Monofunction proportional radio control for ML 50 – ML 110 ERS

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User manual and spare parts

INDICE

Spare parts

1 Introduction

- This documentation was drawn up by Next Hydraulics, in order to inform the User about the prescriptions and the basic principles for the correct use of the RADIO CONTROL SYSTEM.
- These instructions were drawn up for your safety and for the one of other people.
  Before using this device, always read carefully this manual, especially referring to safety prescriptions (paragraph 2) and to way of use (paragraph 4).
- It is very important that this instructions manual is kept together with the device for any future reading. Should the device be sold or transferred to somebody, make sure that the manual is supplied together with it, so that the new user can be informed on device functioning.
- The user of this device is entrusted with its own safety and the one of people and things lying in its working area; therefore the user must have a detailed knowledge about its functioning.
  In case of any defect noticed, apply to the nearest Service Centre.
- The equipment must not be tampered for any reason.
- Any attempt of modification of the installation, or tampering of whichever part of the equipment from the user or from personnel not expressly authorized from the manufacturer, will invalidate relevant warranty, and will release the manufacturer from every responsibility concerning possible damages to things and people ensuing from such tampering.

NOTE

Next Hydraulics reserves the right to make changes to the product without prior notice for improvement requirements.
In case there are discrepancies between what described in this manual and the device in your possession, please apply to your supplier.

2 Instructions

- The use of the crane by remote control is allowed only to qualified and properly trained operators.
- The operator, standing in a position of perfect visibility, is to make sure that the remote control allows precise, controlled and repetitive load movements.
- Never leave the transmitter unguarded when the ignition key is inserted, and never leave it exposed to the atmospheric agents.
- Always check that the activation of every single manoeuvre doesn't cause the activation, complete or partial, of other manoeuvres.
- At the beginning of any working session, always check the correct operation of the emergency stop: While operating one of the movements, push the emergency stop; the manoeuvre must stop.

ATTENTION

Always follow scrupulously the instructions and the general prescriptions for the use of lifting equipments mentioned in the MAXILIFT crane Use and Maintenance manual.

3 Description of main components

4 Use of the control system

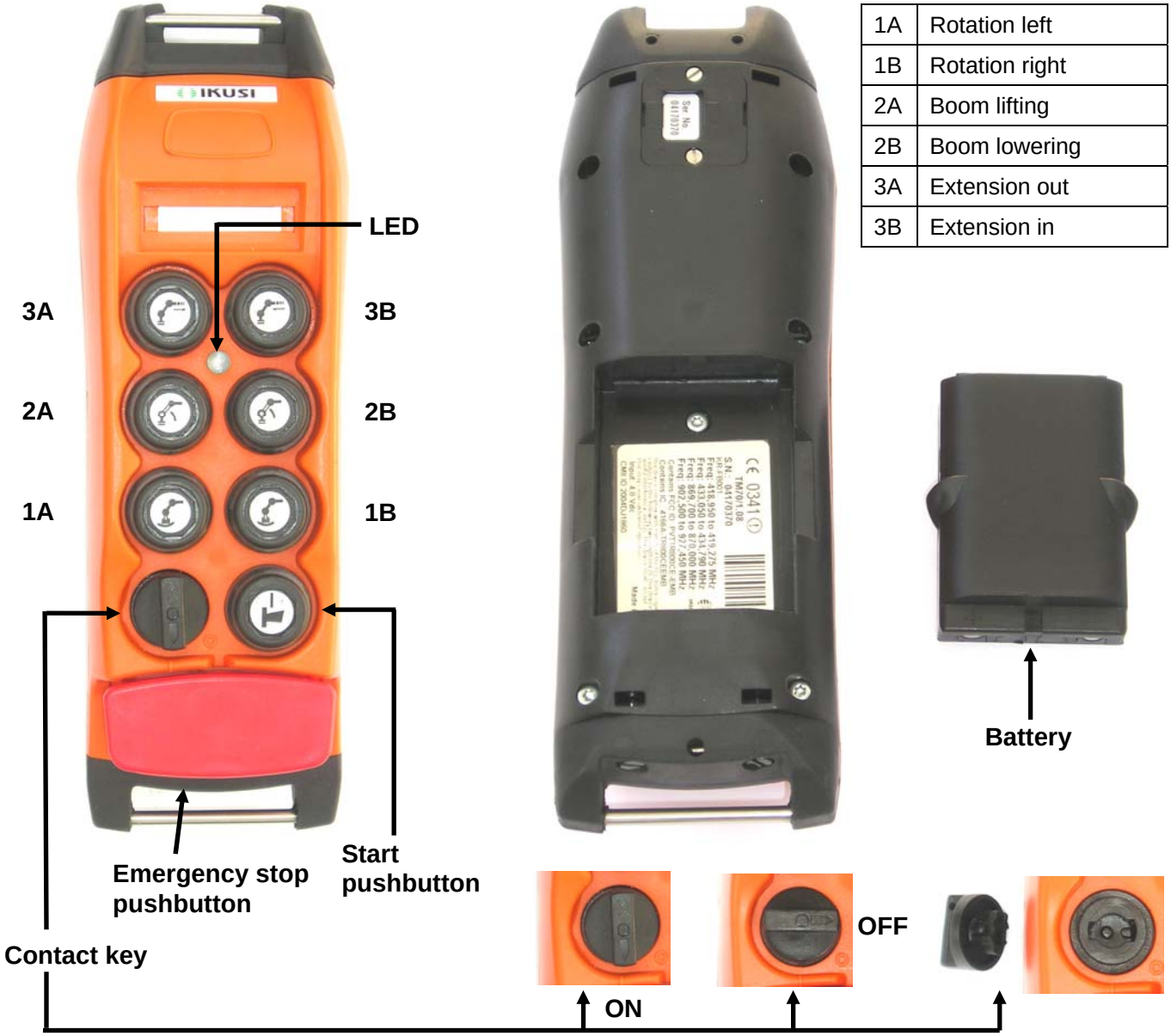
4.1 Use of the crane with radio control

- Turn on the control valve and electric system console, with the ignition switch.
- To turn the transmitter on (see 4.1.1), insert the contact key and turn it, to orientate it with the arrow downwards.
- Unlock the emergency stop, by pulling it. The LED of the transmitter will light up instantaneously with a green-orange pulse, followed by a green one.
- Push the start button (none of the other buttons must be simultaneously pushed). The LED of the transmitter lights up green steady, signalling that the radio communication is active. If the audible warning device (e.g. horn) is connected, it sounds instantaneously. If the flash light is connected, this last turns on and flashes continuously.
- It's possible to activate one single function at a time, by squeezing the relevant pushbutton. The speed of the function will be proportional to the stroke of the pushbutton.
- When terminated a working session, turn the console off with the keyswitch, that must be extracted and put in a safe place. Turn the transmitter off, by pushing the emergency stop. Turn its key counterclockwise to extract it and put it in a safe place.

IMPORTANT
In case of emergency or danger, push the emergency button to stop the crane.

ATTENTION
If the key of the transmitter remains on, with the arrow orientated downwards, the transmitter remains supplied, and therefore, consumes energy of the battery.

4.1.1 Description of transmitter



1A	Rotation left
1B	Rotation right
2A	Boom lifting
2B	Boom lowering
3A	Extension out
3B	Extension in

4.1.2 Status of transmitter battery

The battery charge lasts approximately 8 hours of effective operation.
The battery can be accessed on the rear, for the replacement. Recharging the battery is possible only with the dedicated battery charger (see 4.1.3).
It is suggested to let the battery discharge until it's completelty flat, before starting a new recharge cycle.
The transmitter is equipped with a circuit for monitoring the battery charge level. When this level is lower than the pre-estabilished limit, the LED emits one single red flash, and 5 minutes later, the transmitter turns off. For this reason, within these 5 minutes, it's essential to put the load down and fold the crane, or replace the battery with the spare one, if charged.
In order to avoid a useless power consumption of the battery, the transmitter goes in Standby, if for 4 minutes, none of the function is activated. In this condition, the LED flashes green and the radio transmission is no longer active. To activate it again, it's necessary to press the start pushbutton.

4.1.3 Battery charger

A complete battery recharge can last maximum 2 hours.
Nevertheless,the battery can be left in recharge for an unlimited time.
The recharge must take place at temperatures between 0°C and 45°C.
It's possible to recharge two batteries, simultaneously.
The central LED (POWER) lights up red steady to indicate the presence of power supply.
Each compartment has its relevant LED:

- LED flashing green: low battery; when the LED lights up green steady, the normal charging process starts.
- LED green steady: normal charging process
- LED off: charging process terminated.

The batteries capacity decreases with the use.
The estimated life duration is 500 recharge cycles, but it depends from the conditions of use, for which the following is recommended:

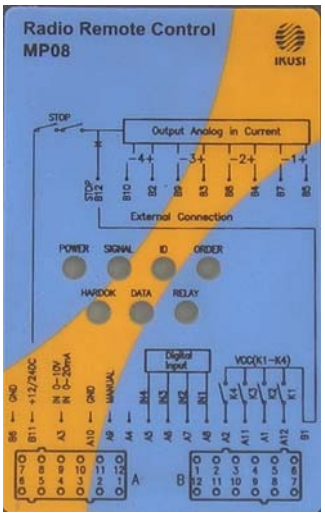
- Don't recharge the batteries if not completely flat (the transmitter signalizes this situation).
- Don't leave the battery charger in environments subject to the direct action of the sunlight.
- Charge the batteries at least once every 6 months.
- Don't carry the batteries in toolboxes or with other metal objects (keys, coins, ect.), to avoid short circuits between the contacts.
- Keep the contacts clean.
- Don't expose the battery to the sunlight.
- Use IKUSI original batteries only.

