37DJ

Use and maintenance Manual

Ed. 05/2021 – REV. E-fs3-0071
Codice: SO-0042
Matricola: 37DJ

Original Instructions

SOCAGE SRL

CUSTOMER SERVICE

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Servizio Tecnico: **tecnico@cs.socage.it**

ASSISTENZA TECNICA • POST VENDITA

PROFESSIONALITÀ ED EFFICIENZA A DISPOSIZIONE DEL CLIENTE

PRESENZA SU TERRITORIO NAZIONALE ED INTERNAZIONALE

RIPARAZIONI E MANUTENZIONI

FORMAZIONE

DISPONOBILITÀ E RAPIDITÀ DI RISPOSTA

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MDXDESIGN

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INTRODUCTORY

A reasonable safety condition during works is essential to prevent serious damages to oneself and to other people. Therefore, it is essential to follow the WARNINGS and to carefully read this manual presenting accurate and fundamental instructions on routine and periodic maintenance procedures.

WARNING: READ AND KEEP THIS MANUAL!

- Study user's instructions.
- The operator shall be trained on the use of this machine, he should know its lifting capacity and utilisation limits, he should know and carefully follow safety standards.
- The instruction manual is a fundamental element for the proper use and the maintenance of this equipment.

TECHNICAL ASSISTANCE SERVICE

For repair and overhaul assistance please call SOCAGE organisation which relies on highly skilled workers and on suitable equipment.
The TECHNICAL ASSISTANCE SERVICE is at your disposal for explanations, advice and for interventions with its own workers, if necessary.

SPARE PARTS SERVICE

Guarantee of good functioning and service life is ensured by the use of original spare parts only, for this purpose refer to "CATALOGUE OF SPARE PARTS".

At the end of this manual there are some sheets on which every intervention, modernisation and change is to be recorded. By doing this, you and we will always have an updated statistical memorandum of the machine.

THIS MANUAL INSTRUCTIONS DO NOT TAKE THE PLACE OF BUT COMPLETE THE OBLIGATIONS ON SAFETY AND ACCIDENT LEGISLATION IN FORCE

SPECIAL EXECUTION

FRAME WITH DEMOUNTABLE STABILIZERS TO MOVE SEPARATELY

In certain cases, concerns the truck on which the installation is made, in order to hold the total weight of the equipment following the builder's instructions of the truck, is carried out the special execution in object which foresees the frame with removable and transportable stabilisers separately with removable and transportable stabilisers separately with an other vehicle.

With regard to the use of the equipment is necessary that the stabilisers, including mechanical fasteners besides hydraulic and electric connections, are mounted correctly.

The technical operations of mounting and dismounting of the stabilizers can easily be performed with normal tools, while for the hydraulic and electric connections are foreseen rapid joints.

The identification of the stabiliser's position on the frame is underlined by an equal number, reported both on stabilisers and on the position's area in the frame.

During the travel, so that the vehicle respects the directions regarding the traffic and the builder's instructions of the truck, the four stabilisers have to be dismounted and transferred on another vehicle.

In the course of the equipment's use as working elevating platform, the stabilisers have to be positioned in their respective position's areas, fastened mechanically and joined both on hydraulic and electric level.

NOTES FOR ASSEMBLY KIT SUPPLIES

This manual refers to the complete machine as it is supplied by SOCAGE (with the description of the possible variants available on request).

As regards machines supplied with assembly "KIT" (the kit is prepared by workshops other than SOCAGE) the USE AND MAINTENACE manual has to be drawn by the final installer and must conform the equipment and the directive force.

SOCAGE materials can be only used in the parts which are not changed if compared to the original installation.

NOTE:	By assembly KIT of the SOCAGE . company we mean the supply of the upperworks up to the thrust bearing fixing lower ring to be welded on the frame produced by the installer and the main hydraulic components

NOTES FOR PLATFORM UTIILIZATION

ATTENTION: TO EXCEED THE LOAD VALUE INDICATED BY THE WORKING AREA CAN LEAD TO STRUCTURAL DAMAGES AND THE OVERTURNING OF THE AERIAL WORKING PLATFORM

***** CHAPTER 1 *****

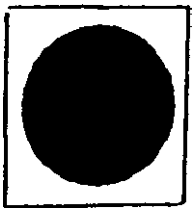
INTRODUCTORY INFORMATION

The documentation contained in this chapter is composed of
n° 8 pages, this one included..

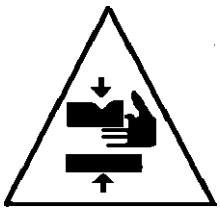
KEYS AND SYMBOLS USED FOR THE WARNING SIGNS

WARNING: DANGER Signs

PROHIBITION Signs



OBLIGATION Signs



CRUSHING DANGER Signs

IDENTIFICATION DATA OF THE MACHINE

All the information for the identification of the machine is carved on a plate on the turning turret.

N.B. For every demand specify type and serial number.

DECLARATION OF CONFORMITY

SOCAGE SRL
VIA DELLA CHIMICA N. 23
CARPI (MODENA) ITALY
TEL. 059.9121211 FAX 059.907304

Composizione del fascicolo tecnico a cura di:
Ufficio tecnico Socage presso, Socage s.r.l., via della chimica n°23,Carpi (modena) Italy

PIATTAFORMA DI LAVORO ELEVABILE / MOBILE ELEVATING WORKING PLATFORM

Modello/Tipo/Type/Type/Modelle/Tipo: **SO-0042**

Nome commerciale/Nombre comercial/Nom commercial/Trade name/Geschäftsname/Nome comercial: **37DJ**

Matricola/Matricula/N°de serie/Serial number/Serien nr./ N°de série Matricula: **37DJxxxxx**

Anno di fabbricazione/Año de fabricación/Année de fabrication/year of construction/baujahr/ano de fabricação: **XXXX**

Su autocarro/autocar/camion/truck/lastkraftwagen/caminhão: \ **XXXXXXXX**

Matricola/Matricula/N°de serie/Serial number/Serien nr./N°de série Matricula: **XXXXXXXX**

DICHIARAZIONE DI CONFORMITÀ CE / EC CONFORMITY DECLARATION

(in conformità all'allegato II A della direttiva 2006/42/CE)

Noi, firmatari della presente, dichiariamo sotto la nostra esclusiva responsabilità, che la macchina in oggetto è conforme a quanto prescritto dalla Direttiva Macchine 2006/42/CE e dalle Direttive 2014/35/UE, 2014/30/UE e la norma EN280:2013+A1:2015.

È inoltre conforme alle disposizioni della Dir. 2000/14/CE (allegato V) recepita con D.Lgs. 262/02:

- Livello di potenza sonora misurato (LWA) su una macchina simile: 74 dB
- Livello di potenza sonoro garantito (LWA): 80 dB

È identica alla macchina oggetto della certificazione CE di tipo. (allegato IV).

Esame per la Certificazione CE eseguita da: Examen para la Certificación CE realizada por: Examen pour la Certification CE executé par: Examination for EC Certification executed by: Prüfung für die EG-Bescheinigung ausgeführt vom: Exame para a Certificação CE realizada por	**VERICERT SRL** (Notified Body n. 1878) Verità Ricerca Certezza Conformità Via L. Masotti 5 48124 Fornace Zarattini (RA)

Numero di Certificazione CE: Certificación CE número: Certification CE numéro: Certification EC number: Zertifikation EG nummer:: Certificação CE número	xxxxxxxxxxxxxxxxx

SOCAGE srl
Il Presidente del C.d.A.
FIORENZO FLISI

Carpi, li _____ _____

FAC-SIMILE

DECLARATION OF THE CONSTRUCTOR

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Numero di Certificazione CE: Certificación CE número: Certification CE numéro: Certification EC number: Zertifikation EG nummer:: Certificação CE número	xxxxxxxxxxxxxxxxx

SOCAGE srl
Il Presidente del C.d.A.
FIORENZO FLISI

Carpi, li _____ _____

FACSIMILE

REFERENCE REGULATIONS

This technical document “INSTRUCTION AND MAINTENANCE MANUAL” for raisable platforms model **37DJ** is identified with code

MUM SO-0042 E-fs3-0071.

This document has been written in compliance with harmonised regulations
UNI EN 12100-1rst part paragraph 3.21
UNI EN 12100-2nd part paragraph 6.
EN 280 paragraph 7.

REVISIONS TO THIS DOCUMENT

This manual reflects the state of the art at the time of the machine’s putting into the stream of commerce. It is an integral part of the machine and is in compliance with all regulations, laws and directives binding at that time; this manual cannot be considered inadequate if subsequently updated because of more recent experiments.
Changes, adaptations, etc. (if any) made on machines sold afterwards do not oblige the manufacturer to modify the equipment sold before nor to consider it and the relevant manual insufficient and unsuited.
Any possible supplement to this manual that the manufacturer judges important to send to the user should be kept together with the manual to which is an integral part.

TECHNICAL INFORMATION

REFERENCE REGULATIONS

SOCAGE platforms are manufactured in compliance with the following Directives :
- 2006/42/EC (called Machine Directive),
- 2014/30/UE
- 2014/35/UE (EMC)
- 2000/14/EC.

ENFORCED HARMONIZED REGULATIONS

- EN ISO 12100-1:2010 Safety of the equipment (basic procedure);
- EN ISO 12100-2:2010 Safety of the equipment (technical principles);
- EN ISO 13857:2008 Safety distances of the upper parts;
- EN ISO 13850:2008 Emergency stop devices;
- EN 349:1993+A1:2008 Distances of pressing of parts of the body;
- IEC/EN 60204-1:2006 Electrical equipment of the machines;
- DIN 15018 sheet 1 Calculations of steel structures;
- DIN 15018 sheet 3 Rules for steel supporting structures
- DLgs 81/2008 Regulations for prevention of accidents on work place
- EN ISO 13849-1:2016 Safety related parts of control system
- EN ISO 13849-2:2013 Safety related parts of control system
- EN 280:2013+A1:2015 Aerial work Platform
- EN 12999:2011+A1:2012 Cranes safety- Loaders Cranes
- EN ISO 4413:2010 Safety requirements for fluid systems and their components
- EN ISO 13001-3-1:2013 Lifting devices- General criteria for the project

ENFORCED REGULATIONS AND TECHNICAL RULES

EN 280 (Raisable working platforms)
EN 80 WGP8 (TC147) (Structural calculation)

NUMBER OF ESTIMATED LOADING CYCLES according to EN 280

100.000 (e.g. 10 Years, 50 weeks per year, 40 hours per week, 5 cycles per hour)
Within this number of cycles a complete overhaul and a deep structural inspection of the machine should be carried out. If working conditions are particularly heavy (e.g. always maximum load, great straddle , etc.) this inspection must be sped up (ask the manufacturer for an inspection of the machine).
EVERY 1500 - 4500 HOURS, WE SUGGEST A COMPLETE CHECKING PROCEDURE BY THE MANUFACTURER.

CYCLES REDUCTION FOR AUTHORIZED MACHINES AT INCREASED LOAD CAPACITY

66.000 (e.g. 7 Years, 48 weeks per year, 40 hours per week, 5 cycles per hour)
Within this number of cycles a complete overhaul and a deep structural inspection of the machine should be carried out. If working conditions are particularly heavy (e.g. always maximum load, great straddle , etc.) this inspection must be sped up (ask the manufacturer for an inspection of the machine).
EVERY 1000 - 3000 HOURS, WE SUGGEST A COMPLETE CHECKING PROCEDURE BY THE MANUFACTURER.

USE AND STORAGE CONDITIONS

SOCAGE platforms are manufactured to function under these environmental conditions:

- working temperature: min. -10°C max. +40°C
- humidity 30% - 95% without condensation

When the machine is to be used under environmental conditions other than the standard ones, special devices are available on request.

IMPORTANT

NEVER USE THE MACHINE UNDER UNFAVOURABLE AIR CONDITIONS (i.e.: MANY WORKING HOURS IN A SEE AREA).

- storage temperature: -30°C max. +60°C.
- if the oil temperature tends to exceed 70° C. it is necessary to mount a heat exchanger.

COUNTERWEIGHT AND ACCESSORIES

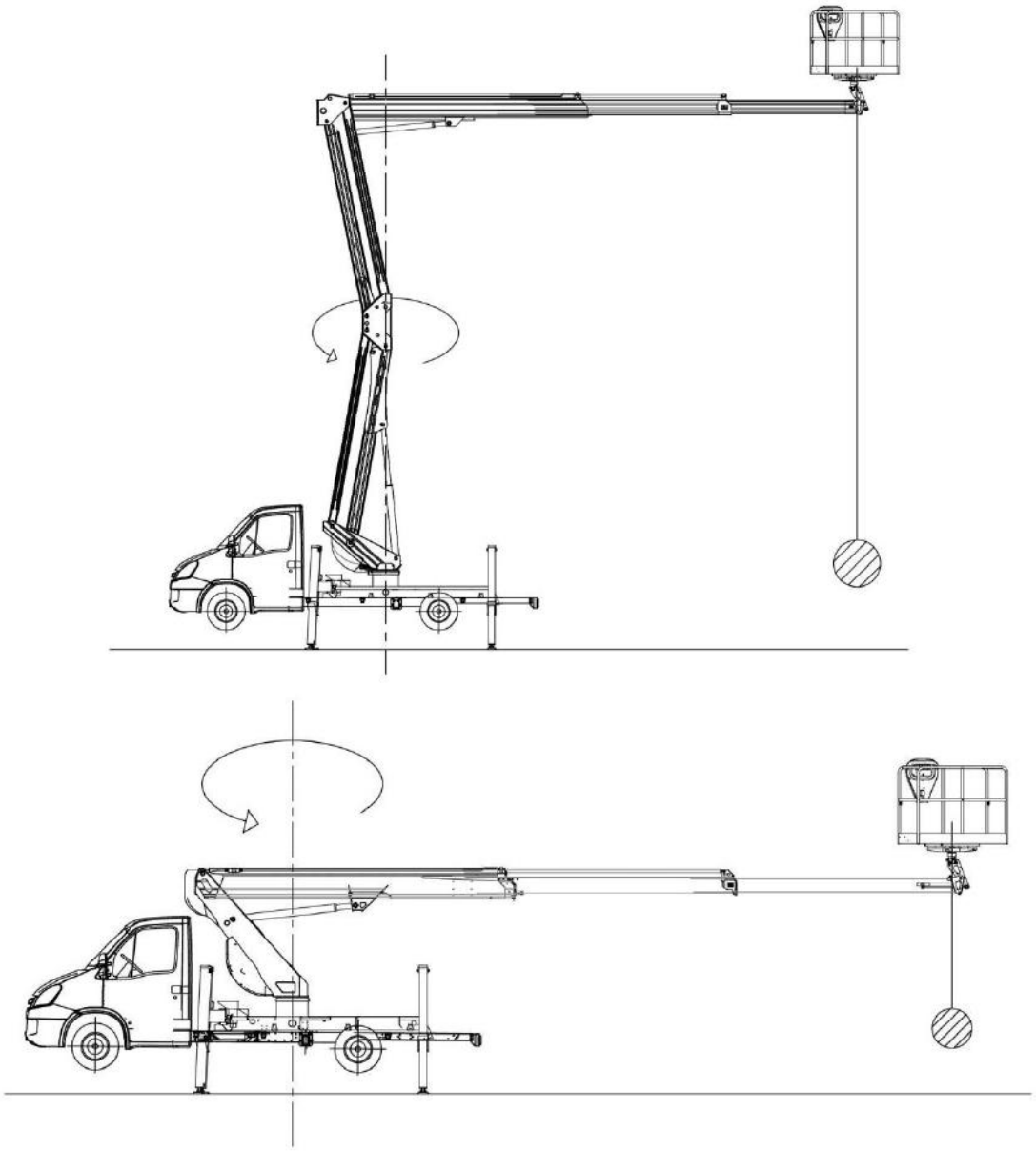
All the eventual counterweights and assembled accessories, which are already present during the inspection, do absolutely not be remove during the platform working phase, because they are integrant parts of the machine and they are indispensable in order to grant the stability obtained with the inspection

STATIC TEST

The machine HAS SUCCESSFULLY OVERCOME THE STATIC TEST carried out according to EN280:2013+A1:2015 as follows:

- Machine levelled properly.
- Machine with minimum allowed stabilization.
- Telescopic boom parallel to the ground.
- Pantograph (if any) placed in the worst condition.
- Machine at max outreach and turned basket.
- Test load equal to nominal load plus an increase foreseen by EN280 (wind, operators' pushes and dynamic effects).
- Slow starting of the machine rotation on the whole working area (at least 180° sideways), always keeping under control the position of the outriggers opposite the boom.

The test is considered overcome only if in the whole working area two support points never lift at the same time (so only one of the support points can be lifted, according to the position of the boom. NB For the installations on pick-up/van, the stabilizing method it's described in the ch."start-up procedure").



***** CHAPTER 2 *****

SAFETY STANDARDS USER'S INSTRUCTIONS

The documentation contained in this chapter is composed of
n°12 pages, this included..

For the use of platform the operators have to:
- be in perfect psyco-physical conditions
- have the licence guide (right degree to the use of vehicle)
- be instructed to the use of platform
- have read and understood all the instructions and information in this manual and in the machine

USER'S INSTRUCTIONS

IMPORTANT WARNINGS

ALL THE PROVISIONS ON USE AND MAINTENANCE CONTAINED IN THIS MANUAL ARE UNBREAKABLE, THEREFORE WE RECOMMEND TO CAREFULLY AND FREQUENTLY READ THEM AND TO ALWAYS PUT THEM INTO PRACTICE.

WITHOUT PREJUDICE TO SOCAGE SRL'S NON-LIABILITY OUTSIDE THE WARRANTY GIVEN, AFTER INSPECTION AND DELIVERY OF THE MACHINE, SOCAGE SRL RECOMMENDS TO CAREFULLY AND REGULARLY FOLLOW ALL THE PROVISIONS CONTAINED IN THIS MANUAL AND TO CORRECTLY PUT INTO PRACTICE THE REGULATIONS IN FORCE. THE NON-ENFORCEMENT OF WHAT INDICATED ABOVE IS ANOTHER REASON OF NON-LIABILITY FOR DAMAGES AGAINST THE MACHINE, THINGS, PERSONS AND OTHERS.

IN THE ABOVE INDICATED CASES THE 12-MONTHS WARRANTY IS NOT EFFECTIVE.
TECHNICAL DATA CONTAINED IN THIS MANUAL CAN UNDERGO CHANGES DUE TO THE DIFFERENT TYPES OF TRUCKS, TO TECHNICAL CHANGES, OR TO THE ENTERING INTO FORCE OF MODIFIED REGULATIONS.
THEREFORE, THE USER SHOULD CAREFULLY STUDY THE ABOVE MENTIONED TECHNICAL DATA.
FOR SPECIAL WORKING CONDITIONS NOT INDICATED IN THIS DOCUMENT, ASK FOR THE MANUFACTURER'S WRITTEN APPROVAL.

INTRODUCTION

The operator of the platform being the only element of the machine who can think and reason, his responsibility is not reduced by the addition of safety devices. Every over-indulgence in easiness reducing concentration and attention in using these devices is absolutely forbidden.
Safety devices are intended to help, not to supervise operations.
Safety devices can be mechanic, electronic, or both, and they are for this reason subject to breakdowns and improper use.
The operator is the sole person responsible for his own safety and for the safety of by-standards: he must act as a professional, scrupulously following all safety standards.

ALWAYS KEEP IN MIND: THE NON-OBSERVANCE OF EVEN JUST ONE SAFETY STANDARD CAN CAUSE ACCIDENTS TO PERSONS, THINGS OR TO THE MACHINE.

The operator should make sure that every person he is working with is aware of dangers related to the functioning of the platform and that, therefore, is properly trained.
At any time, the operator should be aware of his own responsibility for the safety of his work-mates, for the safety of the machine and of everything surrounding it.

The operator should always check that the platform is properly stabilised; he should mind to the wind, to the movements of the arm and to every unusual thing, even the one which would be not remarked by a less careful person.

IT IS COMPULSORY TO LEARN AND TO FOLLOW ALL SAFETY STANDARDS. FOR THIS REASON, IT IS ESSENTIAL TO DEEPLY UNDERSTAND THIS MANUAL BEFORE USING THE PLATFORM. AT THE DELIVERY OF THE MACHINE, INSTRUCTIONS NECESSARY TO ITS USE WERE SUPPLIED TO THE BUYER; IN CASE OF HIRE OR TRANSFER, THE TRANSFEROR MUST GIVE THESE INSTRUCTIONS TO THE NEW USER.

SAFETY STANDARDS: SOMETHING TO ALWAYS DO

FOR SAFETY PURPOSES, IT IS ABSOLUTELY ESSENTIAL TO ALWAYS CARRY OUT THE FOLLOWING OPERATIONS:

- Carefully follow the user's instruction (in chronological order).
- It is absolutely forbidden to use the equipment with weights exceeding the ones indicated on the machine and in this document and in a way different from what indicated on the machine and in this document.
- Read the content of all the plates put on the equipment and in the maintenance and use manuals of the components of the same.
- The machine must be operated by at least two persons, one of them being a skilled worker perfectly knowing the use of the machine and who has to stay on the ground. If there isn't a control on the ground, the drives board on the ground have to be locked/ forbidden so other people can't have the access.
- Before installing this equipment, stabilise it with the help of stabilisers equipped with anchor plates; these stabilisers must necessarily rest on a solid ground. If necessary, use boards to arrange the thrusts on a big enough area with regard to the characteristics of the ground. These boards must be of a material suitable to the stabilisers' thrust, they must be thick enough and tried before use without workers on the machine which has to be at the maximum straddle, with the basket near the ground, and with a weight equal to the maximum allowed loading capacity.
- If the ground slopes, make sure that the inclination does not exceed 3°. In case of ground grade, provide always to adopt right means to prevent the mean's sliding (wedges under the wheels or other similar clamp systems). A difference in level due to horizontal steps is not to be considered a slope.
- The maximum deviation of the thrust bearing plane from the horizontal line must not exceed 2°.
- Make sure that the platform never rests on other structures, whether fixed or moving.
- Keep in mind that operations to reach the working spot must be carried out by the operator on the platform. As a matter of fact, GROUND OPERATION IS ALLOWED IN CASE OF EMERGENCY ONLY since, from ground, it is impossible to correctly estimate any interference, obstacle, real dynamic of basket movements, etc.
- Make sure there are no electric lines.
- If the platform is used on busy roads , it is compulsory to signal the presence of such platform by both the appropriate ground signals and the winking light and to follow traffic regulations in force.
- When entering into the basket, safety belts must be immediately fastened to the special connections and entry protections must be closed; make sure they are properly locked.

- All workers should wear the safety helmet, in accordance with the law. Do not drop any material from the basket or from top. For special works (pruning, painting, etc.) provide for necessary protections and measures for the safeguard of persons, of surrounding things and of the machine itself. It is forbidden to use working tools which are not in compliance with regulations in force.
- It is absolutely forbidden to insert tools, hands, fingers, etc. within the holes on the telescopic arms and in places where there are dangers arising from interference, cutting and crushing, etc.

WHILE MOVING :

- Drive with caution and avoid high speeds.
- Check if the chosen road is suitable to the equipment dimensions.
- Check if tyres show wear and tear and if inflating pressure is correct (when tyres are cold).
- Put on the brake when the machine is parked on a sloping road, and if necessary, lock the wheels with wedges.
- It is forbidden to travel or to move the truck with people or charges/materials in the basket or in the turret or on the frame walking floor

BEFORE GOING UP:

- Carry out daily inspections as indicated in chapter 4 “Maintenance”.
- Use the protective helmets and the approved accident-prevention dress.
- Put on the locking device for turret hydraulic distributor levers.
- Check to make sure that the automatic levelling of the basket is perfectly reset (basket horizontal) and pressurised
- Fasten safety belts (attacks on the basket belts are for one person to attack).
- Close entry protections.
- Once again, make sure that all controls are in working order and fix the working material properly, so that it cannot move or create dangers.
- Make sure that all operators are aware of use and maintenance provisions.

WHEN RAISED

- While moving, mind to arm travels; during rotation, lifting, lowering , march , etc., mind to any possible obstacle.
- Keep a minimum distance of at least 5 m (five metres) from electric lines and pylons and follow current regulations on minimum distances.
- Avoid any collision of basket or arms with the truck cabin, stabilisers or with other parts of the machine, with fixed (buildings) or moving (vehicles, cranes, etc.) obstacles.
- Do not stand under the working area of the equipment, in particular under arms and basket.
- Use the equipment for vertical movements only, never perform any throwing or thrusting towards any direction.
- Keep your hands far from joints or openings.
- It is forbidden to increase the load in to the basket

AT THE END OF WORK

- Make sure that the structure and the operator-holding basket are in non-working position and that stabilisers have completely come back.

IMPORTANT

KEEP IN MIND THAT, ACCORDING TO D.lgs. 81/08 Art. 71 comma 11 e 12, all'Allegato VII e DEL D.M. 11/04/2011 > VARYING INCLINATION AERIAL LADDERS, INVOLUTE WAGON BRIDGES AND SUSPENSION WINCH BRIDGES MUST BE TESTED AND INSPECTED EVERY YEAR, FROM THE ORGANS IN CHARGE OF SECURITY (ISPESL-USL-ASL-ARPA) IN ORDER TO DETERMINE THEIR EFFICIENCY WITH REGARD TO SAFETY.

SAFETY STANDARDS: SOMETHING TO NEVER DO

FOR SAFETY PURPOSES, IT IS ESSENTIAL TO NEVER USE THE MACHINE UNDER THE FOLLOWING CONDITIONS:

- With weights and in ways other than the ones for which it has been designed, tested and delivered (which are indicated on the machine itself);
- On an unsteady, wet or cluttered ground or having a slope exceeding 3°;
- Never use the machine during automatic basket levelling not reset (basket horizontal) and not pressurised
- With wind exceeding 12,5 m/s ;
- Near electric lines (The machine is not insulated);
- Without the entry protection bar of the basket;
- With material or objects hanging from the machine arms or sides (in any way outside the basket);
- Using ladders or similar tools within the basket;
- Performing any throwing or horizontal/inclined thrusting exceeding 20daN per person or o 40daN every two or more persons (move in an horizontal direction only);
- In areas presenting exploding hazard;
- If there are cracks, flaws, hydraulic leaks, cut wires or any other anomaly in functioning;
- At a temperature lower than -10°;
- As a lifting device for materials;
- With safety devices out of order or not inspected;
- Under dangerous weather conditions (poor visibility, thunderstorms , lightning, etc.);
- With posters, banners, etc. hanging from the basket, arms or other parts of the machine.

IMPORTANT

It is absolutely forbidden to insert tools, hands, fingers, etc. into the holes on telescopic arms, cable pulleys and on joints.

DURING WASHING WITH HIGH-PRESSURE JET DO NOT AIM AT BOXES, CABINETS AND ELECTRIC COMPONENTS. DO NOT WASH WITH DETERGENTS, CHEMICALS, PETROL OR SIMILAR SUBSTANCES, WHICH CAN DAMAGE RUBBER PARTS, PLASTIC COMPONENTS AND FILMS.

WARNING!!! PAUSES/WORKING BREAK

Never leave the machine without care if the motor has not been turned off, the control board on ground blocked and the cabin compartment of the truck locked.
We advise you, in case of pauses or working break, to carry the platform on the ground (in transport position).

WARNING!!! WORKING NEAR ELECTRIC LINES

Operate with aerial platform near electric lines is always very dangerous because of the mobility of the machine structure.
We remind you that there can be electric discharges even without the contact with the two parts, but it can be sufficient that they go near a minimum level of the minimum security distance (see the set of rules in force in the country of destination of the machine).
The set of rules in Italy (D.Lgs 81/08), prescribes the minimum distances given in the table . This value is to be considered the lowest distance during the different manoeuvres with the platform.
In any case we advise you previously to require the interruption of the current supply for the period of working with the platform.

KV	DISTANCES MIN.
≤ 1	3
1 ≤ 30	3,5
30 ≤ 132	5
> 132	7

RESIDUAL RISKS AND APPROPRIATE PRECAUTIONS

- Abrupt working of control levers: jerks and swinging hazard. GENTLY MOVE THE CONTROLS TO REGULATE SPEED AND ACCELERATION.

- Overload and horizontal/inclined thrusting: tilting hazard. DO NOT EXCEED WORKING LOADING CAPACITY.

- Ground sinking: tilting hazard. CHECK GROUND PRESSURE AND GROUND SOLIDITY (see ground pressure under stabilisers) (mind to winter thawing).

- Wind gusts: tilting hazard. DO NOT WORK UNDER DANGEROUS WEATHER CONDITIONS.

- Stroke against an obstacle, whether on the ground or in the air: collision and tilting hazard. BE EXTREMELY CAREFUL DURING OPERATION.

- Stroke against a tension line: electric shock hazard. KEEP AT A SAFE DISTANCE FROM ELECTRIC LINES.

- Work on platforms and sidewalks, etc.: tilting hazard. PAY ATTENTION TO THE GROUND AND TO THE POSITION OF STABILIZERS.

- Work in an explosive environment: explosion hazard. PREVIOUSLY GET INFORMATION ABOUT EXPLOSION OR FIRE HAZARD IN THE PLACE OF THE INTERVENTION.

- Persons near the working area of the machine: crushing hazard. KEEP WORKING AREA CLEAR AND FORBID ADMITTANCE TO UNAUTHORIZED WORKERS. DURING WORKING HOURS, CHECK IF WORKERS RESPECT THIS PROHIBITION.

- Thermal engine + exhaust: burning and poisoning hazard. DO NOT STAND NEAR EXHAUSTS. WHEN WORKING AT INTERIORS DIRECT EXHAUSTS OUTSIDE.

- Mind to overloads from top or caused by contact with other structures . BEFORE STARTING ANY WORK, PAY ATTENTION TO WORKING AREA CONDITIONS, TO THE GROUND, TO OBSTACLES, TO LUMINOSITY AND NOISE AND TO TRAINING OF WORKERS IN CHARGE OF THE MACHINE UTILIZATION.

- Poisonous materials. IN THE EQUIPMENT THERE ARE TOXIC SUBSTANCES AND MATERIALS (POISONOUS WHEN SWALLOWED OR INHALED (QUICK SILVER, OILS, PLASTICS ,ETC.) MAINTENANCE AND REPAIR OPERATIONS SHOULD BE CARRIED OUT BY TRAINED AND SKILLED WORKERS ONLY.

NB. IF THE MACHINE IS EQUIPPED WITH HOSES FOR EXHAUST GAS DEVIATION IT IS COMPULSORY TO USE THEM.

