Workshop literature

STILL
ELECTRONIC
DOCUMENTATION
SYSTEM

Electric pallet truck

EXU-SF-20

CE

0160

50168070901 EN - 03.2010

first in intralogistics

horn, proportional lifting and lowering buttons and rear safety button.

For safety reasons, the tiller, under thrust from a gas cylinder, automatically goes back to the upper position when it is released.

Braking system

The electromagnetic brake fitted to EXU-SF pallet trucks is noted for its short handling times, low inertia and torque transmission with no angle clearance.

Braking:

- counter-current, upon accelerator release,
- counter-current by switching the drive direction,
- counter-current, controlled by the rear safety button (belly),
- electromagnetic safety, controlled by the emergency stop handle
- electromagnetic safety, controlled by the top or bottom position of the tiller when operating the truck in pedestrian mode,
- counter current, controlled by the top or bottom position of the tiller when operating the truck in ride-on mode,
- electromagnetic parking, applied when power supply is cut off.

Operator's seat

The standard equipment at the operator's seat comprises:

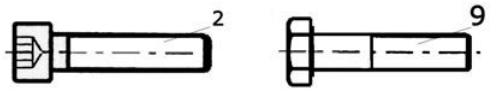
- Fixed tiller for all of the controls
- Office compartment for storing rolls of adhesive tape, gloves, pens etc.
- Emergency stop button located on the chassis
- Hour meter/discharge indicator
- Folding platform that can be adjusted according to the operator's size
- Two side protection arms that can be folded and height-adjusted according to the weight of the operator.

As options:

- Exterior fork width = 520 mm
- Exterior fork width = 670 mm
- Housing for 360 Ah TROG 113 battery
- Side battery removal
- Load backrest height = 1200 mm
- Load backrest height = 1800 mm
- Drive wheel, smooth non-marking rubber tyre

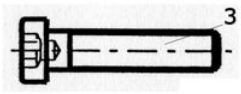
Table of tightening torques in Nm

Hexagonal socket head screws/Hexagon head screws ▷



	Low head hexagonal socket head screws (2) DIN 912 / ISO 4762					
	Hexagon head screws (9) DIN 931 / EN ISO 4014 DIN 933 / EN ISO 4017					
	Zinc-plated			Dacromet-coated		
Ø / Class	8.8	10.9	12.9	8.8	10.9	12.9
M3 x 0.5	1.3	1.9	2.3	-	-	-
M4 x 0.7	3	4.5	5	-	-	-
MS x 0.8	6	8.5	10	-	-	-
M6 x 1	10	15	17.5	9	13	15.5
M8 x 1.25	25	36	42	22	32	37
M10 x 1.5	48	71	83	42	63	73
M12 x 1.75	84	123	144	74	108	126
M14 x 2	133	195	229	116	171	201
M16 x 2	206	302	354	181	264	309

Low head hexagonal socket head screws ▷



	Low head hexagonal socket head screws (3) DIN 7984 DIN 6912					
	Zinc-plated			Dacromet-coated		
Ø / Class	8.8	10.9	12.9	8.8	10.9	12.9
M3 x 0.5	1	1.35	1.6	-	-	-
M4 x 0.7	2.1	3	3.5	-	-	-
M5 x 0.8	4.2	6	7	-	-	-
M6 x 1	7	10	12.5	6	8.8	11
M8 x 1.25	17.5	24.5	30	15.5	22	27
M10 x 1.5	34.5	49	59	30	43	52
M12 x 1.75	60	84	101	53	74	89
M14 x 2	95	137	161	-	-	-
M16 x 2	147	210	252	129	185	222

General

Diagnostic instructions

⚠ CAUTION

Before carrying out any work on the electrical components of the truck using the repair kit, raise the drive wheel from the ground using a jack so that it can turn freely.

For safety reasons, place wooden blocks under the chassis to prevent the truck from moving.

Accessing truck information

The diagnostic tool uses a special Still software application for laptop PCs.

It is connected to the truck via an interface unit (CANBOX) and linked up to a single connector (diagnostic connector) located on the dashboard, at the back of the tiller arm.