Technical specifications:

- Supply voltage: 10.5÷35 Vcc
- Power 7W

4.1.4 Indications of the LEDs of the receiver in regular functioning

1) With transmitter off or on, but before pressing the start pushbutton:
POWER and HARDOK: lit up steady
SIGNAL: flashing slow
ID, ORDER, DATA, RELAY: off



2) After having the start pushbutton pressed:
POWER, HARDOK and RELAY: lit up steady
SIGNAL: flashing irregularly
ID and DATA: flashing fast simultaneously
ORDER: off

3) By activating a function:
POWER, HARDOK and RELAY: lit up steady
SIGNAL: flashing irregularly
ID and DATA: flashing fast simultaneously
ORDER: lit up steady, as long as the function is active

4.2 Radio system diagnostics

Table of the meanings of the receiver LEDs indications

LED	**Lit up steady**	**Flashing**	**Off**
POWER	Voltage supply OK		No voltage supply
HARDOK	Electronic circuits OK	Slow: Fault in the electronic circuits Fast: EEPROM error	Fault in the electronic circuits
SIGNAL	Radio signal OK	Radio signal present in the channel	No signal
DATA		Correct signal received from the transmitter	No signal from the transmitter
ID		Correct identifier	Identifier not recognized
RELAY	Link output activated		
ORDER	Digital output of a function activated		

Table of the meanings of the transmitter LEDs indications

LED indication	**Meaning**
Green steady	Transmitter in operation and connected with the receiver
Green flashing	STANDBY mode: waiting for the start order or for the link confirmation signal from the riceiver
Red flashing single slow	Low battery
Red flashing single fast	EEPROM not plugged or corrupted
Red flashing double	➢ A pushbutton activated while pushing the start button prevents the starting of the transmitter ➢ Fault in the transmitter, if no pushbutton is activated
Red steady	Fault in the transmitter

4.3 Use of the crane in emergency (electric system or radio failure)

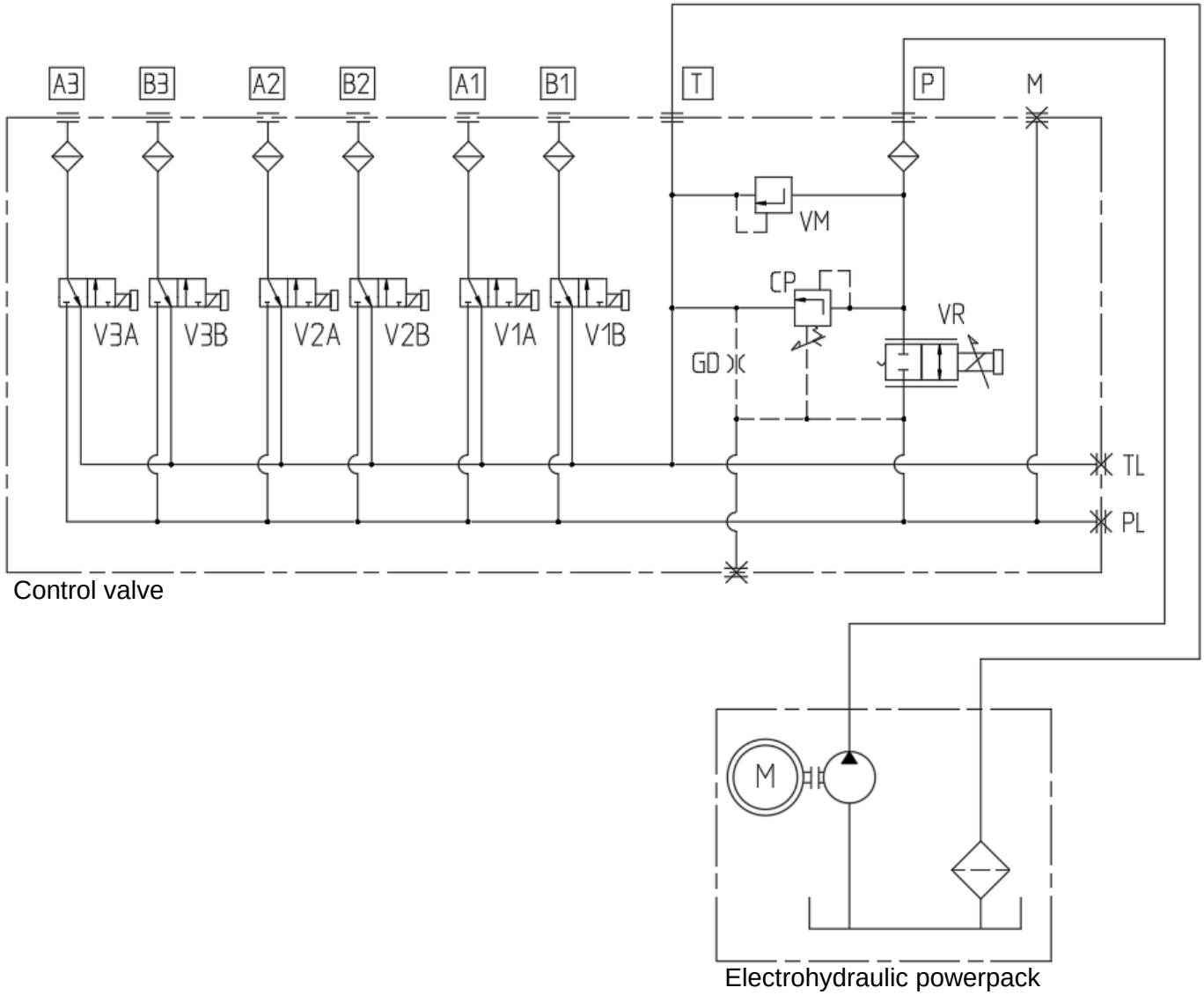
In case of failure either of the electric system or of the radio, it's possible to operate the crane manually, with the only purpose of folding it to reach the nearest service workshop.

1) Access the control valve, by lifting the casing.
2) Fully unscrew the manual operator (**1**) of the valve associated to the function to be operated (see 4.1.1).
3) Activate the electropump by connecting the two emergency wires (**2** and **3**) each other.
4) Gradually screw the manual operator (**4**) of the proportional valve, depending on the desired speed.
5) When terminated the operation, disconnect the two emergency wires.

Once the regular functioning of the system is restored, by authorized personnel, the manual operators must be brought to the original conditions.

