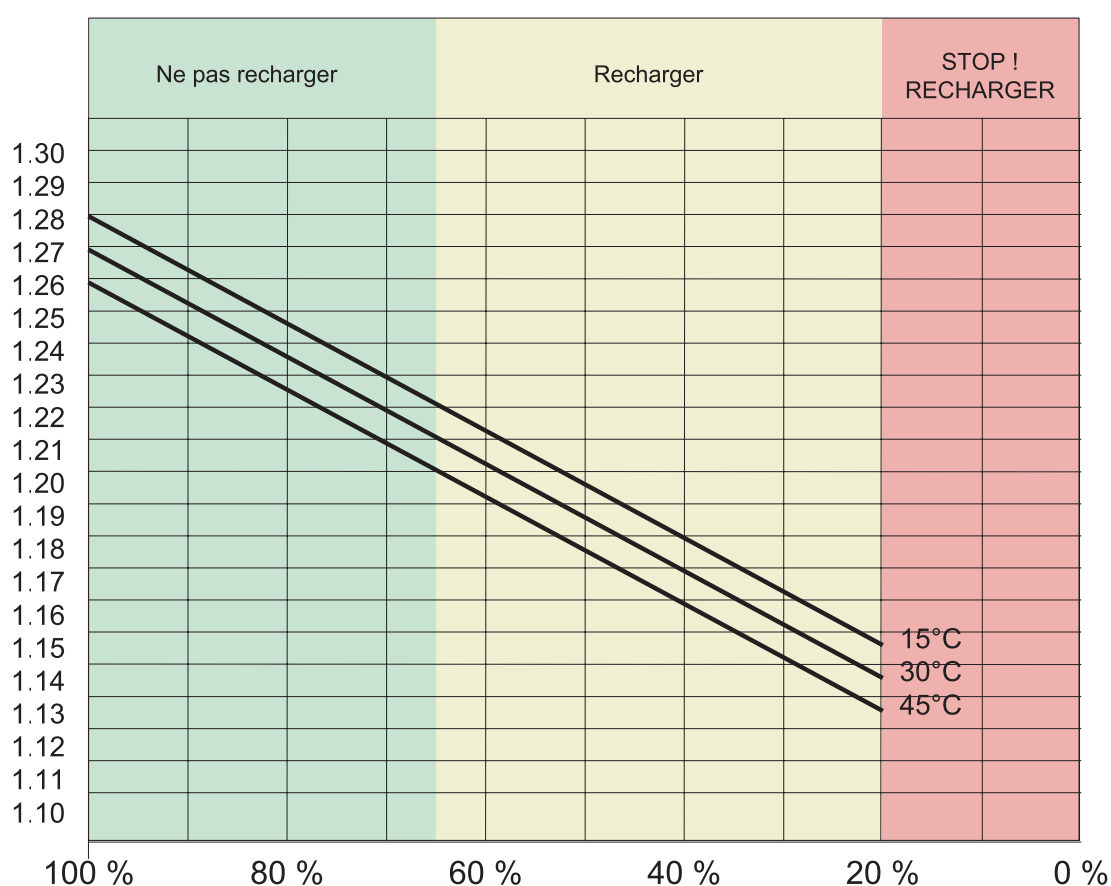
E018

6 - Additional operation

Place the machine in its operating configuration. 3.3.2-Placing in operating configuration

To keep your batteries in good condition, test the density of each element once a month using a battery hydrometer, according to the temperature indicated in the curves below :

Battery charge status according to density and temperature





10 min



E018



Notes

[illegible]



15 mn



E022

1 - You will need



- Standard tool kit
- Protective goggles
- Gloves



- Place barriers around the perimeter of the work area

2 - Preliminary procedure

1. Place the machine in maintenance configuration.  3.3.1-Placing the machine in maintenance configuration

3 - Lubrication

Oil the parts of the telescope subject to friction (with a spatula).

Oil the telescoping cable.

4 - Additional operation

1. Place the machine in its operating configuration.  3.3.2-Placing in operating configuration



15 mn



E022



Notes

[illegible]



15 mn



E041

1 - You will need



- Standard tool kit
- Multimeter
- Protective goggles
- Gloves



- Place barriers around the perimeter of the work area

2 - Preliminary procedure

1. Place the machine in maintenance configuration.  3.3.1-Placing the machine in maintenance configuration

N.B.:- The generator's performances are linked to the hydraulic oil temperature. Ensure that the hydraulic oil temperature is between 30 °C(86 °F) and 70 °C(158 °F) during the operations.

3 - Power supply voltage control

- Disconnect all equipment connected to the generator (welder, hand equipment, ...).
- Start up the machine.
- Start the generator.
- Wait for the generator to stabilize.
- Measure the voltage at the welder outlet using a multimeter.

N.B.:- The voltage between each phase must be between 210 V AC and 240 V AC.

- Measure the voltage at the 110 V outlet.

N.B.:- The voltage at each outlet must be between 110 V AC and 135 V AC.



If a malfunction occurs, contact HAULOTTE Services®.

Generator option (For HT132RTJ PRO only)



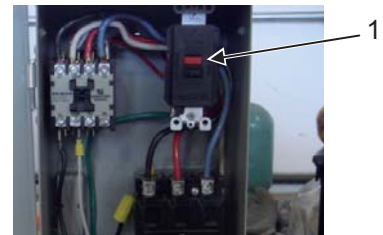
15 mn



E041

4 - Differential protection control

- Disconnect all equipment connected to the generator (welder, hand equipment, ...).
- Start up the machine.
- Start the generator.
- Wait for the generator to stabilize.
- Press the TEST button on the 60 A cabinet.
- Check that there is no voltage at the welder outlet.
- Reset the contactor by pressing the RESET button.



- Press the TEST button on the plug situated in the cage.
- Check that there is no voltage at the outlet.
- Reset the outlet by pressing the RESET button.



If a malfunction occurs, contact HAULOTTE Services®.

5 - Additional operation

1. Place the machine in its operating configuration.  3.3.2-Placing in operating configuration



1 - You will need



- Standard tool kit
- Protective goggles
- Gloves



- Place barriers around the perimeter of the work area

2 - Preliminary procedure

1. Place the machine in maintenance configuration.  3.3.1-Placing the machine in maintenance configuration

3 - Control

Control carefully the cable carrier chain :

- Check the appearance of the mechanical parts of the the cable carrier chain : Premature wear, excessive friction
- Ensure that cables slide inside the cable carrier chain.
- Ensure that cables don't leave their socket. Locate them back in the socket if necessary.
- Check the electric wires and cables : Premature wear, excessive friction, non-insulated cable ... Replace cables if necessary.

4 - Additional operation

1. Place the machine in its operating configuration.  3.3.2-Placing in operating configuration



30 min



E048



Notes

[illegible]

D - Diagnosis assistance

1 - Recommendations

If a malfunction occurs, check the following points :

- There is sufficient fuel.
- Sufficient engine oil.
- Sufficient hydraulic oil in the tank.
- Batteries are charging.
- Control box E-stop push-buttons are pulled out.
- The control box selector key is set to platform or ground control box.
- Control box relays are engaged.
- Fuse status.
- Ground control box solenoid valve status.

If the malfunction persists, consult the troubleshooting table to identify the problem.

IF you cannot identify the problem, contact HAULOTTE Services®.

A

B

C

D

E

F

G

H

I

D - Diagnosis assistance

2 - Troubleshooting

Diagnosis HT43RTJ PRO - HT132RTJ PRO

Problem	Probable cause	Solution
Engine cannot be started or stopped	Empty fuel tank	Fill the tank
	Leak or air in the fuel circuit	Contact HAULOTTE Services®
	Clogged fuel filter	Replace the filter
	Electric battery low	Recharge the battery or batteries
	Faulty printed circuit fuses (ground control box)	Replace the fuse(s)
	E-stop push-buttons are pushed in	Pull the E-stop buttons
	Engine in restricted mode (oil pressure indicators, overheating indicator, alternator charging indicator and clogged air filter indicator on)	See engine manufacturer's manual or contact HAULOTTE Services®
	Charge indicator bulb burnt out	Replace the bulb
	Clogged air filter indicator on	Replace the air filter cartridge
	Faulty engine safety relay KP1	Replace the relay(s)
	Poor cable/battery terminal contact	Loosen and clean the terminals
	Boom telescope chain or cable breakage	Contact HAULOTTE Services®
	Internal machine fault	
	Internal machine defect (radius limit)	Stow the machine using the emergency power unit Contact HAULOTTE Services®
Low hydraulic pump pressure or power	Connection failure between the platform and ground control boxes (CAN)	Stow the machine using the ground control box Contact HAULOTTE Services®
	Clogged air filter	Replace the filter
	Leak or air in the fuel circuit	Contact HAULOTTE Services®
	Engine speed too low	
	Oil leak on couplings, hoses or components	Replace the oil filter cartridge See maintenance sheet E003
	Clogged oil filter	
	Clogged fuel filter	Replace the filter
	Faulty accelerator coil YA2	Replace the coil
	Faulty accelerator fuse or relay KM6-FU14	Replace the accelerator relay or fuse

D

- Diagnosis assistance

Problem	Probable cause	Solution
Platform controls do not respond	Ground control box selector key is set to ground control box position	Turn the ground control box selector key to platform control box position
	Platform overload indicator	Remove some weight Do not exceed the authorised limit  Section G 1-Main characteristics
	'Enable Switch' control validation device is not enabled	Enable the device and keep pressed down during movement
	Faulty joystick	Replace the joystick Contact HAULOTTE Services®
	Faulty solenoid valve for the selected movement	Replace the solenoid valve or the solenoid valve coil Contact HAULOTTE Services®
	Not enough hydraulic oil	Top up the oil level
	Tilt or slope exceeding the authorised limit	Do not exceed the authorised limit  Section G 1-Main characteristics
	Faulty fuse(s) FU6	Replace the fuse(s)
	No power supply in the platform	Stow the machine using the ground control box. Check the connectors on the connecting cable (top and bottom)
	Machine not calibrated	Contact HAULOTTE Services®
No high speed	Platform extended	Stow the machine completely
No telescoping	Faulty joystick	Replace the joystick
No boom lifting	Faulty joystick	Replace the joystick
No driving	Failure following microspeed failure	Stow the machine Switch off the power and then switch it back on again
No steering	Not enough hydraulic oil	Top up the oil level
	'Enable Switch' control validation device is not enabled	Enable the device and keep pressed down during movement
No horizontal drive, telescoping, lifting or buzzer in operation	Tilt or slope exceeding the authorised limit	Do not exceed the authorised limit  Section G 1-Main characteristics
No turntable rotation	Turntable rotation locking pin is inserted in the chassis	Remove the pin
Hydraulic pump is making an abnormal noise	Not enough hydraulic oil	Top up the oil level
	Pump suction valves closed or not fully open	Fully open the suction valves
A drive wheel does not hold the road	Insufficient load on one wheel	Press the differential locking selector
Buzzer in operation	Tilt or slope exceeding the authorised limit	Do not exceed the authorised limit  Section G 1-Main characteristics
	Platform overload indicator	Remove some weight Do not exceed the authorised limit  Section G 1-Main characteristics
	Hydraulic oil temperature too high	Allow to cool down
	Axle not fully extended or retracted	Fully extend or retract the axles
	Outrigger cylinder is not fully retracted	Fully retract the outrigger cylinder
	Axle retraction/extension forbidden with axle control box activated	Stow the machine Align the turret with the machine



Notes

[illegible]

E - Electric circuit

1 - Wiring diagram-Main components

N.B.:-  See end of manual.