UTILIZATION LIMITS

DO NOT USE THE MACHINE:

- With a load exceeding working loading capacity.
- On a ground which is not resistant to pressure and weight under stabilisers.
- On a slope or inclination exceeding 3°.
- With the side stress in the basket exceeding 20daN for every person (max. 40daN for more than one person).
- With a wind exceeding 12,5 m/s.
- Within refrigerating chambers.
- In explosive or poisonous surroundings.
- During a thunderstorm.
- With poor visibility.
- In a not enough ventilated area. (Toxic exhaust gas of thermal engines).

INFORMATION ABOUT WIND SPEED

WIND FORCE Beaufort scale	WIND SPEED M/s	DESIGNATION	FEATURE
0	0.0 - 0.2	Calm	Calm wind; smoke is whipped up vertically or nearly vertically.
1 **2**	0.3 - 1.5 1.6 - 3.3	Light breeze	The wind direction is given by the smoke one; wind is felt on the face, leaves as well as baffle plate start moving.
3 **4**	3.4 - 5.4 5.5 - 7.9	Moderate breeze	Leaves and branches move continuously. Dust and paper are moved on the ground.
5	8.0 - 10.7	Quite near gale	Small branches with leaves move; waves on canals and lakes are formed.
6	10.8 - 13.8	Near gale	Big branches swing, wind whistles when passing through the electric line cables; it is difficult to walk with the umbrella opened.
7	13.9 - 17.1	Strong gale	Trees swing; it is difficult to walk.
8	17.2 - 20.7	Stormy wind	Branches are broken; it is hardly possible to walk.
9	20.8 - 24.4	Storm	The wind damages houses (antennas and roofing-tiles are swept away).

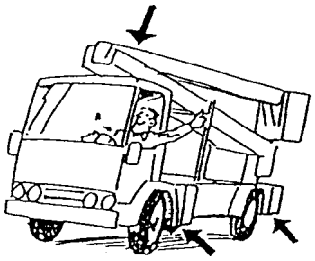
CAUTION

WIND SPEED IS MEASURED ON AVERAGE FOR APPROXIMATELY 10 MINUTES AT A 10-METER HEIGHT ON A LEVEL GROUND.

SUMMARY OF MOST IMPORTANT WARNINGS

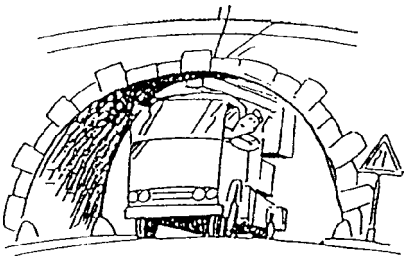
MOVEMENT POSITION

Make sure of the complete non-working condition.



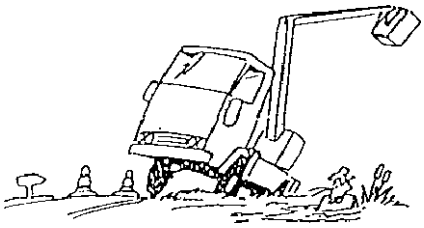
MOVEMENT

Mind to obstacles to the machine.



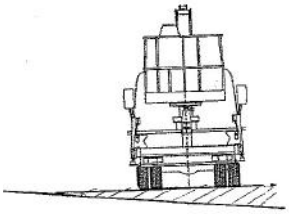
STABILIZATION

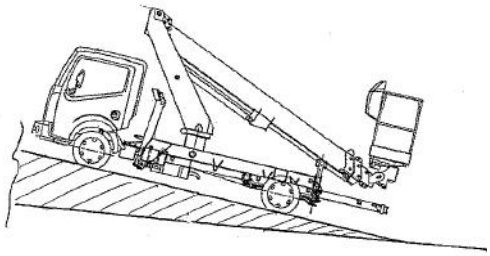
Mind to ground solidity.



STABILIZATION

Maximum inclination ground.



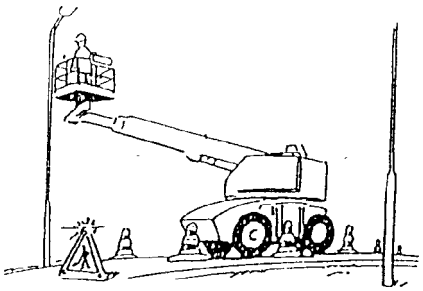


BALANCING

Check maximum allowed inclination.

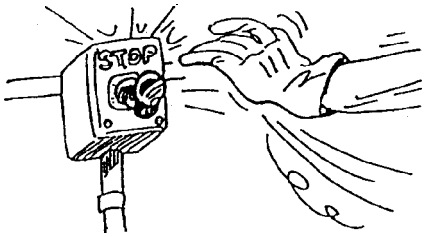
WORKING AREA

Put barriers around working area.



EMERGENCY STOP

If there is any anomaly, stop the machine.
BEFORE SWITCHING ON THE MACHINE AGAIN, MAKE SURE THAT DANGEROUS CONDITIONS ARE OVER

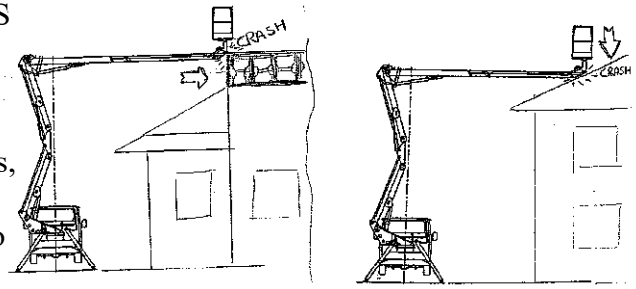


OBSTACLES AND ELECTRIC LINES

Make sure that there are no electric lines and obstacles of some kind.

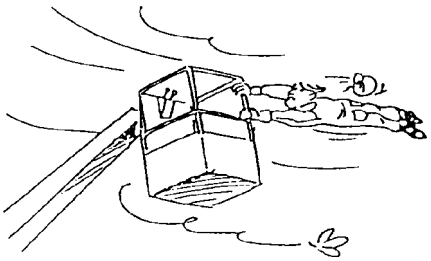
STROKE AND THRUSTING AGAINST OBSTACLES

The stroke and/or the thrusting against an obstacles (opening/closing and/or lifting/lowering) may create structural damages to the machine and serious risks of tilting of the platform. Before and during the movements, always verify visually the encumbrance of the machine structure in all the directions (with particular attention to the hidden parts, such as the lower part of the basket).



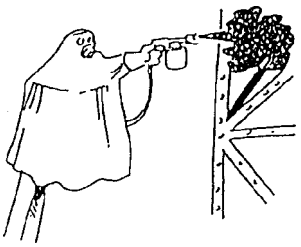
SAFETY BELTS

Mind to maximum working wind.
ALWAYS AND PROPERLY use safety belts (attacks belts on the basket are for one person to attack)..



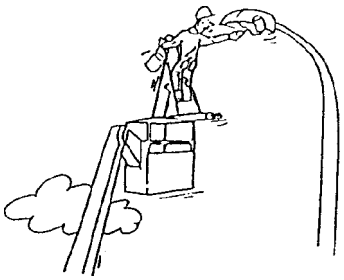
PROTECTIONS

When performing special works, safeguard yourself and the machine.



IN THE BASKET

Never use ladders, boards, or other object,
IT IS FORBIDDEN to mount onto the banister.

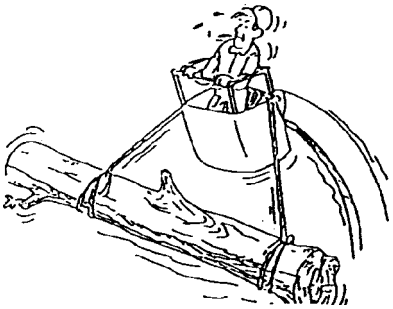


IN THE BASKET

Never exceed loading
capacity allowed in the basket.

LIFTING

Never use the platform as a lifting device,
not even for small weights.

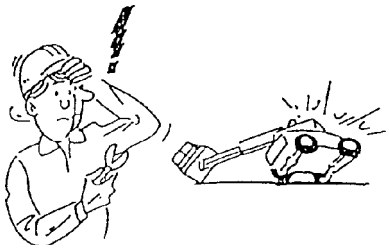


SAFETY BELTS AND HELMET

Always use safety belts and helmet.
Do not fasten belts to structures outside
the basket BUT ONLY TO THE INDICATED
SPECIAL CONNECTIONS (each attack is for a person) .

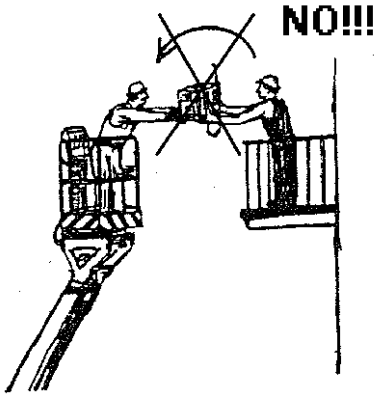
REPAIRS AND MODIFICATIONS

Do not carry out any repair or modification
unless at authorised repair shops.



ATTENTION !!! LOAD ON HEIGHT

Do not load the basket while it is in height with tools or
people. This operation can cause the tilting of the machine
or serious damages to the structure.



STABILIZATION
ATTENTION !!! (with extensible cross-bars)
It is forbidden act the extension/retracting cross-bar movement
When the outrigger (plate) is pressed to the ground.

IMPORTANT!!! CONSISTENCY OF THE GROUND

During the maneuvres of installation of the outriggers give attention to the ground where you will put the outriggers plates.
You always have to verify the consistency and the solidity of the ground and, if it's necessary, interpose the right uprated baseplates to obtain a better load distribution transmittede to the ground (if you have dobts ask information to the yard manager or to a civil engineer experienced of the ground consistency).
For the load values transmitted to the ground from the machine's outriggers, see chapter 3 "Characteristics and performances",and for the consistency ground values you can find a chart of the allowable pressures of somekinds of ground below.
For the calculation of th specificpressure loadedon the ground from the outriggers use this formula:

P= F/A
where:
P= specific pressure loadedon the ground by the outrigger (daN/cmq-kg/cmq)
F= maximum load of the outriggers (kg-see chap. 3)
A= area/bearing surface of the outrigger (cmq)

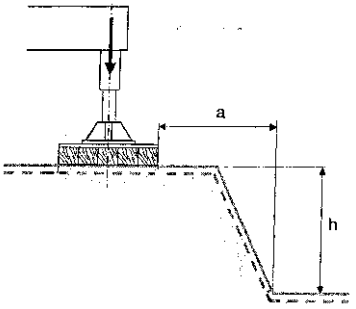
Example for the platform with F= 3200 kg and the blaseplates with surface A= 400 cmq (dimensions 20x20 cm)
P= 3200/400= 8 daN/cmq
With uprated baseplates with surface A'= 1600 cmq (dimensions 40x40 cm)
P'= 3200/1600= 2 daN/cmq

Chart with the values of the ground consistency

Kind of ground	Specific pressure allowable (daN/cmq)
Shifted grounds, not compact	1 - 2
Compact and granular grounds (sand)	2 - 6
Compact grounds (sand+gravel)	4 - 10
Rocks of middle consistency (limestone-sandstone)- paving suitable for the transit of the heavy means	10 - 15
Rocks of remarkable consistency (strong limestone-strong sandstone)	15 - 30
Compact rocks (porphyry-basalt-granite)	30 - 50

IMPORTANT!!! – SECURITY DISTANCE FROM DITCHES/SLOPES

During the installation of the outriggers, keep always a sufficient security distance from ditches and slopes. This distance is a consequence of the kind of ditch/slope (propped and not propped) and of the kind of ground (we advise you to ask information to the yard manager or to a civil engineer experienced of the ground consistency). We give you below the scheme/theoretical rule:



In case of ground subject to landslides or reported - a= 2xh
In case of compact ground, not subjected to landslides or reported – a=1xh

***** CHAPTER 3 *****

DESCRIPTION, CONTROLS, FEATURES, PERFORMANCES, EMERGENCY AND PUTTING INTO OPERATION PROCEDURE

The documentation contained in this chapter is composed of
n° 28 pages, this included..

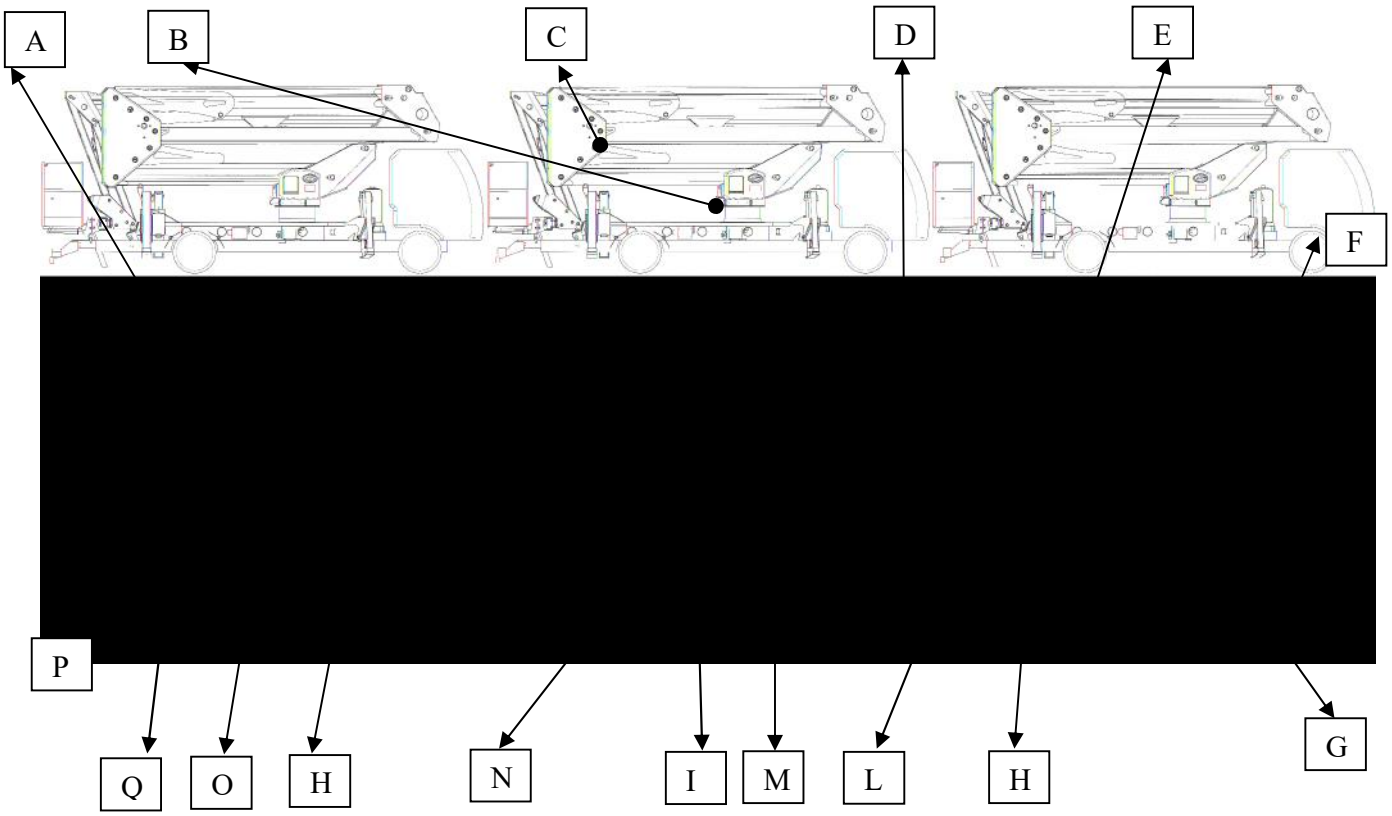
Important.: dimensions and weight reported have ± 5% of tolerance

Description of the machine

3.1 Declared use of the machine

The Socage aerial working platform is designed and realised for lifting and moving people, who are housed inside a levelled basket, through space in all of the field of movements that can be performed.
The platform lifts the staff vertically, allows horizontal movement by means of the joints and extensions and allows angular movements via the rotary turret.
The machine works with the outriggers pressed to the ground, the chassis levelled and the truck suspensions discharged.
Staff can take tools into the basket up to the maximum capacity indicated.
Once at height, the staff cannot tranship objects and/or persons.

3.2 Main components



A – Controls in the basket
Hydraulic distributor for the movement of the basket platform.
B - Main telescopic arm
Telescopic arm with three elements. The arms extension is realised with an hydraulic cylinder and cable pulleys. The lifting is realised with two hydraulic cylinders.
C - Pantograph
The articulated booms (upper and lower) are the connection element between the rotary turret and the main telescopic boom. They are connected to each other by an intermediate head. The bars are lifted via a hydraulic cylinder and a rod positioned inside the intermediate head, which guarantees perfect synchronism.
D - Turret
In top quality sheet steel, it is composed of a main press-bent body and electro-welded reinforcements. It is installed on the fifth wheel coupling support of the superstructure; rotation is ensured by a hydraulic motor with worm screws and automatic brake in work position. A rotating hydraulic distributor allows continuous rotation of the superstructure with respect to the chassis.
E – Oil tank
It is the tank that contains the oil for powering the machine's hydraulic plant, complete with MIN/MAX level.
F – Control board in cab
To check the correct insertion of the power take-off and activation of the plant. It is equipped with a timer in order to detect functioning times.
G – Power take-off control
For mechanical insertion of the power take-off.
H - Outriggers
With individual or simultaneous descent, they are fixed to the secondary frame.
I – Base frame
It is the top quality steel support structure for fixing the aerial part to the truck. It is finished with a walking floor in slip-proof aluminium.
L – Emergency hand pump
Hand pump for emergency descents.
M – Outrigger controls
Hydraulic distributor and panel for selecting outrigger movement.
N – Emergency controls
For moving the machine from the ground during descent in emergency conditions.
O – Access steps to the operator basket
Positioned in the rear part of the base frame, used for access to the basket.
P- Operator basket
It is the car that hosts the operator/s and the tools. It is realised in aluminium tubular with dimensions of 2000x700x1100 mm.
Q- Jib
The Jib boom (upper and lower) is the connection element between the main booms and the basket. They are connected to each other by an intermediate head. The bars are lifted via a hydraulic cylinder and a rod positioned inside the intermediate head, which guarantees perfect synchronism.

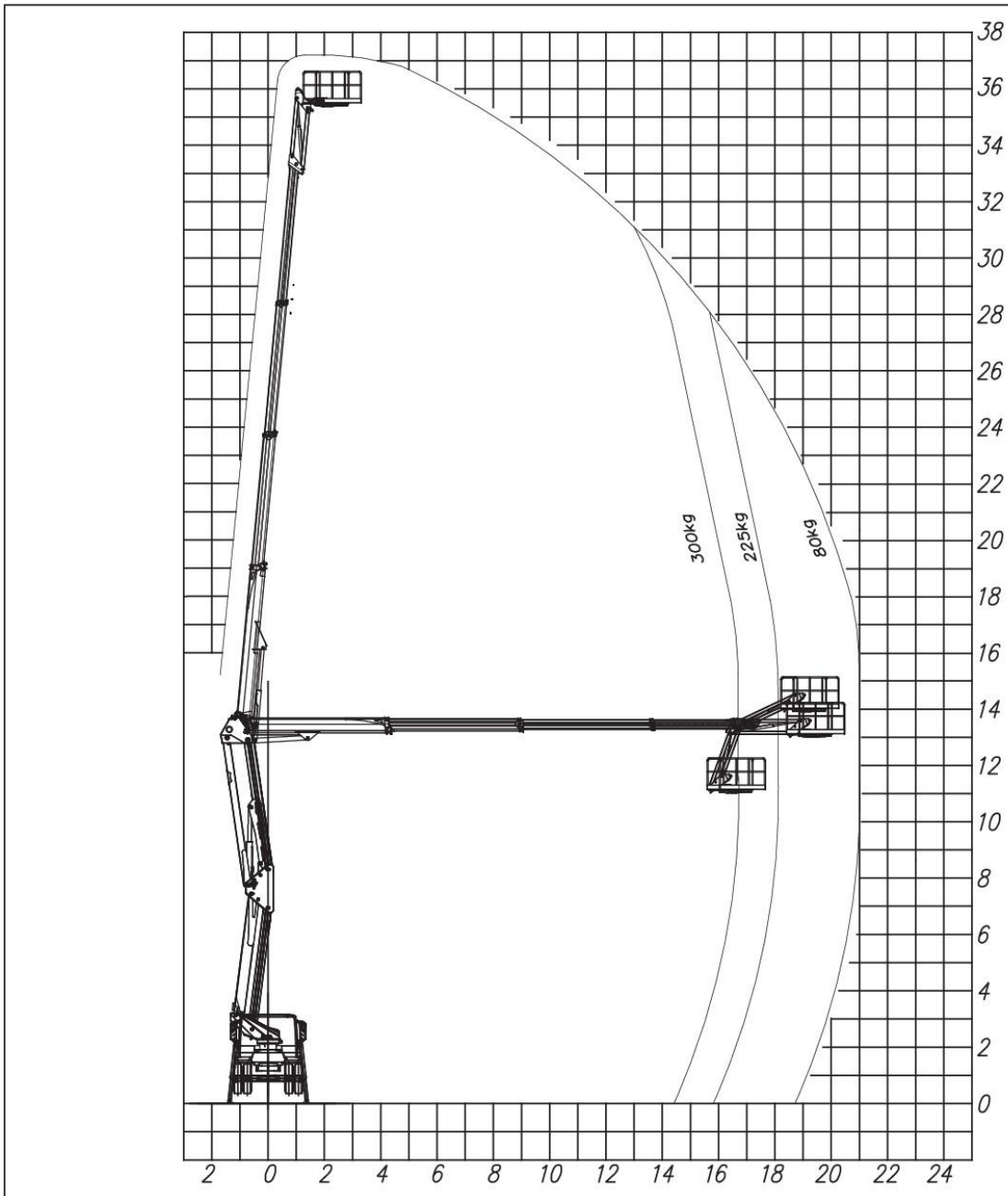
HYDRAULIC PLANT POWER SUPPLY

Power supply with pump coupled to the truck power take-off, with coupling control positioned in the driver's cab, completed by a luminous insertion indicator, positioned on the dashboard.

3.3 Technical features

Model	**37DJ**	**SO-0042**
Wheelbase stabilisation		**HE+HE**
Maximum capacity	kg	300 – 3 pers.
PERFORMANCE		
Maximum work height	m	37,20
Basket walking floor maximum height	m	35,20
Working area extended cross-bars		
Maximum work reach	m	18,00
Basket maximum outreach	m	17,30
Working area closed cross-bars		
Maximum work reach	m	16,70
Basket maximum outreach	m	16,00
Dimensions of aluminium basket	mm	2000x700x1100
Superstructure rotation	°	700
Basket rotation	°	90° right, 90° left
Lifting speed	m/s	0,4
Extension speed	m/s	0,4
Rotation speed	m/s	0,7
Maximum load under the outriggers	kg	11000
Specific load under the outriggers	daN/cm^2	15 (plate std=260x260mm)
Travelling dimensions	See layout	
Level of machine vibrations	m/s^2	< 0,25
Noise intensity level LWA	dB	80
Note: The noise produced is caused by the motor of the truck, the detection of the noise on the platform at 1.60 m from the walking floor during the ascent, descent and extension phases has not signalled noise pressure exceeding 80 dBA		

WORKING AREA WITH CLOSED CROSS-BARS



CARATTERISTICHE TECNICHE – TECHNICAL SPECIFICATIONS	
ALTEZZA MAX DI LAVORO – MAXIMUM WORKING HEIGHT	37,2 m
ALTEZZA PIANO DI CALPESTIO – WALKING FLOOR HEIGHT	35,2 m
SBRACCIO MAX DI LAVORO	21 m
PORTATA – MAXIMUM CAPACITY LOAD	300 kg

TOLLERANZA SULLE PRESTAZIONI INDICATE ± 3% IN RAGIONE DELL'ALLESTIMENTO E DEGLI ACCESSORI

THE WORKING DIAGRAMS CAN VARY BY ±3% DEPENDING ON THE TYPE OF INSTALLATION AND ACCESSORIES

I dati e le dimensioni sono forniti a titolo indicativo e non impegnativo.
Data and descriptions are approximate and not binding.
Toutes les données et descriptions sont fournies à titre indicatif, sans engagement.
Angaben und Beschreibungen sind nicht verbindlich.

DIS. S.C. APPROV. M.B.

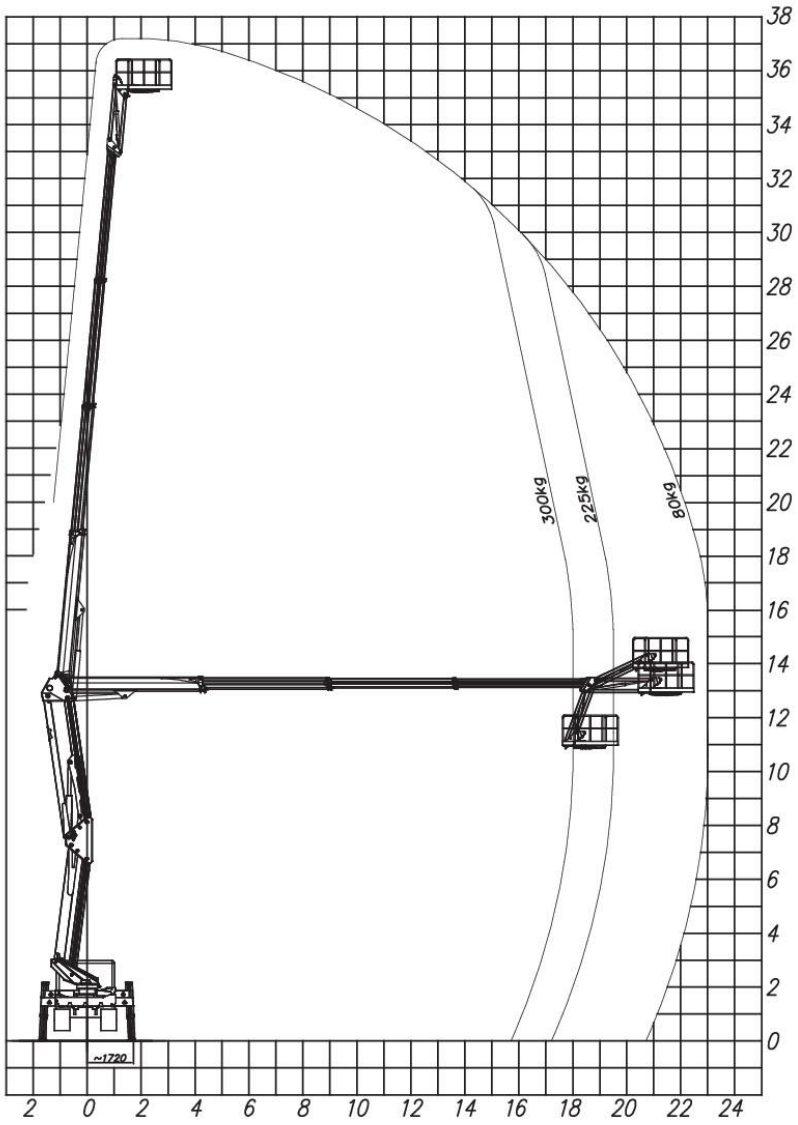
PIATTAFORMA
AERIAL WORKING PLATFORM

37DJ (H+H)
Iveco Eurocargo ML180

CODICE N0150998

DATA 23/06/2020 MOD. A

WORKING AREA WITH EXTENDED CROSS-BARS



37DJ Speed + Traverse sfilabili

CARATTERISTICHE TECNICHE – TECHNICAL SPECIFICATIONS	
ALTEZZA MAX DI LAVORO – MAXIMUM WORKING HEIGHT	37.2 m
ALTEZZA PIANO DI CALPESTIO – WALKING FLOOR HEIGHT	35.2 m
SBRACCIO MAX DI LAVORO	23 m
PORTATA – MAXIMUM CAPACITY LOAD	300kg

TOLLERANZA SULLE PRESTAZIONI INDICATE ± 3% IN RAGIONE DELL'ALLESTIMENTO E DEGLI ACCESSORI

THE WORKING DIAGRAMS CAN VARY BY ±3% DEPENDING ON THE TYPE OF INSTALLATION AND ACCESSORIES

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Angaben und Beschreibungen sind nicht verbindlich.

SOCAGE

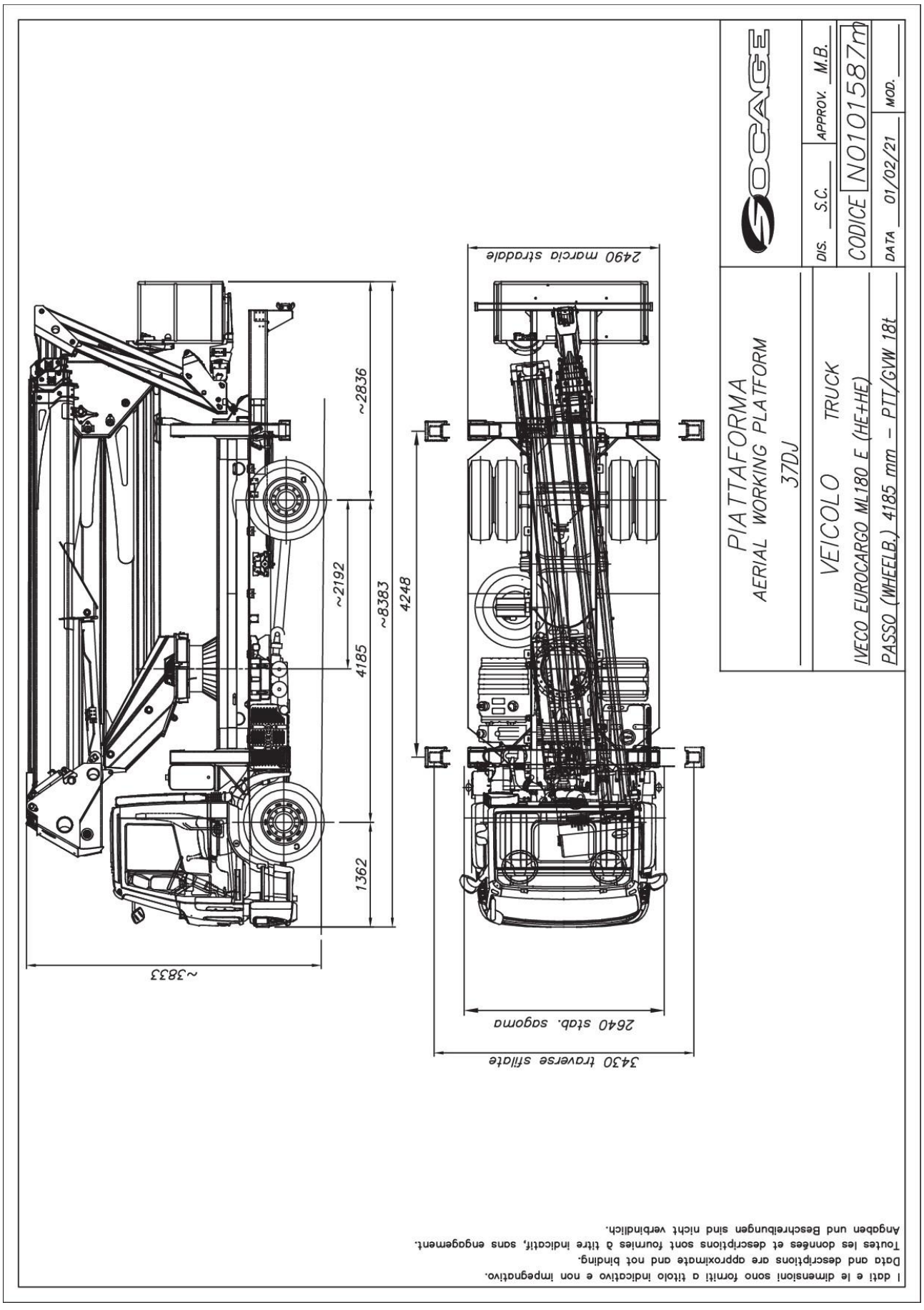
DIS. Paiva APPROV. M.B.