NOTE

It is essential that the truck is activated and connected to the laptop before starting the software application.

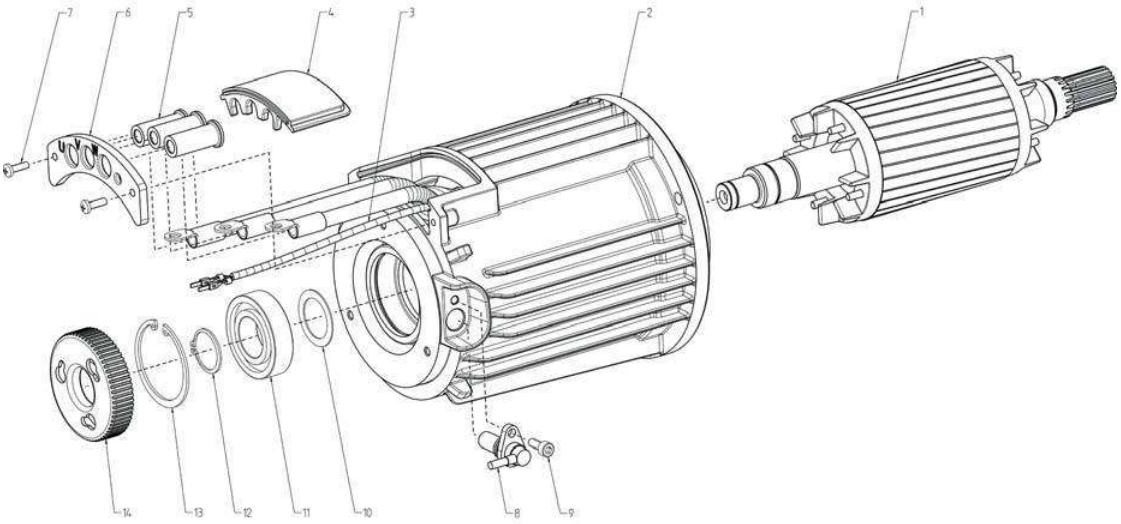
Traction motor

Technical data

JULI reference	1011199
Motor type	Asynchronous
Operating voltage (V)	14
Amperage (A)	135
Nominal speed (rpm)	3450
Power (kW)	2.3
Service rate	S2 - 60 mins*
Guard	IP 44
Insulation	Class F

*S2-60: operation of motor with full load for an hour followed by an hour's rest.