Nomenclature : HT43RTJ PRO - HT132RTJ PRO

Marking	Description
SR601	Weighing relative angle measurement ^{((1.))}
SR600	Weighing absolute angle measurement ^{((1.))}
ST300	Engine overheating pressure switch
SP300	Engine oil pressure switch
ST900	Hydraulic oil overheating pressure switch
ST902	Hydraulic oil overheating temperature switch for cooler option
SP100	Hydraulic high-speed drive pressure switch
HA902	Platform buzzer
M900	Engine, cooler option
FU1	10 A Engine power supply circuit fuse
FU3	80 A Pre-heating control circuit fuse
FU4	30 A Low power control circuit main fuse and calculator
FU5	3 A Turntable movement control circuit fuse
FU6	3 A Platform movement control circuit fuse
FU7	20 A Solenoid valve power supply circuit fuse
FU8	5 A Permanent power supply circuit fuse
FU9	20 A Accessory power supply circuit fuse
FU10	3 A LS valve circuit fuse
FU11	25 A Cooler circuit fuse (Option)
FU13	250 A Emergency pump circuit fuse
FU14	15 A Accelerator circuit fuse
FU15	20 A Injection pump circuit fuse
FU16	7,5 A Node B power supply circuit fuse
SP600	Small chamber pressure measurement for overload ^{((1.))}
SP601	Large chamber pressure measurement for overload ^{((1.))}
GB1	Battery 12 V

E

- Electric circuit

Marking	Description
HA907	Buzzer
HA901	Turntable buzzer
EL903	Beacon light option
EL904	Work light option
SM902	Drive joystick
SM901	Telescoping joystick
SM900	Turntable rotation and lifting joystick
KA300	Engine start-up relay
KM800	Electric pump relay
KM6	Pre-heating relay
KM300	Accelerator relay
KMG	General power supply relay
KP302	Engine power supply relay
HL301	Particle filter indicator
HL302	Regeneration of particle filter indicator
HL303	Indicator for inhibition of regeneration of particle filter
HL250	Indicator for turntable at 180°
HL720	Turntable compensation fault indicator
HL304	Engine warning indicator
HL305	Indicator after engine shutdown
HL807	'Enable Switch' pedal indicator
HL900	Power ON indicator
HL307	Fuel reserve indicator
HL801	Platform fault indicator
HL800	Tilt indicator light
HL802	Platform overload indicator
HL804	Platform radius limitation indicator
HL803	load selection indicator
HL300	Pre-heating indicator
HL805	Indicator for overload pre-alarm at 230 Kg / 500 Lb
HL806	Indicator for overload pre-alarm at 450 Kg / 1000 Lb
M300	Starter
M800	Emergency pump
R301	Glow plugs
SA900	Power-up selector
SA901	Control box selection key selector
SA302	Accelerator switch
SA620	Turret jib switch
SA530	Turret boom telescoping switch
SA520	Turret boom lifting switch
SA250	Turret orientation switch
SA903	Beacon option switch
SA650	Turntable jib orientation switch
SA750	Turntable platform orientation switch
SA905	Turret emergency pump switch
SA720	Turret compensation switch

E - Electric circuit

Marking	Description
SB803	E-stop button (chassis)
SB801	E-stop button (turntable)
SA905	Start-up switch (ground control box)
SB800	'Enable Switch' pedal
SA301	Pre-heating switch
SR520 - SR521	Boom angle measurement ^{((1.))}
SL530 - SL531	Boom length measurement ^{((1.))}
SR250	Turntable angle sensor
SR150	Front-axle angle sensor
SR151	Rear-axle angle sensor
SQ800	Tilt sensor
SQ520	Boom position limit switch, stowed area
SQ532	Boom telescope detection ILS
SQ650	Jib position limit switch +5° / - 5°
SQ651	Jib position limit switch +180° / - 90°
SQ530	Retracted boom telescope position limit switch
SQ801	Chain breakage position limit switch 1
SQ802	Cable breakage position limit switch
SQ134 - SQ135	Extended front axle position limit switch
SQ132 - SQ133	Extended rear axle position limit switch
SQ140	Retracted front outrigger ILS sensor
SQ141	Retracted rear outrigger ILS sensor
SQ130 - SQ136	Extended axle ILS sensors
SQ131 - SQ137	Retracted axle ILS sensors
SQ300	Fuel reserve indicator
SQ250	"Aligned turntable" redundancy position sensor
SB802	E-stop button (cage)
SA906	Generator start-up, option
SA721	Platform compensation switch
SA110	High-speed driving selection switch
SA150	Platform rear steering switch
SA100	Differential locking switch
SA907	Horn switch
SA908	High platform speed selection switch
SA621	Platform jib lifting switch
SA751	Platform rotation switch
SA651	Platform rotation switch
SA303	Platform rotation switch
SA800	Platform rotation switch
SA802	Platform rotation switch
U100	HEAD calculator, node A ⁽¹⁾
U101	HEAD calculator, node B ^{((1.))}
YA301	Fuel pump
YA300	Engine speed
YA303	Injection pump
YV800	Solenoid valve LOAD SENSING

E

- Electric circuit

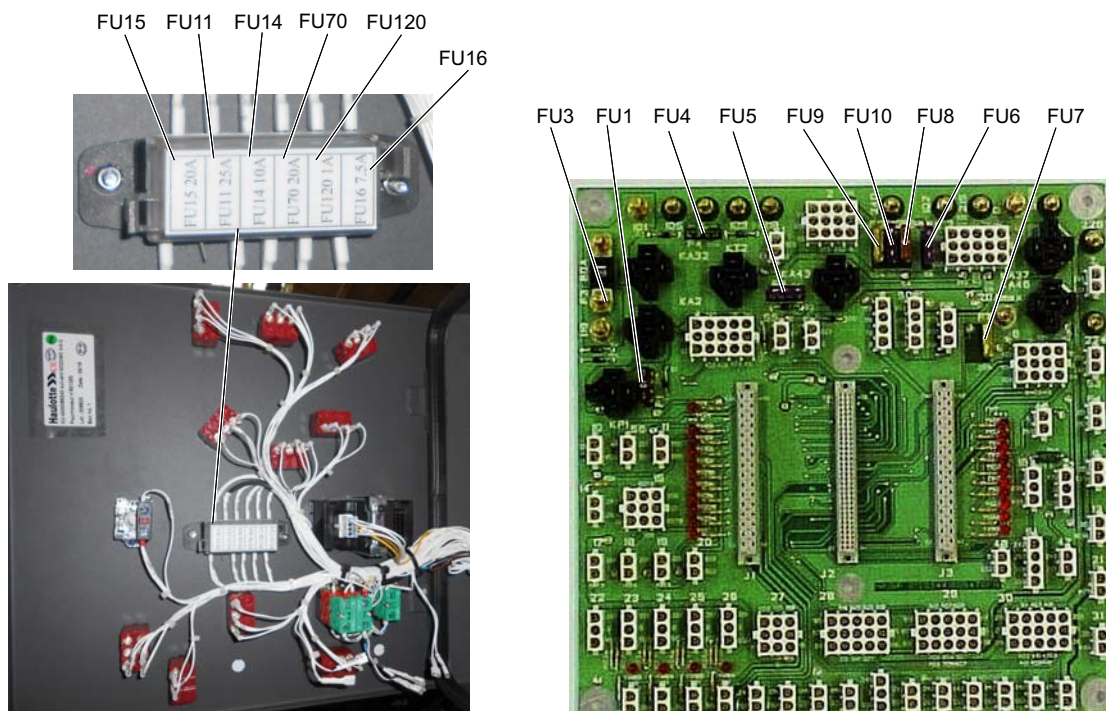
Marking	Description
YV900	Jib, axle extension, outrigger and steering PVG solenoid valve
YV520	Boom lifting control solenoid valve
YV250	Turntable rotation control solenoid valve
YV530	Boom telescoping control solenoid valve
YV106 - YV103	Axle extension, outrigger, steering control solenoid valves
YV100	Differential locking control solenoid valve
YV110	High-speed drive control solenoid valve
YV102	Brake release control solenoid valve
YV720D - YV720U	Compensation control solenoid valve
YV650R - YV650L	Jib rotation solenoid valve
YV620D - YV620U	Jib lifting/lowering control solenoid valve
YV750R - YV750L	Platform rotation control solenoid valve
YV150R - YV150L	Front steering control solenoid valve
YV151R - YV151L	Rear steering control solenoid valve
YV906	Generator control solenoid valve (Option)
YV160F	Pump, horizontal drive, generator control solenoid valve A
YV160B	Pump, horizontal drive, generator control solenoid valve B
YV101	Oscillating axle unlocking control solenoid valve
YV805	Turntable unlocking control solenoid valve
YV804	Telescope safety solenoid valve
YV806	Boom safety solenoid valve
YV807	Emergency valve for boom and telescopic boom combined movements

(1.) If a component in the platform or ground control box is replaced, a HAULOTTE Services® technician will calibrate the radius limit system or initiate the weighing system