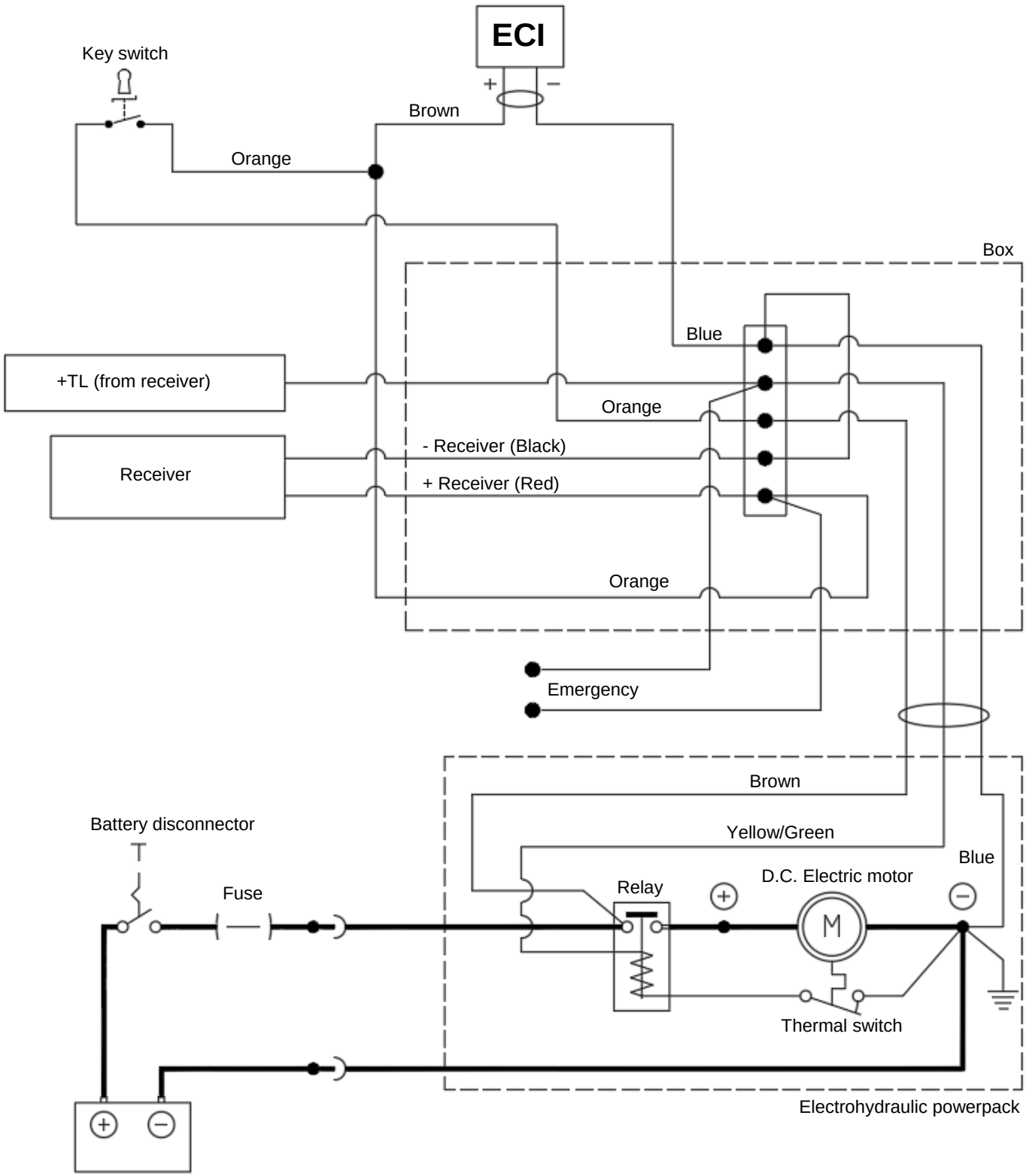
5 Diagrams

5.1 Hydraulic diagram

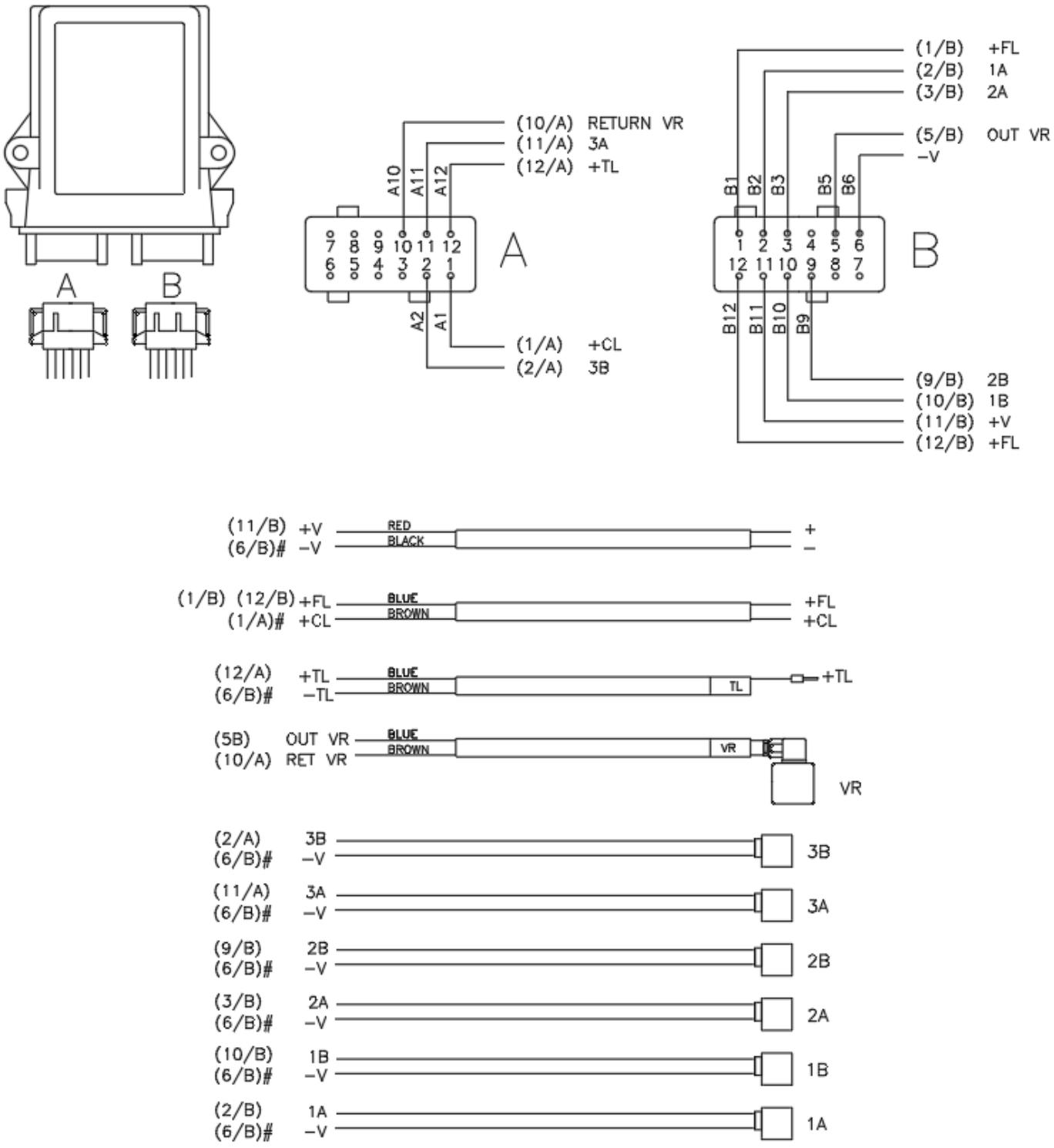


- **V1A-V3B** Functions control solenoid valves
- **VR** Proportional regulator
- **CP** Oil flow compensator
- **VM** Relief valve
- **GD** Outflow restrictor
- **PL** Pressure line
- **TL** Return line
- **M** Port for manometer

5.2 Electric system wiring diagram



5.3 Harness wiring diagram



6 Currents calibrations

It's possible to adjust the maximum speed or optimize the point the movement starts in respect of the stroke of transmitter's buttons. It's not possibile to adjust the parameters for each single movement, rather the parameters will be common for any of the movements.
The calibration procedure doesn't activate the electropump. Therefore, this last must be activated, by connecting the two emergency wires (paragraph 4.3, point 3) each other.
The calibration is possible in the following two conditions:

- Without multimeter: it's indispensable to activate the electropump with the emergency wires.
- With multimeter series connected with the proportional solenoid (below picture), to visualize the parameters: it's not indispensable to activate the electropump with the emergency wires, but anyway advised.

In any case, the procedure for changing the parameters from the transmitter, is always the same:
The receiver must be turned on and the transmitter activated by the released emergency button, but without having pressed the start button.

1 Press simultaneously the start button and the 3B button (see 4.1.1) until the LED lights up orange steady (after approximately 5 seconds). This indicates the maximum current menu.
The calibration takes place only on the movement 3A (extension out). Therefore, it's necessary to keep its button pressed while pressing the button 3B for increasing, or 2B for decreasing. By activating the electropump, try to operate all the movements normally, in order to check that the modified parameter is suitable. Release all the buttons.

2 Press the start button, to access the minimum current menu, indicated by the LED lit up green steady. Calibration and check: like at point 1.

3 Press the start button. The LED lights up orange steady: menu not used.

4 Press the start button. The LED lights off.

5 Press the start button for 5 seconds to store the parameters. The LED flashes orange double.

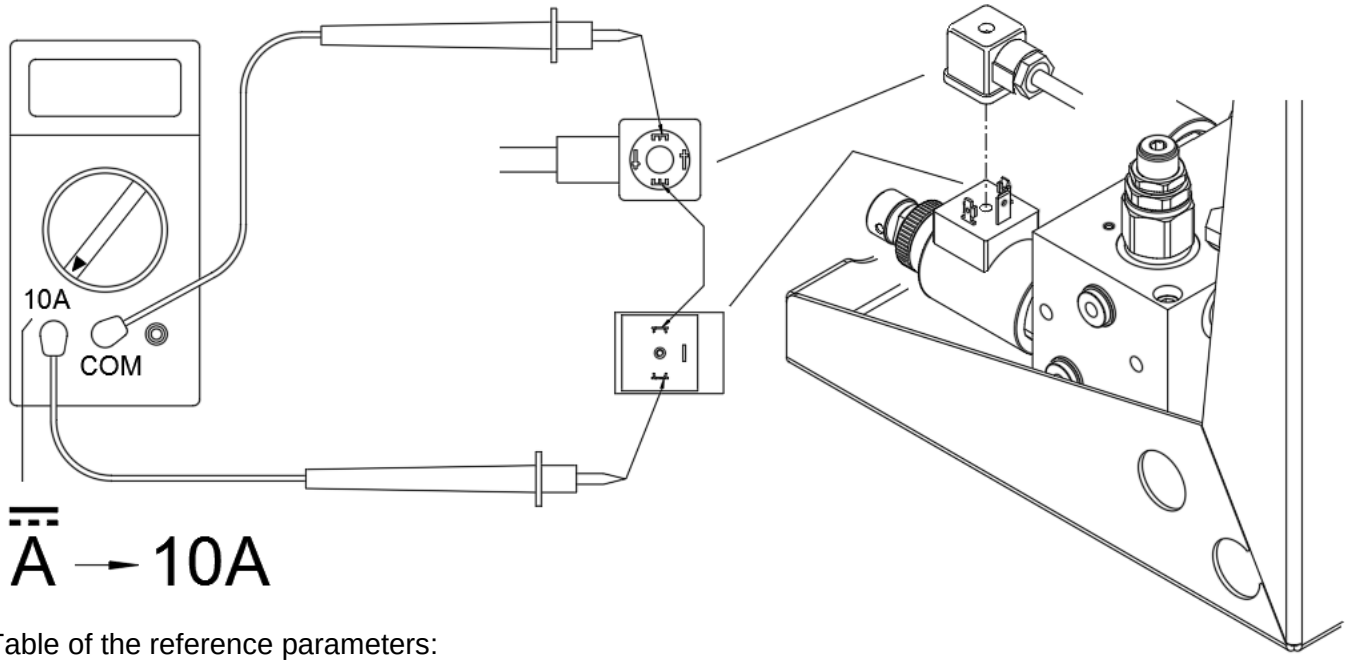


Table of the reference parameters:

Crane model	Maximum current	Minimum current
ML50 12V	850 mA	450 mA
ML50 24V	450 mA	180 mA
ML110 12V	1010 mA	380 mA
ML110 24V	850 mA	260 mA