PIATTAFORMA
AERIAL WORKING PLATFORM
37DJ(HE+HE) Speed

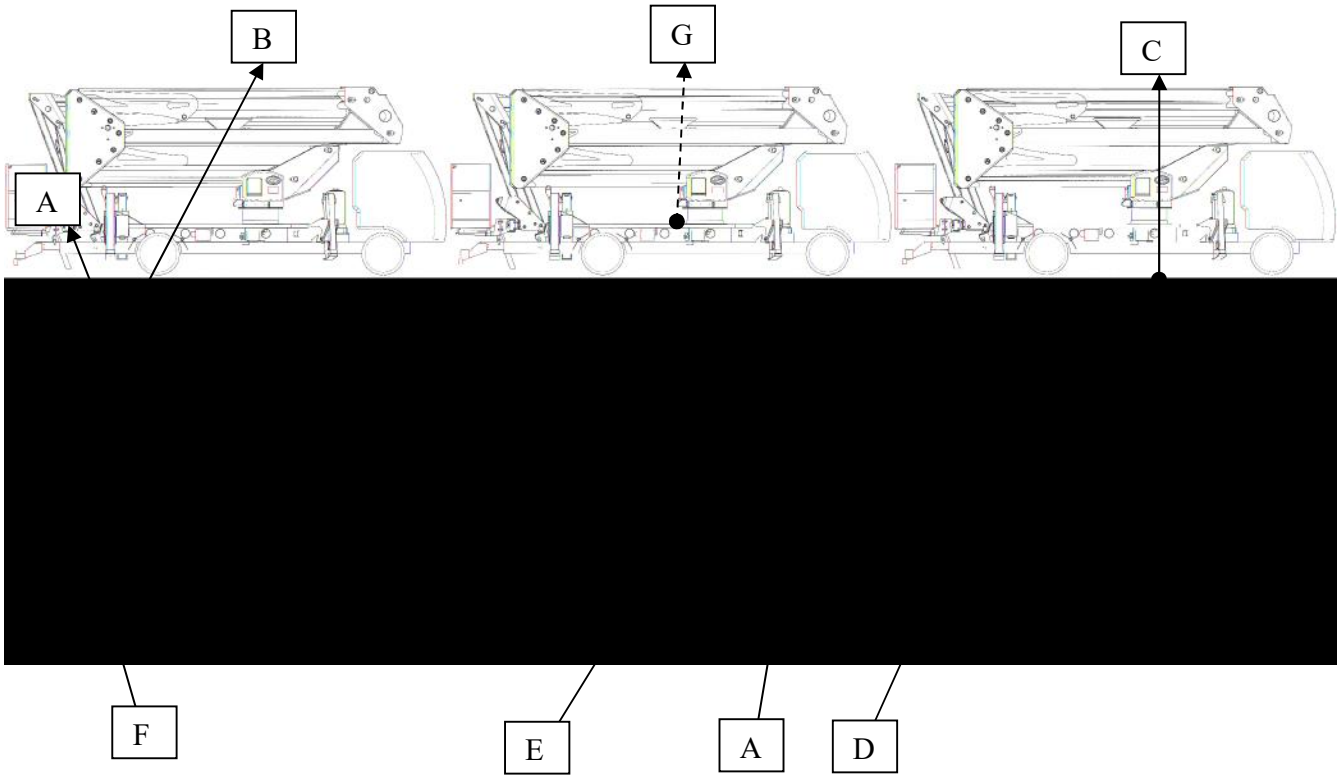
CODICE N015.1056

DATA 01/03/2021 MOD. A

GENERAL LAYOUT



3.4 Safety devices



A – Emergency stop buttons
They are present on the turret and on the controls in the car. They stop any platform function in the case of an emergency.

B – Manual basket levelling
Allows manual levelling of the basket.

C – Rotating flashing light
It is installed on the cab of the truck to signal when the platform is functioning

D – Hand pump for emergency descent
Allows to move the platform and take it back to travelling in the case of breakdown. Depending on set-up, there may be an emergency electric pump present, available as an optional and powered by the truck battery.

E – Emergency controls
They are present on the rotary turret and are used to move the platform in emergency condition.

F – Load limiting device on the basket
This is a device that blocks all platform movements if the basket load exceeds the maximum capacity allowed.

G – Moment limiting device
Limiting device which controls maximum straddle of the basket in relation to the load present in the same.

Flanged block valves on all cylinders
Cylinder movement is stopped if a hydraulic pipe breaks or there is a pressure drop.

Protections on electric and hydraulic plant
All flexible hoses and cables are equipped with wear-proof and burst-proof protections.

Outriggers/boom interlock
The outriggers controls are only activated if the booms are in the rest position and if the appropriate control has been selected in the turret panel. If this is not the case, they cannot be used.
Once the machine is stabilised a green light switches-on on the outriggers selection panel and, by selecting the desired position on the panel in turret (basket or turret), it is possible to lift the telescopic boom and start to work.
With the boom open it is no longer possible to activate the outriggers even by selecting the control in turret.

Rotation brake in work position
Once the rotation movement has been stopped, the turret is immediately blocked to prevent any movement during aerial work.

Maximum pressure valves
They prevent the maximum pressure in the hydraulic plant, at which the platform is calibrated, from being exceeded.

Safety belt attachments
Positioned on the basket, they are used to attach the operator's safety belts during use of the platform.

Anti-crash
The platform is equipped with an automatic anti-crash system, which prevents contact of the booms with the cab of the vehicle and the basket with the telescopic arm. Introduction into the critical area is signalled by the flashing anti-crash button and the blocking of movements. By pressing the anti-crash button, the system deactivates and the equipment moves regularly. On release of the button, the system becomes active immediately.

Inclinometer
This is a device that measures the angle of the base of the frame and that, together with the consent of the stabilizer pressed to the ground, allows the opening of the machine only when the angle of the machine meets the conditions of beginning regular work (within 2° - green light stabilisation lit). Beyond the threshold of 2° tilt the machine does not have the consent to the opening of the superstructure. With the machine in work position (opened), if you exceed the 2° tilt, the intervention of the inclinometer does not block the movements, but activates an acoustic alarm, and the flashing red indicator light on the turret electric panel.
N.B. – CHECK EVERY WEEK, THE EFFICIENCY OF THE DEVICE BY STABILIZING THE BASE WITH INCLINATION ABOVE 2° AND AND CONTROLLING THAT THE OPENING OF THE SUPERSTRUCTURE DOESN'T OPERATE

Other possible platform supplies
- **Basket rotation** 90° right + 90° left
- **Hydraulic socket** in the basket
- **Auxiliary electric pump** with 230 V single-phase motor, complete with control board, protection and battery-charger
- **Pneumatic socket** in the basket
- **Galvanised metal trunk** mounted under the box
- **Fixed/hinges sides** in aluminium

Additional pushbutton control panel via cable from the ground

MOMENT LIMITING DEVICE (MECHANICAL)

This machine is equipped with a moment limiting device (pressure transducer) controlling the maximum straddle of the basket.. The Maximum straddle is indicated on the work diagrams in relation to the load capacity to be lifted.
When the Limiter starts working it is not possible to perform any hard function (lowering/opening) while operations to bring the basket in a safe position are still allowed.
Limiting function is created by read-out of the thrust of the lifting cylinder to the turret combined with the read-out arm angle opening ; this system allowed to stops the above movements in a safety position.
Before the above indicated stop (90% of the maximum straddle approx.), a sound alarm enters in function to forewarn the operator of the lock to maximum straddle.

N.B. BEFORE STARTING TO WORK, IT IS ESSENTIAL TO DAILY CHECK, THE EFFICIENCY OF THE DEVICE AND COMPLIANCE TO MAXIMUM STRADDLE MEASURES WHICH ARE INDICATED INTO WORKING DIAGRAMS.

IN CASE OF MANUAL WORKING OF CONTROLS (EMERGENCY), MOMENT LIMITING DEVICE IS NOT ACTIVE; ALWAYS PERFORM COMPLETE CLOSING OF OPENING DEVICES AS FIRST MOVEMENT.

Adjusting, calibration and replacing interventions, should be carried out at SOCAGE ' s authorised service shops only.

WORKING PROGRAMME DEFINITION

This machine is equipped with a limiting device, that automatically allows to set the machine performance in relation with the load present inside the basket. Preventively consult the working diagrams in the use manual and on the control board to assign the possible performances in relation to the load present in the basket.

For the user's safeguard, it is essential to:

- MAKE SURE THAT THE LOAD YOU WANT TO PUT IN THE BASKET DOESN'T EXCEED THE ALLOWED WORKING LOADING CAPACITY.
- DON'T YOU PUT LOAD IN THE BASKET WHEN IT LIFTS;

A SIGNAL LAMP AND AN ACUSTIC ALARM WARN BEFORE YOU REACH THE MAXIMUM STRADDLE.

ATTENTION
IT'S FORBIDDEN TO ADD LOAD WHEN THE MACHINE IS LIFT

BASKET AUTOMATIC LEVELLING SYSTEM

The basket automatic hydraulic levelling system is realised with two closet circuit cylinders; the first acts as a motor (controlled by boom ascent/descent) and activates the second (applied to the end of the boom) that keeps the basket in horizontal position.

When starting work, it is important always to control the correct synchrony of the system

To control and restore correct levelling, if necessary, proceed as follows:

- with the basket without persons on board, activate the manual control in both directions, in a way to incline the basket in both directions by (± 5°)
- restore correct horizontal basket levelling
- at this point the basket levelling system is perfectly zeroed and the machine can be used

LOAD LIMITING DEVICE

Load limiting device with maximum intervention threshold within 120% of the nominal capacity with block of all machine movements and intermittent acoustic warning that the load accepted has been exceeded. To take the machine from the block condition to that for use, the excess weight must be unloaded until lying within the accepted limit.

NB: the platform maximum load control system does not exempt the operator from controlling that the weight of the tools or the material to be loaded necessary for work or maintenance, is not greater than the maximum load accepted for the various declared uses of the platform

INCLINOMETER

This is a device that measures the angle of the base of the frame and that, together with the consent of the stabilizer pressed to the ground, allows the opening of the machine only when the angle of the machine meets the conditions of beginning regular work (within 2° - green light stabilisation lit). Beyond the threshold of 2° tilt the machine does not have the consent to the opening of the superstructure. With the machine in work position (opened), if you exceed the 2° tilt, the intervention of the inclinometer does not block the movements, but activates an acoustic alarm, and the flashing red indicator light on the turret electric panel.

N.B. – CHECK EVERY WEEK, THE EFFICIENCY OF THE DEVICE BY STABILIZING THE BASE WITH INCLINATION ABOVE 2° AND CONTROLLING THAT THE OPENING OF THE SUPERSTRUCTURE DOESN'T OPERATE

3.5. START-UP PROCEDURE

a) Stabilising the platform

1. Enter the vehicle cab.
2. Insert the parking brake.
3. Position the gear lever in the neutral position, keeping the truck engine ticking over.

The truck engine rotation MUST NOT exceed 1000 rpm

The maximum inclination accepted for the chassis is 2°

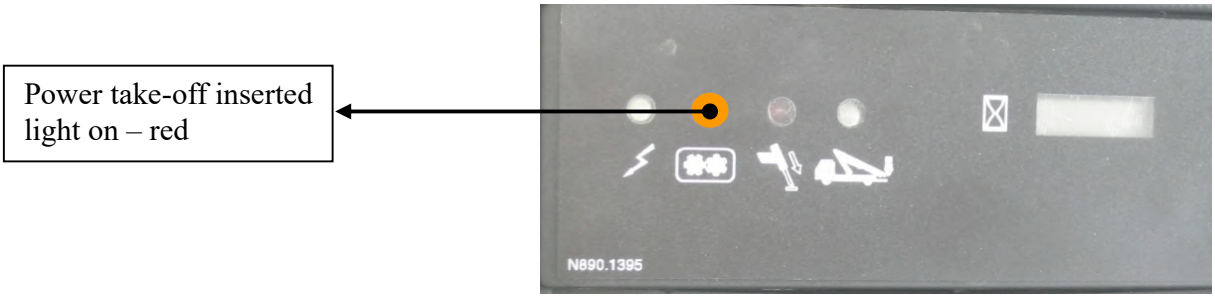
At this point, the platform electric plant power supply indicator switches-on on the panel in the cab.

Platform electric plant power supply light on – yellow

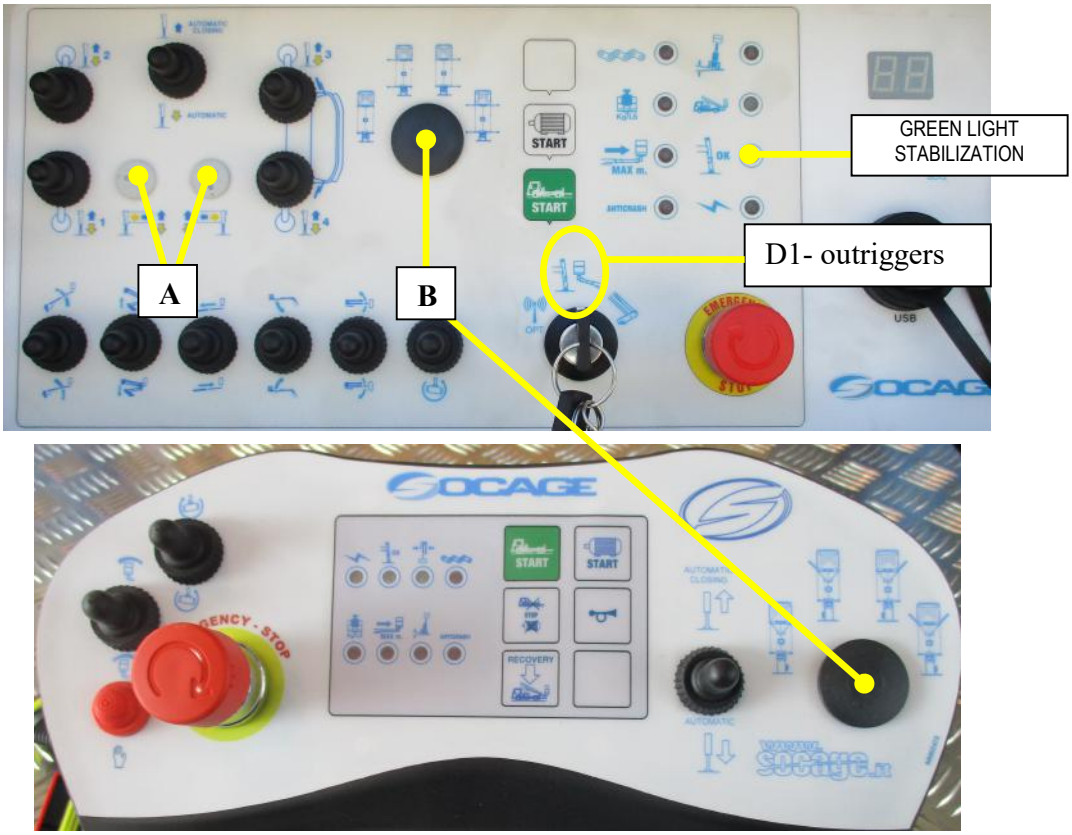
4. Press the clutch pedal.
5. Insert PTO:

- if electrical, keep pressed for a few seconds the push-button "ON" positioned to the left of the steering wheel
-if mechanical, placing the lever that you find between the seats in vertical position

Release the clutch slowly.
If the power take-off has been inserted correctly, the power take-off red indicator lights up.



6.Go to the control board in the turret and position the selector switch key in position D1 – outriggers (see fig)



7a. It is now possible to decide whether to stabilize the machine using closed cross-bars or whether to firstly proceed by extending them to obtain maximum stabilising plan, or greater machine performances. To extend the cross-bars use the manual controls (A) or the automatic one (B).

N.B.: The stabilization commands works only when the telescopic arm is completely closed and in travel position.

7b. To stabilise, push the automatic outriggers opening switch on the control panel under the frame until the green stabilization light switches on. The wheels will be lightly lifted from the ground.

N.B.2: This maneuver can also be executed from the control panel on the basket.

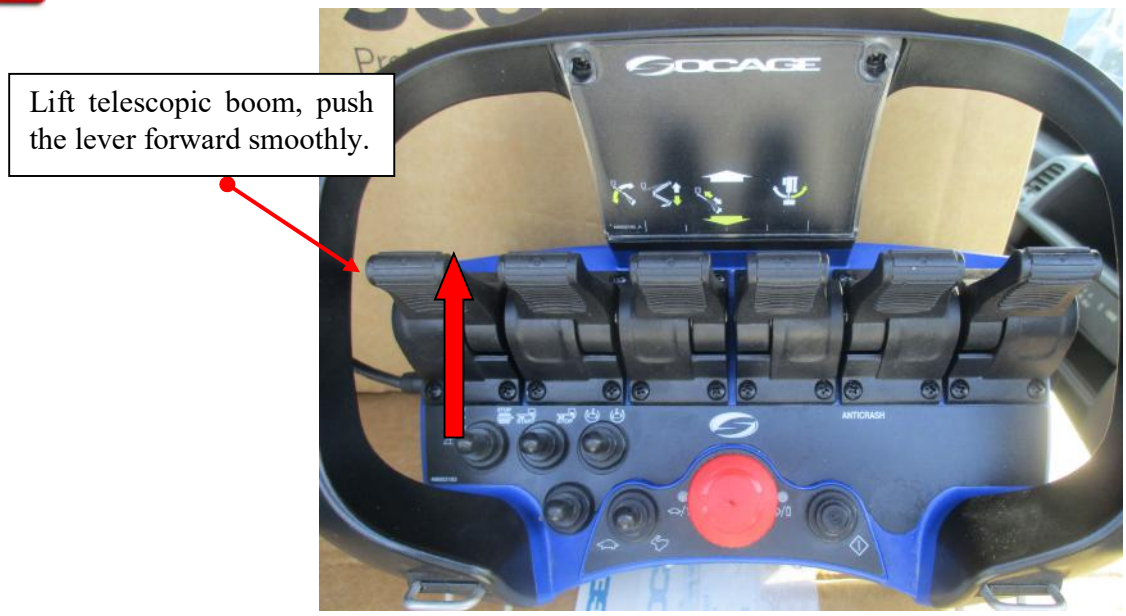
N.B.3: Always stabilize until centring the spirit level that you can find on the frame or on the outrigger.

b) Platform start-up

REMOVE THE KEY FROM THE SELECTOR BEFORE CLIMBING INTO THE BASKET.

Climb into the basket and wear the helmet. Fix the safety belts to the attachments indicated.

THE FIRST MOVEMENT TO BE PERFORMED IS LIFTING THE TELESCOPING ARM

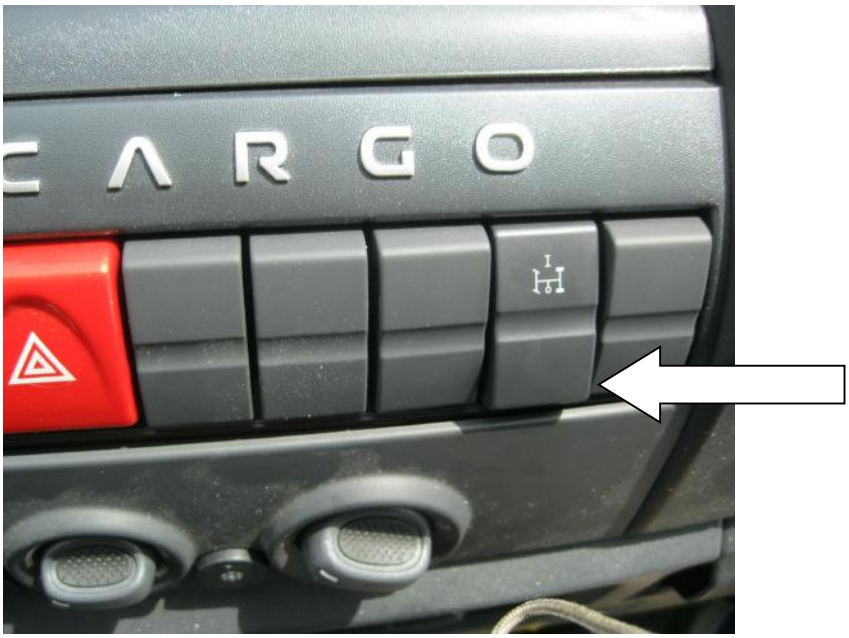


If the oil temperature tends to exceed 70° C, a heat exchanger must be installed.

c) Closing the platform

1. Retract the telescopic boom extension completely.
2. Centre the pantograph and close the bars.
3. Descent of the telescopic boom into the rest position.
4. Push the stabilisers control levers upwards (alternating the stabilisers so as not to cause stresses to the truck frame)
5. Manually close the outriggers
6. Remove the key from the control panel in turret.
7. Disconnect the power take-off as follows:
   a) Press the clutch button.
   b) Disconnect the PTO as follows:
      - if mechanic, place the lever between the seats in horizontal position;
      - if electrical, keep pressed for a few seconds the push-button “OFF”.
   c) Release the clutch smoothly.

ALWAYS CONTROL THE CORRECT DISCONNECTION OF THE POWER TAKE-OFF BEFORE MAKING MOVEMENTS WITH THE TRUCK SO AS NOT TO CAUSE DAMAGE TO THE VEHICLE GEAR BOX!



START - PROCEDURE WITH ELECTRIC PUMP (optional)

FOREWORD

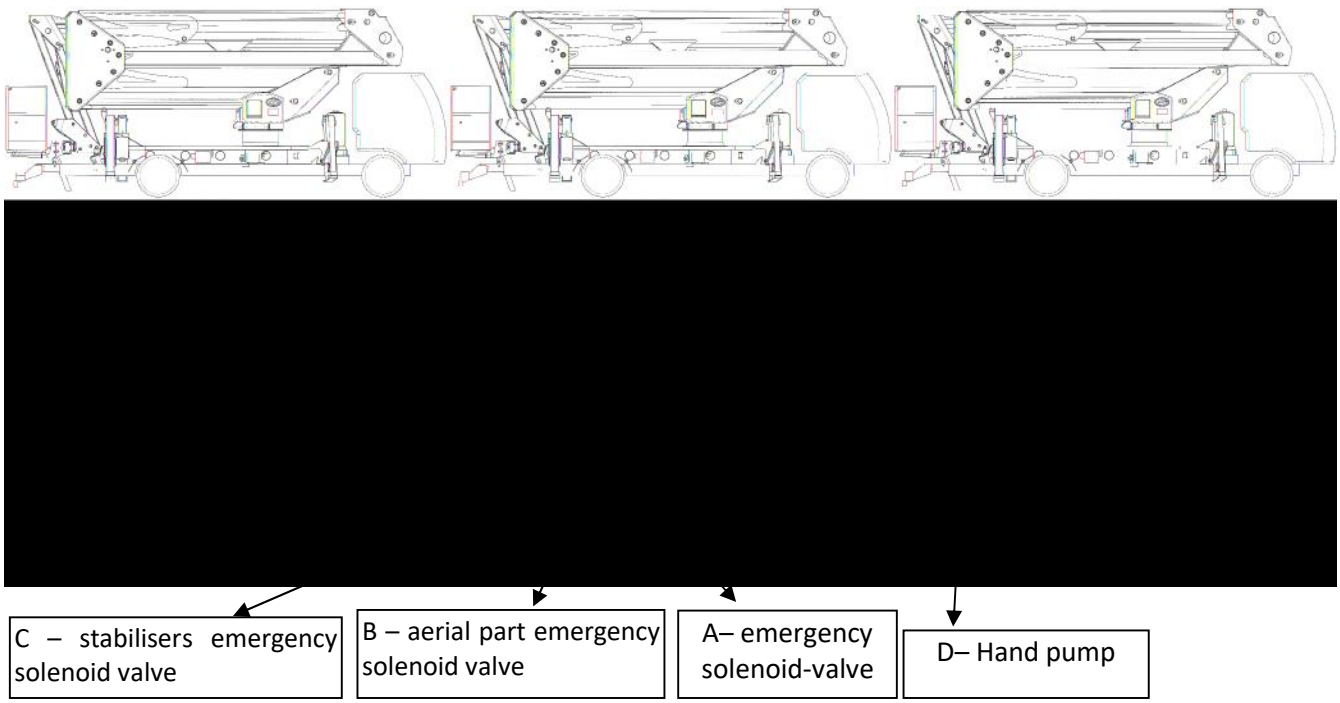
Read this manual carefully before starting to work with the machine. Until functioning of the controls and safety devices has been fully understood, try the machine from the position in the turret, without staff in the basket.

1. Place the truck in a suitable position to reach the work place and check the consistency of the ground on which the machine is being stabilised. Pay attention to the eventual presence of sewers and other points of subsidence, which are not recognisable from a surface examination.
2. Connect to the electric line (pos.A) and start the electric pump by turning the selector switch (pos.B) anti-clockwise, taking it to pos. 1 “START” (indicator C will switch-on).
3. Now turn on the electric pump from the button “9” on the controls in the turret (see page 3.26)
4. Then follow the standard procedure for the start-up procedure of the machine (see pag 3.15 point 6 and 7). Go to the control board in the turret and position the selector switch key in position D1 – outriggers , than act on the hydraulic distributor levers to obtain platform stabilisation.
5. At this point, position the selector switch key in position D2 – BASKET , go inside and proceed with normal use of the platform (see page 3.27-28)
6. To close the machine, the rest manoeuvres are obviously the opposite to those stated previously stated. For greater clarity, the sequence is the following:

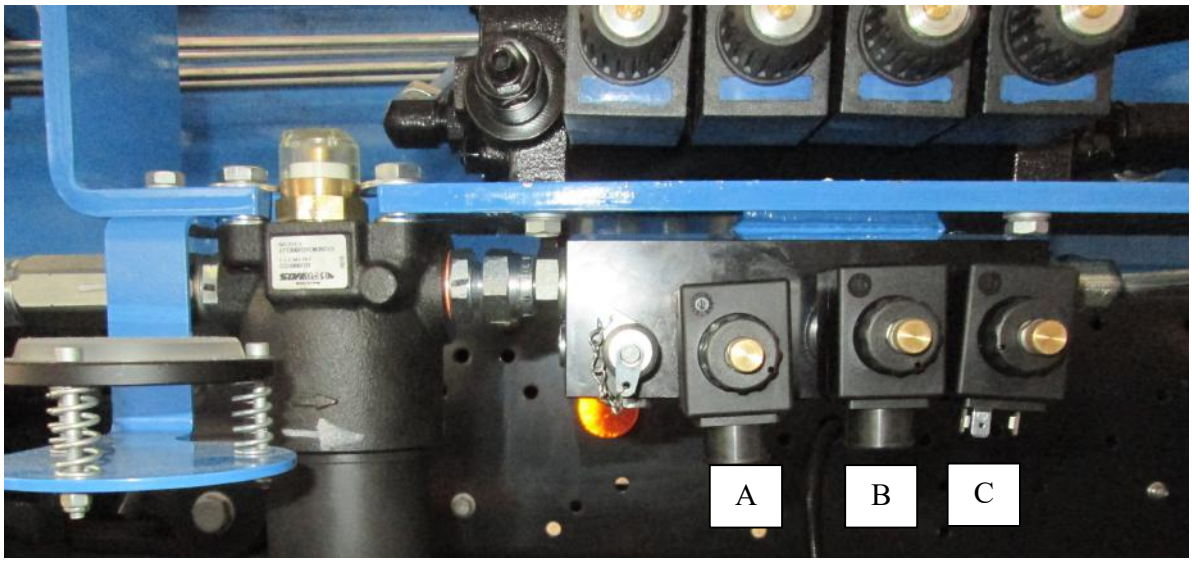
- BOOM RETURN
- BARS DESCENT AND REST ON THE SUPPORT
- TELESCOPIC BOOM DESCENT
- DESELECTION OF THE ELECTRIC PUMP BUTTON ON THE BASKET CONTROLS
- PRESSING THE ELECTRIC PUMP BUTTON IN THE TURRET AND RETRACTION OF THE OUTRIGGERS; (REMEMBER THAT THE MANOEUVRE IS ONLY POSSIBLE IF THE BOOM IS RESTING ON THE SUPPORT)
- VISUAL CHECK OF THE RETRACTION OF THE FOUR OUTRIGGERS AND THE PERFECT REST OF THE SET-UP AND VERIFICATION OF THE INDICATORS POSITIONED IN THE TRUCK CAB FOR CORRECT CLOSURE
- SWITCH THE ELECTRIC PUMP OFF BY TAKING THE SELECTOR “B” TO POSITION 2 “STOP”.
- DISCONNECT THE CONNECTION PLUG TO THE ELECTRIC LINE (pos.A)

3.6 Machine closure in emergency conditions

In the case of fault or interruption of the hydraulic or electric power supply during use, the operator on the round can carry out closure by performing the emergency movement from the ground.