E - Electric circuit

2 - Fuses

Locations

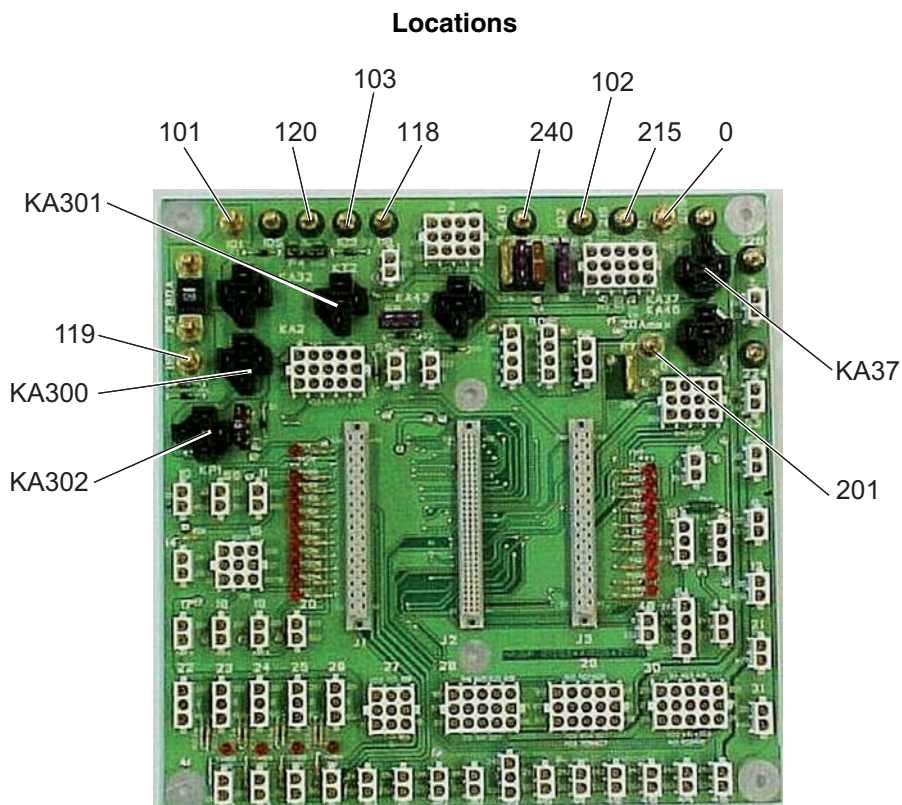


Description of the components HT43RTJ PRO - HT132RTJ PRO

Marking	Description
FU1	10 A Engine power supply circuit fuse
FU3	80 A Pre-heating control circuit fuse
FU4	30 A Low power control circuit main fuse and calculator
FU5	3 A Turntable movement control circuit fuse
FU6	3 A Platform movement control circuit fuse
FU7	20 A Solenoid valve power supply circuit fuse
FU8	5 A Permanent power supply circuit fuse
FU9	20 A Accessory power supply circuit fuse
FU10	3 A LS valve circuit fuse
FU11	25 A Cooler circuit fuse (Option)
FU13	250 A Emergency pump circuit fuse
FU14	15 A Accelerator circuit fuse
FU15	20 A Injection pump circuit fuse
FU16	7,5 A Node B power supply circuit fuse

E - Electric circuit

3 - Relays and terminals



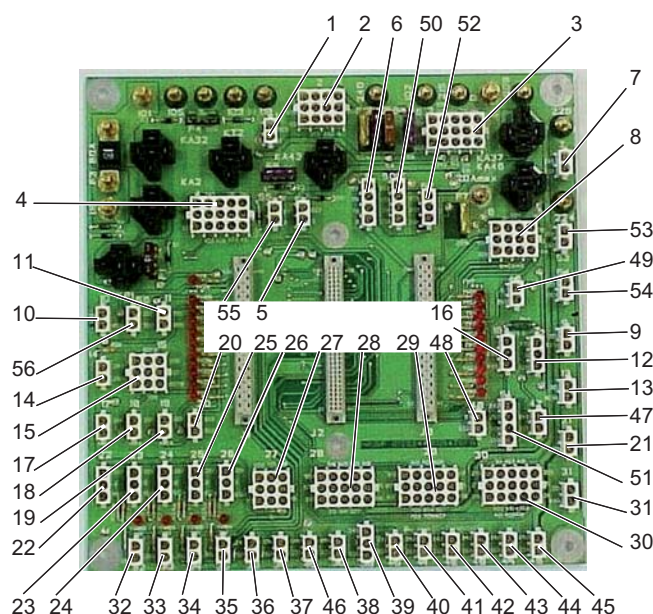
Description of the components HT43RTJ PRO - HT132RTJ PRO

Marking	Description
KA300	Engine start-up relay
KA37	Injection pump control relay
KM800	Electric pump relay
KM6	Pre-heating relay
KM300	Accelerator relay
KA301	Accelerator relay
KMG	General power supply relay
KA302	Engine power supply relay
0	-Battery
101	+Battery
102	Emergency stop circuit
103	Starter
119	+Engine pre-heating
120	+General
215	Emergency stop circuit
240	General power supply after contactor

E - Electric circuit

4 - Connectors

Locations



Description of the components HT43RTJ PRO - HT132RTJ PRO

Marking	Description
1	Beacon light EL903
2 / 4 / 28	Lower cabin door
8	Chassis solenoid valves : YV102 (Axle brake release)- YV150R (Forwards right-hand steering)- YV150L (Forwards left-hand steering)- YV101 (Oscillating axle brake release)
12	• Accelerator relay control KM300 • Pre-heating relay control KM6
14	Buzzer HA901
15	Chassis solenoid valves : YV106 (Outrigger or steering selection)- YV100 (Differential lock)- YV110 (High drive speed)- YV151R (Reverse right-hand steering)- YV151L (Reverse left-hand steering)- YV103 (Steering locking)
17	Telescope safety solenoid valve YV804
18	Boom lifting safety solenoid valve YV806
19	Emergency valve for boom and telescopic boom combined movements YV807
20	LS control solenoid valve YV800
21	Turntable unlocking control solenoid valve YV805
22	Jib, compensation, platform rotation, outrigger extension and steering PVG YV900
23	Boom lifting PVG YV520
24	Direction PVG YV250
25	Boom telescoping PVG YV530
27	Engine looms
29	• Boom telescope length sensors : SL530- SL531 • Connection with ground control box door SA620 • Rear-axle angle sensor SR151
30	• Chassis sensors : SQ134 (Extended front left axles)- SQ135 (Extended front right axles)- SQ132 (Extended rear right axles)- SQ133 (Extended rear left axles)- SQ140 (Retracted front axle adjustment)- SQ141 (Retracted rear axle adjustment)- SQ130 (Extended front axles)- SQ136 (Extended rear axles)- SQ131 (Retracted front axles)- SQ137, (Retracted rear axles)- SR420 (Turntable angle sensor) • Boom angle sensors : SR520- SR521
31	Forwards drive proportional solenoid valve YV160F
32	Generator option

E

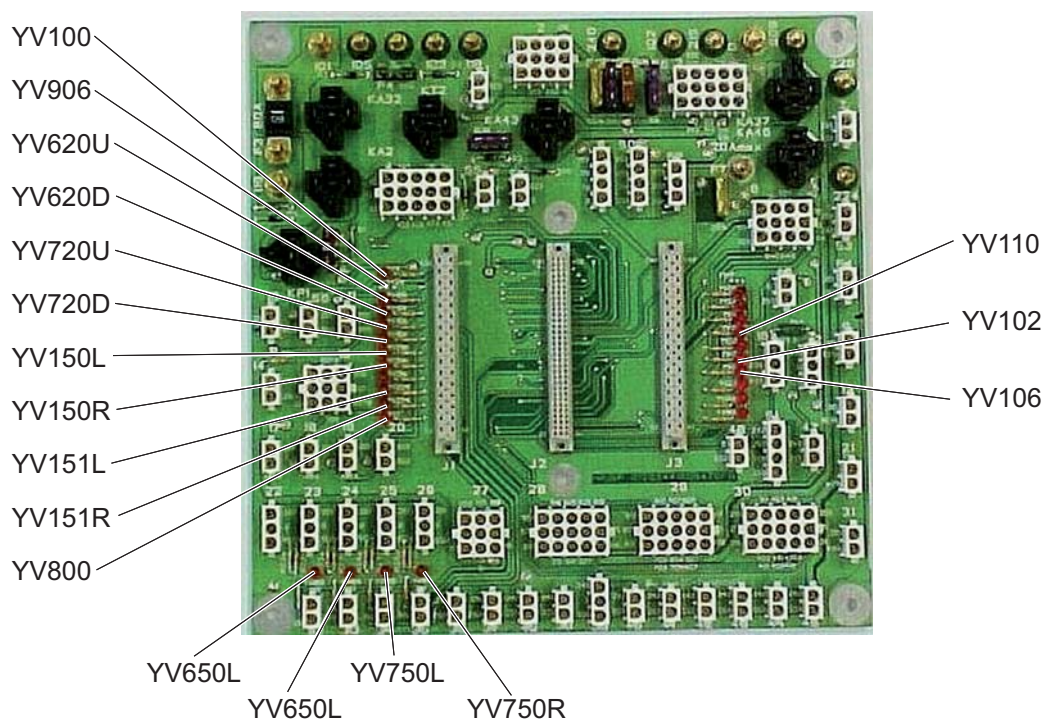
 - Electric circuit

Marking	Description
36	Chain n° *1 breakage sensor SQ801
37	Retracted boom telescope sensor SQ530
38	11 ° tilt sensor SQ800
39	3 ° tilt sensor SQ800
40	Hydraulic tank temperature probe ST900
41	Lower boom sensor SQ520
42	Telescope impulsion sensor SQ532
45	High-speed driving detection sensor SP100
46	"Aligned turntable" sensor SQ250
47	Cable breakage sensor SQ802
48	Fuel reserve sensor SQ300
49	Emergency pump relay
50	Emergency stop line monitoring-Connection with ground control box door SA720
51	Front-axle angle sensor SR150
52	Horn HA907
54	Reverse drive proportional solenoid valve YV160B

E - Electric circuit

5 - Diagnosis assistance indicators

Locations



Description of the components : HT43RTJ PRO - HT132RTJ PRO

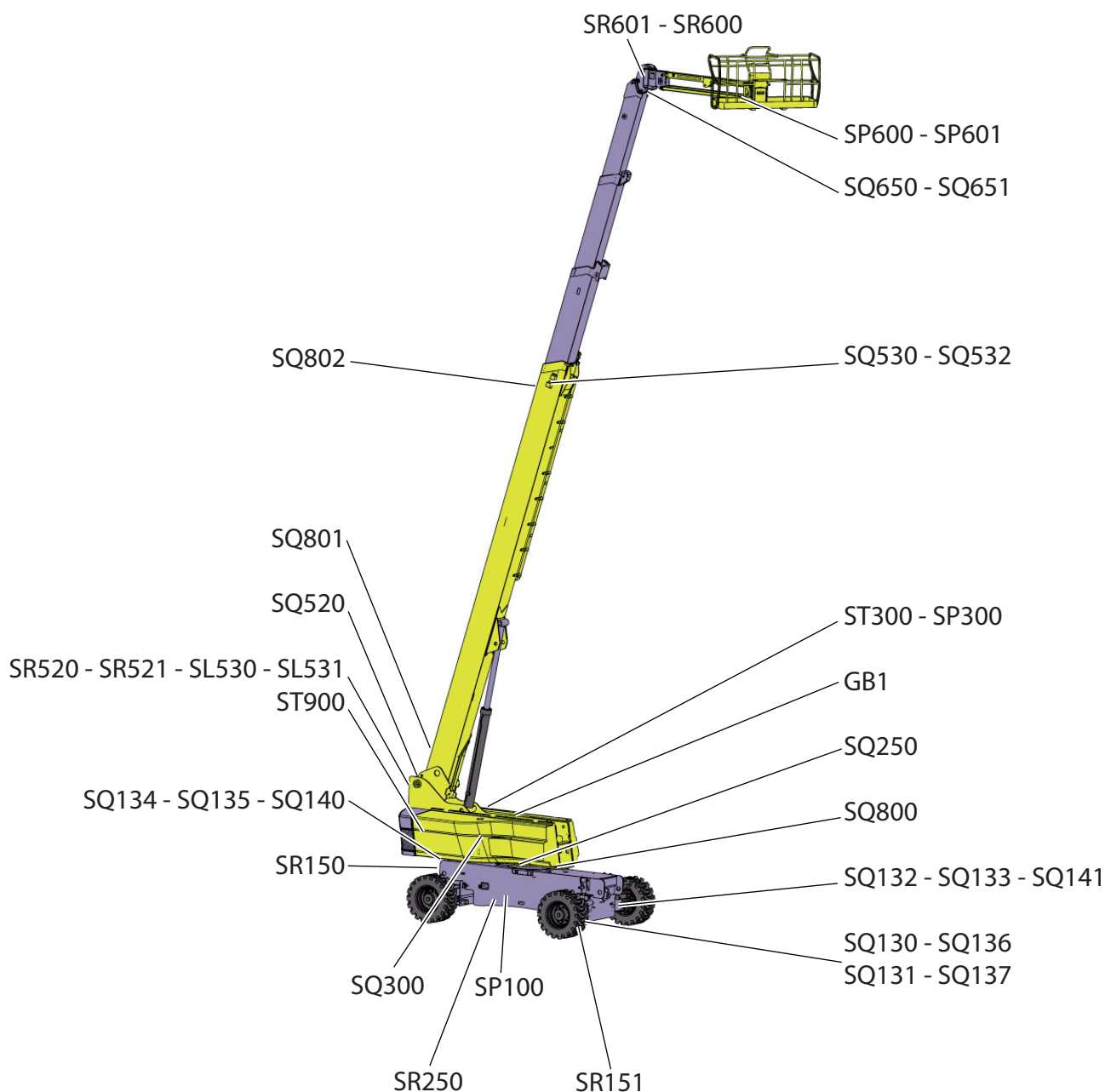
Marking	Description
YV800	LS control solenoid valve
YV106	Steering or outrigger selection solenoid valve
YV100	Differential locking control solenoid valve
YV110	High-speed drive control solenoid valve
YV102	Brake release control solenoid valve
YV720D	Compensation lowering control solenoid valve
YV720U	Compensation elevation control solenoid valve
YV650R	Not applicable
YV650L	Not applicable
YV620D	Not applicable
YV620U	Not applicable
YV750R	Not applicable
YV750L	Not applicable
YV150R	Front right-hand steering control solenoid valve
YV150L	Front left-hand steering control solenoid valve
YV151R	Reverse right-hand steering control solenoid valve
YV151L	Reverse left-hand steering control solenoid valve
YV906	Not applicable