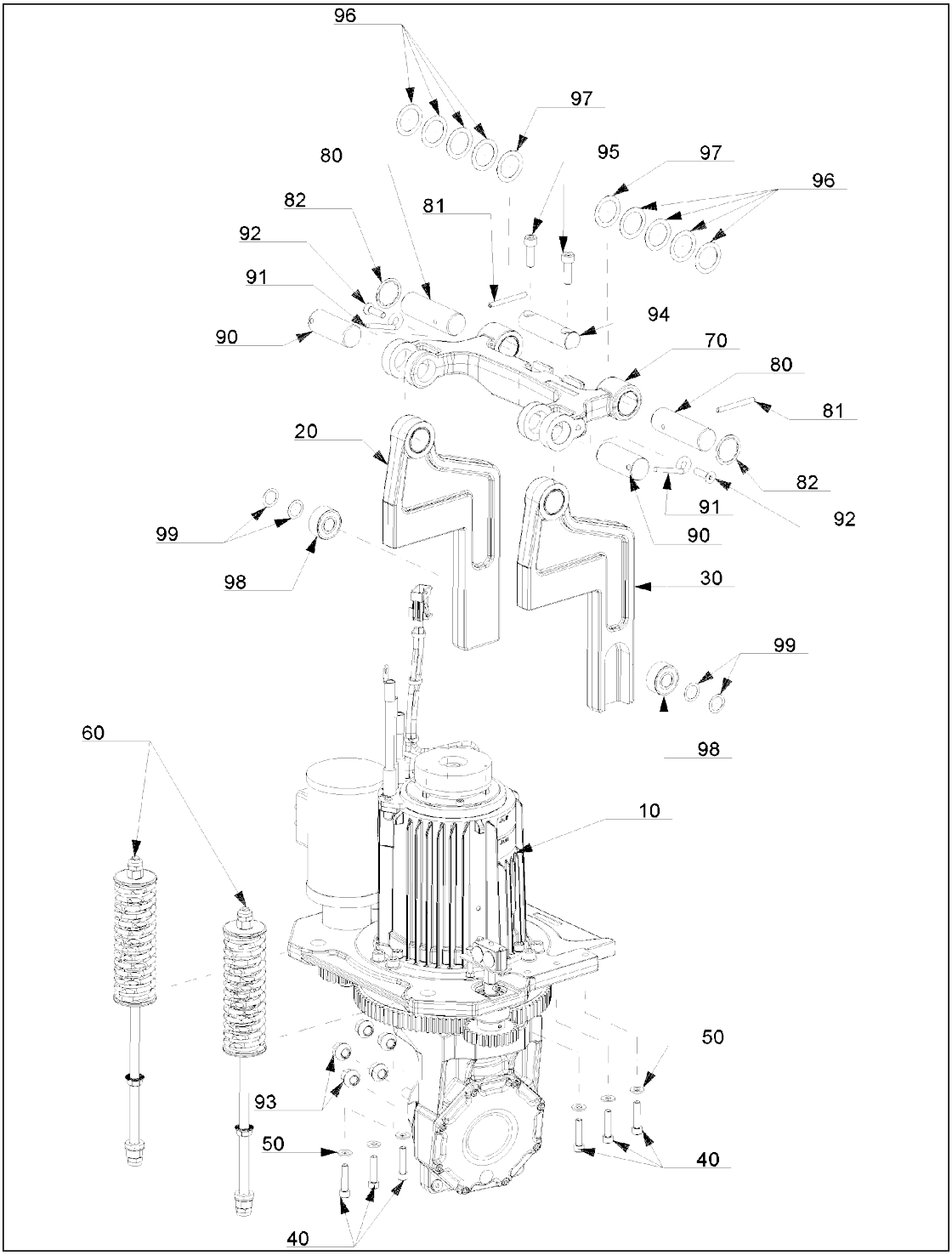
Overview



1	Rotor
2	Stator
3	Temperature sensor
4	Plastic plate
5	9.5x12.7x8–GU wire conduit
6	Plastic plate
7	Screw
8	Speed sensor
9	DIN 7500–E M6x16 ST A2E screw
10	DIN 988 30x42x1 spacer washer
11	Grooved ball bearing
12	DIN 471 30x1.5 retaining ring
13	DIN 472 62x2 retaining ring
14	Speed sensor disc

Drive unit

Description



– Unscrew the nut and the locknut using two 13 ring spanners as shown in the photo.

⚠ DANGER

Energy stored in the springs.

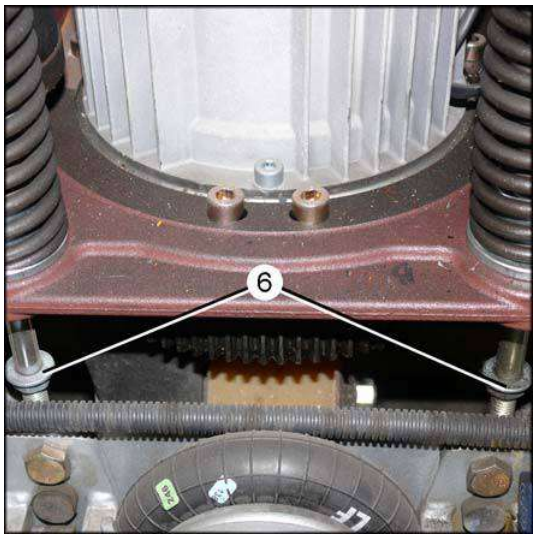
Unscrew slowly and carefully!

– Release the springs of the threaded rods.