A – Solenoid-valve discharging set-up of emergency.
B – Aerial part emergency solenoid valve
C – Stabilizers emergency solenoid valve
D– Hand pump



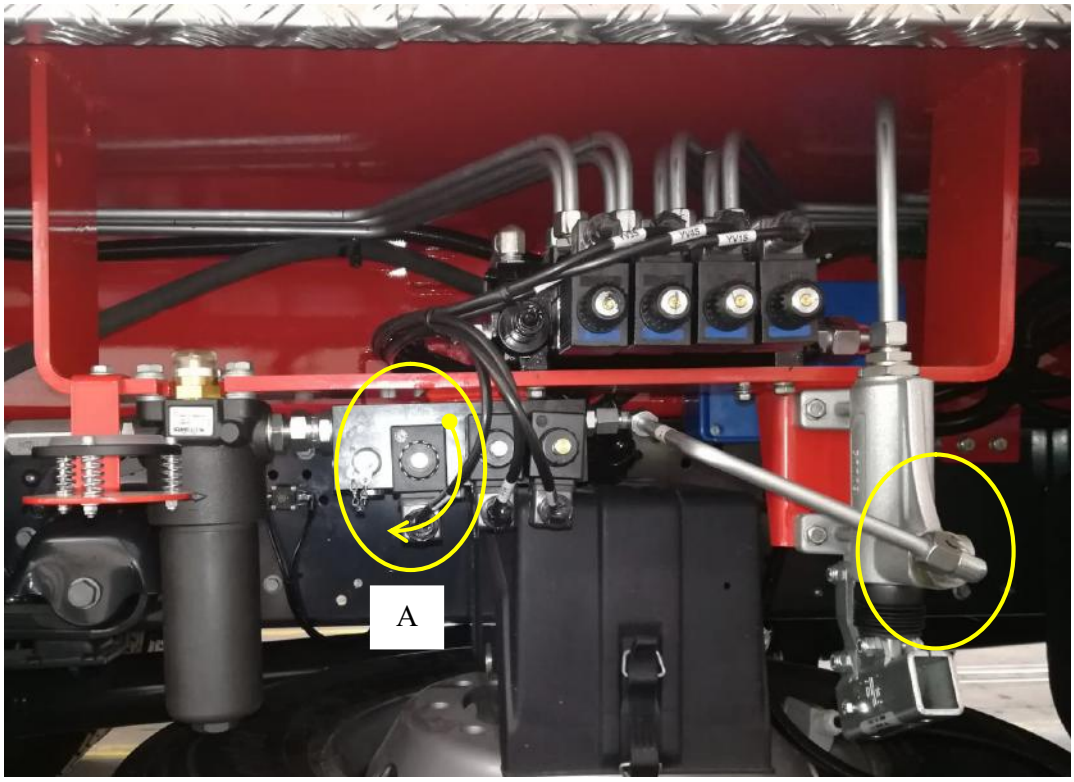
Malfunction of the hydraulic fee and electric power supply

In case of malfunction of the hydraulic feed and electric power supply, the machine can be moved with the aid of the manual pump, as follows:

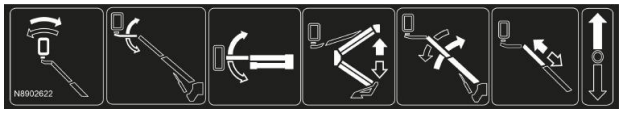
IMPORTANT: For this operation is necessary the presence of two operators

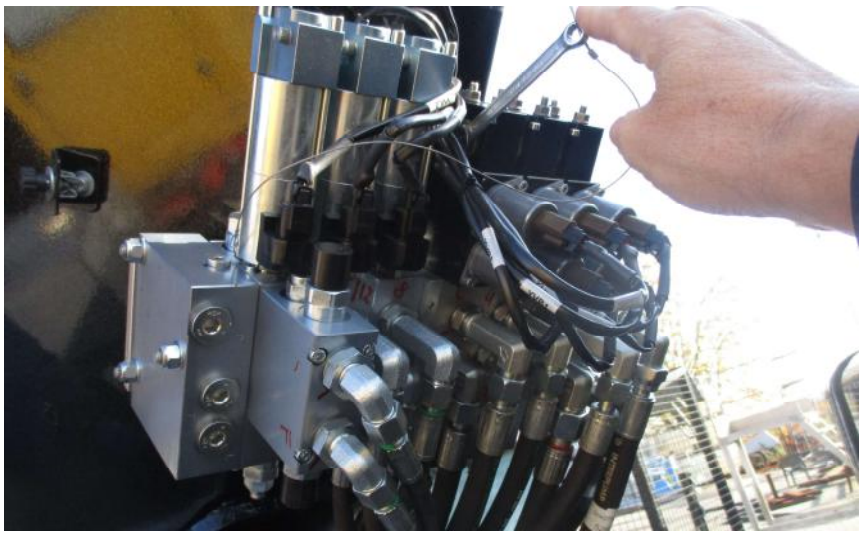
1. Take the handle of the manual pump located in the truck's cabin, and insert it in the manual pump, located at the side of the oil tank.

2. Remove the seal of the main drain solenoid valve “A”, located under the frame, and exclude it by tightening the end run pin.



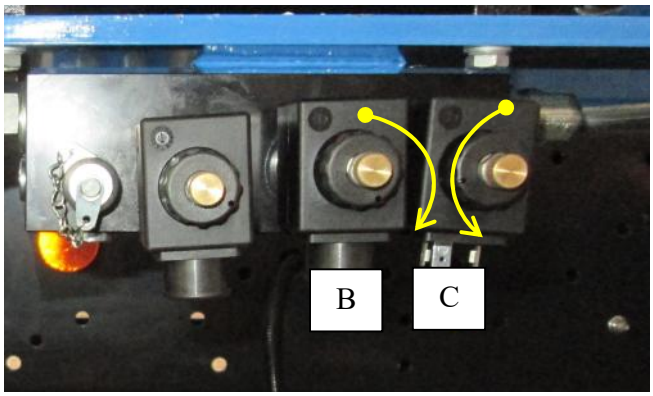
3. Remove the carter in the turret, operate the controls (using the supplied wrench) according to the indications of the respective movements (shown on the adhesive plate on the upper part), simultaneously use the hand pump to close the aerial.





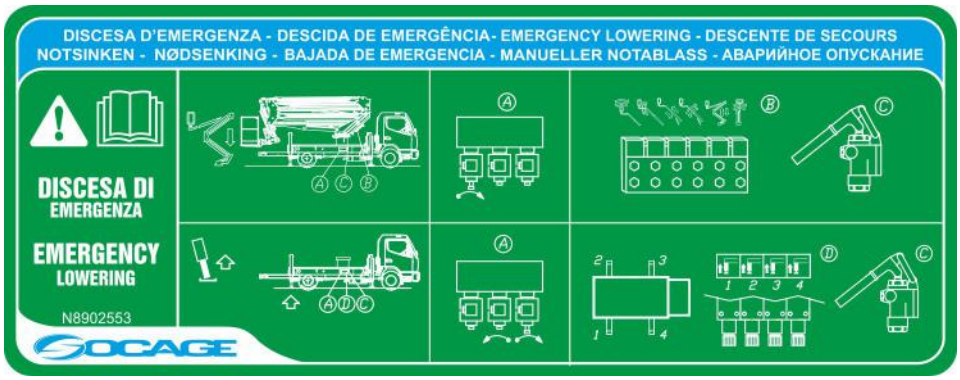
Lifting of the stabilisers in emergency condition
(restore running conditions)

1. Exclude the solenoid valve of the aerial part – B - by tightening the pin to end run
2. Exclude the solenoid valve of the stabilisers – C - by loosening the knob to end run



3. Activate the stabilisers levers and simultaneously activate the manual pump using the controls lever to bring the machine in running conditions again.

ADESHIVE OF THE EMERGENCY MANEUVERS



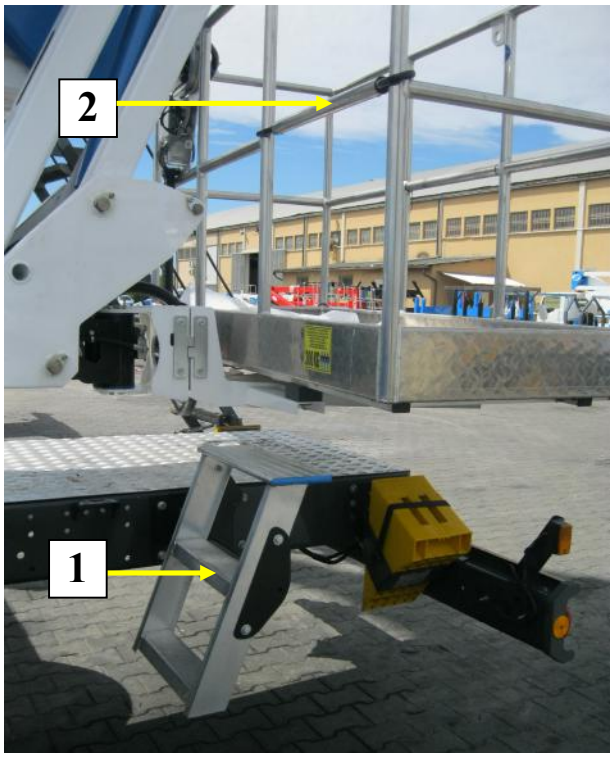
Once the recovery operations are completed, restore the following:

- **Tighten the knob of the drain solenoid valve of the stabilisers**
- **Fully loosen the pins of the exchanger solenoid valve at the side of the distributor.**
- **Remove the stabilisers control lever.**

Contact an authorised Socage workshop to control the malfunction and lead coat the knobs of the solenoid valves again.

3.7 - Control board

ACCESS TO THE TRUCK BED AND THE BASKET



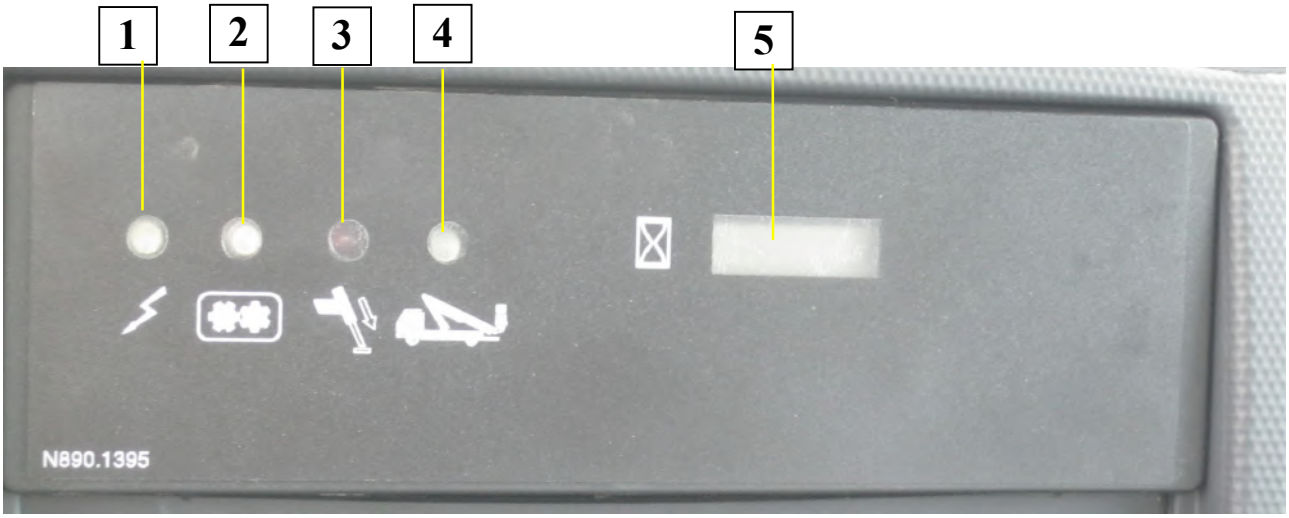
1. Steps for ascent
2. Basket access sliding protection bar.

Note: The slide bar access, returns automatically (by weight) in its position closing. Daily check the efficiency of the return automatic, using practice test

PANEL IN TRUCK CAB

The following are present on the panel inside the truck cab:

1- PLE power supply line white indicator light.
2- Power take-off inserted orange signal light.
3- Red indicator light signalling incorrect closure of the outriggers when moving (optional)
4- Green light indicating correct position of the platform during movement (optional).
5 Timer with simultaneous switch-on at the PLE electric control boards



COMMANDS AND CONTROLS

The positions indicated refer to the illustrations and hydraulic and electric layouts.

STABILIZATION

Stabiliser controls, located under the walking frame, are made up of an electric distributor, four levers to control the stabilizers individually and a lever to control all of them automatically.
Perform ascent and descent of stabilisers by using the automatic closing/opening lever or, when needed, the individual stabiliser controls (see indications of the movements shown on the plate).
For working arm opening, it is essential that all stabilisers are fixed to the ground. Once the arm has been lifted from its support on the frame, it is impossible to move stabilisers.
During machine closing, completely lower bars and, afterwards, the telescopic arm.

(!)ATTENTION (!)

Perform the extension/retraction maneuvers of the cross-bars ONLY when the outriggers (plate) are raised from the ground
..

(!) WARNING (!)

The movements of "lifting-and-lowering stabilisers" have to be done symmetrically. That means to move the stabilisers altogether, at the same time. Otherwise, if they are moved singularly, than they have to be lifted or lowered alternatively, in graduation all four stabilisers. Better is if they are moved from two to two.
We underline the following:
if the stabilisers are operated too much unbalanced, the frame, the base structure of the platform and the stabilisers themselves can suffer for the effort.
If the machine has front slanted outriggers (towards the vehicle cabin) and back vertical outriggers it's necessary to put on the ground the front diagonal outriggers.
This is important to avoid a damage of the back vertical outriggers because of the sliding of the vehicle
DO NEVER OPERATE THE PLATFORM AS HERE FOLLOWING INDICATED:
NEVER LIFTING OR LOWERING COMPLETELY AND SEPARATELY ONE, TWO, OR THREE STABILISERS.

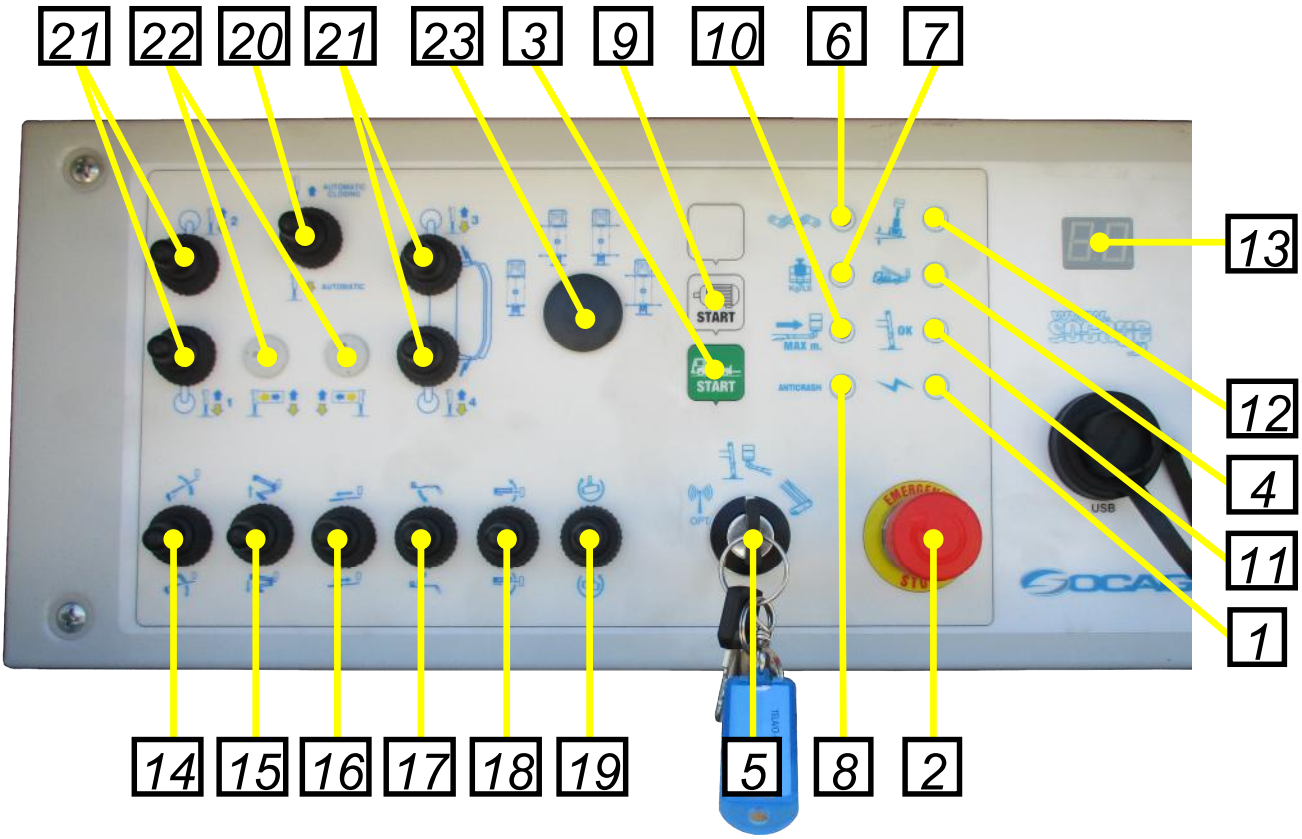
CONTROLS ON THE TURRET

Controls realised with sensitised hydraulic distributors and with levers protected against accidental activation.

ELECTRIC CONTROLS AND COMMANDS

1. Plant electric power supply signal light.
2. Self-retaining emergency button.
   If pressed, it causes all movements to stop, the thermal motor of the carriage to switch-off and triggers the acoustic signal. To restore functioning, release the button by turning the upper part.
3. Truck engine pump switch-on button.
4. Closed machine light
5. Three-position key selector switch to enable FRAME - RADIO-BASKET - TURRET controls
   NB: to make it works, the TURRET position must be hold
6. Chains breaking/loosening indicator
7. Red indicator light for signalling overloads on the basket (optional)
8. Anti-crash alarm light
9. Electric pump switch-on button (optional).
   Allows to work with the truck thermal engine off.
   For functioning, hold the button down and activate the hydraulic distributors normally.
10. Maximum outreach alarm signal lamp
11. Stabilisers pressed to the ground - green indicator
12. Inclinometer
13. Error reporting display
14. Selector switch to control boom lift / lower movement
15. Selector switch to control bar lift / lower movement
16. Selector switch for boom extension / return movement
17. Selector switch to control jib lift / lower movement
18. Selector switch for turret rotation control
19. Selector switch for basket rotation control
20. Selector switch for automatic stabilization
21. Selector switch for stabilizers extension / return movement
22. Selector switch for outriggers extension / return movement
23. Stabilization selector with four positions:
    -Stabilizer with close outriggers;
    -Stabilizer with open outrigger left;
    -Stabilizer with open outrigger right;
    -Stabilizer with open outriggers.

CONTROL PANELS IN THE TURRET (Figure 015)

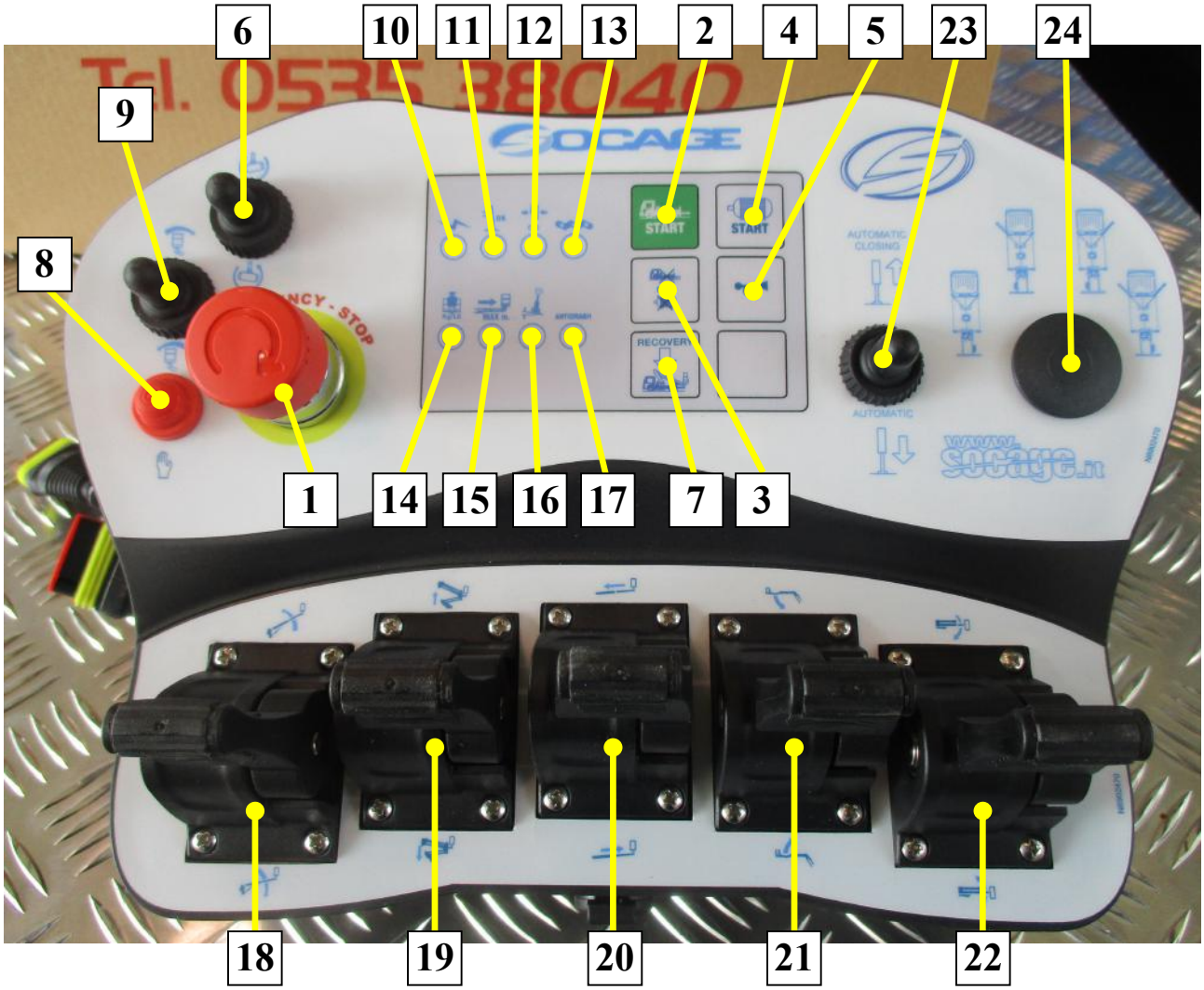


CONTROLS ON THE BASKET

Controls realised with sensitised hydraulic distributors and with levers protected against accidental activation.

POS.	DESCRIZIONE E FUNZIONAMENTO
1	24. Self-retaining emergency button. If pressed, it causes all movements to stop, the thermal motor of the carriage to switch-off and triggers the acoustic signal. To restore functioning, release the button by turning the upper part
2	Truck engine pump switch-on button
3	Truck and electric pump switch-off button
4	Electric pump switch-on button (optional)
5	Horn
6	Selector switch for basket rotation control
7	Anti-crash bypass button
8	Manual levelling operation consent button
9	Basket rotation control selector switch
10	Plant electric power supply signal light
11	Green stabilization signal lamp
12	Turret centering indicator light (optional)
13	Signal lamp for chain loosening
14	Red indicator light for signalling overloads on the basket (when present)
15	Red indicator light for extension limiter intervention
16	Inclinometer
17	Anti-crash light (when present)
18	Lever selector switch to control boom lift and lower movement
19	Lever selector switch to control bars lift and lower movement.
20	Lever selector switch for boom extension and return movement.
21	Lever selector switch to control jib lift and lower movement.
22	Lever selector switch for turret rotation control.
23	Automatic stabilization/closing selector switch
24	Stabilization selector with four positions: -Stabilizer with close outriggers; -Stabilizer with open outrigger left; -Stabilizer with open outrigger right; -Stabilizer with open outriggers.

BASKET CONTROL PANEL (Figure 016)



RADIO REMOTE CONTROL (optional)

The machine can be equipped with a radio remote control that can be used on the ground. To use this remote control you need to position the key selector (placed in the control panel in the turret) in RADIO-BASKET position and then proceed by turning on the remote control (button 5).
When switched on, an interlocking device will inhibit all the other control panels (turret / basket).
N.B.: placing the key selector in "BASKET" position, the first console that will be turned on (basket or radio) will get priority.

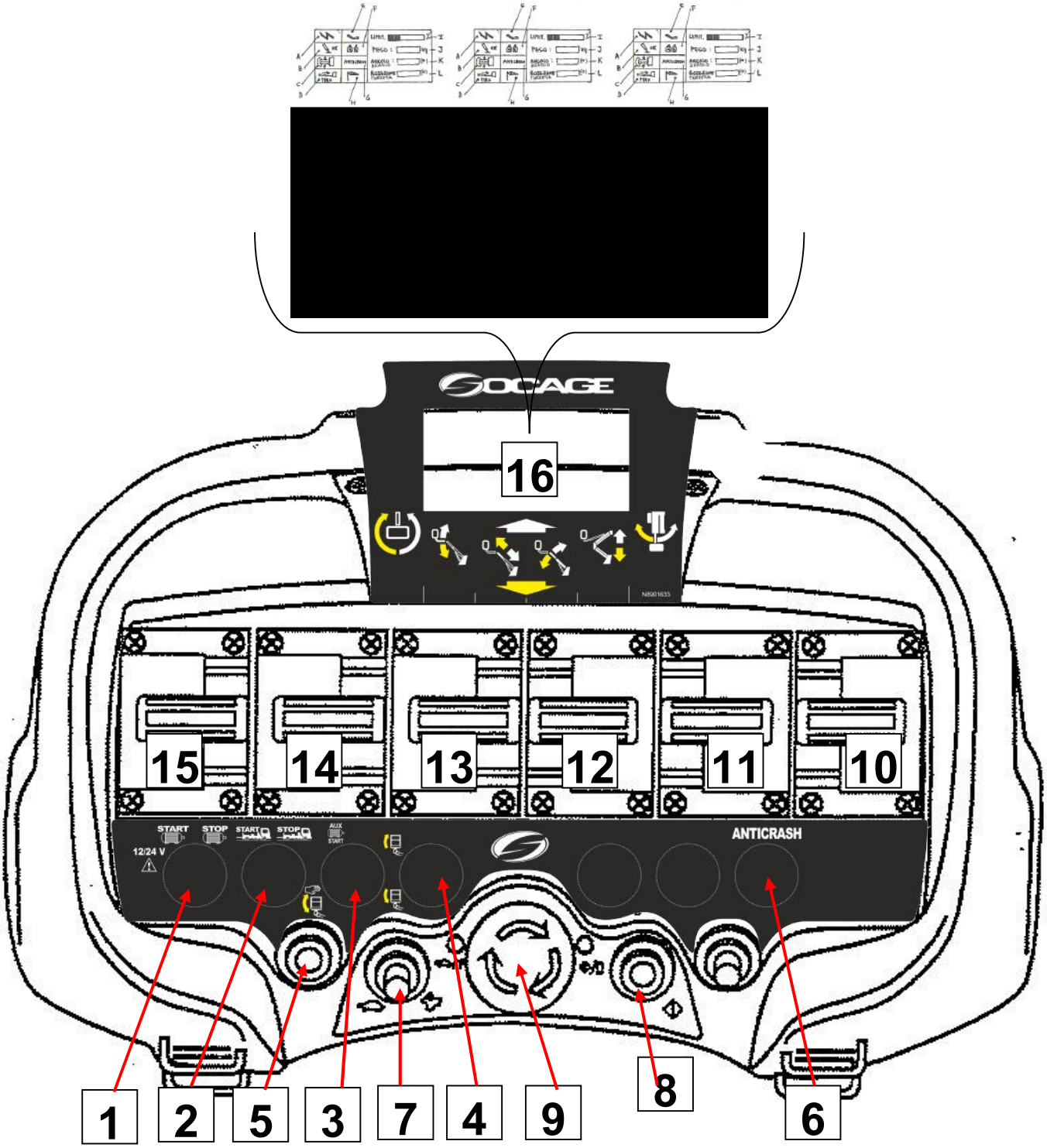
GENERAL PROVISIONS of SAFETY/USE

It's good practice:
-that the user of the control get familiar with the symbols and placement of the levers to get used to the functions and the movements
-to always check the correct working of the emergency button
-stay at an adequate distance from the machine to always have a clear view of the working area to avoid impacts and collisions.

RADIO REMOTE CONTROL DESCRIPTION

1. Engine 12/24V start-stop button
2. Truck engine start-stop button.
3. Auxiliary start button and truck engine max cycle ranging pushbutton.
4. Basket levelling control (The operation is subject to activation of the button pos.5)
5. Manual levelling activation button (use with lever pos. 4)
6. "Anticrash" button
7. Speed manoeuvres selector SLOW-FAST or automatic stabilization
8. Radio remote control start button and Horn
9. Mushroom shaped emergency stop button
   Pressing this stops all movement and shuts down the lorry thermal motor. To reset functions, unblock the button by turning the upper part
10. Lever for turret rotation control
11. Lever selector switch to control pantograph lift/lower movement
12. Lever selector switch to control arm lift/lower movement
13. Leva Lever selector switch for boom extension/return movement
14. Lever selector switch to control Jib lift/lower movement
15. Lever selector switch for basket rotation control
16. Display:
    A. Pilot light
    B. Stabilization light
    C. Centred turret indicator
    D. Moment limiting light
    E. Chain alarm light
    F. Load limiting light
    G. Anti-crash light
    H. Anemometer light
    I. Residual limiter indicator (0-100%)
    J. Weight on basket
    K. Boom degree
    L. Turret rotation degree

RADIO REMOTE CONTROL (optional)



EMPTY PAGE FOR FURTHER INFORMATIONS

***** CHAPTER 4 *****

MAINTENANCE

The documentation contained in this chapter is composed of
n° 20 pages, this included..

ATTENTION!!! WELDING/RESTORATION
Different parts of the machine are made with steel of high elastic limit; do not never make weldings or restorations without the authorization and the preventive instructions of the constructor.