E - Electric circuit

6 - Locations and functions of the main safety features

6.1 - LOCATION OF THE LIMIT SWITCH AND SENSORS

Locations : HT43RTJ PRO - HT132RTJ PRO



E - Electric circuit

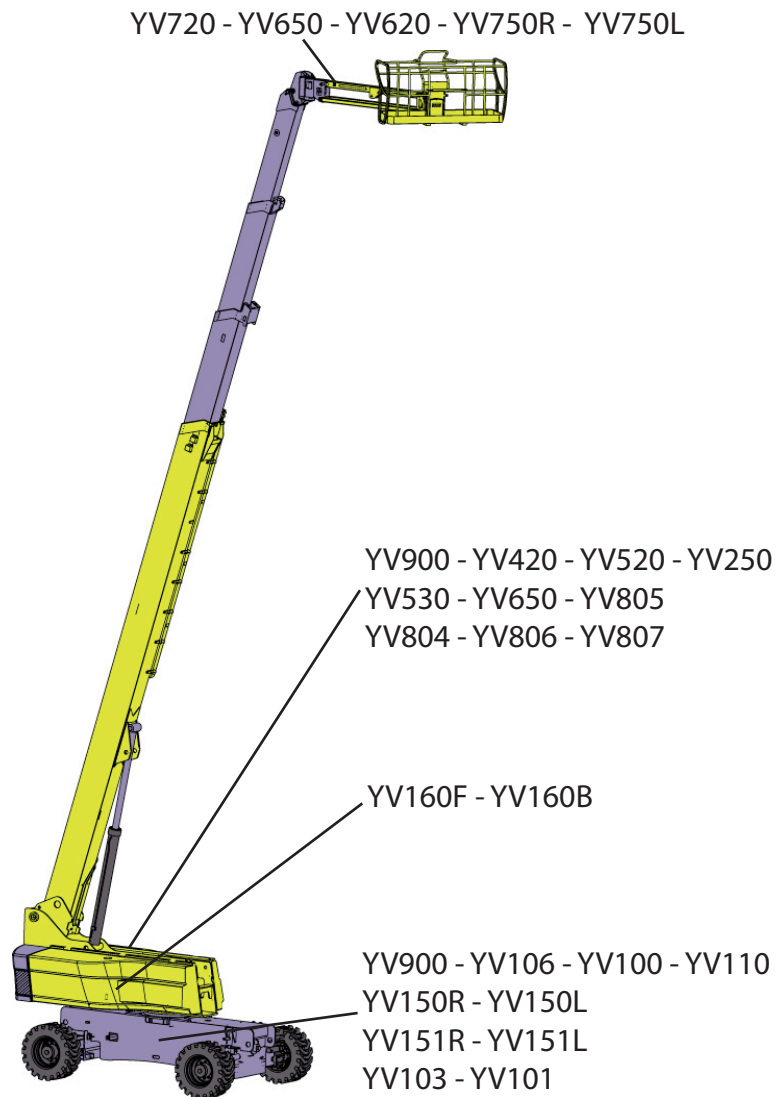
Description of the components HT43RTJ PRO - HT132RTJ PRO

Marking	Description	Function
SR601	Weighing relative angle measurement	Controls overload
SR600	Weighing absolute angle measurement	Controls overload
ST300	Engine overheating pressure switch	Engine cut-off
SP300	Engine oil pressure switch	Engine cut-off
ST900	Hydraulic oil overheating pressure switch	Buzzer
SP100	Hydraulic high-speed drive pressure switch	Safety high speed cut out if machine unfolded
SP600	Small chamber pressure measurement for overload	Controls overload
SP601	Large chamber pressure measurement for overload	Controls overload
GB1	Battery	
SR520 / SR521	Boom angle sensors	Limits the radius
SR530 / SR531	Boom length	Limits the radius
SR250	Turntable angle	Cuts axle extension extension
SR150	Front-axle angle sensor	Reduces the driving speed during steering
SR151	Rear-axle angle sensor	Reduces the driving speed during steering
SQ800	tilt sensor	Cuts all movements
SQ520	Upper boom position limit switch	High-speed cut-off + To extend the boom out
SQ532	Sensor Boom telescope detection ILS	Telescope length detection
SQ650	Jib position limit switch +5° / -5°	Jib rotation detection in work position (+5° / -5°)
SQ651	Jib position limit switch -90° / +180°	Jib rotation detection in transport position (-90° / +180°)
SQ530	Retracted boom telescope position limit switch	Cuts boom lowering
SQ801	Chain breakage position limit switch 1	Cuts all movements
SQ802	Chain breakage position limit switch 2	Cuts all movements
SQ134 - SQ135	Extended front axle position limit switch	Cuts all movements except boom lifting and turntable rotation
SQ132 - SQ133	Extended rear axle position limit switch	Cuts all movements except boom lifting and turntable rotation
SQ140	Retracted front outrigger sensor	Cuts all movements except boom lifting and turntable rotation
SQ141	Retracted rear outrigger sensor	Cuts all movements except boom lifting and turntable rotation
SQ130 - SQ136	Extended axle sensors	Cuts all movements except boom lifting and turntable rotation
SQ131 - SQ137	Retracted axle sensors	Cuts all movements except boom lifting and turntable rotation
SQ300	Fuel reserve sensor	Effect switch REED
SQ250	"Aligned turntable" redundancy position sensor	Cuts axle extension extension

E - Electric circuit

6.2 - LOCATIONS OF THE SOLENOID VALVES

Locations : HT43RTJ PRO - HT132RTJ PRO



E - Electric circuit

7 - Buzzers

Description of the components : HT43RTJ PRO - HT132RTJ PRO

Marking	Description
HA907	Buzzer
HA901	Buzzer : • Tilt sensor • Overload • Temperature
HA902	Buzzer Platform control box : • Overload • Radius limitation • Axles not extended or retracted, outrigger extension in progress • Driving buzzer option • Movement buzzer option

8 - Indicators

Description of the components HT43RTJ PRO - HT132RTJ PRO

Marking	Description
EL903	Beacon light option
EL904	Work light option
HL301	Particle filter indicator
HL302	Regeneration of particle filter indicator
HL303	Indicator for inhibition of regeneration of particle filter
HL250	Indicator for turntable at 180°
HL720	Turntable compensation fault indicator
HL304	Engine warning indicator
HL305	Indicator after engine shutdown
HL807	'Enable Switch' pedal indicator
HL900	Power ON indicator
HL307	Fuel reserve indicator
HL801	Platform fault indicator
HL800	Tilt indicator light
HL802	Platform overload indicator
HL804	Platform radius limitation indicator
HL803	load selection indicator
HL300	Pre-heating indicator
HL805	Indicator for overload pre-alarm at 230 Kg / 500 Lb
HL806	Indicator for overload pre-alarm at 450 Kg / 1000 Lb

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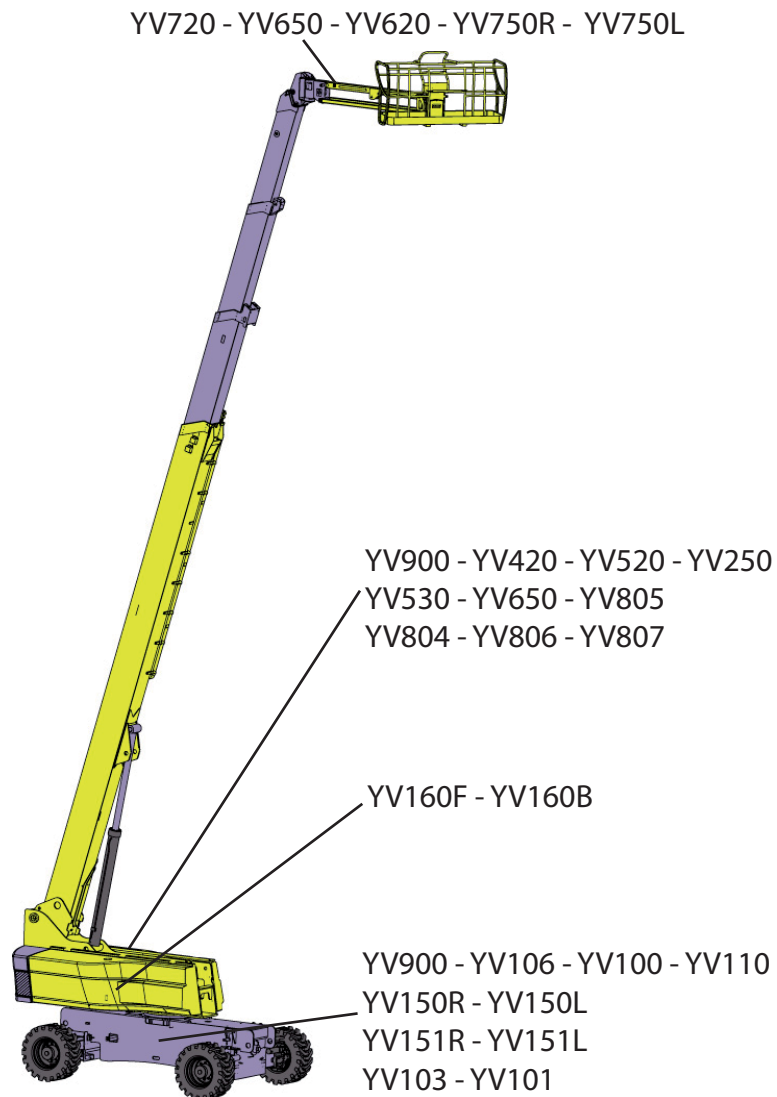
F - Hydraulic circuit

1 - Hydraulic diagram-Main components

N.B.:  See end of manual.