Reassembly

– For reassembly, proceed in the reverse order. The setting is 160 mm (+5/-5).

– Caution! The nuts (6) must be screwed to the end of the rod screw thread, as shown in the photo below. For safety reasons, never change the setting!



– Lift the battery cover (2) using the handle (3). ▷

– Disconnect the battery connector. ▷

– Open out the side protection bars (1) and lower the platform (2). ▷

Adjusting the platform

For improved absorption of vibrations, the platform must be adjusted according to the weight of the operator.

The platform pressure should also be checked every 500 hours.

– This adjustment is made by connecting a pneumatic air line to the connection socket located under the platform.

Removing the tiller arm

– Unscrew the two screws (8). ▷
– The tiller head is now removed.

– To remove the lower half of the flange, unscrew the 7 screws (12) using a cross-tip screwdriver. ▷

Removing the throttles

– Pull firmly outwards to remove the two throttles (9). ▷

NOTE

The throttles cannot be dismantled until the printed circuit board unit has been removed from its housing.

For reassembly, proceed in reverse order to removal.

⚠ CAUTION

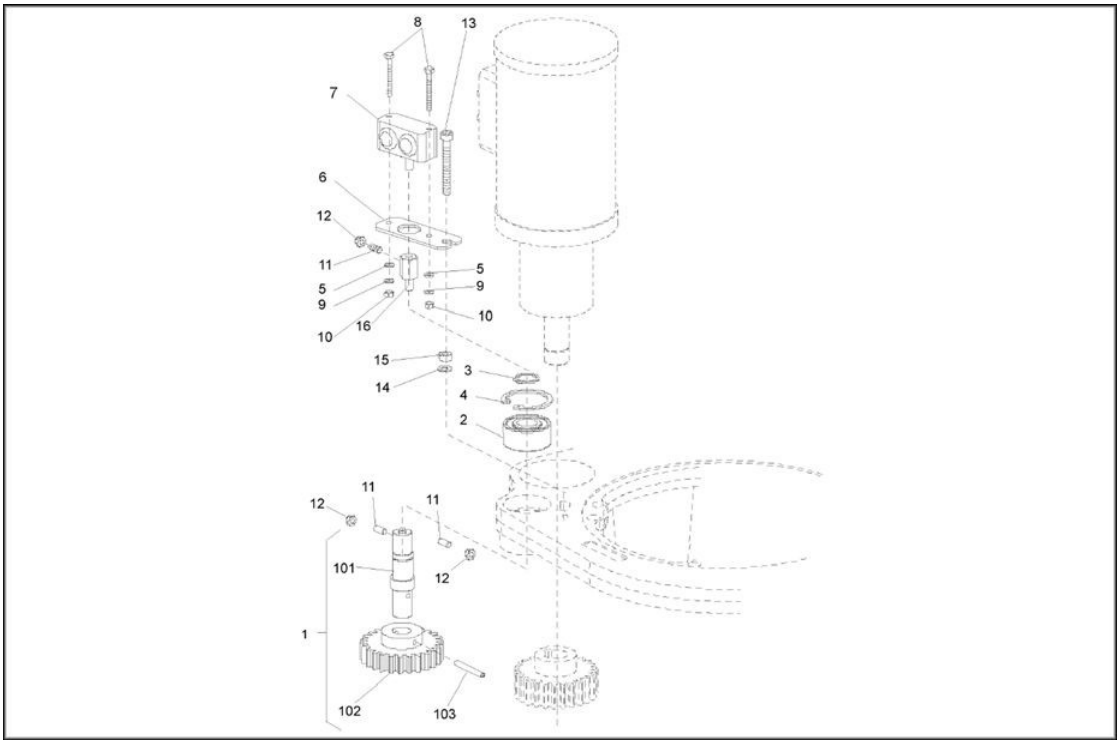
When reassembling, the two throttles are clipped back on using the guiding pins and contact studs.

– Unscrew the stop screw. ▷

– Unscrew the two flange screws. ▷
– Remove the flange.