INDEX

1. Assumption
2. Products to use
3. Maintenance program
4. Rotation group greasing
5. Hydraulic oil level verification
6. Delivery filter cartridge replacement
7. Return filter cartridge replacement/cleaning
8. Control seal valves of cylinders block
9. Control pipefitting and pipes
10. Systems/electric components
11. Structure inspection
12. Control clamping bolts and nuts
13. System emptying and tank filling
14. Hinged pivots greasing
15. Sliding blocks greasing
16. Control/sliding blocks adjustment
17. Controls
18. Troubles-causes-cures
19. Irregularities of working

INTRODUCTION

It is of the utmost importance that this equipment is washed with water cleaning machine as to remove all polluting elements which can damage materials and impair good functioning.
After washing, lubricate all components as to properly restore sliding conditions and check if there are elements out of shape or which show wear. If so, it is compulsory to apply to an authorised service shop to replace these elements.
For lubricating material refer to what indicated in this manual.
It is essential to take into account that even safety devices can wear and that one has to always check if they are clean, lubricated and unimpaired. Under normal working conditions cleaning and lubricating operations as described above can be carried out once a month. This interval has to be reduced if there is a situation of use or an environment harder than normal.
It is impossible to describe all these situations, what follows is therefore a list of some examples:

- Machine setting into operation again after a long period of stoppage.
- Extremely high or extremely low environmental temperatures with subsequent fast lubricant deterioration or extreme hardening.
- Painting and sand blasting works during which the material tends to enter into the friction sliding guides and to combine with grease thus creating a mixture which is no more a lubricant but becomes an abrasive substance wearing out the components of the machine and locking the sliding guides.

We rely on your conscientiousness in tracing down, in relation to the ways in which the machine is used, when and how to perform control and maintenance absolutely necessary to the perfect functioning and good state of preservation of safety devices and of the machine in general.

WARNING

FOR THE SAFEGUARD OF THE MACHINE AND OF OPERATORS IT IS COMPULSORY TO USE ORIGINAL SPARE PARTS. TO KNOW THE AUTHORIZED SERVICE SHOP FOR YOUR AREA CALL SOCAGE TECHNICAL SERVICE

DURING WASHING WITH HIGH-PRESSURE JET DO NOT AIM AT BOXES, CABINETS AND ELECTRIC COMPONENTS. DO NOT WASH WITH DETERGENTS, CHEMICALS, PETROL OR SIMILAR SUBSTANCES, WHICH CAN DAMAGE RUBBER PARTS, PLASTIC COMPONENTS AND FILMS.

DO NOT PERFORM ANY MAINTENANCE OPERATION IF THE MACHINE IS MOVING. TURNS ALL MOTORS OFF AND REMOVE KEYS FROM THE CONTROL PANEL AND FROM THE DASHBOARD OF THE TRUCK. FOR BALL JOINTS WE SUGGEST TO REPEAT GREASING WITH THE MACHINE IN DIFFERENT POSITIONS. HOWEVER, MAINTENANCE HAS TO BE CARRIED OUT WHEN THE MACHINE IS TURNED OUT AND AFTER THE KEYS HAVE BEEN REMOVED FROM CONTROL PANELS.

Inspection, maintenance and other intervention on the machine are to be carried out according to specific skills. As far as maintenance programme is concerned, what follows is a list of workers in charge for each operation:

A) The driver of the platform and the service shop of the company which owns the machine.
B) SOCAGE authorised service shop.
C) SOCAGE service shop.

Before carrying out any modifications you must to be authorized by the manufacturer.

NOTE: AFTER HAVING MADE THE DIFFERENT CONTROLS/MAINTENANCE PROVIDE TO GIVE THE RESULTS AND THE OPERATIONS MADE ON THE APPROPRIATE CONTROL BOOK-SEE CHAP.11

IF THE MACHINE IS TO BE STORED FOR A LONG TIME:

- Store it in a dry and well-aired place.
- Remove starting keys from the machine.
- Clean filter and electric system.
- Protect contacts and remote control switches with special antioxidising products.
- Grease sliding guides, chains and surfaces which are not protected by painting.
- Do not cover the machine with a plastic material since it would create damaging condensation.
- As far as the wagon is concerned, follow indications suggested by its manufacturer.

Before putting the machine into operation again, carry out inspection and maintenance procedures at intervals requested every day....., every 50 hours....., once a month.

DISMANTLING AND SCRAPPING

In case of scrapping, it is necessary to dismantle the machine and broke it down into uniform parts which should be sent to the relevant storage centres.
These types of materials are present on the machine:

- Iron materials: metal structural works and mechanical components.
- Plastic materials: gaskets, belts, protections.
- Electric materials: windings, controls, electric valves and similar components.
- Oils and lubricants: hydraulic oil, gearbox lubricants, greases.
- As far as wagon is concerned, follow what indicated by its manufacturer.
- Other materials: QUICKSILVER (basket balancing sensor)

EQUIPMET LIFTING

To lift the complete equipment (truck + platform), follow the truck usage indications. Do not hook to any platform parts during the lifting.
The platform parts (if it is not indicated inside this manual) can be dismounted only by some authorising workshops, and move by means and in accordance of the rules in force.

2. MATERIAL TO USE

- NILS SOCAGE GREASE grease or equivalent for axes and lubricator
- NILS SOCAGE GREASE graphitised grease for the booms extensions and the outriggers' supporting

	DROP POINT C°	DENSITY TO 15°C (g/cm³)	WORKING TEMPERATURE (°C)	Viscosity to 40°C (mm /s²)	Flash Point (°C)	Autoignition Point (°C)
NILS SOCAGE GREASE	ca.250	0,91÷0,95	-15/+100	ca.84.	≥ 250°	Not autoignition

Oil AGIP ARNICA 46 for hydraulic system - Hydraulic System Capacity 50 l

	Density to 15°C(Kg/l) ASTM D 1298	Viscosity to 40°C(mm /s) ASTM D 445	Flash V.A. °C ASTM D 92	Sliding °C ASTM D 97
AGIP ARNICA 32-46	0,865-0,870	32-45	202-215	-36

Equivalent: ROL LI 46 HIV
TOTAL EQUIVIS ZS 46
ESSO INVALOR EP 46
SCHELL TELLUS SX 46
MOBIL DTE 15

ν Oils for centre bearing rotation unit with endless-screws/flanged bearing:
- NILS SOCAGE GREASE: for endless-screw/bearings/balls and for cogging

	DROP POINT C°	DENSITY TO 15°C (g/cm³)	WORKING TEMPERATURE (°C)	Viscosity to 40°C (mm /s²)	Flash Point (°C)	Autoignition Point (°C)
NILS SOCAGE GREASE	ca.250	0,91÷0,95	-15/+100	ca.84.	≥ 250°	Not autoignition

IT IS ABSOLUTELY FORBIDDEN TO INTRODUCE TOOLS, HANDS, FINGERS, ETC., IN THE HOLES OF THE TELESCOPIC BOOM.

ALL THE MAINTENANCE OPERATIONS HAVE TO BE MADE WITH ORDINARY TOOLS ACCORDING TO THE SAFETY RULES

IMPORTANT
CHECK CAREFULLY THE CONDITIONS OF THE ELECTRIC CONDUCTORS OF THE BASKET CONNECTION WITH THE TURNTABLE. FOR THE IMPORTANCE OF THE SAFETY IN THE OPERATION, WE SUGGEST TO REPLACE THESE CONDUCTORS EVERY 2000 WORKING – HOURS.

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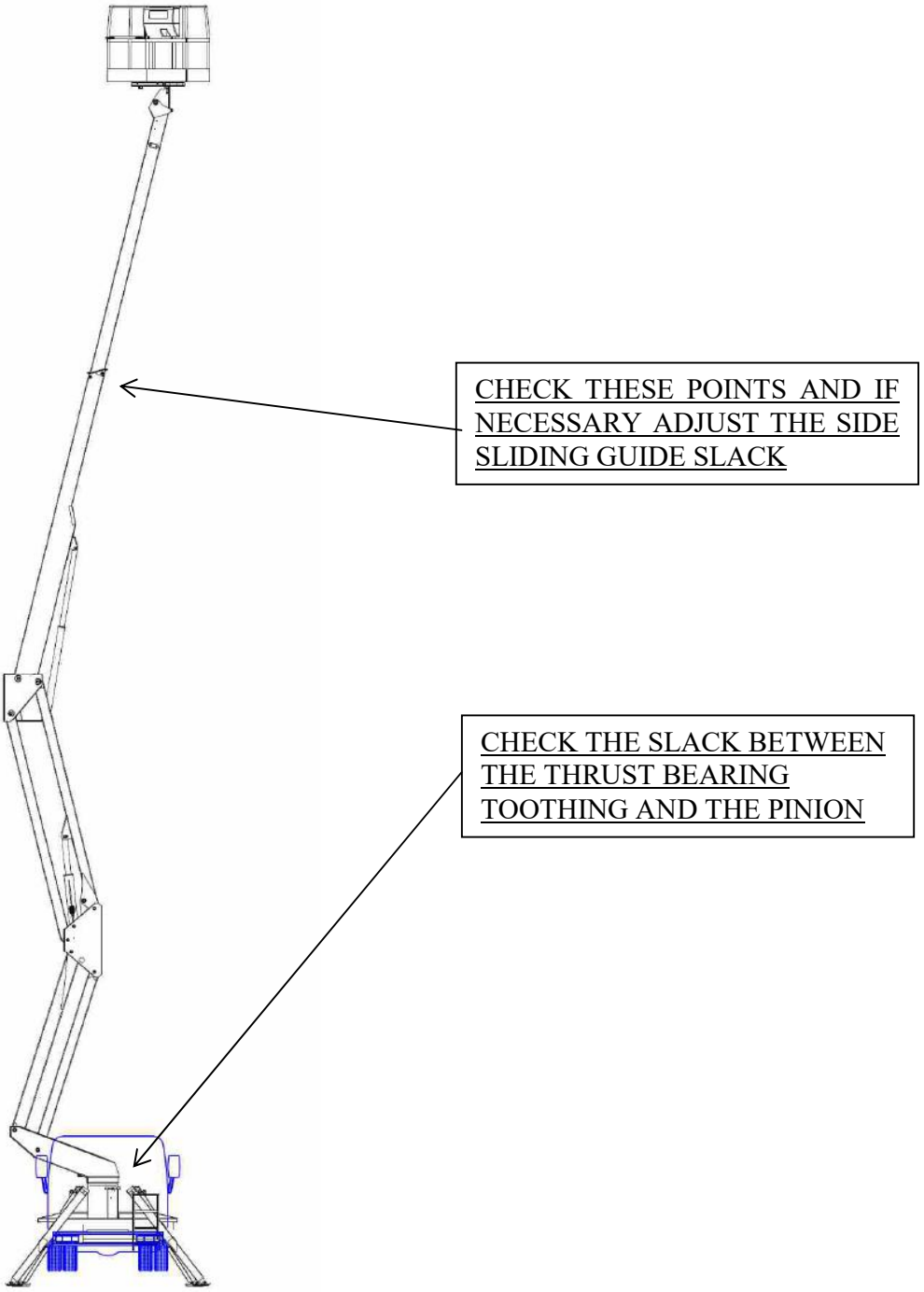
MAINTENANCE PROGRAMME

Important: After having carried out any kind of control/maintenance, and before putting the machine back into service, please carry out the control and maintenance operations forseen "every day".

INTERVALS	OPERATIONS	NOTES	BY
Every day before putting into operation	Check through repeated tests, without any person in the basket, the good functioning of all safety and emergency devices; in particular, be extremely mindful to · emergency stopping pushbuttons · locking systems for arm stabilisers · controls and warning lights · if battery are charged · hydraulic oil and fuel tank levels MOREOVER, MAKE SURE THAT: · pin locking systems (plugs, collects, etc.) are in perfect efficiency and in good condition • instruction and safety plates can be perfectly read · there are no hydraulic leaks, loosen electric connections, collision signs, friction, etc.		A platform driver
Every 50 hours of work	Check oil level in the motors. Make sure that the following components are sufficiently clean: · first filter of diesel oil · motor air filter · machine (in particular, inspect tightness of connections and hoses); take the advantage of inspecting the condition of tyres, cables, all accessories and tools. Check hydraulic oil filter saturation.		A platform driver
Every month (~ 120 hours)	Perform a complete cycle of cleaning and greasing as indicated in the INTRODUCTION to this paragraph MAINTENANCE. Perform inspection and lubrication as indicated by the attached picture 050-051.	After the first 150 hours, replace hydraulic system oil filter cartridges	A platform driver

PICTURE 050

CHECK THE POSSIBLE PRESENCE
OF RUST POINTS WHICH CAN
REVEAL CRASHES CRACKES OR OTHER EVENTS
ON WHICH IT IS NECESSARY TO INTERVENE



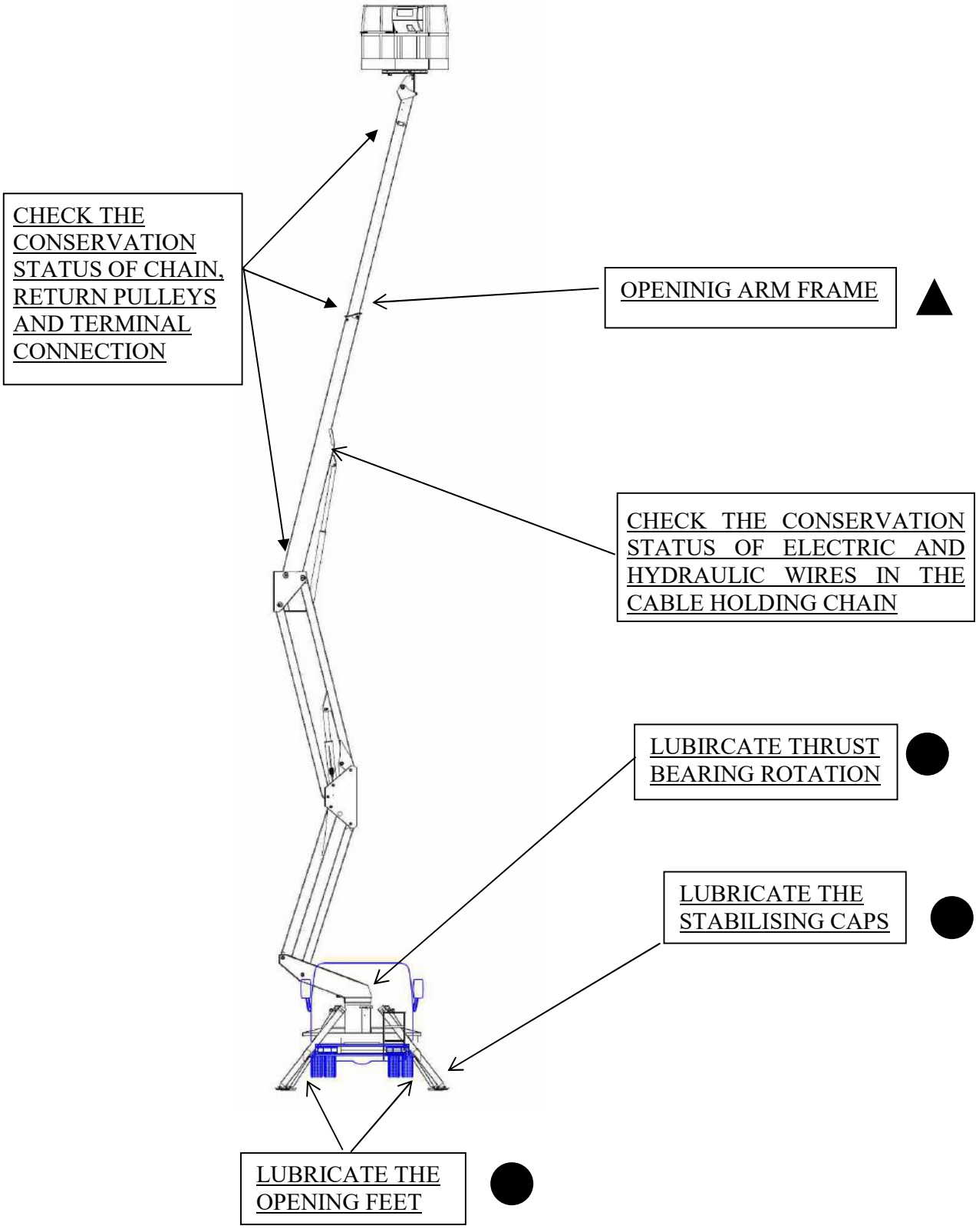
MAINTENANCE PROGRAMME

Important: After having carried out any kind of control/maintenance, and before putting the machine back into service, please carry out the control and maintenance operations forseen "every day".

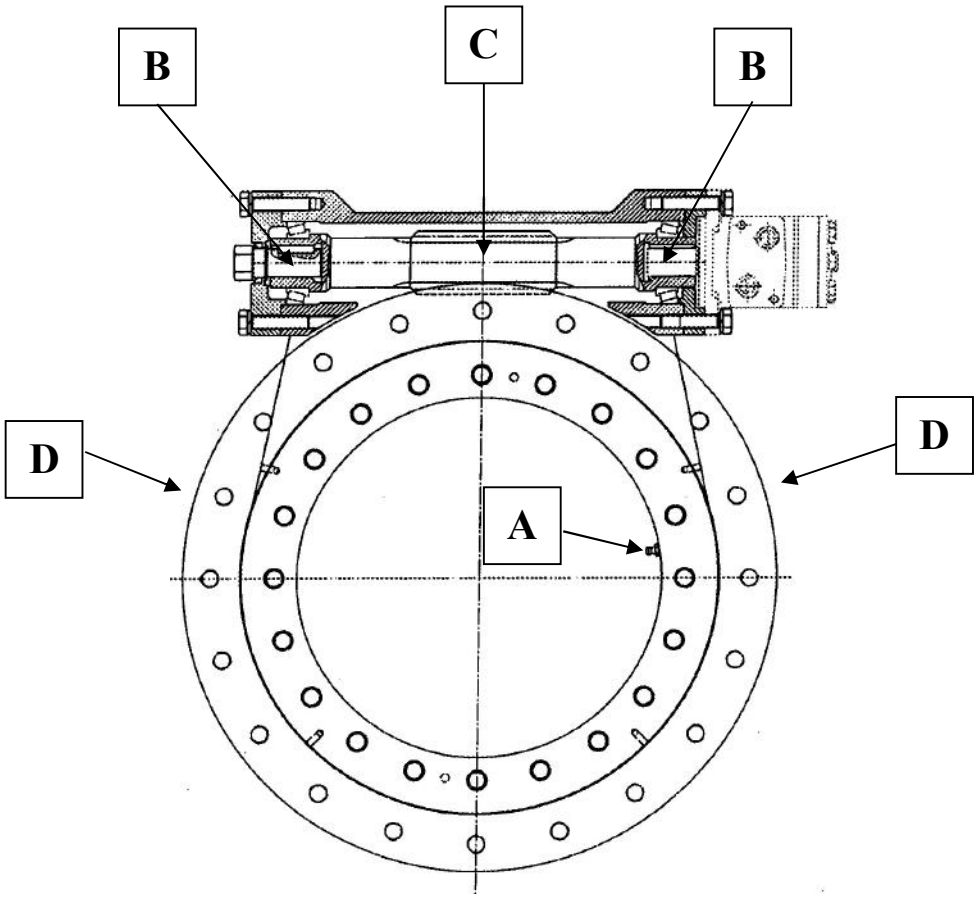
INTERVALS	OPERATIONS	NOTES	BY
Every 3 months (~ 360 hours)	Inspect main fixing tightening parts · thrust bearing nuts and bolts · gearbox nuts and bolts · frame-truck nuts and bolts · pin collects. Perform inspection and lubrication as indicated by the attached picture 050-051. Replace hydraulic system oil filter cartridges and inspect locking valves. N.B. If tightening of thrust bearing screws is not correct, it is necessary to replace the screws at our authorised service shops.	With this regard, see tightening couples at chapter 3 With this regard, see "INSTRUCTIONS FOR HYDRAULIC SYSTEM MAINTENANCE"	A platform driver and/or person in charge of safety at the company which owns the machine + B authorised service shops or SOCAGE company
Every 6 months (~ 750 hours)	Perform a complete inspection of the machine and write down your findings onto the special sheets herewith attached in the "INSPECTION REGISTER"		A platform driver + person in charge of safety at the company which owns the machine
Every year (~ 1500 hours)	Replace all the oil in the hydraulic system .	With this regard, see "INSTRUCTIONS HYDRAULIC SYSTEM MAINTENANCE"	A platform driver + person in charge of safety at the company which owns the machine + B authorised service shops or SOCAGE company
Every 1-3 years (1500-4500 hours)	COMPLETE INSPECTION	N.B. For authorized platforms at increased load capacity the period is reduce every 1-2 years (1000-3000 h) and the complete overhaul every 6-7 years (9000-10000 h)	B authorised service shops or SOCAGE company
Every 15000 hours or 10 years	COMPLETE OVERHAUL		B authorised service shops or SOCAGE company

PICTURE O51

LUBRIFICATE THE PIVOT OF ALL JOINTS



4. GREASING/LUBRIFICATION OF THE CENTRE BEARING ROTATION UNIT WITH ENDLESS SCREWS



A – BALL BEARINGS – NILS SOCAGE GREASE (through grease cup)
B – BEARINGS - NILS SOCAGE GREASE (through grease cup)
C – ENDLESS SCREWS/COGGING - NILS SOCAGE GREASE (through grease cup)
D – EXTERNAL COGGING – NILS SOCAGE GREASE (USING PANEL)

5 VERIFICATION HYDRAULIC OIL LEVEL

You have to check that the hydraulic oil level in the tank is between the minimum and maximum values like in picture 1. The verification has to be made when the machine is closed and in position of transport (even the outriggers) and when the vehicleis on a ground floor.
In case of oil lack you have to make the topping up with an oil that has the characteristics on page 4.4.

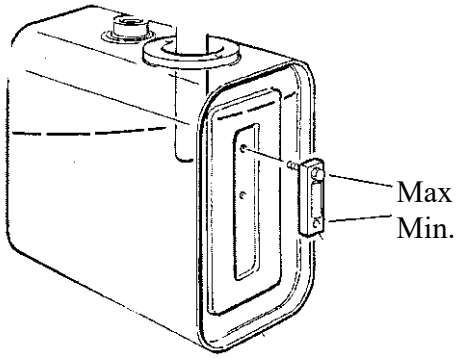


FIG.1

6. DELIVERY OIL FILTER CARTRIDGE REPLACEMENT

The delivery oil filter is near the control outriggers group (pic.2).
For a correct filter cleaning you have to replace the filter cartridge because it's not washable (made of microfibre).
For the replacement operation you have to proceed in this way:
-clean the filter external body
-screw out the lower part of the filter and extract the inside cartridge (before this operation put under the filter a container to gather the oil on the inside of the filter)
-insert the new cartridge and retighten the lower part of the filter

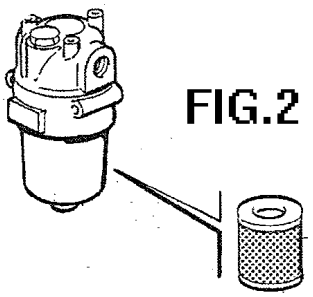


FIG.2

7. REPLACEMENT/RETURN FILTER CARTRIDGE CLEANING

The return filter cartridge is on the upper part of the tank (pic.3).
For a correct filter maintenance it's necessary to clean the inside filter cartridge and to replace it when its level of stoppage has exceeded the maximum limit (it's underlined by an evident dirty that can't be removed on its external surface).
For the cleaning and replacement operation you have to proceed in this way:

- clean the filter external body
- screw out the upper screws of the cover and extract the inside cartridge
- clean and replace the cartridge
- insert the new cartridge and retighten the screws of the cover

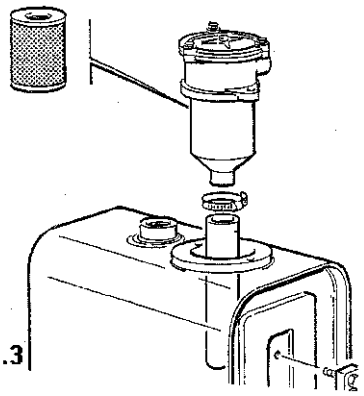


FIG.3

8. CONTROL OF THE SEAL OF THE CYLKINDERS BLOCKING VALVES

Every three moths check the seal of the blocking valves on the cylinders in this way:

A) Control of the blocking valves working steered of the outriggers

1) Fix stabilisers to the ground
2) Disconnect the power take off of the vehicle
3)Keep the truck turned on as to continue to electrically feed the controls.
4) Move lifting control levers and make sure that they do not move.
5) Switch off the truck, waiting for few minutes of the bedding and provide to mark the extension position of the outriggers
6) Check after 10 minutes that there was not a settlement (reenter of the outriggers)
7) Make the same test/control for the outriggers seal completely reentered

B) Control of the blocking valves on the cylinders of the superstructure

1) Partially lift the arms with maximum allowed load in the basket (Use only a load of material do not make the test with people in the basket)
2) Disconnect the power take off of the vehicle
3) Keep the truck turned on as to continue to electrically feed the controls
4) Operate on the interested controls and check that the cylinders do not make any movement
5) Switch off the truck waiting for few minutes of bedding and provide to mark the extension position of the different cylinders
6) Check after 10 minutes that there was not a settlement (Reenter of the cylinders)

7) Note: If you find settlements go as soon as possible to an authorized repair shop to make more controls and ,if it's the case, cures

9. CONTROL PIPEFITTINGS AND FLEXIBLE/RIGID PIPES

During the normal maintenance you have to control all the pipe fittings and the different hydraulic junctions of the machine to find irregularities.
The control of the pipe fittings has to be made through the check of the oil dripping absence and also check the correct clamping (if on the pipefitting there is a seal, and if it's necessary, make a replacement).
For the flexible pipes check with attention the junction pipe/pressed pipefitting and the general condition of the flexible pipe (it doesn't have early aging signs, craks, swellings or abrasions that can compromise the seal 9.
For the replacement of any pipes follow this instructions:

1 Switch off the truck engine
2 Operate, many times, control levers (motor turned off) in order to eliminate pressure within the circuits.
3 If these hoses are under the tank, a suction phenomenon by discharge filters could occur; therefore, if necessary, disconnect hoses connected to return filters.
4 If you have to replace an induction pipe from the tank, you have to stop the exit of the oil from the tank
5 Always proceed very carefully while removing the part to be replaced
6 Use always original pipes/spares

After having replaced the required parts, eliminate air which has entered into the circuit by moving the various jacks at end stroke.

ATTENTION!!! PIPES-ELECTRIC CABLES

The flexible pipes and the electric cables that slide on the inside of the cable holder chains are components that can be subject to wear and they have frequently be controlled to avoid damages risks with also a stopping machine.

You have to control their correct clamping to the extremities of the cable holder chain, their external wear condition and their correct position and tension (on the inside of the cable holder chain there can't be trusses and discharge of pipes and cables).

Note: If the cable holder chain is on the inside of the boom it can be made a visual control with a portable light from the back boom opening (you have to remove the cover lock up and make attention to the cable holder chain during the extension of the boom).

10. SYSTEMS/ELECTRIC COMPONENTS

Check every 100 hours/one month of working the preservation state of the components and of the electric harness (control with attention the cables and the different plugs/tap). Check that the cables don't have impact signs/rubbings or superficial wears and that they are correctly fixed in their original position.
You have also to check the integrity of the different electric boxes and verify the correct water tightness of the covers and of the pipe fittings for the entry of the electric cables (to avoid dangerous water infiltrations). For the machine shaving the electrohydraulic joint on the inside of the turret (machines with a continuous rotation of the turret) verify the integrity of its inside electric connections (brushes and sliding links) and lubricate them every month with a right antioxidant product (antioxidant spray for electric contacts).

11. STRUCTURE INSPECTION

The complete control and the structure inspection of the platform has to be made every 1500/2000 working hours if it's possible by the expert personnel and authorized by the constructor to check the general condition of the machine.
To make this control follow this instructions:
-wash/clean with attention all the machine
-make a visual inspection to the entire structure of the machine (also the connection frame to the vehicle) with particular attention to the welding sand to the points of rust/oxidation to find weakening signs
-if you find flaws/cracks or if you have doubts go as soon as possible to an authorized repair shop to make more controls and if it's the case cares

12. CONTROL BOLTS AND NUTS CLAMPING

The control of the correct bolts and nuts clamping used on the platform has to be made every 300/600 working hours, if it's possible, by the expert personnel to find settlements or loosening.
You have to control the clamping of all the bolts and nuts that are on the machine (through dynamometric key with the aid of the values clamping chart below). Give attention to the follow critical points:
-clamping to the vehicle frame
-basket clamping
- Clamping flanged valve on cylinder
- clamping thrust bearing/turret/frame
-clamping system for pin blocking
-outriggers clamping

ATTENTION!!!
During the controls/new clamping do not use the screws that are already at a yield/extended because they do not guarantee the correct seal characteristics.
If you find a loose clamping, in particular of the critical clamping points, replace the screw (use always original spares given by the constructor).

NUTS AND BOLTS TIGHTENING COUPLE TABLE Nm

Rated diameter (mm)	BOLT CLASS		
	8.8	10.9	12.9
5	5	7	8
6	8	12	14
8	20	29	35
10	40	60	70
12	70	100	120
14	110	160	190
16	170	250	300
18	240	350	410
20	340	500	580
22	460	680	800
24	580	860	1000
27	860	1270	1490
30	1170	1720	2010
33	1590	2340	2740
36	2040	3000	3520
39	2660	3900	4570

Precision tightening C μ= 0,15 Law E25-030 Afnor 84162
(10Nm ≅ 1 Kgm)

TABLE OF PIPEFITTING/PIPES TIGHTENING COUPLE

PIPEFITTING/PIPE 24° - DIN3861

T ∅ EST PIPE		F THREAD	TIGHTENING COUPLE
SERIE	SP		N.m
LIGHT (L)	6	12 x 1,5	13 - 15
	8	14 x 1,5	15 – 18
	10	16 x 1,5	25 – 28
	12	18 x 1,5	27 – 30
	15	22 x 1,5	50 - 60
	18	26 x 1,5	60 – 75
	22	30 x 2	85 – 105
	28	36 x 2	120 - 140
HEAVY (S)	6	14 x 1,5	14 – 16
	8	16 x 1,5	25 – 28
	10	18 x 1,5	27 – 30
	12	20 x 1,5	43 – 54
	14	22 x 1,5	50 – 62
	16	24 x 1,5	60 – 75
	20	30 x 2	90 – 110
	25	36 x 2	125 - 145

PIPEFITTING/PIPE 60°-BSP

T ∅ EST PIPE		F THREAD	TIGHTENING COUPLE
mm	IN.		N.m
5	3/16	1/8	12 - 14
6	1/4	1/4	14 - 16
10	3/8	3/8	25 – 28
12	1/2	1/2	45 – 60
16	5/8	5/8	55 – 70
20	3/4	3/4	90 – 110
25	1”	1”	120 – 140
32	1”1/4	1”1/4	170 – 190
38	1”1/2	1”1/2	200 - 245

13. SYSTEM EMPTYING AND TANK REFILLING

If it is necessary to empty the equipment, you have to completely remove used oil as not to mix it with new oil. Intake must be carried out starting from the equipment's lowest part; intake should be carried out when oil is hot.
The oil for refilling the equipment should be poured into the tank through a 25 micron filter.
Oil must be clean and devoid of any foreign substance which could cause anomalies and early wears to the equipment; moreover, oil must correspond to specifications indicated.