2 - Solenoid valves

Locations : HT43RTJ PRO - HT132RTJ PRO



F

- Hydraulic circuit

Description of the components HT43RTJ PRO - HT132RTJ PRO

Marking	Description
YV800	Solenoid valve LOAD SENSING
YV900	Jib, axle extension, outrigger and steering PVG solenoid valve
YV520	Boom lifting control solenoid valve
YV250	Turntable rotation control solenoid valve
YV530	Boom telescoping control solenoid valve
YV106 - YV103	Axle extension, outrigger, steering control solenoid valves
YV100	Differential locking control solenoid valve
YV110	High-speed drive control solenoid valve
YV102	Brake release control solenoid valve
YV720D - YV720U	Compensation control solenoid valve
YV650R - YV650L	Jib rotation solenoid valve
YV620D - YV620U	Jib lifting/lowering control solenoid valve
YV750R - YV750L	Platform rotation control solenoid valve
YV150R - YV150L	Front steering control solenoid valve
YV151R - YV151L	Rear steering control solenoid valve
YV160F	Pump, horizontal drive, generator control solenoid valve A
YV160B	Pump, horizontal drive, generator control solenoid valve B
YV101	Oscillating axle unlocking control solenoid valve
YV805	Turntable unlocking control solenoid valve
YV804	Telescope safety solenoid valve
YV806	Boom safety solenoid valve
YV807	Emergency valve for boom and telescopic boom combined movements

G - Intervention register

1 - Intervention register

The intervention register keeps a record of maintenance and repair work carried out inside or outside the maintenance programme.

N.B.: - In the case of a HAULOTTE Services® intervention, the qualified technician must indicate the HAULOTTE Services® intervention number.

Date	Type of intervention	Number of hours	Intervenor	HAULOTTE Services® intervention number

G

 - Intervention register

Date	Type of intervention	Number of hours	Intervenor	HAULOTTE Services® intervention number

G

- Intervention register

Date	Type of intervention	Number of hours	Intervenor	HAULOTTE Services® intervention number

A

B

C

D

E

F

G

H

I

G

 - Intervention register

Date	Type of intervention	Number of hours	Intervenor	HAULOTTE Services® intervention number

G

- Intervention register

Date	Type of intervention	Number of hours	Intervenor	HAULOTTE Services® intervention number

A

B

C

D

E

F

G

H

I

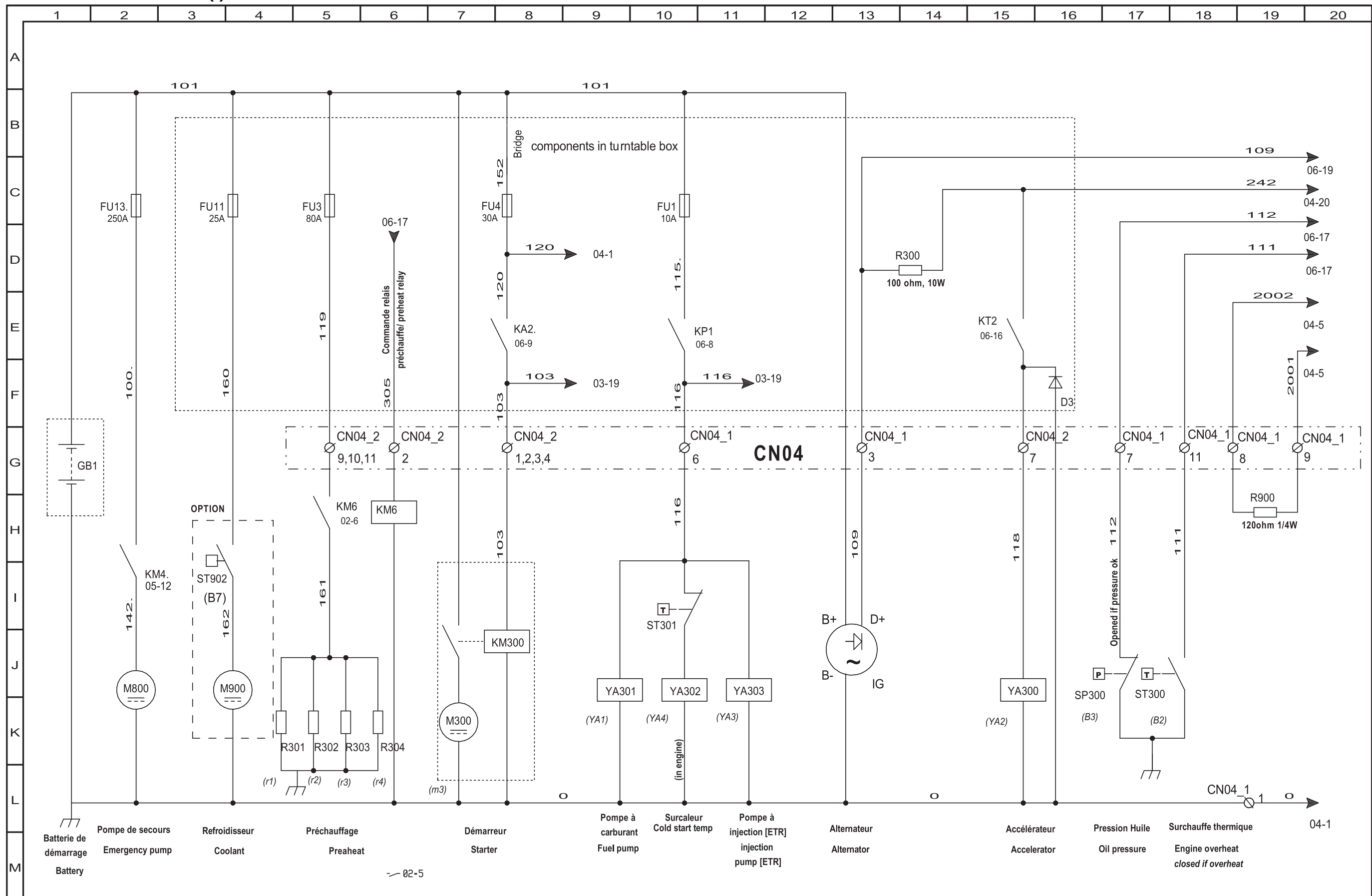
G

 - Intervention register

Date	Type of intervention	Number of hours	Intervenor	HAULOTTE Services® intervention number

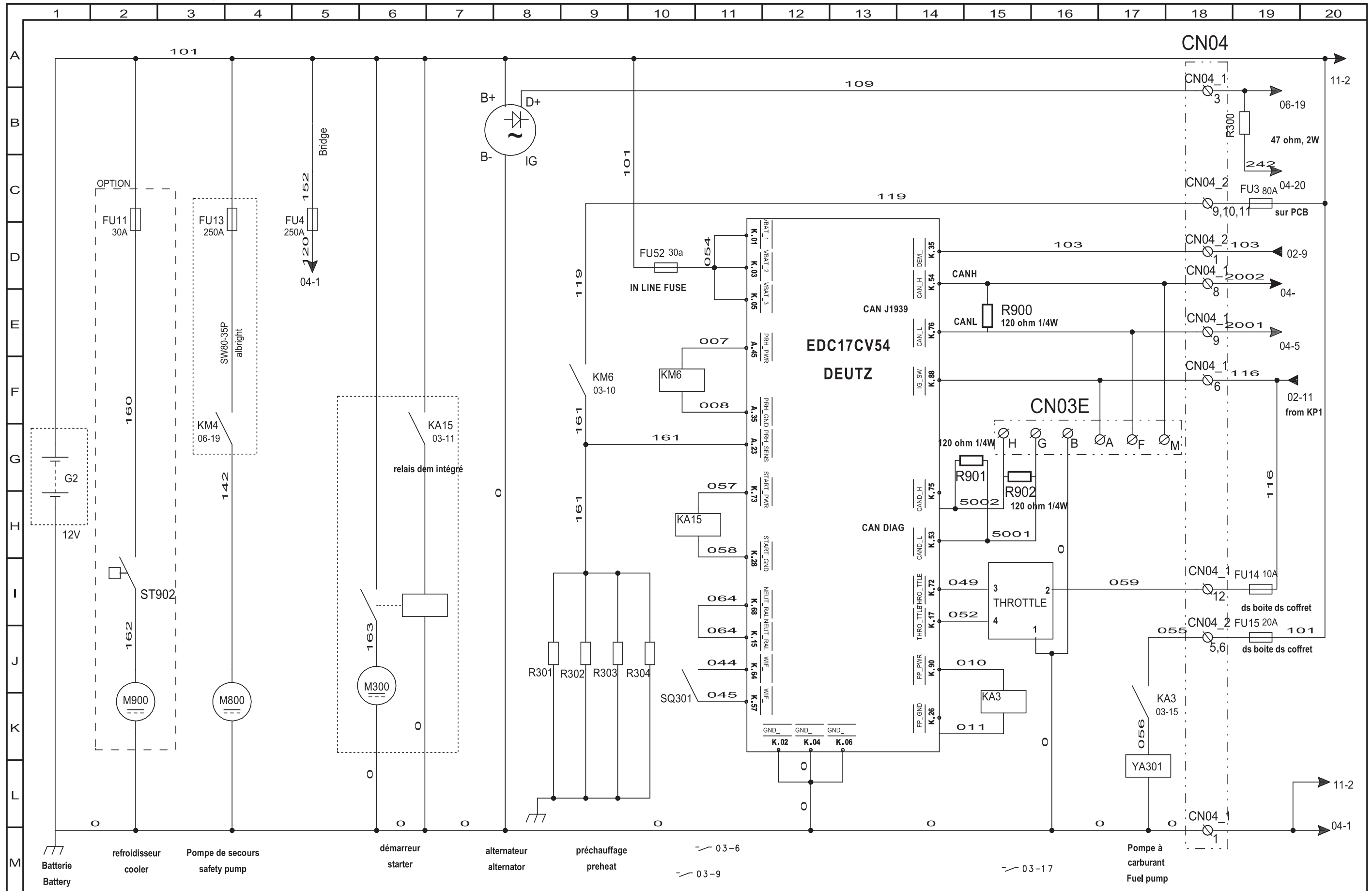
1 - HT43RTJ PRO - HT132RTJ PRO

1.1 - ENGINE UNIT (I)