– Remove the lipped ring (when refitting, do not fit the seal fully home on the pin). ▷

Potentiometer pinion bearing



Disassembly

– Remove the potentiometer angle sensor.
– Remove the locking ring (3).
– Unscrew the screw (11) and remove the drive pinion (16).
– Remove the pinion (102) with the shaft (101).
– Remove the locking ring (4).
– Detach the bearing (2) using a bearing puller.

Reassembly

– For reassembly, proceed in the reverse order.

Disassembly

Disassembly

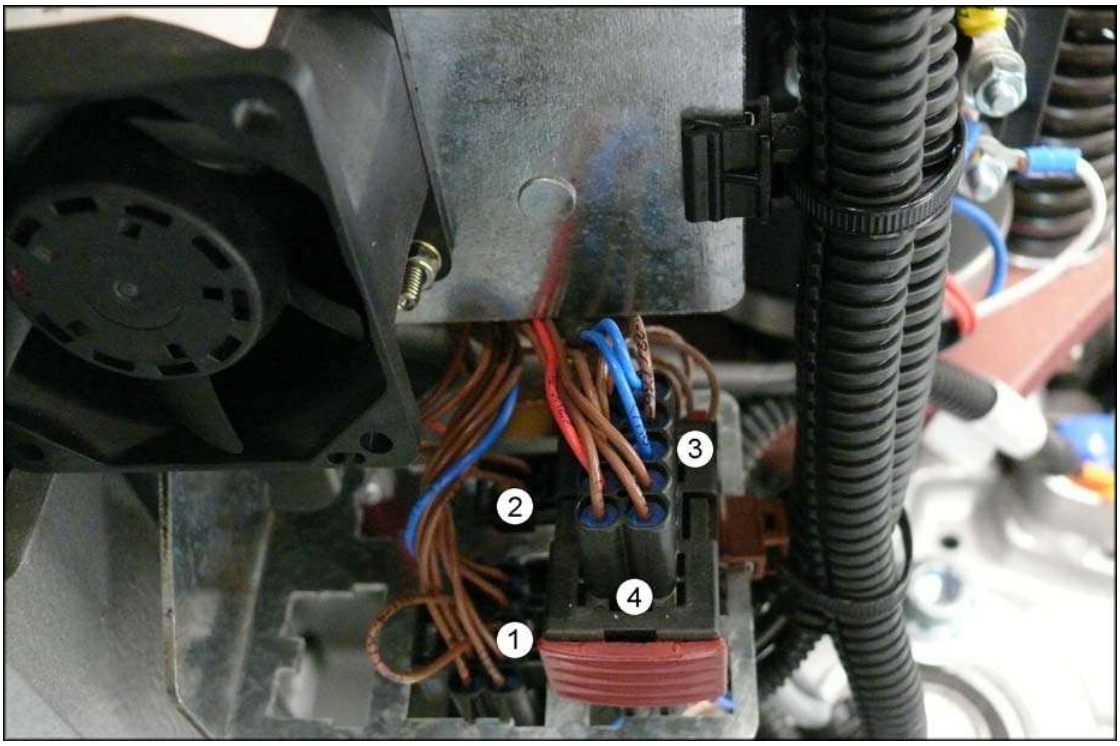
– Park the truck (see ⇒ Chapter "Parking the truck.", P. 00-18).
– Engage the emergency stop.
– Open the battery cover.
– Disconnect the battery connector (see ⇒ Chapter "Battery connector", P. 00-19).
– Remove the motor cover (see ⇒ Chapter "Access to the technical compartment", P. 30-1).
– Disconnect the brake connector.
– Unscrew the three screws (1). ▷