7 Technical specifications of the radio system

Version – Nominal frequency	434 MHz	915 MHz
Frequency range	433.05 ÷ 434.79 MHz - 70 channels	914.15 ÷ 915.875 MHz - 70 channels
Maximum operating range	150 m	
Transmitter radio frequency output power	< 1 mW e.r.p. – 433.05 ÷ 434.04 < 10 mW e.r.p. – 434.04 ÷ 434.79	< 5 mW e.r.p.
Receiver response time for passive emergency	< 2000 ms	
Transmitter environmental protection	IP65	
Receiver environmental protection	IP65	
Transmitter weigth (with battery)	0.44 kg	
Battery endurance	8 hours	
Operating temperature range	-20°C ÷ +65°C	

7.1 Working frequencies

This radio system (both in 434 and 915 version) works with the free channel automatic selection (LBT= Listen before transmitting): Both the transmitter and the receiver, explore the busy channels, and decide autonomously the operating channel. In case of interference signal, the device automatically switches to another free channel.
In the following tables, the frequencies assigned to each channel are listed.
Only for the 434, the power automatically adjusts to the allowed levels, depending on the channels (1mW on channels from 1 to 40; 10 mW on channels from 41 to 70).
The working frequency of the radio system in one's own possession is written on the production sheet of the radio kit, but as explained above, it can switch among those of all of the available channels. The radio system is identified by the serial numbers of transmitter and receiver, also written on the production sheet, together with the identifier.

434			
Channel	**MHz**	**Channel**	**MHz**
01	433.050	36	433.925
02	433.075	37	433.950
03	433.100	38	433.975
04	433.125	39	434.000
05	433.150	40	434.025
06	433.175	41	434.050
07	433.200	42	434.075
08	433.225	43	434.100
09	433.250	44	434.125
10	433.275	45	434.150
11	433.300	46	434.175
12	433.325	47	434.200
13	433.350	48	434.225
14	433.375	49	434.250
15	433.400	50	434.275
16	433.425	51	434.300
17	433.450	52	434.325
18	433.475	53	434.350
19	433.500	54	434.375
20	433.525	55	434.400
21	433.550	56	434.425
22	433.575	57	434.450
23	433.600	58	434.475
24	433.625	59	434.500
25	433.650	60	434.525
26	433.675	61	434.550
27	433.700	62	434.575
28	433.725	63	434.600
29	433.750	64	434.625
30	433.775	65	434.650
31	433.800	66	434.675
32	433.825	67	434.700
33	433.850	68	434.725
34	433.875	69	434.750
35	433.900	70	434.775

915			
Channel	**MHz**	**Channel**	**MHz**
01	914.150	36	915.025
02	914.175	37	915.050
03	914.200	38	915.075
04	914.225	39	915.100
05	914.250	40	915.125
06	914.275	41	915.150
07	914.300	42	915.175
08	914.325	43	915.200
09	914.350	44	915.225
10	914.375	45	915.250
11	914.400	46	915.275
12	914.425	47	915.300
13	914.450	48	915.325
14	914.475	49	915.350
15	914.500	50	915.375
16	914.525	51	915.400
17	914.550	52	915.425
18	914.575	53	915.450
19	914.600	54	915.475
20	914.625	55	915.500
21	914.650	56	915.525
22	914.675	57	915.550
23	914.700	58	915.575
24	914.725	59	915.600
25	914.750	60	915.625
26	914.775	61	915.650
27	914.800	62	915.675
28	914.825	63	915.700
29	914.850	64	915.725
30	914.875	65	915.750
31	914.900	66	915.775
32	914.925	67	915.800
33	914.950	68	915.825
34	914.975	69	915.850
35	915.000	70	915.875

8 Declaration of radio remote control installation

⚠ WARNING !

During the installation phase it is necessary to make sure that:

- **the radio remote control and the machine work together according to the regulation currently in force and to the safety characteristics of the machine as supplied by the manufacturer;**
- **all the functions of the radio remote control, as well as their conformity on the equipped machine have been completely checked and tested; this includes in particular the Emergency Stop function.**

IKUSI is not responsible of the remote control's installation; the installer is therefore required to issue the operator a Declaration of Installation that must be kept together with this manual by the operator. A template for the declaration of Installation is shown below.

DECLARATION OF RADIO REMOTE CONTROL INSTALLATION

I, the undersigned _____

born in _____ State/Province_____ on _____

legally responsible for the installing Company _____

with its headquarters in _____

DECLARE:

1 – to have installed on _____ on the machine of brand _____

type _____ serial number _____

at the Company _____

located in (street) _____ (Town/City) _____

a Radio Remote Control System branded IKUSI

system n° _____

2 – that the installation has been carried out according to the regulations currently in force for the type of machine being equipped and that all these regulations have been observed;

3 – that the interface between the machine and the receiver is suitable and has been properly manufactured according to the instructions provided by the manufacturer, and that all the necessary tests have been carried out.

.

On this day of _____ in _____

Signature and stamp of the Installer _____

THIS SPARE PARTS CATALOGUE IS FOR THE MAXILIFT LOADER

INTRODUCTION

The catalogue has several main suddivisions.Each of them embraces a main component groupping. Each illustration is followed by the corresponding written material. Parts shown in the illustrations are numbered by position starting with number 1. This position number is listed with the written material opposite the part number, quantity per loader and description of the appropriate part.

INTERPRETATION OF THE SIGNS FOR PAGE NUMBERS

ML 110 **TR.22.23.0** **01/19**

Lader type *Plates* *Edition*

ORDERING SPARE PARTS

When ordering spare parts please:
1 - Include the part number, description and quantity desired.
2 - Include your complete address.
3 - Specify how the parts are to be sent.
4 - List the desired parts in sequence by part number.
5 - When ordering spare parts for one particular stabilizer, please always indicate the type and the serial number. This information is given on a plate mounted on the main beam.

CE CATALOGUE EST POUR LES PIECES DE RECHANGE DU TYPE DE GRUE MAXILIFT

INTRODUCTION

Ce catalogue a plusieurs subdivisions principaux. Chacune de ces subdivisions embrace un regroupement des composantes prinsipaux.
Chaque illustration est suivie par le correspondant materiel écrit. Les pièces montrées dans les illustrations sont nombrées à partir du number 1. Le nombre de position est dressé avec le materiel écrit poosé au numero de la pièce, quantité par grue et description de la pertie convenable.

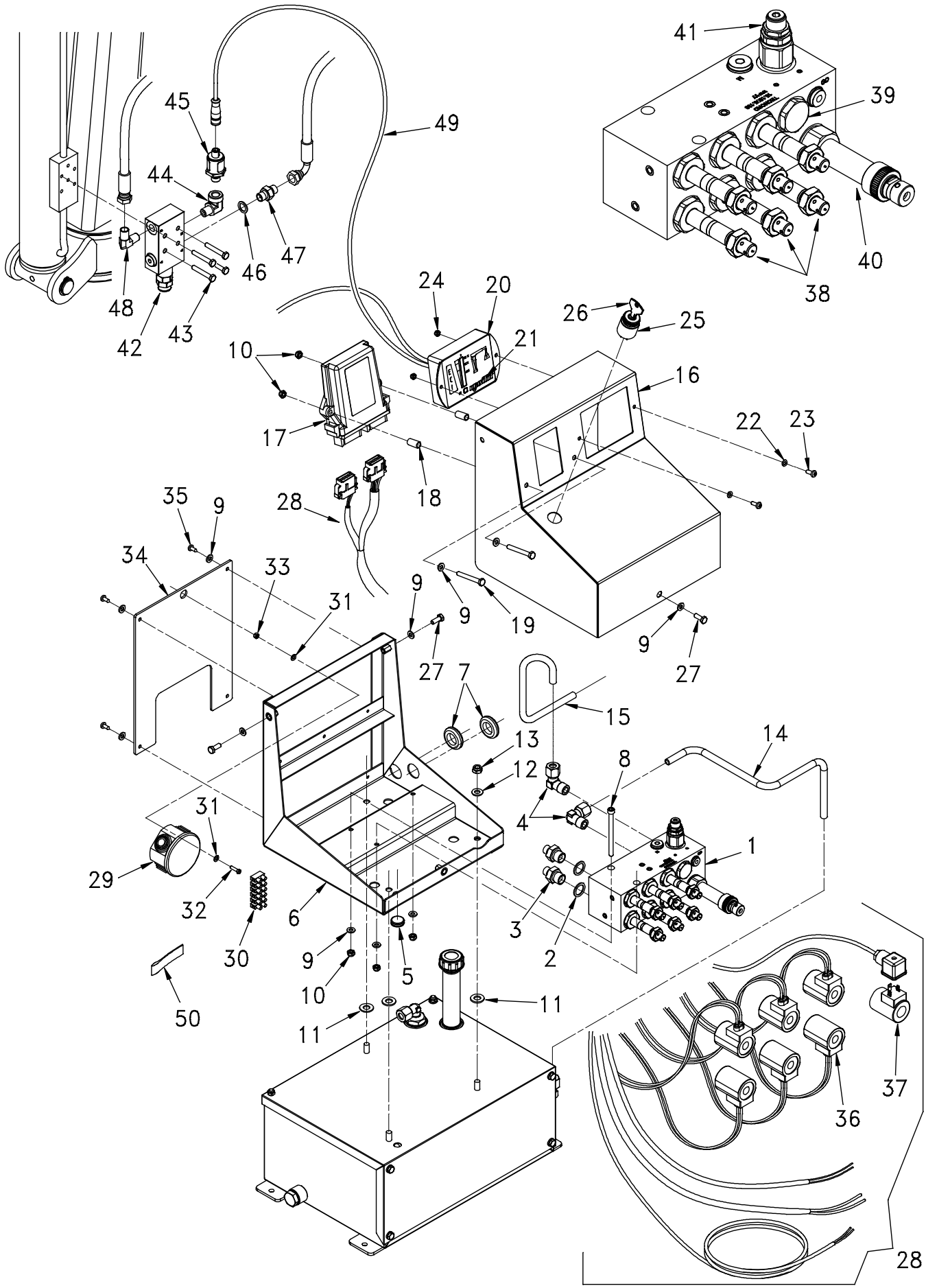
INTERPRETATION DES SYMBOLES POUR LES NUMBRES DES PAGES

ML 110 **TR.22.23.0** **01/19**

Grue type Tableaux Edition

POUR COMMANDER LES PIECES DE RECHANGE

Quand vous commendez les pièces de rechange:
1 - Includez le numero de la pièce, sa description et la quantité désidérée.
2 - Includez votre adresse complete.
3 - Spécifiez comment les pièces doivent etre envoyées.
4 - Spécifiez les pièces desirées en sequence avec le numero de la pièce.
5 - Quand vous commandez les pièces de rechange pour une traverse particulière indiquez le type et son numero de série. Cette information est indiquée sur la plaque placée sur la traverse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28