PROCEDURE TO BE FOLLOWED IN CASE OF ANY BREAKDOWN TO ONE OF THE PUMPS OR TO ONE OF THE MOTORS

Under these conditions there is a risk of polluting the whole system. As a matter of fact, a breakdown in this equipment is always characterised by quite an abrasive dust which can cause serious damages to the remaining systems. You have to release tank oil, wash and clean: valves, users, hoses and tank.
Moreover, it is necessary to check if cylinders show wear.
Replace all the filters and fit provisional 25 micron filters on each return hose.

Let the equipment work for 40/50 hours approx. before removing provisional filters and refilling tank with new oil.

14. GREASING OF THE HINGED PINS

The hinged pins have to be lubricated with right lubricators.
For the kind of grease see paragraph 2-Products to use.

15. GREASING OF THE SLIDING BLOCKS

To lubricate the sliding blocks you have to strew the sliding parts of the different booms with a right lubricator/grease (see paragraph 2 –Products to use) in the contact zone of the sliding blocks.
Make some operations of extension/without operator after having finished the clamping operation, so you can obtain the correct lubrication distribution on the sliding parts.

16. CONTROL/ADJUSTMENT OF THE SLIDING BLOCKS OF THE TELESCOPIC BOOMS

Check regularly the wear condition (and make the adjustment when it's necessary) of the sliding blocks of the telescopic booms.
The lateral sliding blocks are generally adjustable from the outside through a system with screw/adjustment register. The correct adjustment can't be very narrow (to avoid an early damage) and not very slow (to avoid a side clearance). We advise you to maintain a maximum allowance between sliding block and boom of 0,5mm.
The upper and lower sliding blocks are not adjustable from the outside. To control the wear condition and a new adjustment you have to go to an authorized workshop because it's necessary to remove the parts.
In any case you can check their wear controlling the thickness.
The head of the screws or of the backstops can't protrude from the upper surface of the sliding block.
We advise you to maintain a minumum projection of the sliding block of 3mm compared to the clamping systems.

17. CONTROLS

Check the correct controls working (hydraulic and electric),the correct position, the graduality of the operations and the operative speed, if there is an anomalous working go as soon as possible to an authorized assistance point.

18. TROUBLES / POSSIBLE CAUSES / REMEDIAL MEASURES

Troubles	Possible causes	Hypothesis for intervention
INSUFFICIENT PRESSURE or pressure gradient in comparison to the level required in the circuit	1. max pressure valve half-open 2. pump defect 3. excessive inner leaks 4. excessive loading loss	1. a) for too low calibration pressure b) for wearing out of tightening seats c) for dirt under seats d) for spring breakdown 2. see points 5 ÷ 11 3. a) tightening collects in the cylinders and in the hydraulic motors show wear b) distributor and valves wearing c) not enough viscous oil 4. a) too viscous oil b) oil pass - throughs not adequately shaped c) oil pass-throughs partially obstructed
PUMP DEFECT for lack of power or for power extremely below normal values	5. throttled intake 6. air inlet 7. hermetically sealed tank 8. defective working 9. too viscous oil 10. inner breakdowns in the pump 11. the pump shows too much wearing	5. a) too small or obstructed intake filter b) obstructed intake hose c) too little or crooked hose 6. a) in the tank intake take-off b) in intake connections c) in the seal of the pump shaft d) for intake of foamy oil 7. air bleed in the obstructed tank 8. a) check coupling b) too high or too low speed 9. see indications for the pump 10. a) broken inner gaskets b) pasted blades, plates or pistons c) untightened pump head d) broken inner parts which should be replaced 11. pump should be replaced
exceedingly NOISY PUMP (for instance some gear pump are always a little noisy)	12. cavitation 13. air inlet 14. inner wearing 15. system vibrations	12. a) throttled intake: see point 5 b) excessive viscosity: see point 9 13. see point 6 14. excessive clearance in supports and plates 15. defective installation, resonance, etc.

Troubles	Possible causes	Hypothesis for intervention
OVERHEATING i.e. rising of oil temperature above prudential limit of 50°-60°	16.too high maximum pressure 17.power is uselessly engaged 18. extreme inner leaks 19.extreme loading loss 20.insufficient oil capacity 21.insufficient cooling . extreme friction	16. excessive valve calibration 17. a) insufficient exclusion valve b) malfunctioning short-circuit at cycle end c) hydraulic circuit to be modified 18. see point 3 19. see point 4 20. increase oil tank capacity 21. a) add artificial cooling b) refrigerants, if any, not effective 22. a) defective pump inner fitting b) lack of lubrication when required c) use of not enough lubricating oil
INCORRECT MOVEMENTS of hydraulically operated elements in comparison to the required cycled	23.air in the circuit 24.valves locked 25.cylinders locked 26.extreme loading loss 27.varying accumulator pressure	23. a) let air bubbles off at the top b) eliminate air leaks: see point 6 24. a) valves locked, while closing, by rubber or other materials b) valves half-open because of dirt 25. a) cylinder inner incorrect mounting b) normal axle loading not permitted c) seizing of connecting pins 26. see point 4 27. a) insufficient accumulator capacity b) circuit greater demand because of inner leaks
EXTREME WEARING i.e. excessively fast in comparison to working period	28.oil containing abrasive substances 29.insufficient lubrication 30.high working pressure 31.defective coupling	28. a) too old oil b) filters not efficient 29. a) poor quality oil b) too fluid oil at working temperature 30. in comparison to the allowed max. pressure for pump and valves 31. abnormal strain on shafts and stems

19. WORKING ANOMALIES: PART BREAKDOWN

What follows is a list of reasonably foreseeable explanations for which the machine cannot work, relevant to each operation of the platform: in the columns of the following chart we have listed type of trouble, operation, parts which can cause the breakdown and type of intervention to be carried out.

Parts/breakdown	Cause	Remedial measures
Noisy power take off	Driving with power take off applied. Working wearing.	Overhaul or total replacing.
Free power take off	Air switch breakage or air lack in the truck.	Overhaul or total replacing
Noisy truck pump	Lack of oil or breakage of key or of take off connecting joint	Oil refilling or replacing
Stab. insufficient oil pressure	Make sure that the arm is in non-working position and that micro-switch is depressed. Nylon pin (hydraulic switch) broken down. Broken truck pump. Filter obstructed. Non-return valve open. Dirty max. exchanger valve, stabilisation distributor.	Check every single part. Clean or replace, if necessary.
Turret controls out of order	Stabilisation has not occurred. Exchange heart-basket control not switch (See electric system manual)	Check Stab. micro-switches (4) and axle micro-switch
Basket controls out of order	(See electric system manual)	

Parts/breakdown	Cause	Remedial measures
Insufficient oil pressure turret distributor	Dirty distribution max. valve. Exchanger not stimulated Arm holder microswitch broken down.	Inspection of turret panel fuses Replacing of parts (See electric system manual)
Insufficient 220 Volt oil pump pressure	Broken pump or dirty non-return truck pump valve	Clean and/or replace
Emergency stoppage for Edi System	Lack of current Coil burnt out	Check cable from frame to truck cabin Replacing
Pantograph lowering oscillation	Turret accumulator	Replacing
Potentiometer lever: it does not come back to the regular position.	Wearing of the spring	Replacing
Basket rotation out of order	Dirty electric valve or burnt out. Pushbutton broken down. Cylinder valve locked.	Replace or clean.
Basket balancing and rotation out of order	Electric valve locked or out of order	
Excessive rotation clearance when the machine is turned off	Loosened fixing screws	Adjust fixing plate of the gearbox and tighten screws

***** CHAPTER 5 *****

HYDRAULIC SYSTEM

The documentation contained in this chapter is composed of
n° 4 pages, this included..
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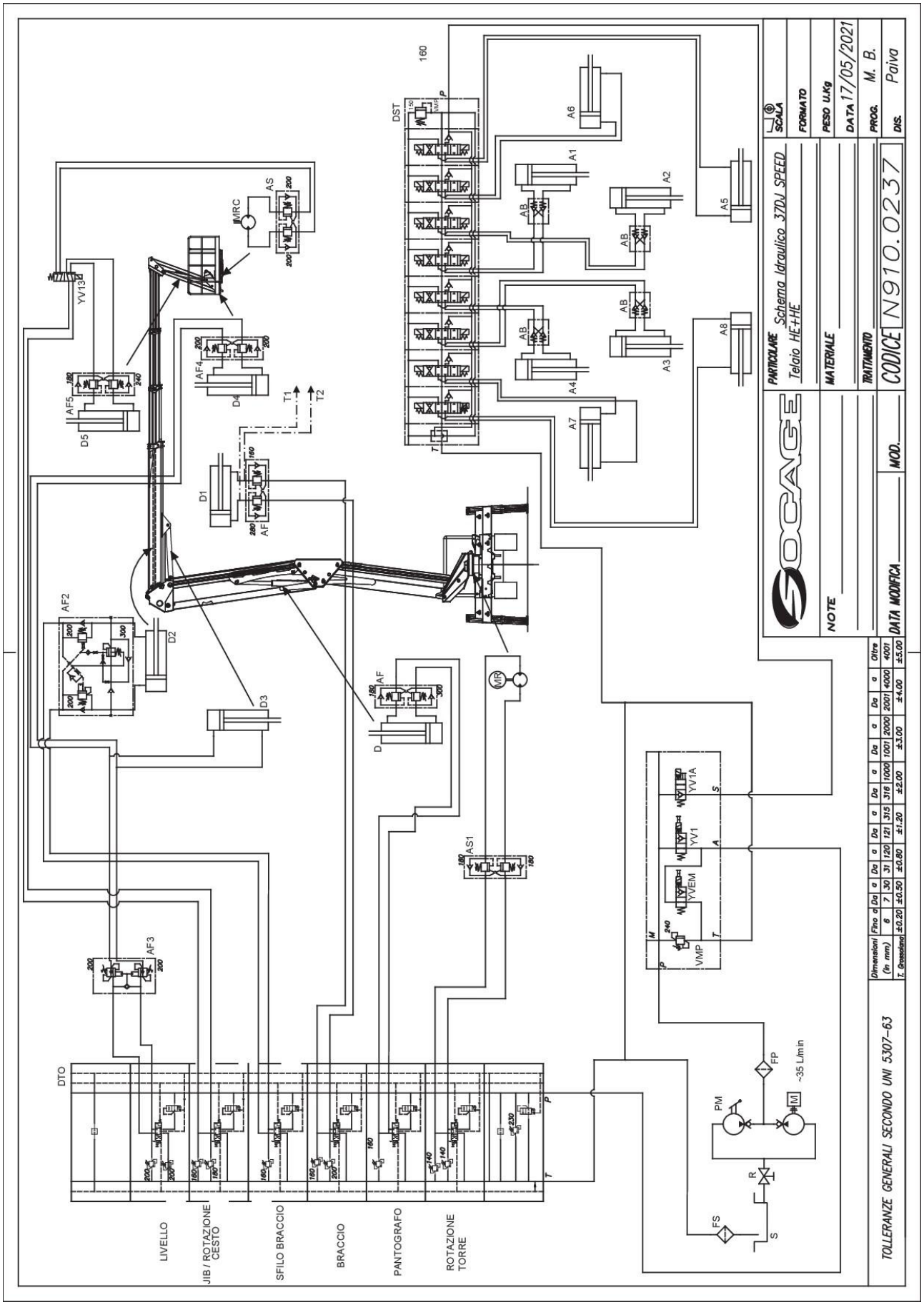
KEYS TO SYMBOLS OF HYDRAULIC COMPONENTS

EQUIPMENT SERIES SO-0042- 37DJ

What follows is a list of hydraulic system components, their relevant symbols are indicated in the following chart:

SYMBOL	COMPONENT AND USE
M	Hydraulic system feeding pump
PM	Emergency hand pump
FS	Discharge line filter
FP	Delivery oil filter
VMP	Maximum pressure valves
S	Oil tank
DST	Stabiliser/Crossbar control distributors
DTO	Turret control distributor
A1-A4	Outrigger cylinders
A5-A8	Cross-bar cylinders
AB	Stabiliser cylinders' locking valve
MR	Turret rotation motor
AS1	Locking valve on MR
MRC	Basket motor rotation
AS	Locking valve on MRC
D	Bar lifting cylinder
AF	Locking valve on D cylinder
D1	Arm lifting cylinder
AF1	Locking valve on D1 cylinder
T1-T2	Pressure transducers
D2	Opening arm cylinder
AF2	Locking valve on D2 cylinder
D3	Intermediate head balancing cylinder
AF3	Locking valve on basket levelling
D4	Basket levelling cylinder
AF4	Locking valve on D4 cylinder
D5	Jib lifting cylinder
AF5	Locking valve on D5 cylinder
R	Tap
YVEM	Emergency electric valve
YV1 / YV1A	Bypass electro-valve aerial part
YV13	Bypass electro-valve (D5/MRC)

HYDRAULIC SYSTEM



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***** CHAPTER 6 *****

ELECTRIC SYSTEM

The documentation contained in this chapter is composed of
n°54 pages, this included..

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COD.	
54811166	IVECO 100/120 24V

Disegno N°	CAD	PROGETTO	REVISIONE N.° 2	Data ultima rev.	DESCRIZIONE
	SOLIDWORKS Electrical	IVECO 100/120 24V		18/05/2020	COVER
			CLIENTE: SOCAGE		
		54811166			

Data Emissione	07/01/2020
Foglio N°	01
Fogli Tot N°	7
Disegnato da:	C.B.

AUTOMAZIONI INDUSTRIALI ELETTRICHE ED ELETTRONICHE
QUADRI ELETTRICI DI COMANDO - SOFTWARE P.L.C.
PROGETTAZIONE E ASSISTENZA
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1-

Drawing	Revision	Date	Description
01	1	18/05/2020	COVER
02	1	18/05/2020	DRAWINGS LIST
03	1	18/05/2020	IVECO
04	1	18/05/2020	CS028D
05	0	05/02/2021	CS172
06	1	18/05/2020	CARDS
07	1	18/05/2020	CONNECTORS

Disegno N°	CAD SOLIDWORKS Electrical	PROGETTO IVECO 100/120 24V	REVISIONE N.° 2	Data ultima rev. 18/05/2020	DESCRIZIONE DRAWINGS LIST
		54811166	CLIENTE: SOCAGE		

Data Emissione	07/01/2020
Foglio N°	02
Fogli Tot N°	7
Disegnato da:	C.B.

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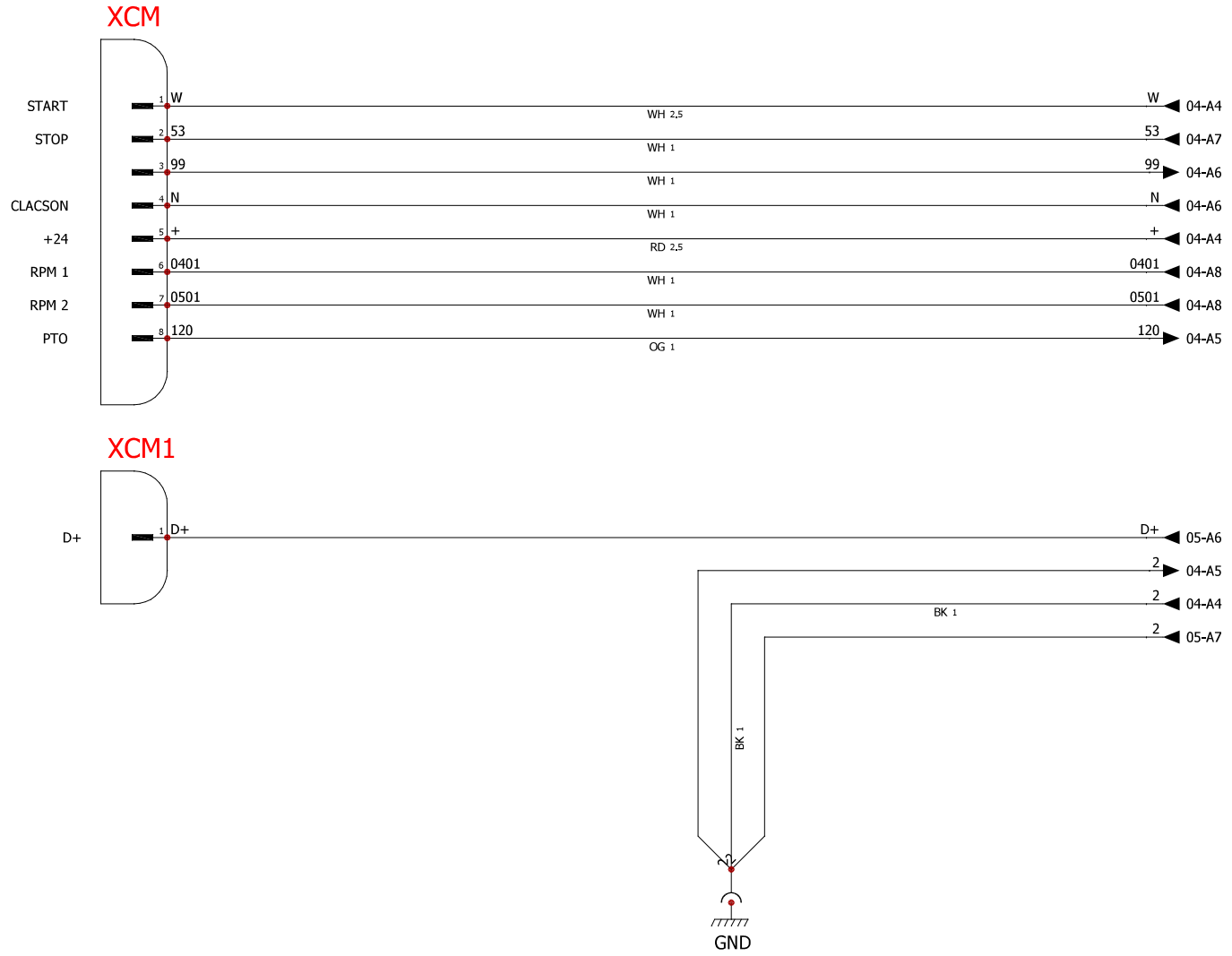

Disegno N°	PROGETTO IVECO 100/120 24V	REVISIONE N.° 2	Data ultima rev. 18/05/2020	DESCRIZIONE IVECO	Data Emissione 07/01/2020
CAD SOLIDWORKS Electrical		CLIENTE: SOCAGE			Foglio N° 03
	54811166				Fogli Tot N° 7
					Disegnato da: C.B.

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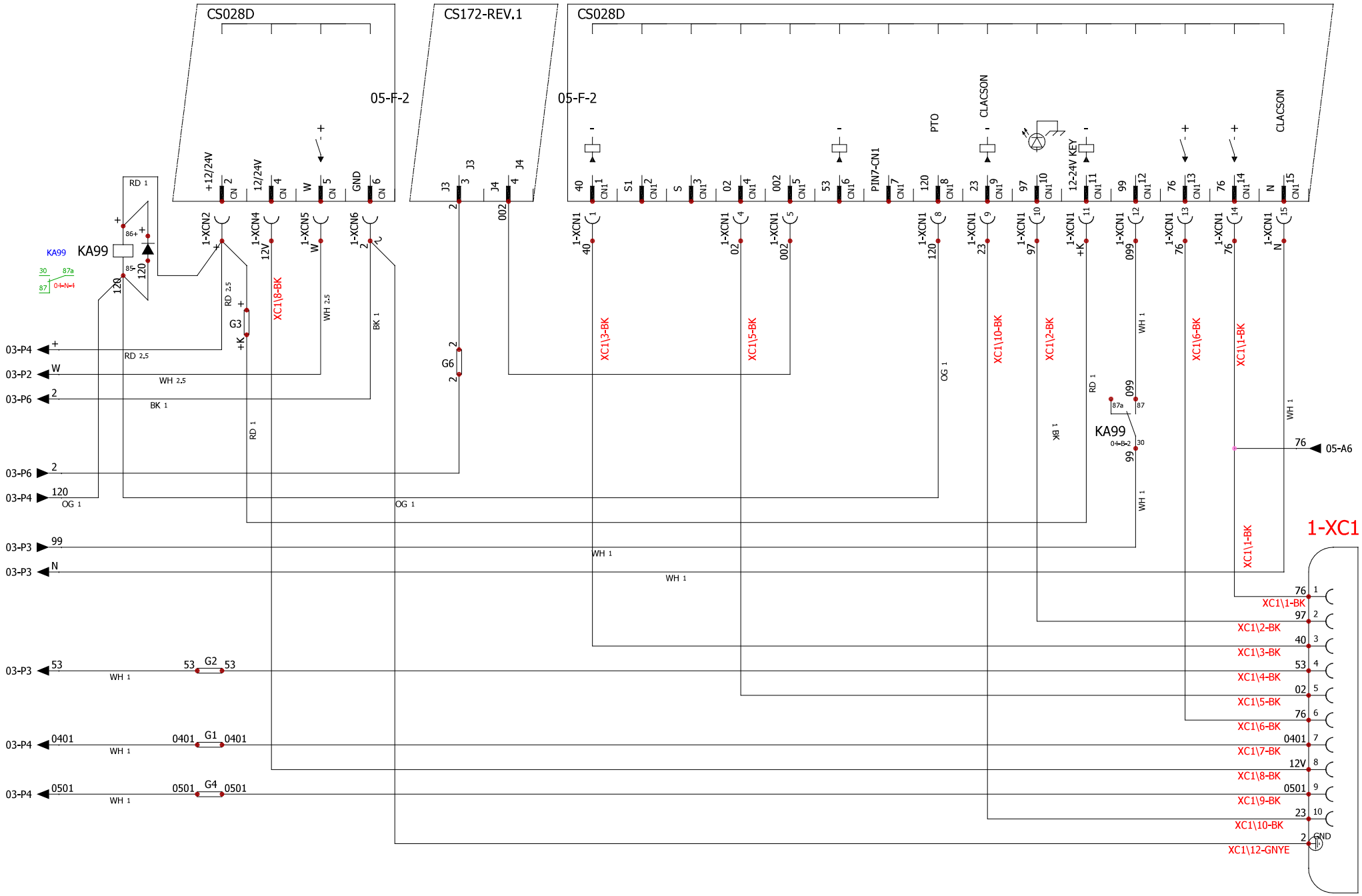

Disegno N°	CAD	PROGETTO IVECO 100/120 24V	REVISIONE N.° 2	Data ultima rev.	DESCRIZIONE CS028D	Data Emissione	07/01/2020
				18/05/2020		Foglio N°	04
			CLIENTE: SOCAGE			Fogli Tot N°	7
		54811166				Disegnato da:	C.B.

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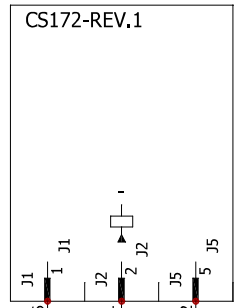
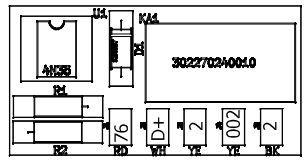
CS172-REV.1





Disegno N°	PROGETTO IVECO 100/120 24V	REVISIONE N.° 2	Data ultima rev.	DESCRIZIONE CS172	Data Emissione 07/01/2020
CAD SOLIDWORKS Electrical			05/02/2021		Foglio N° 05
		CLIENTE: SOCAGE			Fogli Tot N° 7
	54811166				Disegnato da: C.B.

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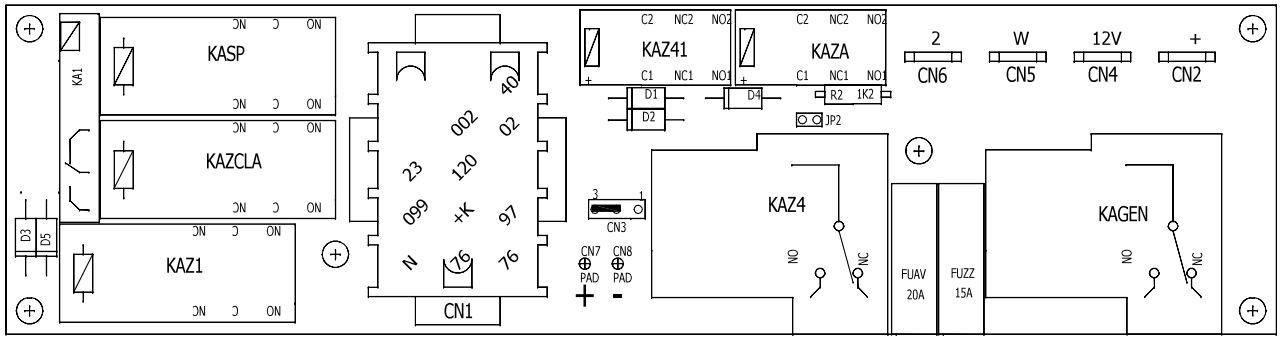
CS028D



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PROGETTO	REVISIONE N.° 2	Data ultima rev.	DESCRIZIONE
IVECO 100/120 24V		18/05/2020	CARDS
	CLIENTE: SOCAGE		
54811166			

Data Emissione	07/01/2020
Foglio N°	06
Fogli Tot N°	7
Disegnato da:	C.B.

Disegno N° | CAD | SOLIDWORKS Electrical

AUTOMAZIONI INDUSTRIALI ELETTRICHE ED ELETTRONICHE
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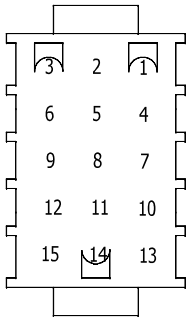
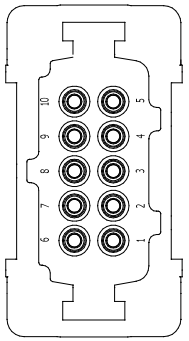


1-XCN1

Pin	Equipot	Color	Number	Description	Destination	Cross-ref
1	40	BK	3	START	1-XC1:3	04-G-2
2						
3						
4	02	BK	5	D+	1-XC1:5	04-I-2
5	002	YE			CS172-REV.1:4	04-J-2
6						
7						
8	120	OG		PTO	KA99:85-	04-K-2
9	23	BK	10		1-XC1:10	04-L-2
10	97	BK	2		1-XC1:2	04-L-2
11	+K	RD		+	G3	04-M-2
12	099	WH			KA99:87	04-N-2
13	76	BK	6		1-XC1:6	04-N-2
14	76	BK;	1		1-XC1:1; CS172-REV.1:1	04-O-2
15	N	WH		CLACSON	XCM:4	04-O-2



1-XC1

Pin	Equipot	Color	Number	Description	Destination	Cross-ref
1	76	BK	1		1-XCN1:14	04-P-6
2	97	BK	2		1-XCN1:10	04-P-6
3	40	BK	3	START	1-XCN1:1	04-P-6
4	53	BK	4	STOP	G2	04-P-6
5	02	BK	5	D+	1-XCN1:4	04-P-6
6	76	BK	6		1-XCN1:13	04-P-6
7	0401	BK	7	RPM 1	G1	04-P-6
8	12V	BK	8	+	1-XCN4	04-P-6
9	0501	BK	9	RPM 2	G4	04-P-6
10	23	BK	10	CLACSON	1-XCN1:9	04-P-6
GND	2	GNYE	12	GND 0V	1-XCN6	04-P-6

Disegno N° | CAD | SOLIDWORKS Electrical

PROGETTO
IVECO 100/120 24V

54811166

REVISIONE N.° 2

Data ultima rev. 18/05/2020

CLIENTE: SOCAGE

DESCRIZIONE
CONNECTORS

Data Emissione	07/01/2020
Foglio N°	07
Fogli Tot N°	7
Disegnato da:	C.B.