– Remove the brake. ▷

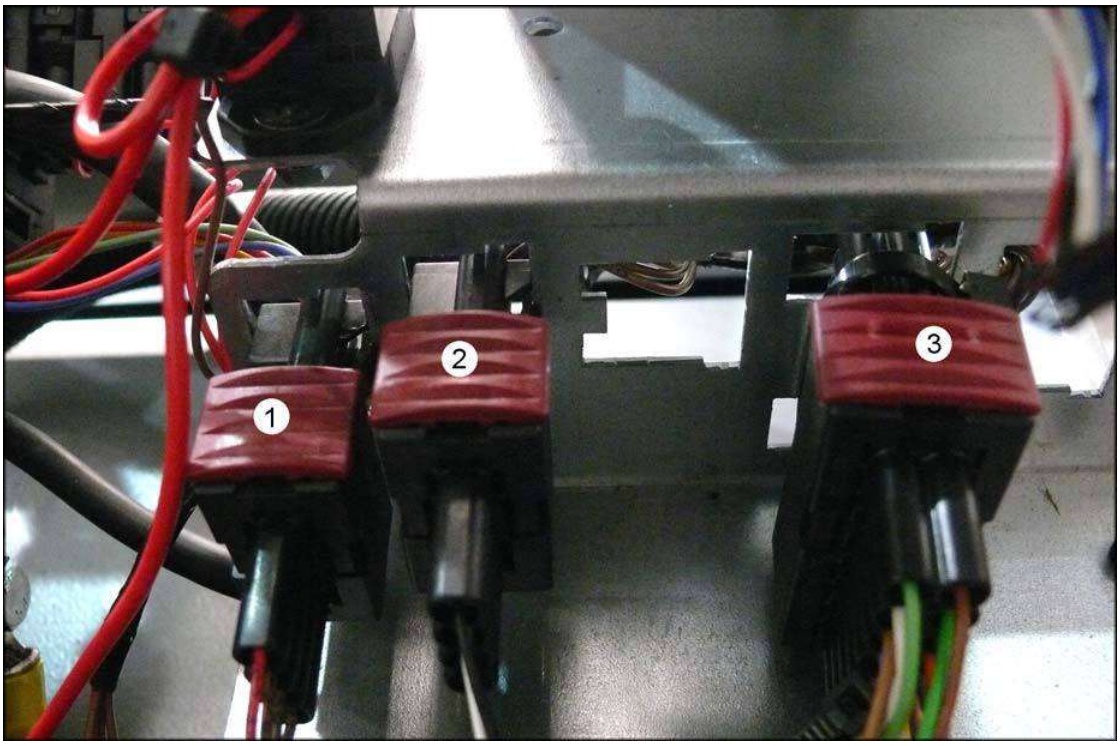
Reassembly

– For reassembly, proceed in the reverse order.

Connectors



1	Platform and side protection sensor	3	Recopy potentiometer
2	Fan and steering controller	4	Brake / traction motor / acceleration sensor



1	Traction motor and steering motor fuse	3	Tiller + tiller head sensor
2	Tiller		

Key switch

Disassembly

– Park the truck (see ⇒ Chapter "Parking the truck.", P. 00-18).

– Engage the emergency stop.

– Open the battery cover.

– Disconnect the battery connector (see ⇒ Chapter "Battery connector", P. 00-19).

– Remove the dashboard (see ⇒ Chapter "Access to the technical compartment", P. 30-1).

– Unscrew the nut. ▷

– Release the key switch from the rear and disconnect it. ▷

Reassembly

– To reassemble, proceed in reverse order to removal, taking care to correctly align the key switch with the centring lug.

On-board charger

On-board charger

⚠ CAUTION

It is strictly prohibited to use an on-board charger other than the one recommended.

Precautions for installation and use

The Charis HF 2+ on-board charger can be connected to any 2P+T 230 V 16 A socket. However, before charging this way, the user must ensure that the location selected for charging satisfies all the required safety guarantees:

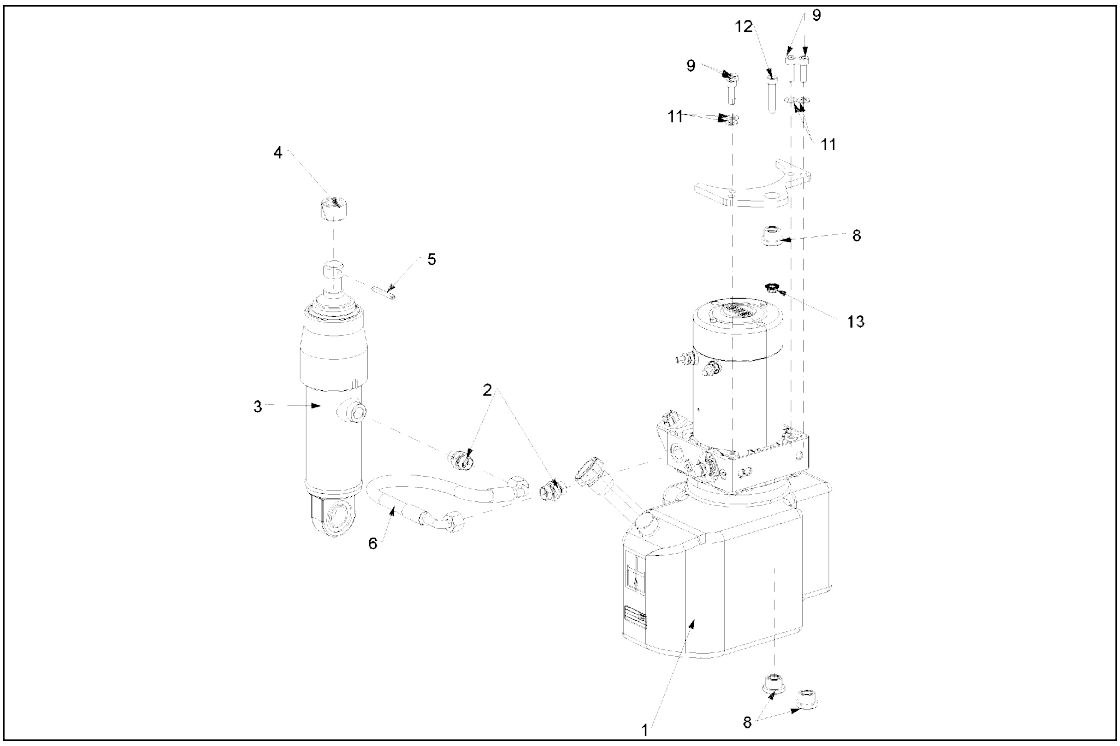
- The electrical installation must comply with standard NF C 15 100.
- The electric wall socket must be a 2 pole + earth 16 A 230 V type that is correctly connected and protected.
- Before charging, check the condition of the connections and cables (retighten, as required).
- The mains cable must not be taut when in use on the mains.
- The mains cable must be checked regularly as part of periodic statutory checks and maintenance operations.
- Charging must be carried out in an area where there is no condensation or pollution and there must be sufficient ventilation.
- The charger must not be exposed to oil, grease or other similar substances.
- Charging must be carried out with the truck stopped.
- The increase in the temperature of the unit in relation to the ambient temperature is 10°C maximum. The temperature of the expelled air is 25 °C maximum. Wait 10 minutes after stopping the charger before touching the unit.
- As the charger is cooled by forced ventilation, do not block the air inlets and outlets. There must be sufficient air circulation to the outside.

The Charis HF 2+ charger is designed:

- To be incorporated inside an industrial truck. The charger must never be used alone (out of the truck).
- To stay connected permanently to the battery.
- To operate in all positions.
- To stay connected to the mains during periods when the truck is not being used to ensure

General

General



1	Pump unit	7	Support
2	ISO 8434–1 SDS L12XG3/8A type E CFS V80 union	8	Spring
		9	DACRO CHC M8x40 8.8 A2C NYL screw
3	Lift cylinder	11	8x16x1.4 NFE 25511 washer
4	32x20.2x20 bush	12	M8x40 8.8 A2C NYL ISO 4762 screw
5	6x40 ISO 8752 stud	13	M8 VERBUS RIPP 10 class 100 nut
6	Hose		

– The head of the cylinder lowers and the cylinder can then be released. ▷

– It this is not the case, lift the chassis using a jack to release the head of the cylinder. ▷

– Unscrew the union from the cylinder. ▷