Pos.	Codice	Qt.	Denominazione	Description	Désignation	Benennung	Denominaciòn
1	DI.2.056	1	DISTRIBUTORE	CONTROL VALVE	DISTRIBUTEUR	STEUERBLOCK	DISTRIBUIDOR
2	RO.7.002	6	RONDELLA DI TENUTA	WASHER	RONDELLE	UNTERLEGSCHEIBE	ARANDELA
3	NI.1.002	6	NIPPLO	NIPPLE	NIPPLE	NIPPLE	NIPLE
4	RA.1.303	2	RACCORDO	FITTING	RACCORD	FITTING	RACORD
5	PC.0.005	1	PASSACAVO	GROMMET	JOINT EN CAOUTCHOUC	GUMMISCHUTZ	GUARNICION GOMA
6	22.5.017	1	SUPPORTO DISTRIB.	SUPPORT	SUPPORT	LAGER	SOPORTE
7	PC.0.001	2	PASSACAVO	GROMMET	JOINT EN CAOUTCHOUC	GUMMISCHUTZ	GUARNICION GOMA
8	VT.1.029	3	VITE	SCREW	VIS	SCHRAUBE	TORNILLO
9	RO.2.003	12	RONDELLA	WASHER	RONDELLE	UNTERLEGSCHEIBE	ARANDELA
10	DA.2.001	5	DADO	NUT	ECROU	MUTTER	TUERCA
11	RO.2.005	3	RONDELLA	WASHER	RONDELLE	UNTERLEGSCHEIBE	ARANDELA
12	RO.2.004	3	RONDELLA	WASHER	RONDELLE	UNTERLEGSCHEIBE	ARANDELA
13	DA.2.002	3	DADO AUTOBLOCCANTE	STOP NUT	ECROU DE SURETE	SPERRMUTTER	TUERCA AUTOTRABAD.
14	TU.0.288	1	TUBO RIGIDO	PIPE	TUBE RIGIDE	STARRES ROHR	TUBO RIGIDO
15	TU.0.289	1	TUBO RIGIDO	PIPE	TUBE RIGIDE	STARRES ROHR	TUBO RIGIDO
16	22.5.016	1	CARTER	CASING	CARTER	GEHÄUSE	CARTER
17A	TC.1.042	1	RICEVITORE 434	RECEIVER UNIT 434	RECEPTEUR 434	EMPFÄNGER 434	RECEPTOR 434
17B	TC.1.043	1	RICEVITORE 915	RECEIVER UNIT 915	RECEPTEUR 915	EMPFÄNGER 915	RECEPTOR 915
18	23.5.008	2	DISTANZIALE	SPACER	ENTRETOISE	DISTANZHULSE	DISTANCIADOR
19	VT.0.017	2	VITE	SCREW	VIS	SCHRAUBE	TORNILLO
20	LM.1.014	1	INDICATORE DI CARICO	LIFTINGCAPACITYINDICATOR	VISUALIZATEURDECHARGE	HUBKAPAZITÄTANZEIGER	VISUALIZATOR DE CARGA
21	DC.0.264	1	DECALCOMANIA	TRANSFER	DECALCOMANIE	AUFKLEBER	CALCOMANIA
22	RO.2.002	2	RONDELLA	WASHER	RONDELLE	UNTERLEGSCHEIBE	ARANDELA
23	VT.6.004	2	VITE	SCREW	VIS	SCHRAUBE	TORNILLO
24	DA.2.010	2	DADO	NUT	ECROU	MUTTER	TUERCA
25	IT.0.001	1	INTERRUT. A CHIAVE	KEYSWITCH	INTERRUPT A CLEF	SCHLUSSELSCHALTER	INTERRUPTOR A LLAVE
26	IT.0.001/91	1	CHIAVE	KEY	CLEF	SCHLUSSEL	LLAVE
27	VT.0.008	3	VITE	SCREW	VIS	SCHRAUBE	TORNILLO
28A	CV.0.154	1	CABLATO 12V	HARNESS 12V	CABLE 12V	KABEL 12V	CABLE 12V
28B	CV.0.155	1	CABLATO 24V	HARNESS 24V	CABLE 24V	KABEL 24V	CABLE 24V
29	SD.0.007	1	SCATOLA	BOX	BOITE	KASTEN	CAJA
30	CN.2.019	0.5	MORSETTIERA	JUNCTION BAR	PLAQUE A BORNES	KLEMMBRETT	BORNE
31	RO.2.001	2	RONDELLA	WASHER	RONDELLE	UNTERLEGSCHEIBE	ARANDELA
32	VT.6.007	1	VITE	SCREW	VIS	SCHRAUBE	TORNILLO
33	DA.2.006	1	DADO	NUT	ECROU	MUTTER	TUERCA
34	22.5.018	1	PIASTRA	PLATE	PLAQUETTE	PLAETTCHEN	PLACA
35	VT.5.001	4	VITE	SCREW	VIS	SCHRAUBE	TORNILLO
36A	SN.0.007	6	SOLENOIDE 12V	SOLENOID 12V	SOLÉNOÏDE12V	SOLENOID 12V	SOLENOIDE 12V
36B	SN.0.008	6	SOLENOIDE 24V	SOLENOID 24V	SOLÉNOÏDE 24V	SOLENOID 24V	SOLENOIDE 24V
37A	SN.0.023	1	SOLENOIDE 12V	SOLENOID 12V	SOLÉNOÏDE 12V	SOLENOID 12V	SOLENOIDE 12V
37B	SN.0.024	1	SOLENOIDE 24V	SOLENOID 24V	SOLÉNOÏDE 24V	SOLENOID 24V	SOLENOIDE 24V
38	DI.2.011	6	VALVOLA DIREZIONALE	FUNCTION VALVE	SOUPAPE	VENTIL	VALVULA
39	DI.2.038/02	1	COMPENSATORE	COMPENSATOR	COMPENSATEUR	KOMPENSATOR	COMPENSADOR
40	DI.2.056/01	1	VALVOLA PROPORZIONALE	PROPORTIONAL VALVE	SOUPAPE PROPORTION.	PROPORTIONALVENTIL	VALVULA PROPORCIONAL
41	DI.2.056/02	1	VALVOLA DI MASSIMA	RELIEF VALVE	SOUPAPE LIMIT. PRESS.	DRUCKBEGRENZVENTIL	VALVULA LIMIT. PRES.
42	VA.1.028	1	VALVOLA	VALVE	SOUPAPE	VENTIL	VALVULA
43	VT.0.015	4	VITE	SCREW	VIS	SCHRAUBE	TORNILLO
44	RA.1.323	1	RACCORDO	FITTING	RACCORD	FITTING	RACORD
45	LM.1.013	1	TRASDUTTORE	PRESSURE GAUGE	TRANSDUCTEUR	DRUCKGEBER	TRANSDUCTOR
46	RO.7.001	1	RONDELLA DI TENUTA	WASHER	RONDELLE	UNTERLEGSCHEIBE	ARANDELA
47	NI.1.001	1	NIPPLO	NIPPLE	NIPPLE	NIPPLE	NIPLE
48	RA.1.321	1	RACCORDO	FITTING	RACCORD	FITTING	RACORD
49	LM.1.011/01	1	CAVO E CONNETTORE	CABLE	CABLE	KABEL	CABLE
50	DC.0.354	1	DECALCOMANIA	TRANSFER	DECALCOMANIE	AUFKLEBER	CALCOMANIA