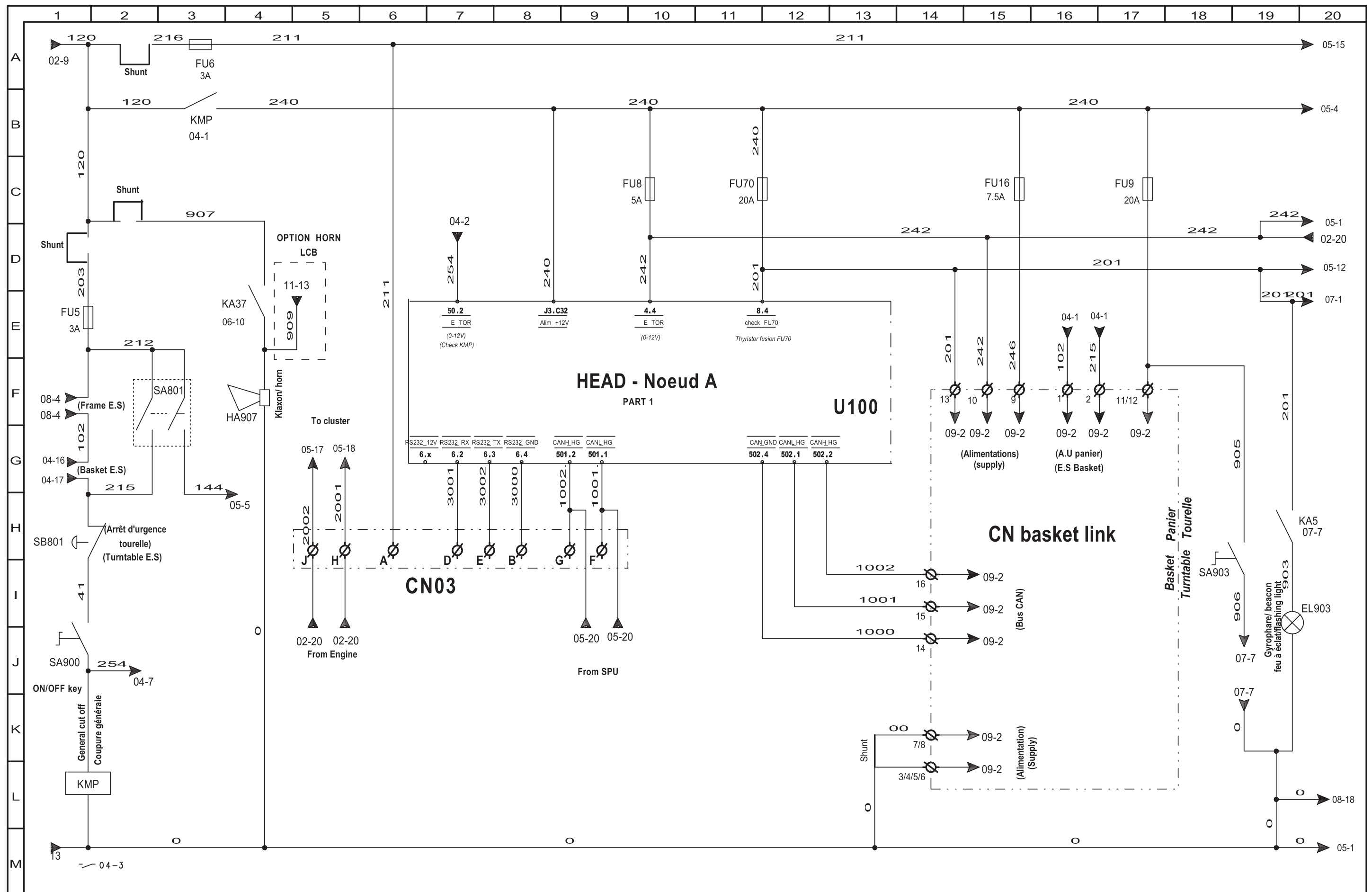
HT43RTJ PRO - HT132RTJ PRO

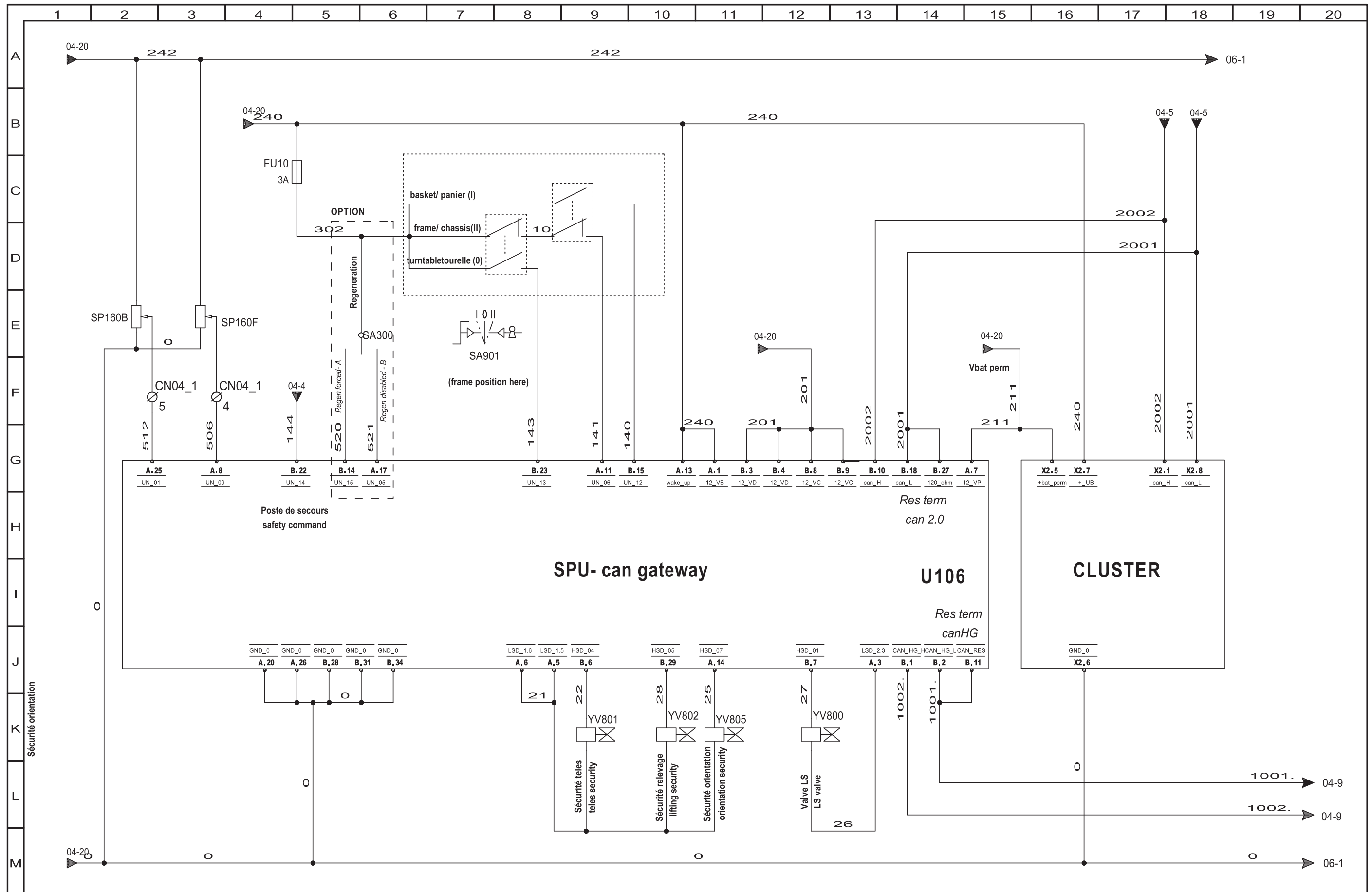
1.2 - ENGINE UNIT (II)