AUTOMAZIONI INDUSTRIALI ELETTRICHE ED ELETTRONICHE
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37DJ-E_HE+HE
STAB. AUTOMATICA
SAFETY LIFT

COMPOSITION OF PLANTS

CODE	DESCRIPTION
54811327	CHASSIS BOX
54811326	CHASSIS HARNESS
54811165	TURRET HARNESS
54811133	BOOM PANTOGRAPH
54811134	BOOM CABLES
54811328	BASKET PLANT
54110513	ARM ANGLE TRANSDUCER
54110498	PRESSURE TRANSDUCER
54110953	ENCODER ROTATION TOWER
54620316	PANTOGRAPH ANGLE SENSOR
54798511	
54110322	LOAD CAGE
54110509	PLANARITY SENSOR
54110510	BASKET CORNER SENSOR

Disegno N° ELECTRICAL DRAWING | CAD SOLIDWORKS Electrical

PROGETTO
37DJ-E_HE+HE
STAB. AUTOMATICA
37DJ0071

REVISIONE N.° 0 | Data ultima rev. 02/03/2021

CLIENTE: SOCAGE

37DJ-E SPEED-HE+HE RC

DESCRIZIONE
COVER

Data Emissione	02/03/2021
Foglio N°	01
Fogli Tot N°	59
Disegnato da:	Francesco Gennari

AUTOMAZIONI INDUSTRIALI ELETTRICHE ED ELETTRONICHE
QUADRI ELETTRICI DI COMANDO - SOFTWARE P.L.C.
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1-ELECTRICAL DRAWING

Drawing	Revision	Date	Description
01	0	02/03/2021	COVER
02	0	02/03/2021	DRAWINGS LIST
03	0	02/03/2021	DRAWINGS LIST
04	0	02/03/2021	LAYOUT LEFT SIDE
05	0	02/03/2021	LAYOUT RIGHT SIDE
06	0	02/03/2021	LAYOUT UP SIDE
07	0	02/03/2021	FRAME LIGHTS LINE
08	0	02/03/2021	CHASSIS BOX BOARD SUPPLY
09	0	02/03/2021	CHASSIS BOX TRUCK CONNECTOR
10	0	02/03/2021	MACHINE CLOSED SENSORS
11	0	02/03/2021	CHASSIS BOX STABILIZERS CLOSED
12	0	02/03/2021	MICRO STABILIZERS ON FLOOR
13	0	23/03/2021	FC
14	0	02/03/2021	OUTTRIGGERS OPEN SWITCHES + MICROBOX
15	0	24/03/2021	FC
16	0	22/03/2021	FC
17	0	02/03/2021	POWER SUPPLY AND EMERGENCY S4
18	0	24/03/2021	LH
19	0	02/03/2021	ELECTROVALVE LINE STABILIZERS
20	0	24/03/2021	EV OUTTRIGGER
21	0	24/03/2021	EV OUTTRIGGER
22	0	02/03/2021	ELECTROVALVE LINE STABILIZERS/EMERGENCY

-> 1-ELECTRICAL DRAWING

Drawing	Revision	Date	Description
23	0	02/03/2021	CHASSIS BOX PUSHBUTTONS
24	0	02/03/2021	CHASSIS BOX PUSHBUTTONS
25	0	02/03/2021	CHASSIS BOX PUSHBUTTONS
26	0	02/03/2021	CHASSIS BOX DOOR
27	0	02/03/2021	TOWER BOX
28	0	02/03/2021	PLANARITY SENSOR CAN LINE
32	0	02/03/2021	RADIOCOMMAND
33	0	02/03/2021	CHASSIS BOX LIMITATOR
35	0	02/03/2021	CHASSIS BOX LIMITATOR
36	0	02/03/2021	CHASSIS BOX TURRET LINE
37	0	02/03/2021	CHASSIS BOX TURRET LINE
38	0	02/03/2021	TOWER BOX ELECTROVALVES
39	0	02/03/2021	TOWER
40	0	02/03/2021	TOWER LINE SENSORS
41	0	02/03/2021	PANTOGRAPH CABLE
42	0	02/03/2021	PANTOGRAPH CABLE
43	0	02/03/2021	SENSOR BOOM LINE
44	0	02/03/2021	BOOM CABLE JIB
45	0	02/03/2021	JIB SENSORS
46	0	02/03/2021	BASKET BOX

Disegno N° | ELECTRICAL DRAWING | CAD | SOLIDWORKS Electrical

PROGETTO
37DJ-E_HE+HE
STAB. AUTOMATICA
37DJ0071

37DJ-E SPEED-HE+HE RC

REVISIONE N.° 0 | Data ultima rev. 02/03/2021

CLIENTE: SOCAGE

DESCRIZIONE
DRAWINGS LIST

Data Emissione	02/03/2021
Foglio N°	02
Fogli Tot N°	59
Disegnato da:	Francesco Gennari

AUTOMAZIONI INDUSTRIALI ELETTRICHE ED ELETTRONICHE
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-> 1-ELECTRICAL DRAWING

Drawing	Revision	Date	Description
47	0	02/03/2021	BASKET BOX SWITCH AND LIGHT
48	0	02/03/2021	BASKET BOX WORK SELECTOR
49	0	02/03/2021	BASKET BOX JOYSTICKS LINE
50	0	02/03/2021	BASKET BOX CAN SENSORS
51	0	02/03/2021	LAYOUT ESMALL BOARD
52	0	02/03/2021	LAYOUT ESMALL S4 BOARD
53	0	02/03/2021	LAYOUT CHASSIS BOX
54	0	02/03/2021	LAYOUT BASKET BOARDS
55	0	02/03/2021	CONNECTOR LIST XC1
56	0	02/03/2021	CONNECTOR LIST XCCAB-f
57	0	02/03/2021	CONNECTOR LIST XCCAB-m
58	0	02/03/2021	CONNECTOR LIST XCT-f
59	0	02/03/2021	CONNECTOR LIST XCT-m
60	0	02/03/2021	CONNECTOR LIST XC8-f
61	0	02/03/2021	CONNECTOR LIST XC8-m
62	0	02/03/2021	CONNECTOR LIST XC9
63	0	02/03/2021	CONNECTOR LIST XC10

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XC11-m	44-H-1
XC11-f	44-F-1
XC9-m	44-B-3
XC9-f	41-N-0
XC9A-m	44-B-8
XC9A-f	42-O-8
BR1	42-J-1
SQ10	45-C-4
YV13	45-C-7
SRPS	43-C-4
XC10-f	44-I-3
XC10A-f	44-I-8
XC10-m	44-K-3
XC10A-m	44-K-8
DE01	40-J-1
BR2	40-M-1
XS2	44-O-2
SR2	
XC8-f	41-C-0
XC8-m	41-D-0
SP1	08-M-9
SR12	12-D-4
XCHL	07-C-1

Disegno N° | ELECTRICAL DRAWING | CAD | SOLIDWORKS Electrical

PROGETTO
37DJ-E_HE+HE
STAB. AUTOMATICA
37DJ0071

REVISIONE N.° 0 | Data ultima rev. 02/03/2021

CLIENTE: SOCAGE

37DJ-E SPEED-HE+HE RC

DESCRIZIONE
LAYOUT LEFT SIDE

Data Emissione	02/03/2021
Foglio N°	04
Fogli Tot N°	59
Disegnato da:	Francesco Gennari

AUTOMAZIONI INDUSTRIALI ELETTRICHE ED ELETTRONICHE
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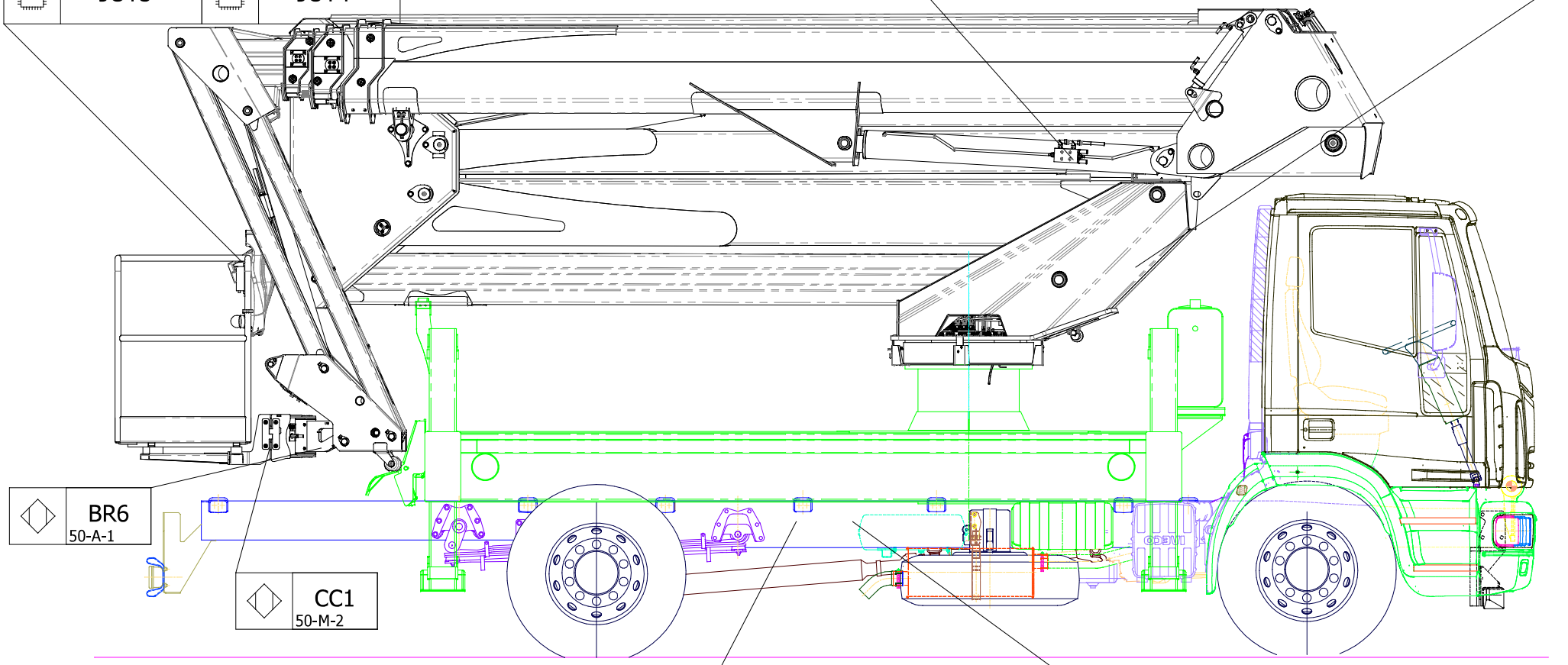
CPU	ESLAVE-S2	CPU	JOY0
CPU	CS138-1	CPU	JOY1
CPU	CS148-1	CPU	JOY2
CPU	JOY3	CPU	JOY4

TS1 42-G-0		XCTS1 42-G-1	
TF1 42-D-0		XCTF1 42-E-1	

YVL2 38-C-7		YVRC2 38-O-7		YVT1 38-I-7		YVB1 38-G-7	
YVL1 38-B-7		YVRC1 38-N-7		YVT2 38-J-7		YVB2 38-F-7	
YVP1 38-L-7		YVP2 38-K-7		YVR1 38-E-7		YVR2 38-D-7	



BR6 50-A-1											
CC1 50-M-2											

YV1TI 21-G-7		YV4D 19-J-7		YV1D 19-M-7		YV1S 19-L-7		YV1 22-E-7		YV4TO 20-C-7		YV3TI 20-N-7
		YV4S 19-I-7		YV2D 19-F-7		YV2S 19-E-7		YV1A 22-C-7		YV4TI 20-G-7		YV2TO 21-J-7
		YV2TI 21-N-7		YV3D 19-H-7		YV3S 19-G-7		YVEM 22-G-7		YV3TO 20-J-7		YV1TO 21-C-7

CPU	CS140R4-S3	XC1 09-A-6	
CPU	ESMALL1	CPU	CS141-R1
CPU	M92E-1	CPU	ESMALL-S4

Disegno N°	PROGETTO 37DJ-E_HE+HE STAB. AUTOMATICA 37DJ0071	REVISIONE N.° 0	Data ultima rev. 02/03/2021	DESCRIZIONE LAYOUT RIGHT SIDE
ELECTRICAL DRAWING				
CAD		CLIENTE: SOCAGE		
SOLIDWORKS Electrical	37DJ-E SPEED-HE+HE RC			

Data Emissione	02/03/2021
Foglio N°	05
Fogli Tot N°	59
Disegnato da:	Francesco Gennari

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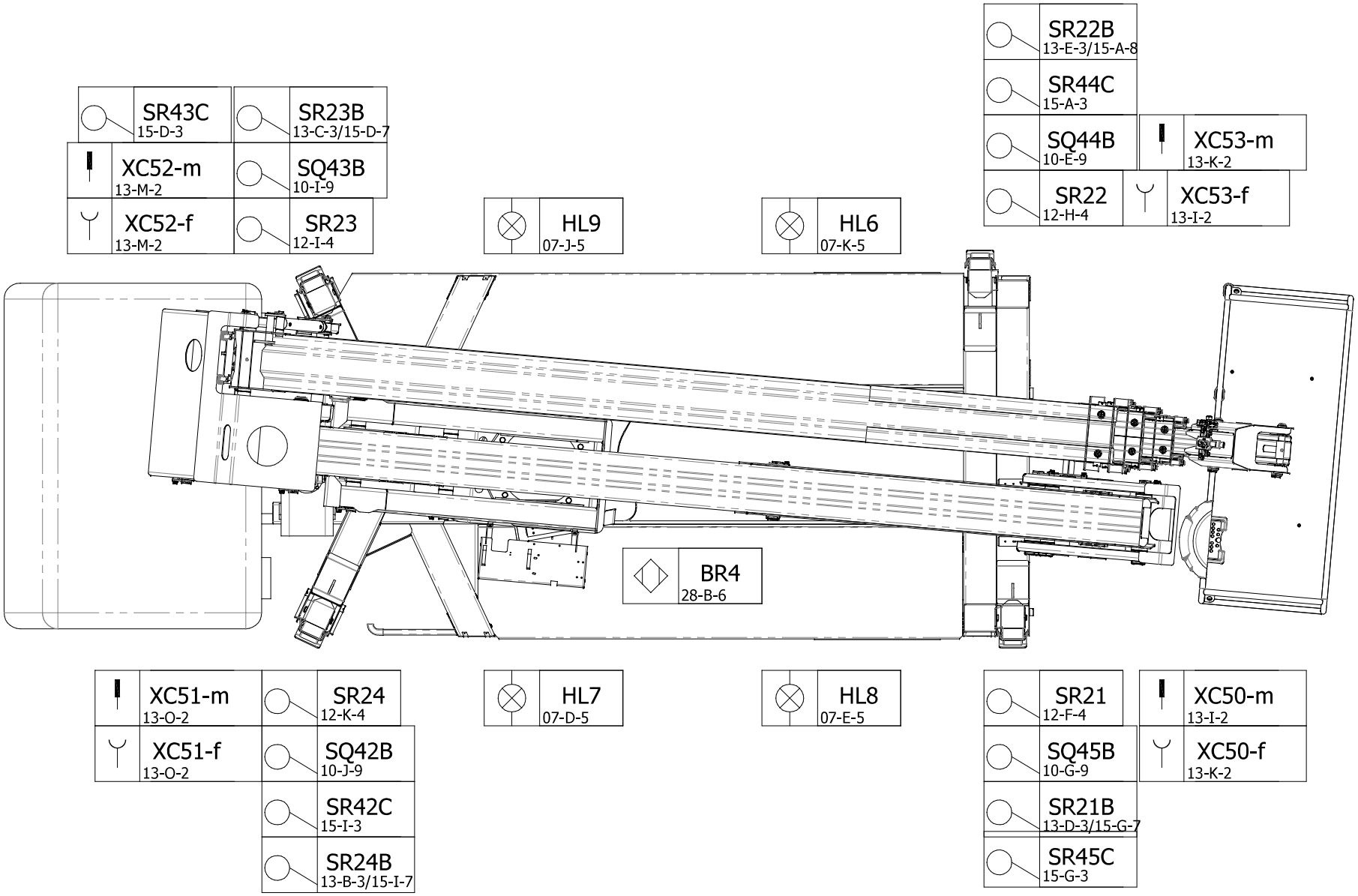

Disegno N° / ELECTRICAL DRAWING / CAD / SOLIDWORKS Electrical	PROGETTO 37DJ-E_HE+HE STAB. AUTOMATICA 37DJ0071	REVISIONE N.° 0	Data ultima rev. 02/03/2021	DESCRIZIONE LAYOUT UP SIDE	Data Emissione 02/03/2021
		CLIENTE: SOCAGE			Foglio N° 06
					Fogli Tot N° 59
	37DJ-E SPEED-HE+HE RC				Disegnato da: Francesco Gennari

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QUADRI ELETTRICI DI COMANDO - SOFTWARE P.L.C.
PROGETTAZIONE E ASSISTENZA
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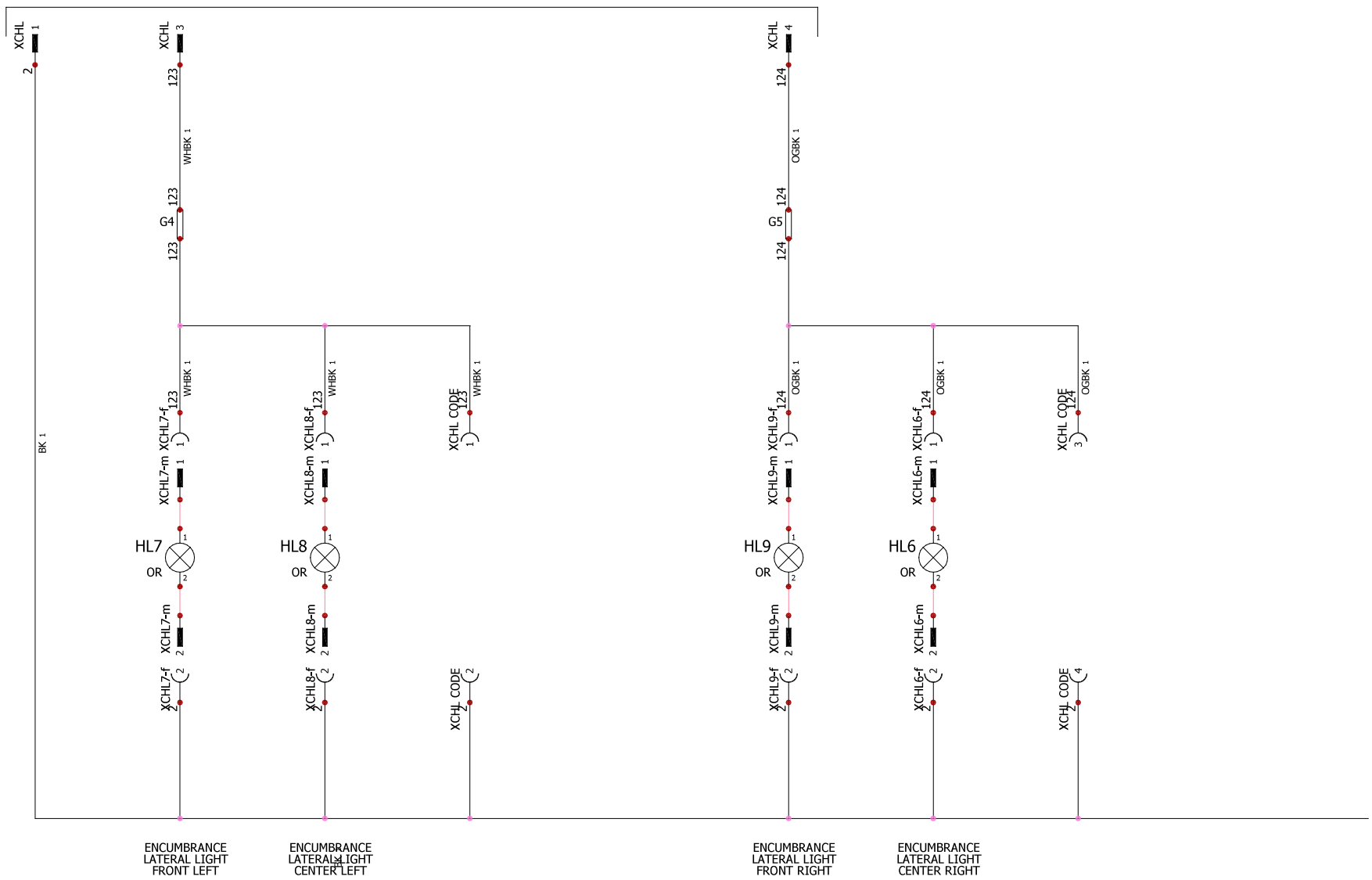
LIGHT CONNECTOR FROM NISSAN CHASSIS



Disegno N°	PROGETTO 37DJ-E_HE+HE STAB. AUTOMATICA 37DJ0071	REVISIONE N.° 0	Data ultima rev. 02/03/2021
ELECTRICAL DRAWING	CLIENTE: SOCAGE		
CAD	37DJ-E SPEED-HE+HE RC		
SOLIDWORKS Electrical			

DESCRIZIONE
FRAME LIGHTS LINE

Data Emissione	02/03/2021
Foglio N°	07
Fogli Tot N°	59
Disegnato da:	Francesco Gennari

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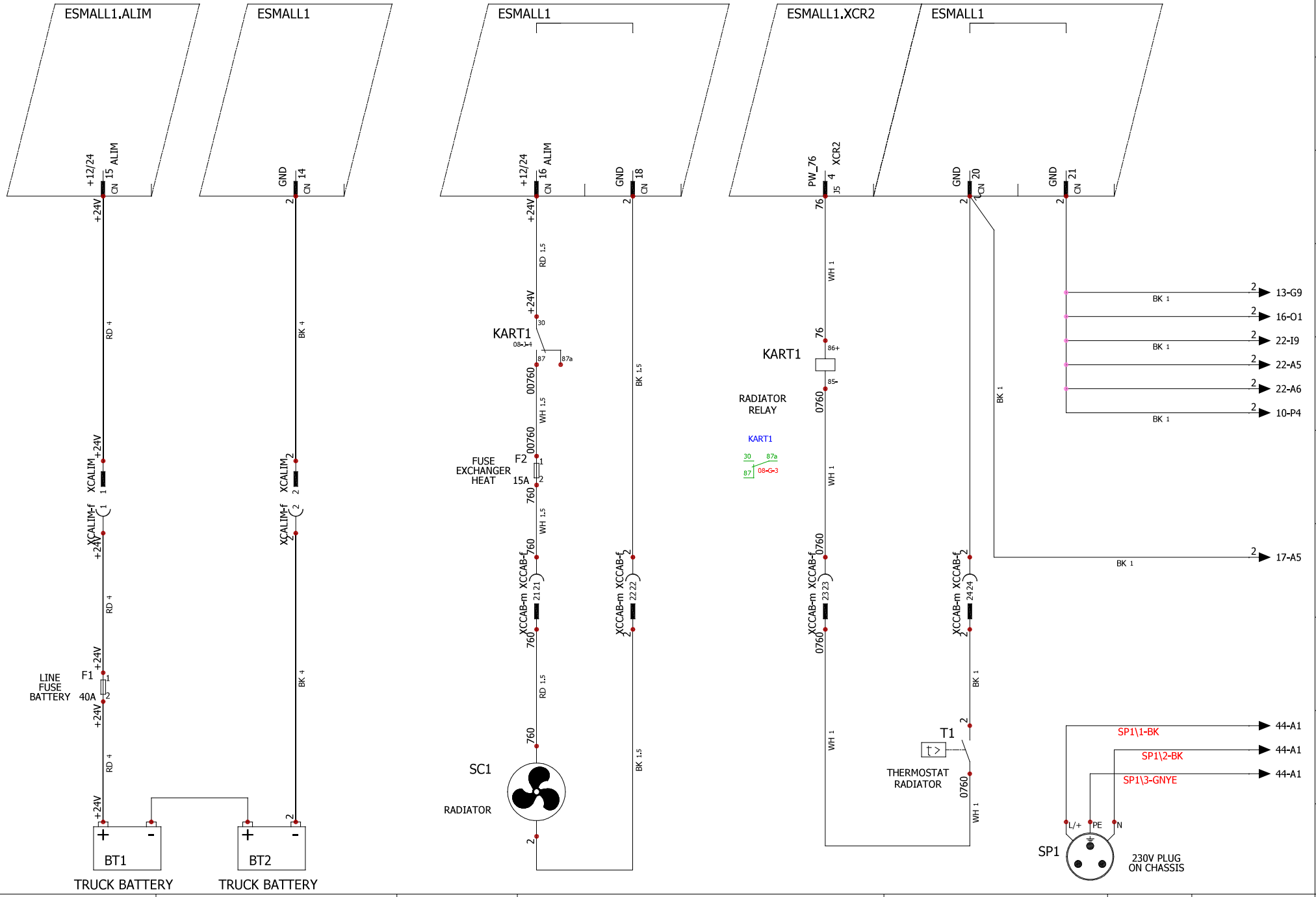

Disegno N°	PROGETTO 37DJ-E_HE+HE STAB. AUTOMATICA 37DJ0071	REVISIONE N.° 0	Data ultima rev. 02/03/2021
ELECTRICAL DRAWING			
CAD SOLIDWORKS Electrical	CLIENTE: SOCAGE		
	37DJ-E SPEED-HE+HE RC		

DESCRIZIONE
CHASSIS BOX
BOARD SUPPLY

Data Emissione	02/03/2021
Foglio N°	08
Fogli Tot N°	59
Disegnato da:	Francesco Gennari

Data Emissione	02/03/2021
Foglio N°	09
Fogli Tot N°	59
Disegnato da:	Francesco Gennari

DESCRIZIONE
CHASSIS BOX
TRUCK CONNECTOR

SOCAGE

REVISIONE N.° 0	Data ultima rev.
	02/03/2021

CLIENTE: SOCAGE

PROGETTO
37DJ-E_HE+HE
STAB. AUTOMATICA
37D00071

37DJ-E SPEED-HE+HE RC

Disegno N°
ELECTRICAL DRAWING
CAD
SOLIDWORKS Electrical

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DESCRIZIONE
MACHINE CLOSED SENSORS

Data Emissione	02/03/2021
Foglio N°	10
Fogli Tot N°	59
Disegnato da:	Francesco Gennari

PROGETTO
37DJ-E_HE+HE
STAB. AUTOMATICA
37DJ0071

REVISIONE N.° 0	Data ultima rev.
	02/03/2021

CLIENTE: SOCAGE

37DJ-E SPEED-HE+HE RC

Disegno N°
ELECTRICAL DRAWING
CAD
SOLIDWORKS Electrical

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DESCRIZIONE
CHASSIS BOX
STABILIZERS CLOSED

SOCAGE

Data Emissione	02/03/2021
Foglio N°	11
Fogli Tot N°	59
Disegnato da:	Francesco Gennari

PROGETTO
37DJ-E_HE+HE
STAB. AUTOMATICA
37DJ0071

REVISIONE N.° 0

	Data ultima rev.
	02/03/2021

CLIENTE: SOCAGE

37DJ-E SPEED-HE+HE RC

Disegno N°
ELECTRICAL DRAWING
CAD
SOLIDWORKS Electrical

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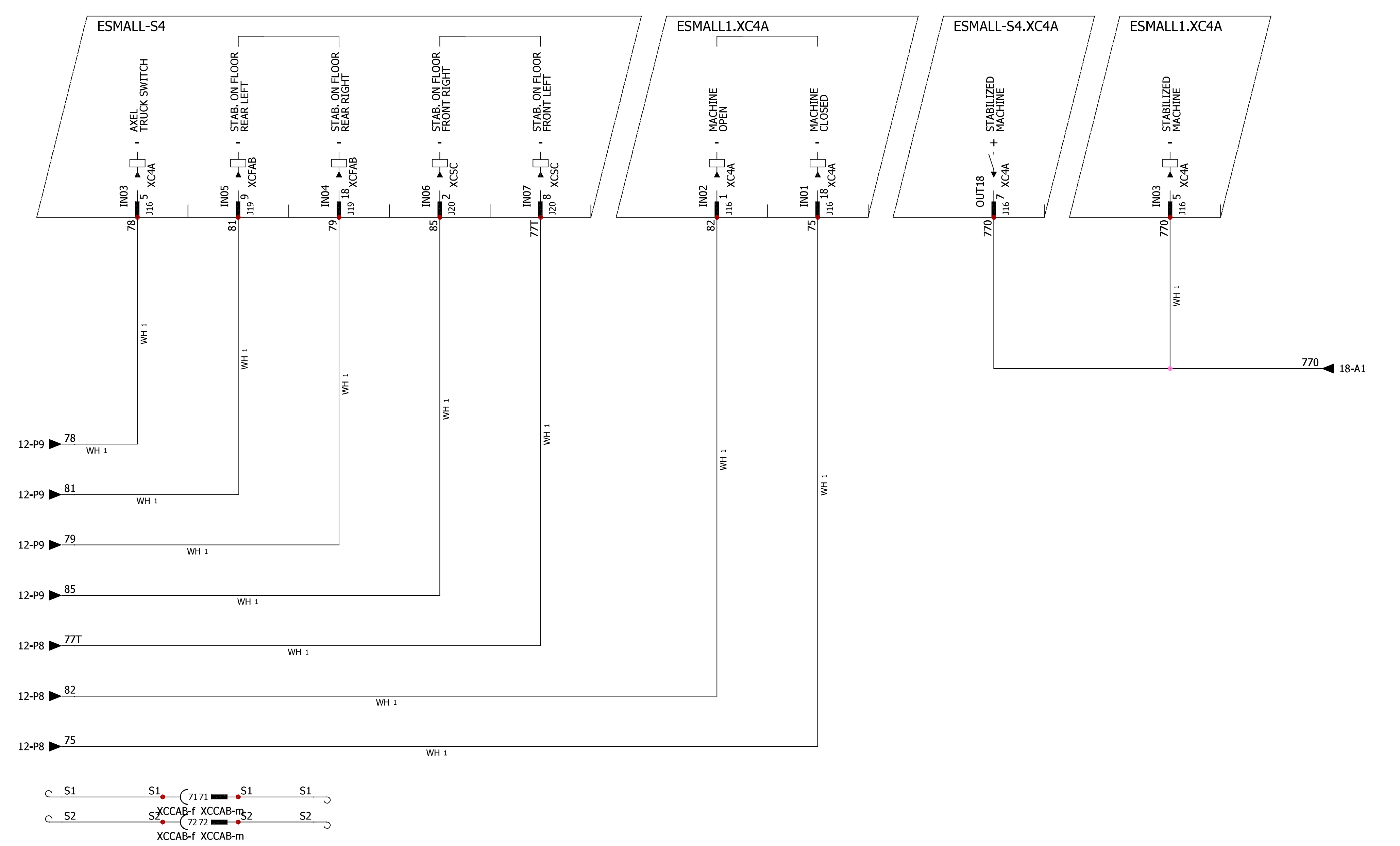

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Disegno N°	PROGETTO	REVISIONE N.° 0	Data ultima rev.	DESCRIZIONE	Data Emissione	02/03/2021
ELECTRICAL DRAWING / CAD / SOLIDWORKS Electrical	37DJ-E_HE+HE STAB. AUTOMATICA 37DJ0071		02/03/2021	OUTTRIGGERS OPEN SWITCHES + MICROBOX	Foglio N°	14
		CLIENTE: SOCAGE			Fogli Tot N°	59
	37DJ-E SPEED-HE+HE RC				Disegnato da:	Francesco Gennari