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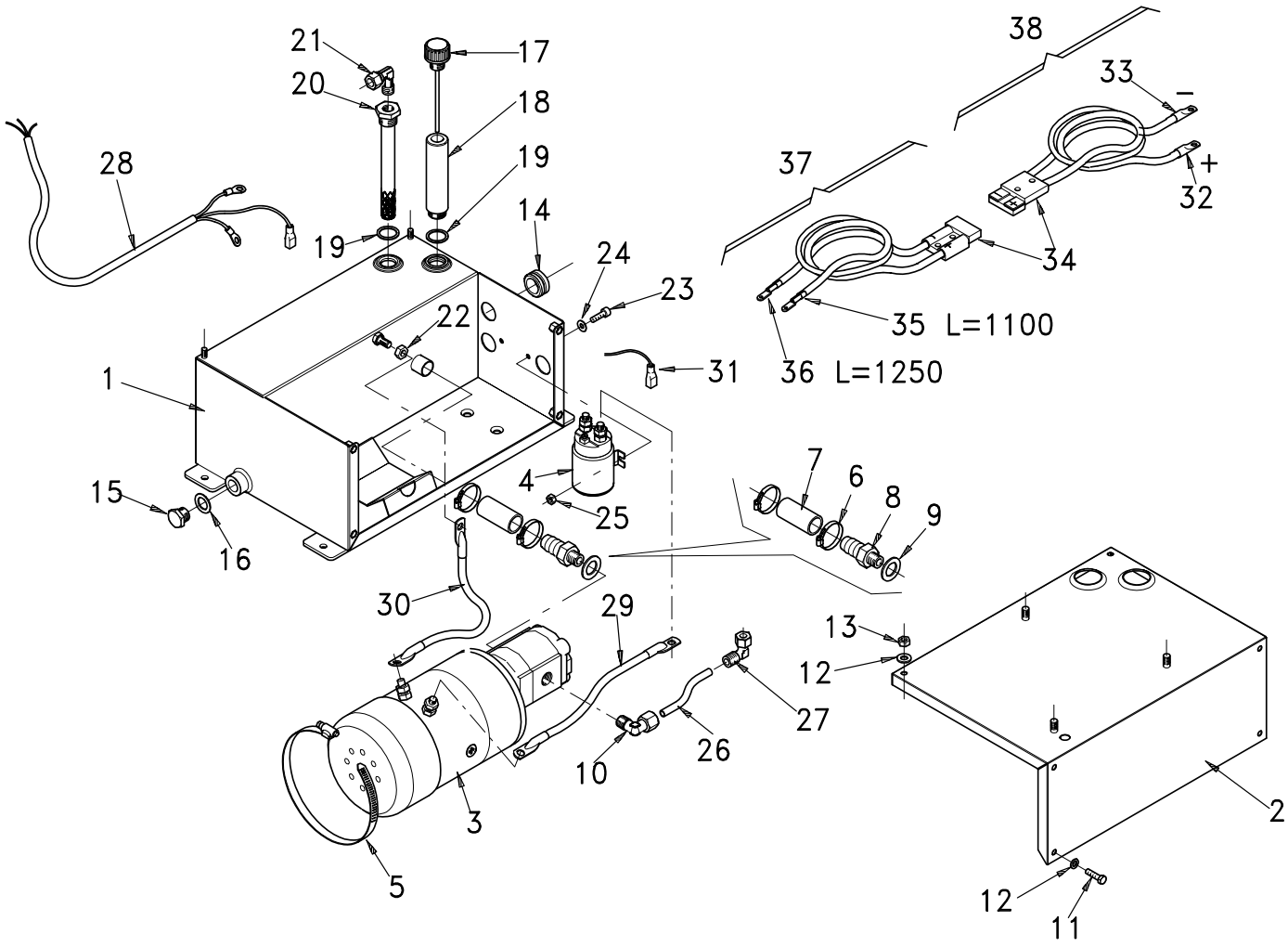

Pos.	Codice	Qt.	Denominazione	Description	Désignation	Benennung	Denominaciòn
1	22.5.001	1	SERBATOIO	TANK	RESEVOIR	TANK	DEPOSITO
2	22.5.002	1	COPERCHIO	COVER	COUVERCLE	DECKEL	TAPA
3A	EP.0.025	1	ELETTROPOMPA 12V	POWER UNIT 12V	POMPE ELEC. 12V	ELEK. PUMPE 12V	BOMBA ELEC. 12V
3B	EP.0.026	1	ELETTROPOMPA 24V	POWER UNIT 24V	POMPE ELEC. 24V	ELEK. PUMPE 24V	BOMBA ELEC. 24V
4A	RL.0.010	1	TELERUTTORE 12V	SOLENOID 12V	RELAIS 12V	RELAIS 12V	CONTACTOR 12V
4B	RL.0.011	1	TELERUTTORE 24V	SOLENOID 24V	RELAIS 24V	RELAIS 24V	CONTACTOR 24V
5	FS.1.003	1	FASCETTA	CLAMP	COLLIER	HALTEBAND	ABRAZADERA
6	FS.1.005	2	FASCETTA	CLAMP	COLLIER	HALTEBAND	ABRAZADERA
7	TF.5.001	1	TUBO FLESSIBILE	HOSE	TUYAU FLEXIBLE	SCHLAUCH	TUBO FLEXIBLE
8	RA.1.251	1	RACCORDO	FITTING	RACCORD	FITTING	RACORD
9	RO.7.008	1	RONDELLA	WASHER	RONDELLE	UNTERLEGSCHEIBE	ARANDELA
10	RA.1.302	1	RACCORDO	FITTING	RACCORD	FITTING	RACORD
11	VT.0.008	4	VITE	SCREW	VIS	SCHRAUBE	TORNILLO
12	RO.2.003	6	RONDELLA	WASHER	RONDELLE	UNTERLEGSCHEIBE	ARANDELA
13	DA.2.001	2	DADO	NUT	ECROU	MUTTER	TUERCA
14	PC.0.001	3	PASSACAVO	GROMMET	JOINT EN CAOUTCHOUC	GUMMISCHUTZ	GUARNICION GOMA
15	TA.1.002	1	TAPPO	CAP	BOUCHON	VERSCHLUSS	TAPON
16	RO.7.002	1	RONDELLA	WASHER	RONDELLE	UNTERLEGSCHEIBE	ARANDELA
17	TA.3.001	1	TAPPO	CAP	BOUCHON	VERSCHLUSS	TAPON
18	22.5.003	1	PROLUNGA	EXTENSION	RALLONGE	VERLANGERUNG	EXTENSION
19	RO.7.023	2	RONDELLA	WASHER	RONDELLE	UNTERLEGSCHEIBE	ARANDELA
20	22.5.013	1	FILTRO	FILTER	FILTRE	FILTER	FILTRO