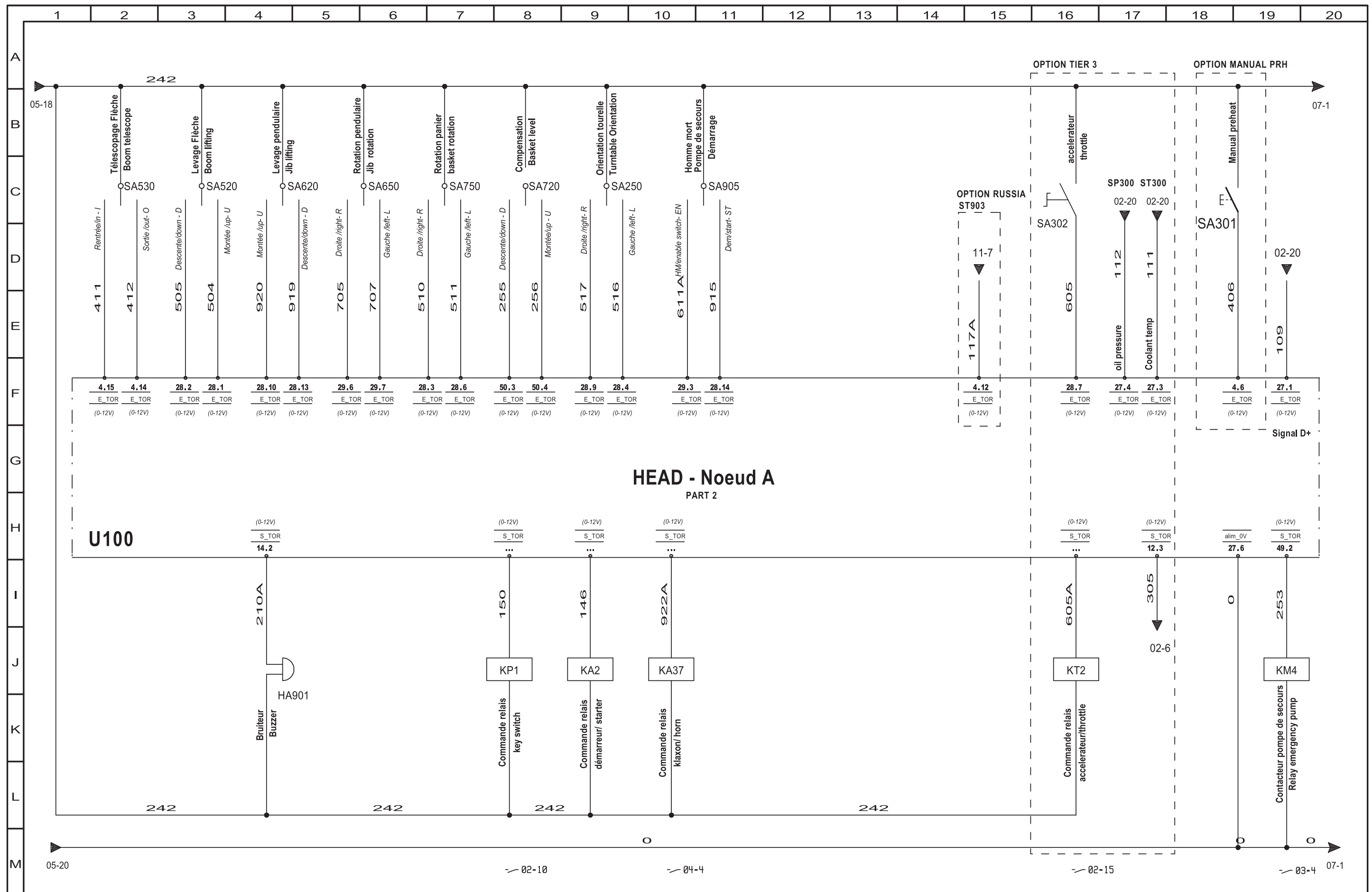


HT43RTJ PRO - HT132RTJ PRO

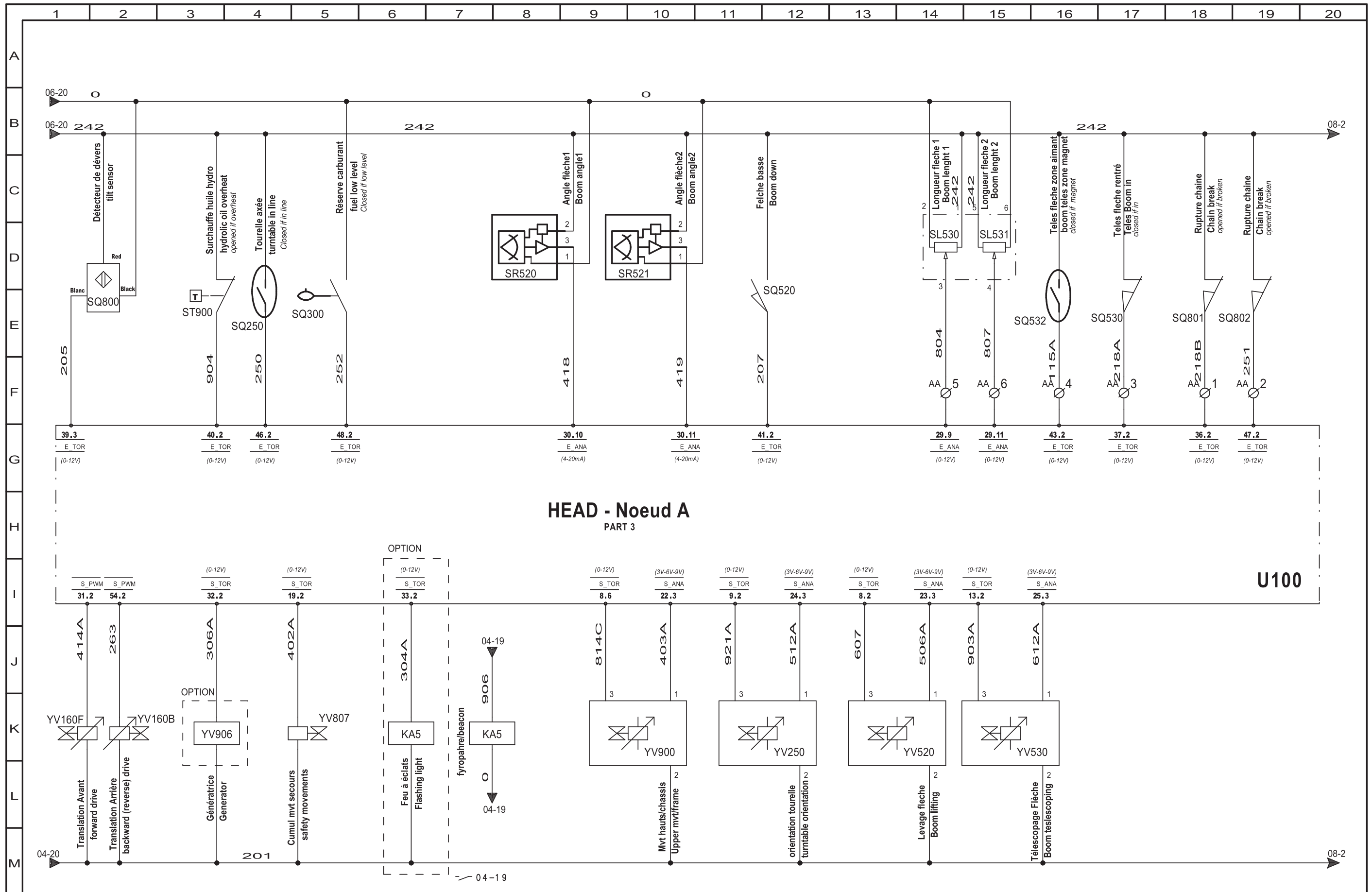
1.3 - TURRET UNIT



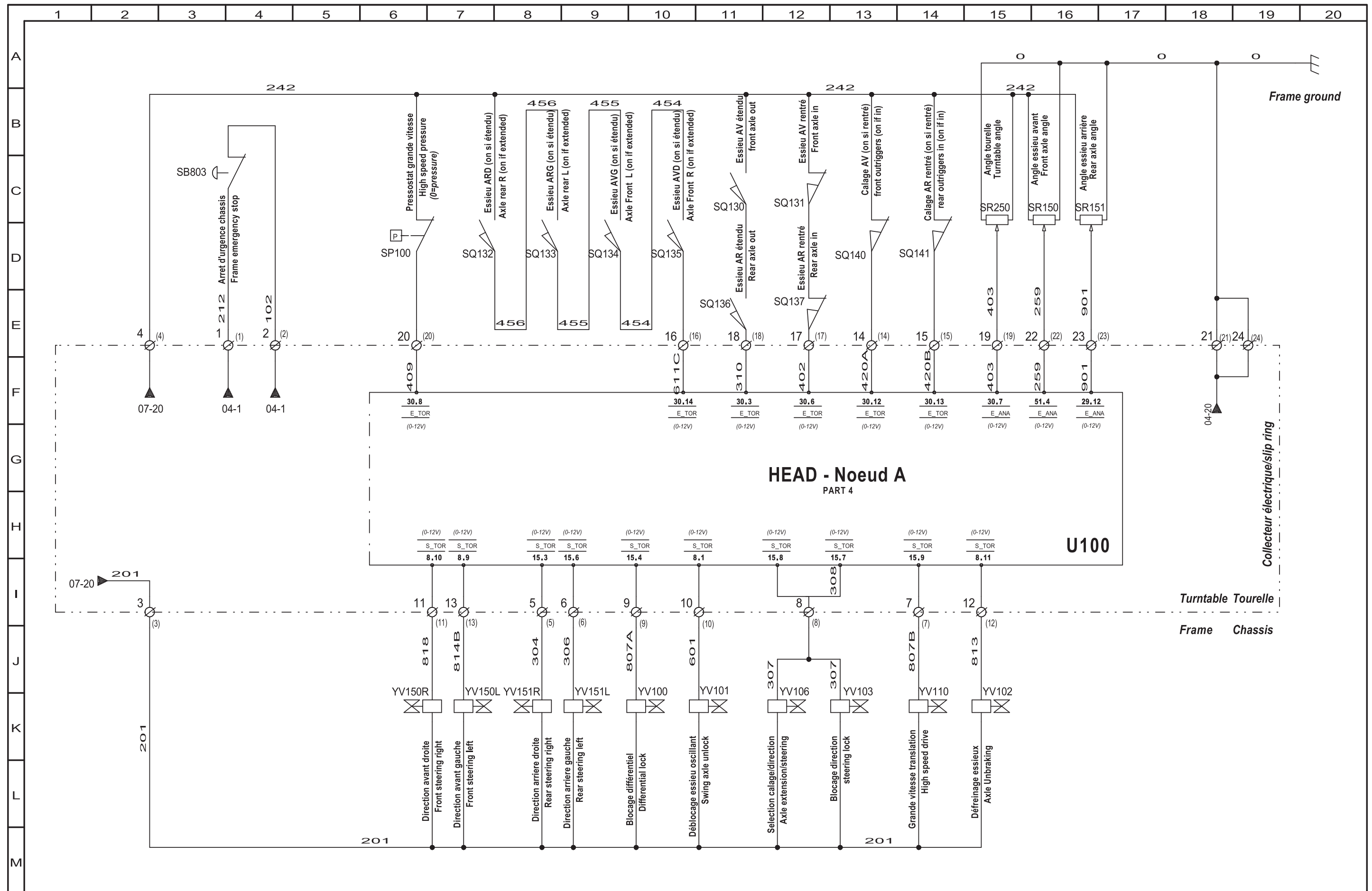




HT43RTJ PRO - HT132RTJ PRO

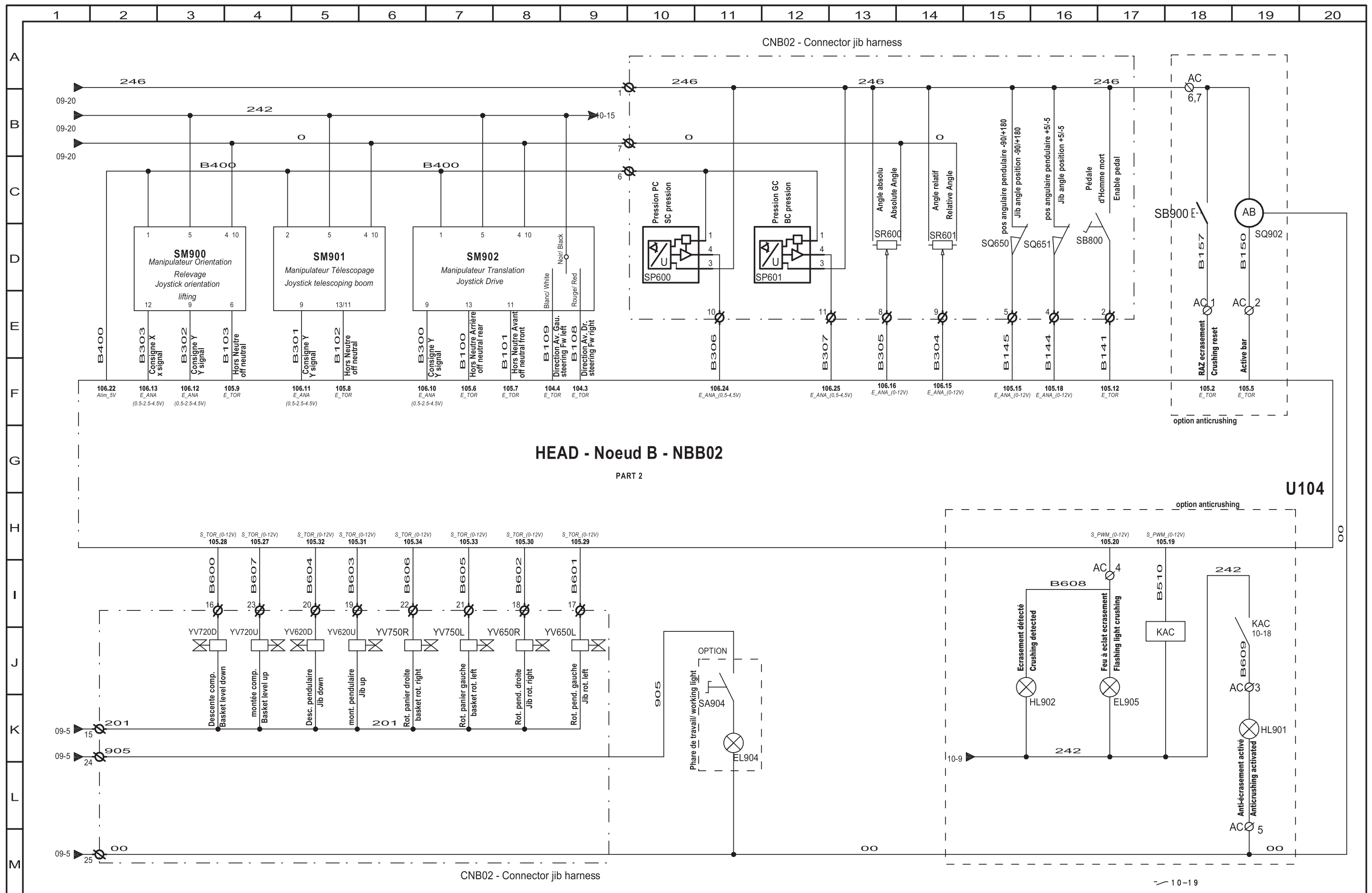


1.4 - FRAME UNIT



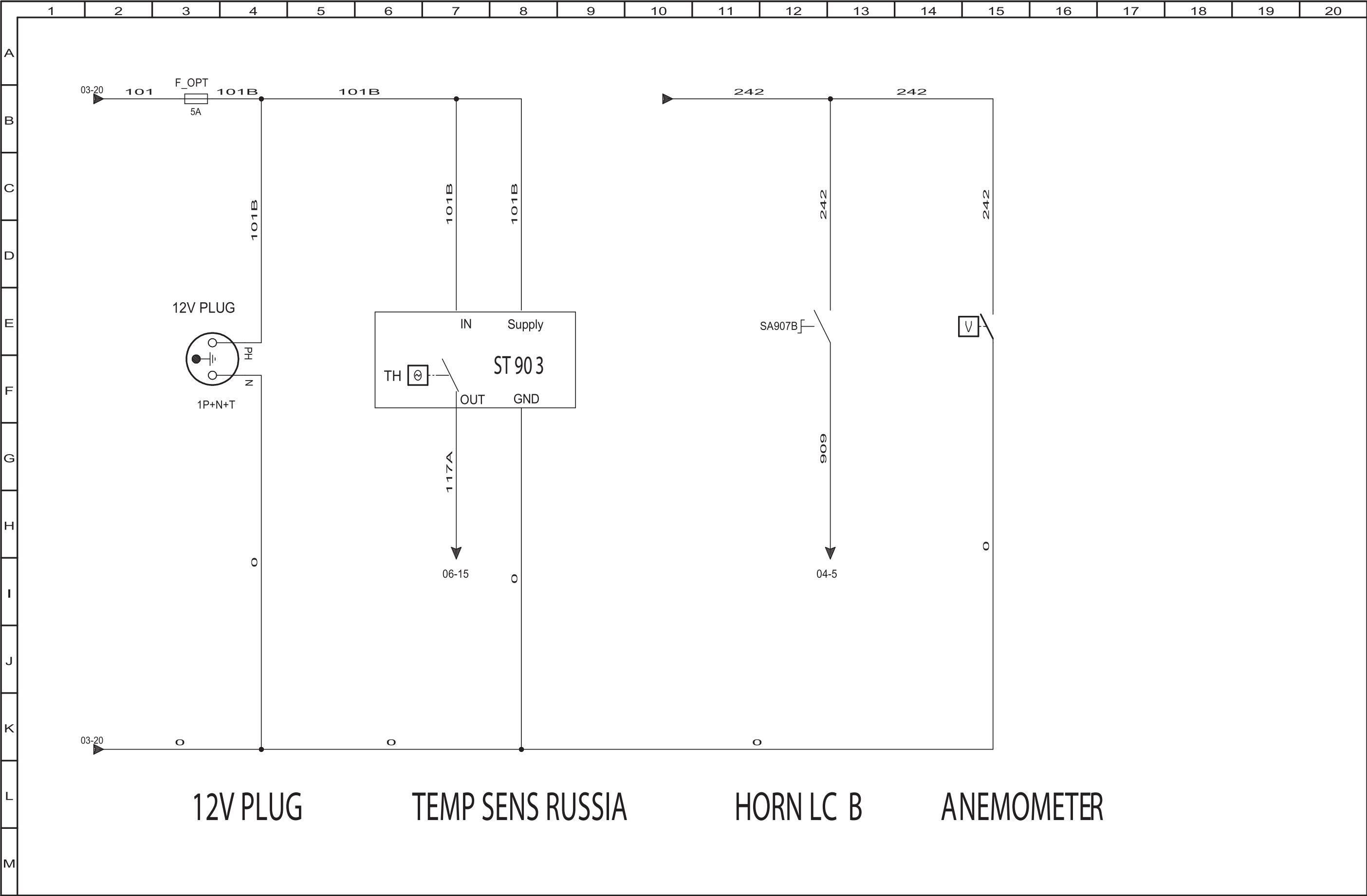
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 A CNB01 - Connector cable basket-turnstile
 B 04-15 9 246 10-1
 C 04-15 10 242 10-1
 D 04-16 1 102
 E 04-17 2 215
 F 105.3 E_TOR 105.4 E_TOR 104.1 E_TOR 104.6 E_TOR 104.12 E_TOR 104.2 E_TOR 105.14 E_TOR 104.11 E_TOR 105.36 E_TOR 105.35 E_TOR 104.9 E_TOR 104.10 E_TOR 104.8 E_TOR 104.7 E_TOR 104.15 E_TOR 104.16 E_TOR 105.11 E_TOR 105.10 E_TOR 107.2 Alim_+12V
 G
 H HEAD - Noeud B - NBB02
 I PART 1
 J Res term canHG
 K 101.3 CAN_Low 101.1 CAN_High 101.2 GND 101.4 RS232_RX 102.2 RS232_TX 102.1 GND 102.4 R120 102.3 ADR0 Gnd Gnd Gnd Gnd Gnd Gnd Gnd Gnd Gnd ADR2 s_tor(0-12) 106.18 107.1 106.3 106.9 106.14 106.17 106.21 106.23 106.28 106.20 106.1 s_tor(0-12) 104.34 104.35 104.36 s_tor(0-12) 104.31 104.32 104.33 s_tor(0-12) 104.21 104.22 104.23 104.24 104.25 104.26 104.27 s_tor(0-12) 104.30 104.29 104.28
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 M (Bus CAN) 04-15 16 1002 1000 04-15 14 1000 04-14 13 201 10-1 04-17 11/12 905 10-1 04-15 7/8 00 10-1 04-15 3/4/5/6 0
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HT43RTJ PRO - HT132RTJ PRO



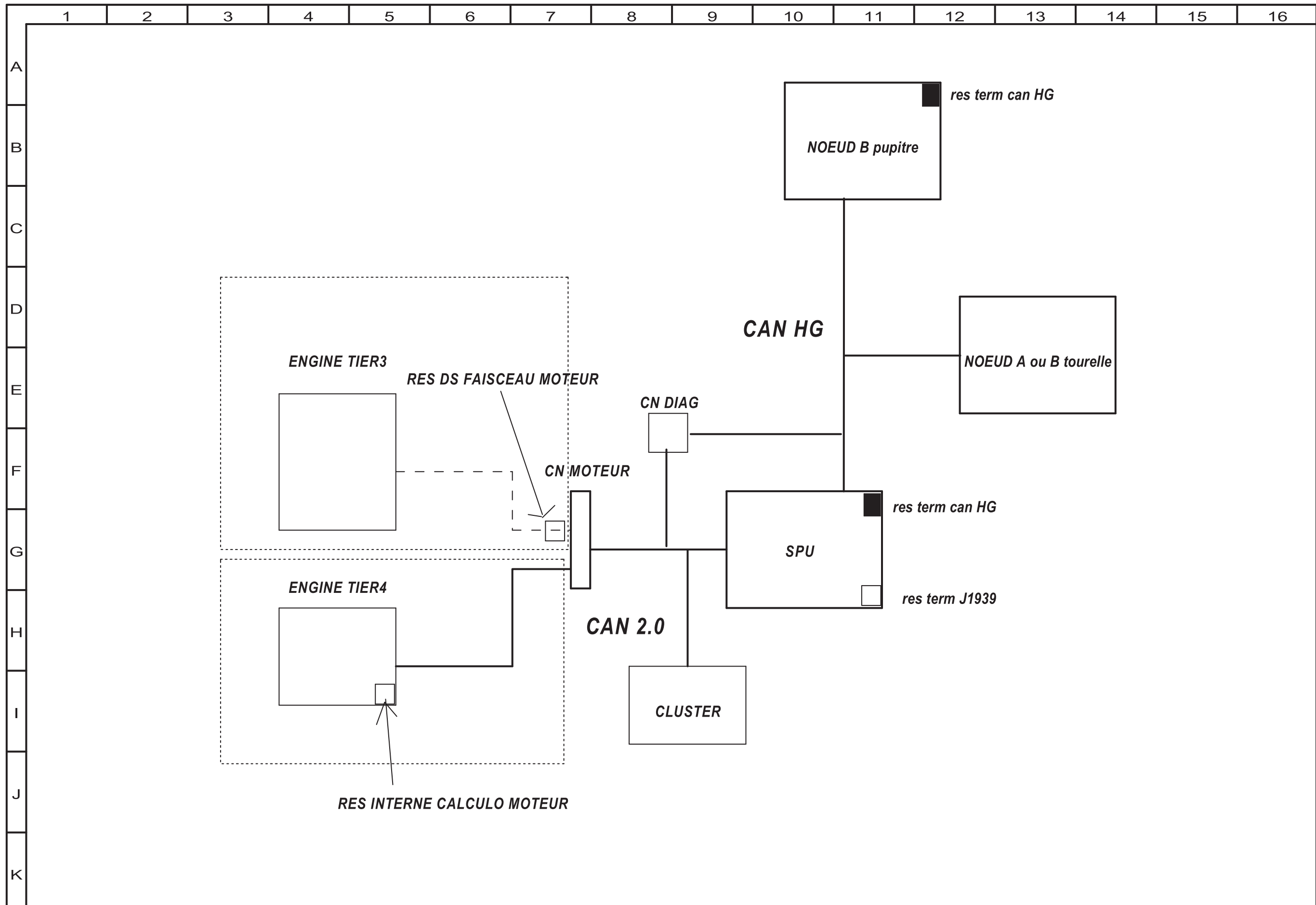
HT43RTJ PRO - HT132RTJ PRO

1.6 - OPTION



HT43RTJ PRO - HT132RTJ PRO

1.7 - NEW ARCHITECTURE



HT43RTJ PRO - HT132RTJ PRO

1 - HT43RTJ PRO - HT132RTJ PRO

1.1 - FOLIO 1/1