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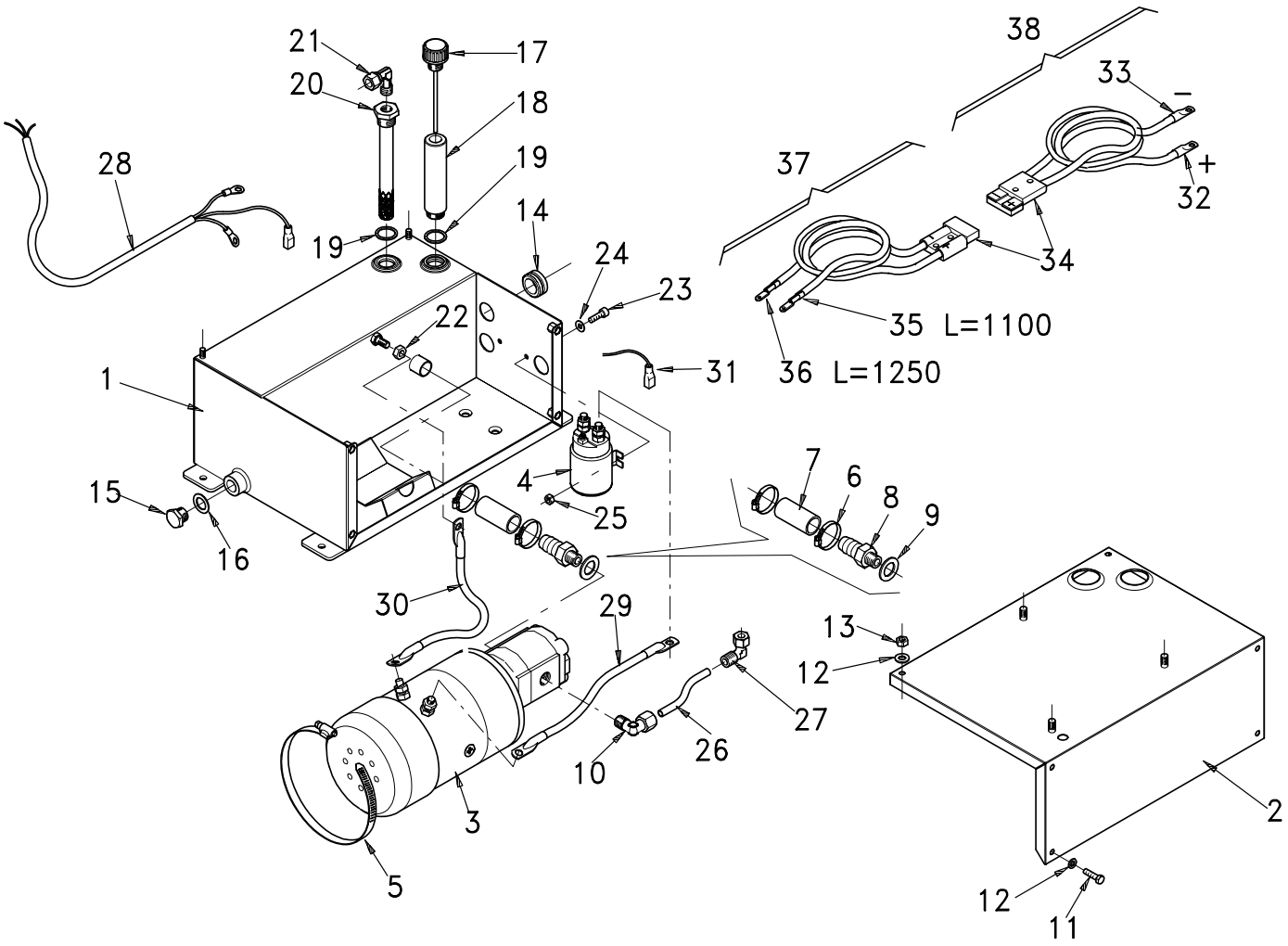
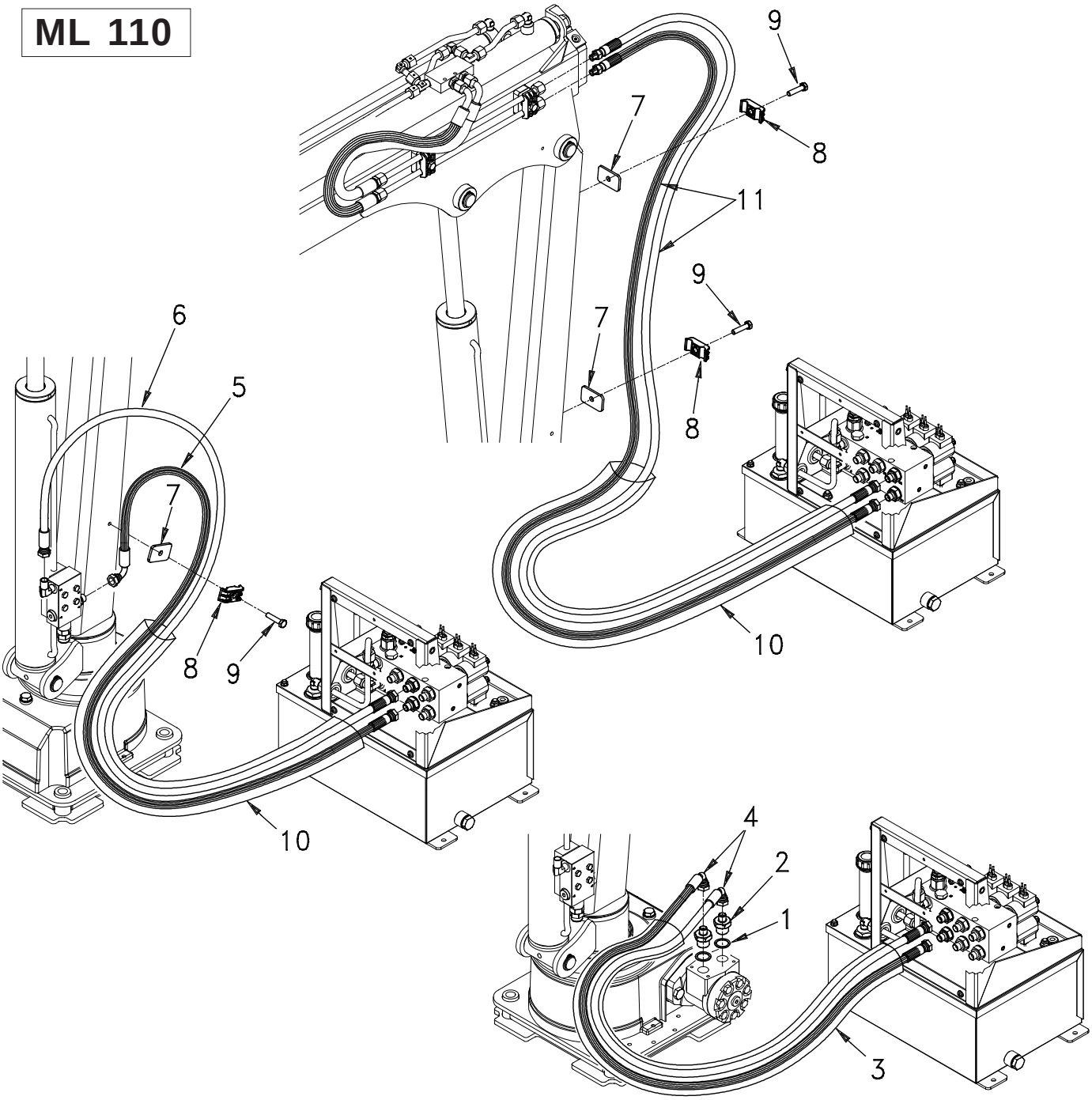


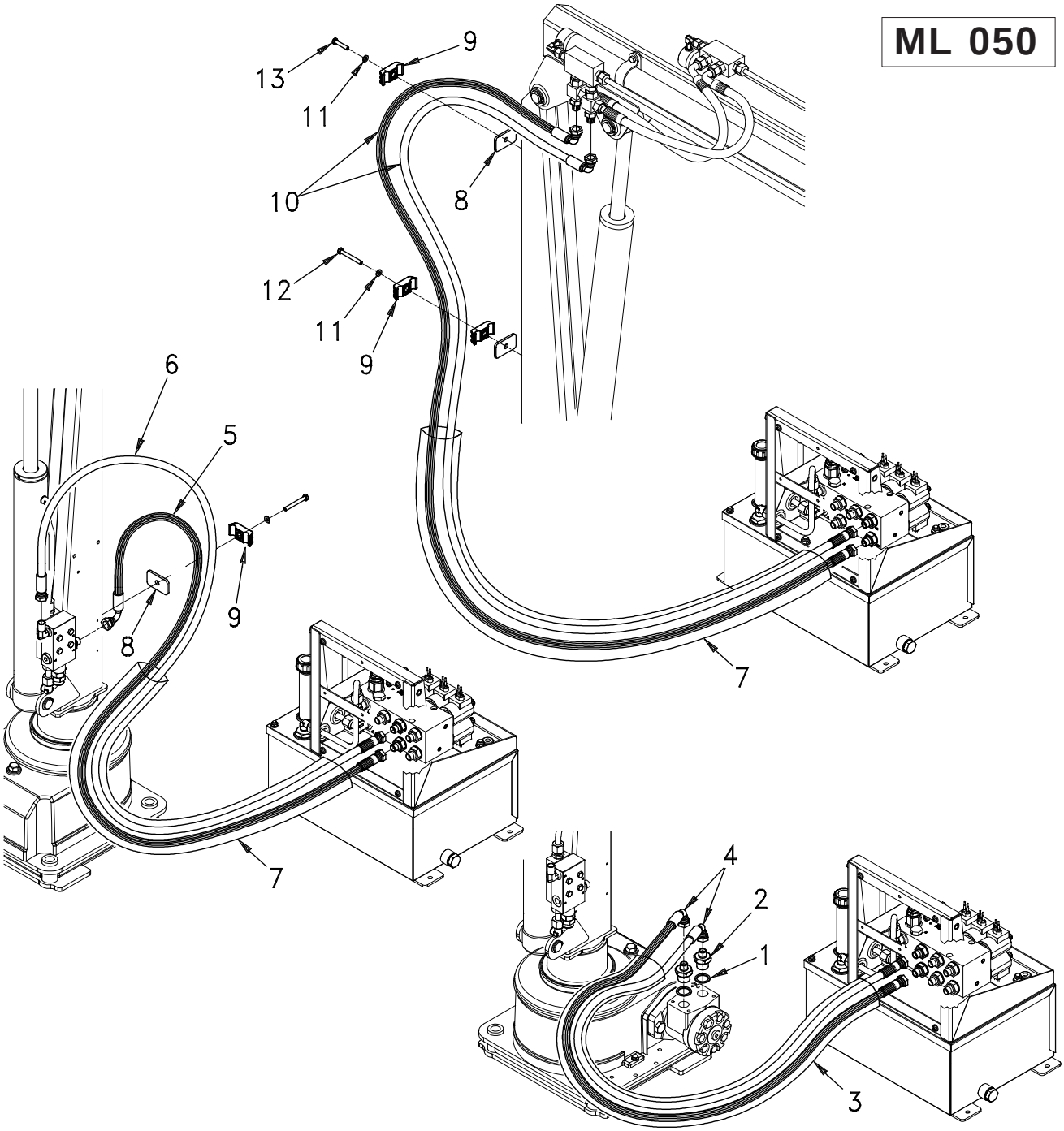
Pos.	Codice	Qt.	Denominazione	Description	Désignation	Benennung	Denominaciòn
21	RA.1.301	1	RACCORDO	FITTING	RACCORD	FITTING	RACORD
22	DA.1.008	1	DADO	NUT	ECROU	MUTTER	TUERCA
23	VT.6.004	2	VITE	SCREW	VIS	SCHRAUBE	TORNILLO
24	RO.2.002	2	RONDELLA	WASHER	RONDELLE	UNTERLEGSCHEIBE	ARANDELA
25	DA.1.005	2	DADO	NUT	ECROU	MUTTER	TUERCA
26	TU.0.197	1	TUBO RIGIDO	PIPE	TUBE RIGIDE	STARRES ROHR	TUBO RIGIDO
27	RA.1.351	1	RACCORDO	FITTING	RACCORD	FITTING	RACORD
28	CV.0.111	1	CAVO	CABLE	CABLE	ELEKTROKABEL	CABLE
29	CV.0.105	1	CAVO	CABLE	CABLE	ELEKTROKABEL	CABLE
30	CV.0.106	1	CAVO	CABLE	CABLE	ELEKTROKABEL	CABLE
31	CV.0.107	1	CAVO	CABLE	CABLE	ELEKTROKABEL	CABLE
32A	CV.0.104	1	CAVO L=2000	CABLE	CABLE	ELEKTROKABEL	CABLE
32B	CV.0.104-L	1	CAVO L=4000	CABLE	CABLE	ELEKTROKABEL	CABLE
33A	CV.0.103	1	CAVO L=2000	CABLE	CABLE	ELEKTROKABEL	CABLE
33B	CV.0.103-L	1	CAVO L=4000	CABLE	CABLE	ELEKTROKABEL	CABLE
34	CN.1.017	2	CONNETTORE .	CONNECTOR	CONNECTEUR	VERBINDER	CONECTOR
35	CV.0.102	1	CAVO	CABLE	CABLE	ELEKTROKABEL	CABLE
36	CV.0.101	1	CAVO	CABLE	CABLE	ELEKTROKABEL	CABLE
37	CV.0.108	1	CABLATO COMPLETO				
38A	CV.0.109	1	CABLATO COMPLETO L=2000				
38B	CV.0.109-L	1	CABLATO COMPLETO L=4000				

ML 110

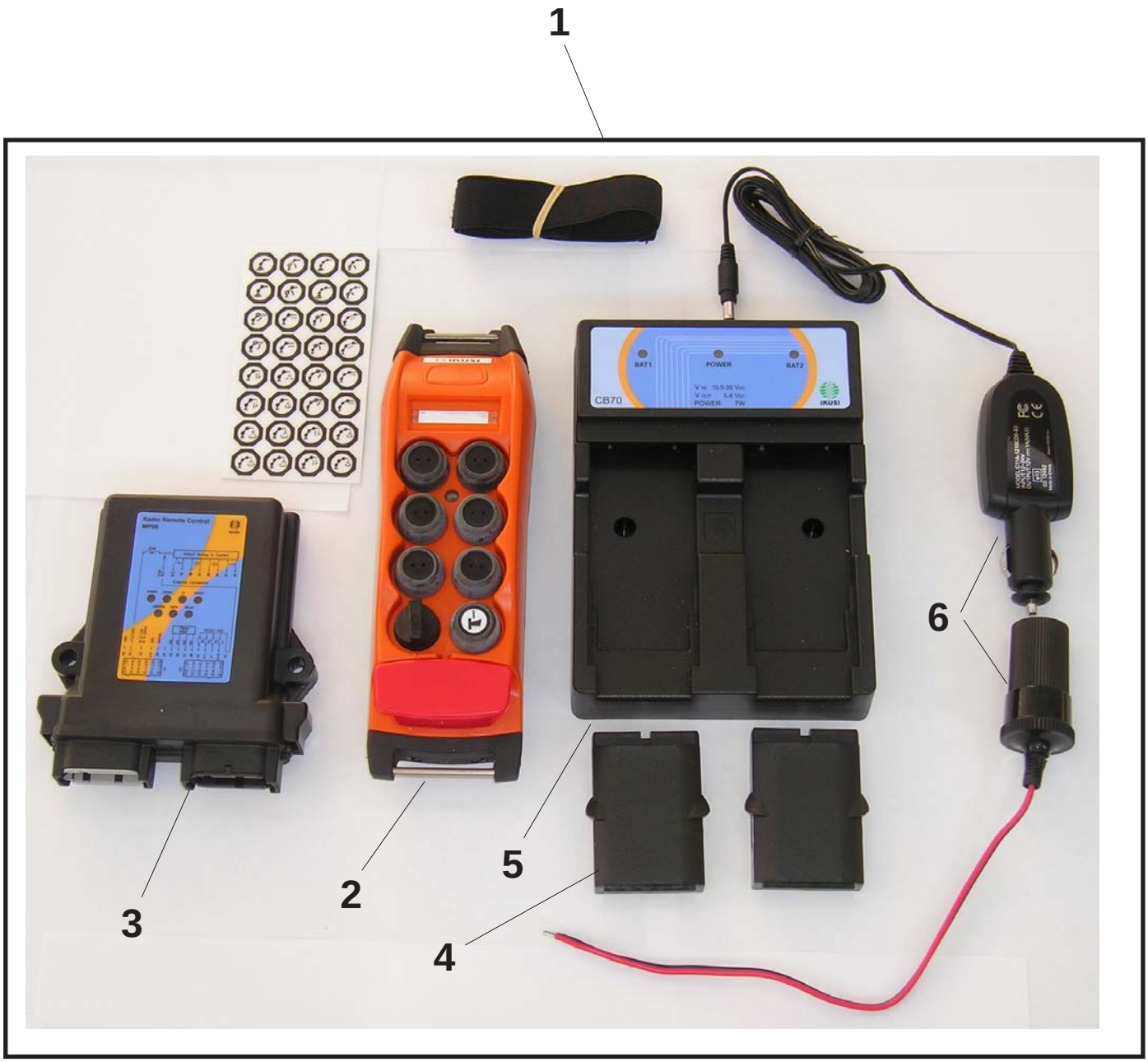


Pos.	Codice	Qt.	Denominazione	Description	Désignation	Benennung	Denominaciòn
1	RO.7.003	2	RONDELLA IN RAME	WASHER	RONDELLE	UNTERLEGSCHEIBE	ARANDELA
2	NI.1.006	2	NIPPLO	NIPPLE	NIPPLE	NIPPLE	NIPLE
3	TF.8.003NP	1	GUAINA	SHEATH	GAINE	HUELLE	FUNDA
4	TF.2.174	1	TUBO FLEX	HOSE	TUYAU FLEXIBLE	SCHLAUCH	TUBO FLEXIBLE
5	TF.2.175	1	TUBO FLEX	HOSE	TUYAU FLEXIBLE	SCHLAUCH	TUBO FLEXIBLE
6	TF.2.176	1	TUBO FLEX	HOSE	TUYAU FLEXIBLE	SCHLAUCH	TUBO FLEXIBLE
7	MS.0.026	3	SUPPORTO	SUPPORT	SUPPORT	LAGER	SOPORTE
8	MS.0.022	3	MORSETTO	FASTENINGUNIT	ARRETOIR	KLEMME	CONEXION
9	VT.0.029	3	VITE	SCREW	VIS	SCHRAUBE	TORNILLO
10	TF.8.002	1	GUAINA	SHEATH	GAINE	HUELLE	FUNDA
11	TF.2.178	2	TUBO FLEX	HOSE	TUYAU FLEXIBLE	SCHLAUCH	TUBO FLEXIBLE

ML 050



Pos.	Codice	Qt.	Denominazione	Description	Désignation	Benennung	Denominaciòn
1	RO.7.003	2	RONDELLA IN RAME	WASHER	RONDELLE	UNTERLEGSCHEIBE	ARANDELA
2	NI.1.006	2	NIPPLO	NIPPLE	NIPPLE	NIPPLE	NIPLE
3	TF.8.003NP	1	GUAINA	SHEATH	GAINE	HUELLE	FUNDA
4	TF.2.174	1	TUBO FLEX	HOSE	TUYAU FLEXIBLE	SCHLAUCH	TUBO FLEXIBLE
5	TF.2.175	1	TUBO FLEX	HOSE	TUYAU FLEXIBLE	SCHLAUCH	TUBO FLEXIBLE
6	TF.2.176	1	TUBO FLEX	HOSE	TUYAU FLEXIBLE	SCHLAUCH	TUBO FLEXIBLE
7	TF.8.002	1	GUAINA	SHEATH	GAINE	HUELLE	FUNDA
8	MS.0.026	2	SUPPORTO	SUPPORT	SUPPORT	LAGER	SOPORTE
9	MS.0.022	3	MORSETTO	FASTENINGUNIT	ARRETOIR	KLEMME	CONEXION
10	TF.2.177	2	TUBO FLEX	HOSE	TUYAU FLEXIBLE	SCHLAUCH	TUBO FLEXIBLE
11	RO.2.003	2	RONDELLA	WASHER	RONDELLE	UNTERLEGSCHEIBE	ARANDELA
12	VT.0.017	1	VITE	SCREW	VIS	SCHRAUBE	TORNILLO
13	VT.0.013	1	VITE	SCREW	VIS	SCHRAUBE	TORNILLO



Pos.	Codice	Qt.	Denominazione	Description	Désignation	Benennung	Denominaciòn
1A	RC.0.029	1	KIT RADIO COMPL. 434	RADIOREM.CONTR.434	KIT RADIOCOM. 434	FUNKSTEUER.434	KIT RADIOCOMAND. 434
1B	RC.0.031	1	KIT RADIO COMPL. 915	RADIOREM.CONTR.915	KIT RADIOCOM. 915	FUNKSTEUER.915	KIT RADIOCOMAND. 915
2A	PS.0.059	1	PULSANTIERA 434	CONTROL BOX 434	TABLEAU POUSSOIRS 434	DRUCKKNOPFTAFEL 434	PANEL DE CONTROL 434
2B	PS.0.060	1	PULSANTIERA 915	CONTROL BOX 915	TABLEAU POUSSOIRS 915	DRUCKKNOPFTAFEL 915	PANEL DE CONTROL 915
3A	TC.1.042	1	RICEVITORE 434	RECEIVER UNIT 434	RECEPTEUR 434	EMPFÄNGER 434	RECEPTOR 434
3B	TC.1.043	1	RICEVITORE 915	RECEIVER UNIT 915	RECEPTEUR 915	EMPFÄNGER 915	RECEPTOR 915
4	RC.0.029/01	2	BATTERIA	BATTERY	BATTERIE	AKKU	BATERIA
5	RC.0.029/02	1	CARICATORE BATTERIE	BATTERY CHARGER	CHARGEUR BATTERIE	AKKU–LADEGERÄT	CARGADOR DE BATERIAS
6	RC.0.029/03	1	KIT DI CONNESSIONE CC	DC CONNECTION KIT	KIT CONNECTION CC	DC–VERBINDUNGSSATZ	KIT CONEXION DC

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