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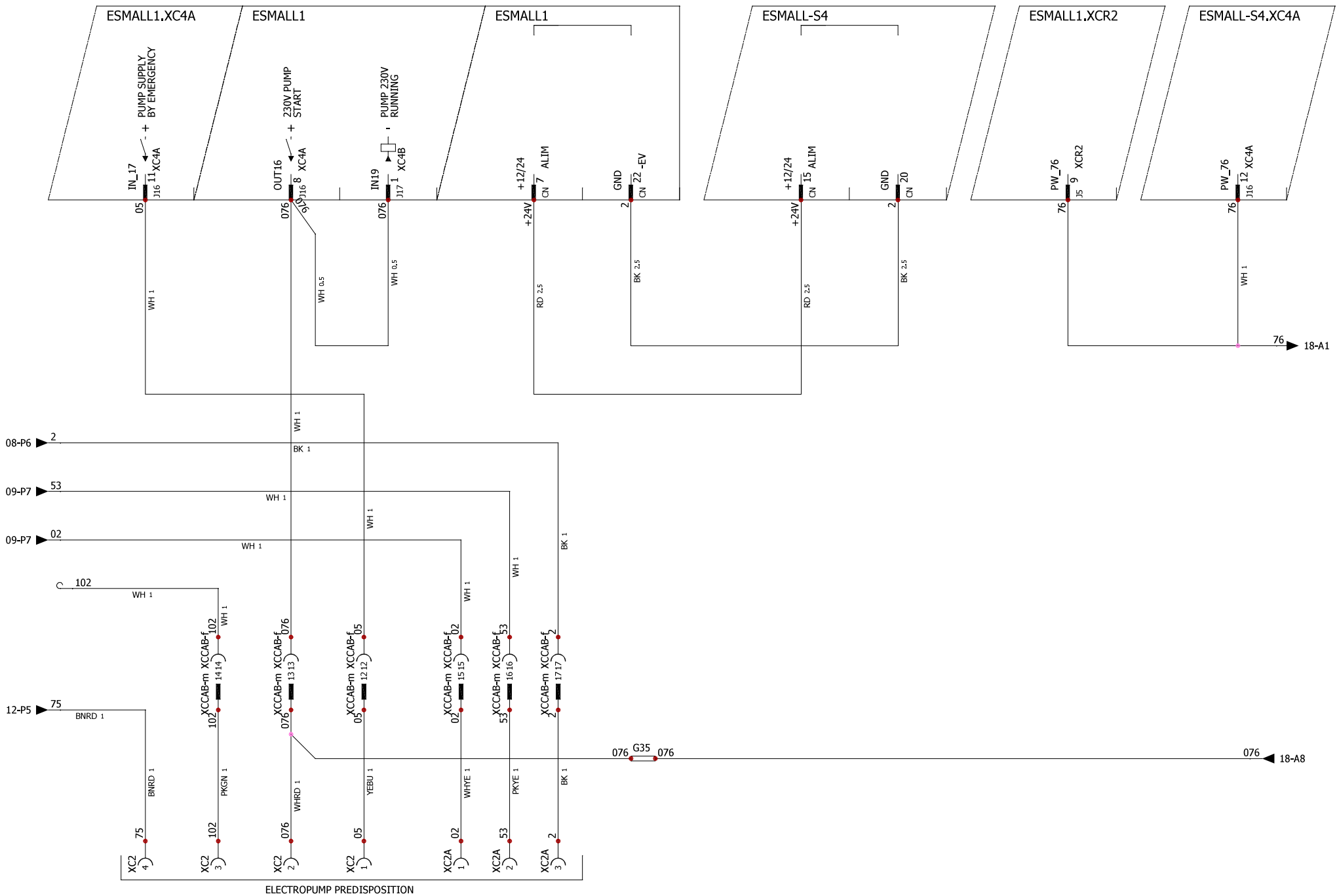

Disegno N°	PROGETTO 37DJ-E_HE+HE STAB. AUTOMATICA 37DJ0071	REVISIONE N.° 0	Data ultima rev. 02/03/2021	DESCRIZIONE POWER SUPPLY AND EMERGENCY S4	Data Emissione: 02/03/2021
ELECTRICAL DRAWING					Foglio N°: 17
CAD		CLIENTE: SOCAGE			Fogli Tot N°: 59
SOLIDWORKS Electrical	37DJ-E SPEED-HE+HE RC				Disegnato da: Francesco Gennari

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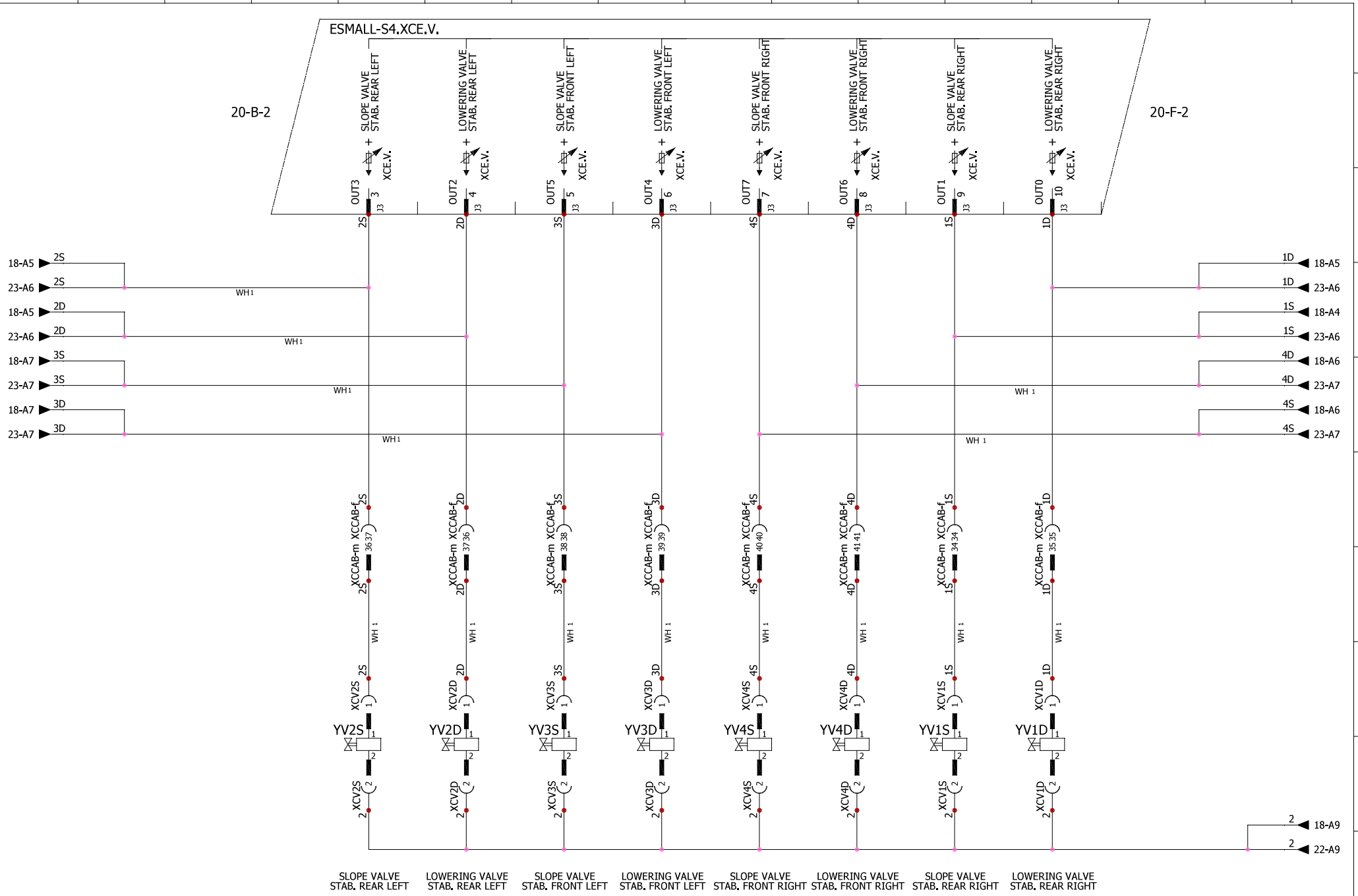

Disegno N°	ELECTRICAL DRAWING	CAD	SOLIDWORKS Electrical	PROGETTO 37DJ-E_HE+HE STAB. AUTOMATICA 37DJ0071	REVISIONE N.° 0	Data ultima rev. 02/03/2021	DESCRIZIONE ELECTROVALVE LINE STABILIZERS

CLIENTE: SOCAGE

37DJ-E SPEED-HE+HE RC

Data Emissione	02/03/2021
Foglio N°	19
Fogli Tot N°	59
Disegnato da:	Francesco Gennari

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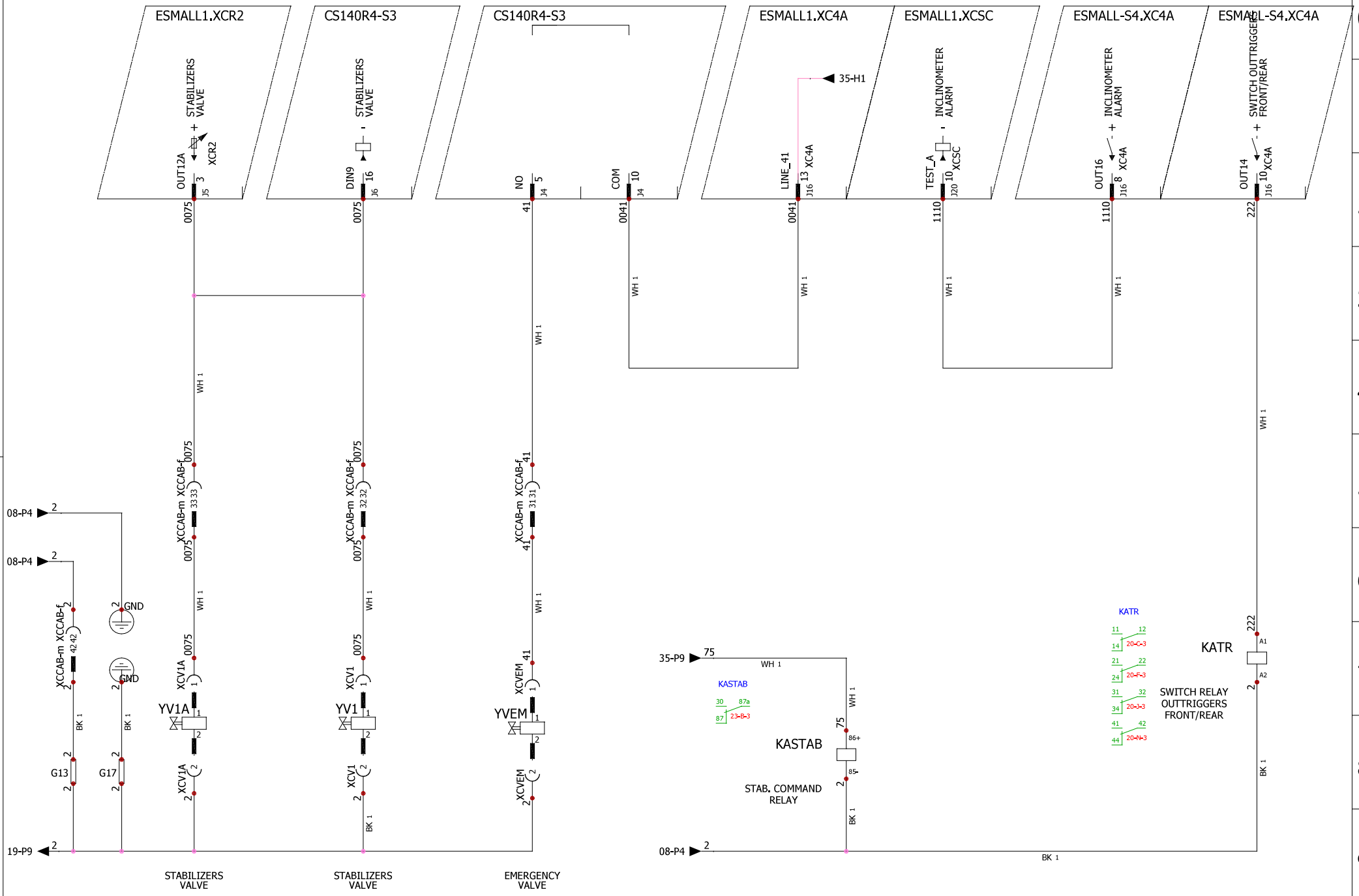
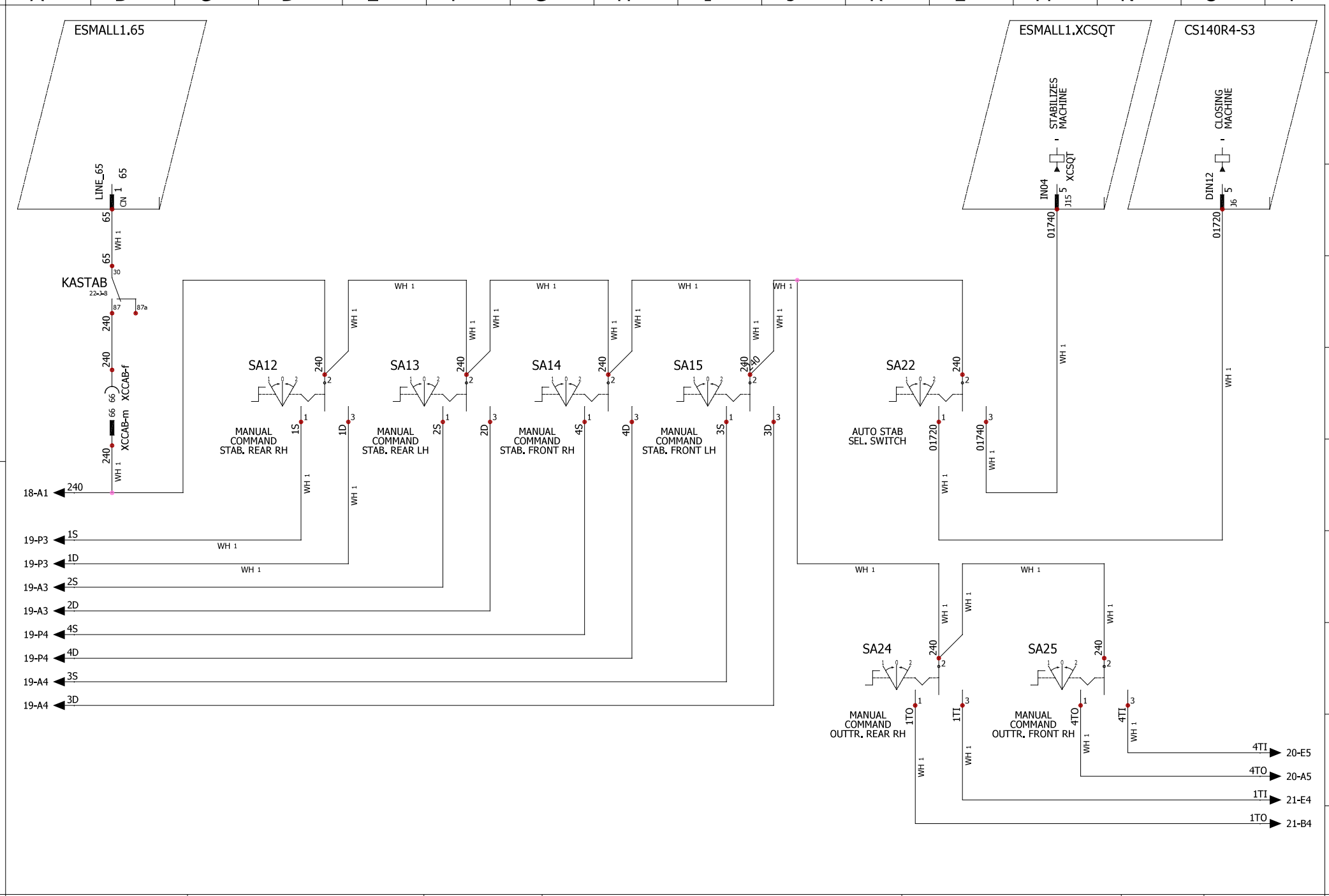


Disegno N°	PROGETTO 37DJ-E_HE+HE STAB. AUTOMATICA 37DJ0071	REVISIONE N.° 0	Data ultima rev. 02/03/2021
ELECTRICAL DRAWING	CLIENTE: SOCAGE		
CAD SOLIDWORKS Electrical	37DJ-E SPEED-HE+HE RC		

DESCRIZIONE
ELECTROVALVE LINE STABILIZERS/EMERGENCY

Data Emissione	02/03/2021
Foglio N°	22
Fogli Tot N°	59
Disegnato da:	Francesco Gennari



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Disegno N°	PROGETTO 37DJ-E_HE+HE STAB. AUTOMATICA 37DJ0071	REVISIONE N.° 0	Data ultima rev. 02/03/2021	DESCRIZIONE CHASSIS BOX PUSHBUTTONS	Data Emissione: 02/03/2021
ELECTRICAL DRAWING					Foglio N°: 23
CAD		CLIENTE: SOCAGE			Fogli Tot N°: 59
SOLIDWORKS Electrical	37DJ-E SPEED-HE+HE RC				Disegnato da: Francesco Gennari

PROGETTO	37DJ-E_HE+HE STAB. AUTOMATICA 37DJ0071
REVISIONE N.° 0	Data ultima rev. 02/03/2021
CLIENTE: SOCAGE	
37DJ-E SPEED-HE+HE RC	

Data Emissione	02/03/2021
Foglio N°	24
Fogli Tot N°	59
Disegnato da:	Francesco Gennari

DESCRIZIONE
CHASSIS BOX
PUSHBUTTONS

SOCAGE

Disegno N°
ELECTRICAL DRAWING
CAD
SOLIDWORKS Electrical

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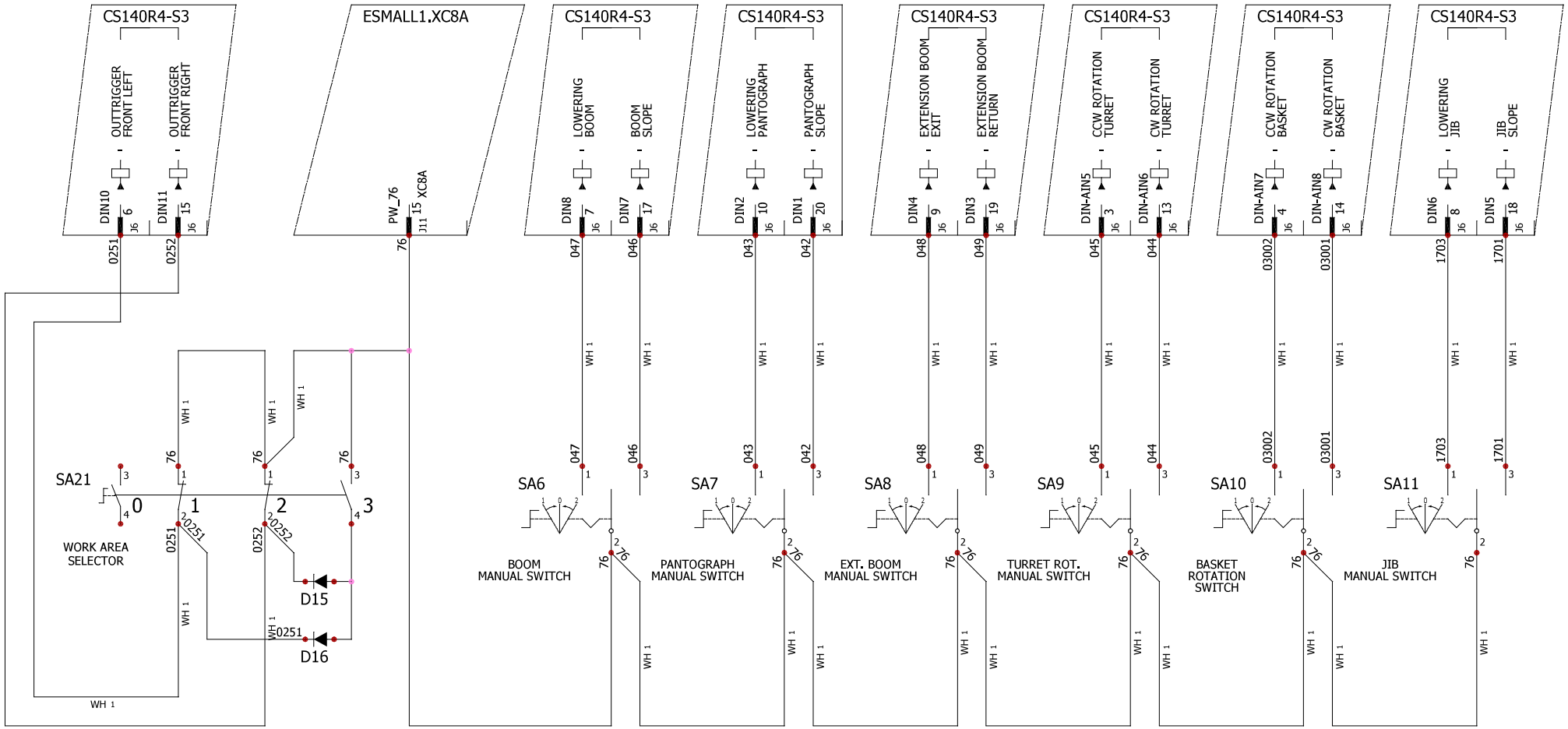

Disegno N° / ELECTRICAL DRAWING / CAD / SOLIDWORKS Electrical	PROGETTO 37DJ-E_HE+HE STAB. AUTOMATICA 37DJ0071	REVISIONE N.° 0	Data ultima rev. 02/03/2021	DESCRIZIONE CHASSIS BOX PUSHBUTTONS	Data Emissione: 02/03/2021 Foglio N°: 25 Fogli Tot N°: 59
		CLIENTE: SOCAGE			Disegnato da: Francesco Gennari
	37DJ-E SPEED-HE+HE RC				

PROGETTO	REVISIONE N.° 0	Data ultima rev.	
37DJ-E_HE+HE STAB. AUTOMATICA		02/03/2021	
37DJ00071	CLIENTE: SOCAGE		

37DJ-E SPEED-HE+HE RC

DESCRIZIONE
CHASSIS BOX
DOOR

Data Emissione	02/03/2021
Foglio N°	26
Fogli Tot N°	59
Disegnato da:	Francesco Gennari

Disegno N°
ELECTRICAL DRAWING
CAD
SOLIDWORKS Electrical

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Disegno N°
ELECTRICAL DRAWING
CAD
SOLIDWORKS Electrical

PROGETTO
37DJ-E_HE+HE
STAB. AUTOMATICA
37DJ0071

REVISIONE N.° 0

	Data ultima rev.
	02/03/2021

CLIENTE: SOCAGE

37DJ-E SPEED-HE+HE RC

DESCRIZIONE
TOWER BOX

Data Emissione	02/03/2021
Foglio N°	27
Fogli Tot N°	59
Disegnato da:	Francesco Gennari

AUTOMAZIONI INDUSTRIALI ELETTRICHE ED ELETTRONICHE
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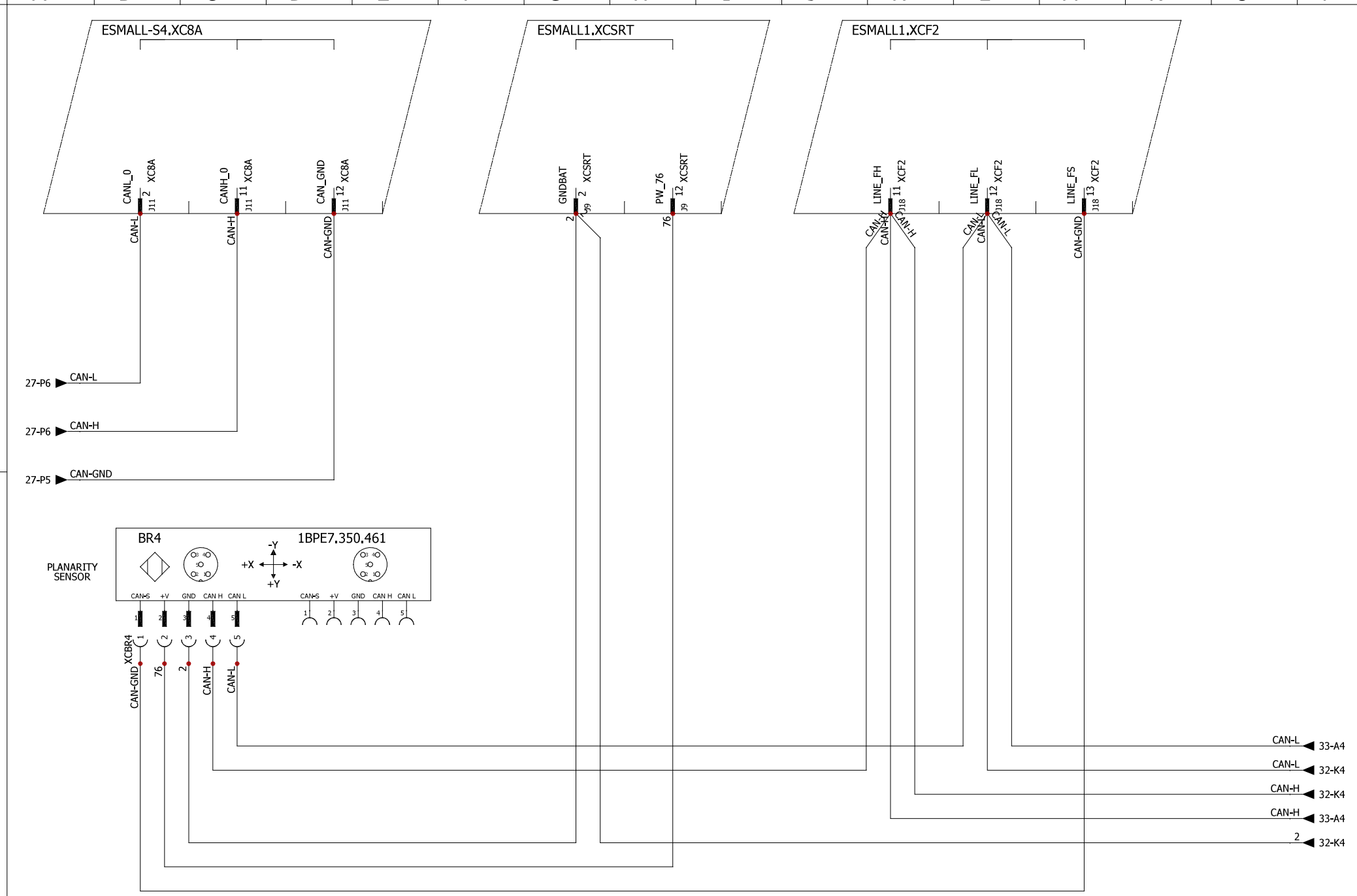

Disegno N°	PROGETTO 37DJ-E_HE+HE STAB. AUTOMATICA 37DJ0071	REVISIONE N.° 0	Data ultima rev. 02/03/2021
ELECTRICAL DRAWING			
CAD	CLIENTE: SOCAGE		
SOLIDWORKS Electrical	37DJ-E SPEED-HE+HE RC		

DESCRIZIONE
PLANARITY SENSOR
CAN LINE

Data Emissione	02/03/2021
Foglio N°	28
Fogli Tot N°	59
Disegnato da:	Francesco Gennari

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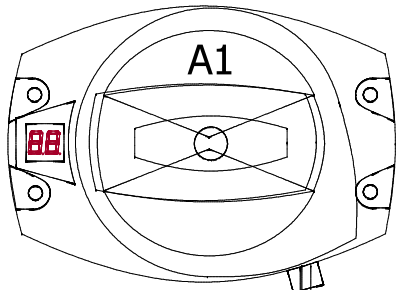
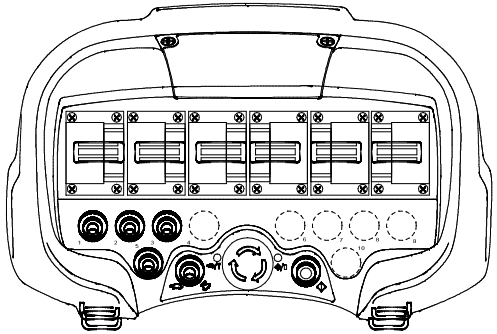
UNITA CENTRALE G3



BUTTON RECEIVER

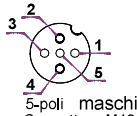
XCA



Cavo comunicaz. seriale
L = 10m

Cavo A

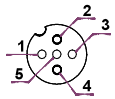
Collegamento	
Pin no.	Colore / Funzione
1	Marrone / DV1+
2	Bianco / Alimentazione +12/24VDC
3	Blu / GND / CAN_GND
4	Nero / CAN_HIGH
5	Grigio / CAN_LOW



5-poli maschio
Connettore M12

Cavo B

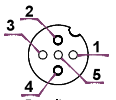
Collegamento	
Pin no.	Colore / Funzione
1	Marrone / Data
2	Bianco / GND
3	Blu / RS 232 TX
4	Nero / RS 232 RX
5	Grigio / Supply output/CAB+



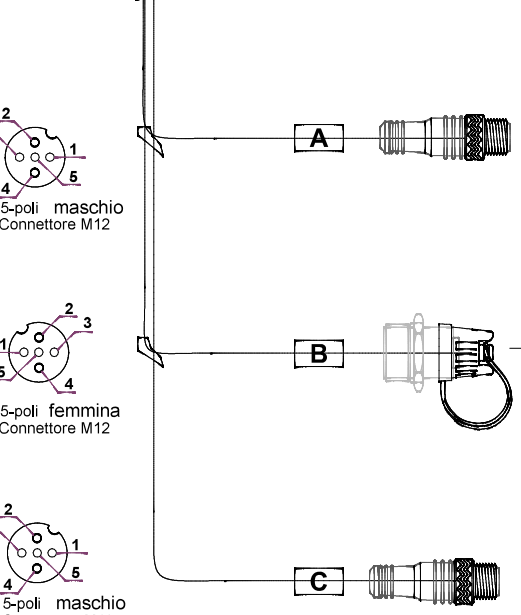
5-poli femmina
Connettore M12

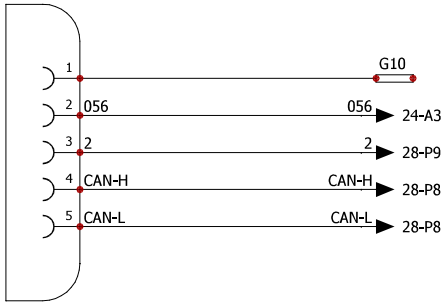
Cavo C

Collegamento	
Pin no.	Colore / Funzione
1	Marrone / DV2+
2	Bianco / LOOP1_OUT
3	Blu / LOOP1_IN
4	Nero / LOOP2_OUT
5	Grigio / LOOP2_IN



5-poli maschio
Connettore M12





Disegno N°	PROGETTO	REVISIONE N.° 0	Data ultima rev.	DESCRIZIONE	Data Emissione 02/03/2021
ELECTRICAL DRAWING	37DJ-E_HE+HE		02/03/2021	RADIOCOMMAND	Foglio N° 32
CAD	STAB. AUTOMATICA	CLIENTE: SOCAGE			Fogli Tot N° 59
SOLIDWORKS Electrical	37DJ0071	37DJ-E SPEED-HE+HE RC			Disegnato da: Francesco Gennari

PROGETTO	37DJ-E_HE+HE STAB. AUTOMATICA 37D10071
REVISIONE N.° 0	Data ultima rev. 02/03/2021
CLIENTE: SOCAGE	
37DJ-E SPEED-HE+HE RC	

Data Emissione	02/03/2021
Foglio N°	33
Fogli Tot N°	59
Disegnato da:	Francesco Gennari

DESCRIZIONE
CHASSIS BOX
LIMITATOR

SOCAGE

Disegno N°
ELECTRICAL DRAWING
CAD
SOLIDWORKS Electrical

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Tel. 0535.38040 Fax 0535-657512 E-mail: tecnico@diasieca.com

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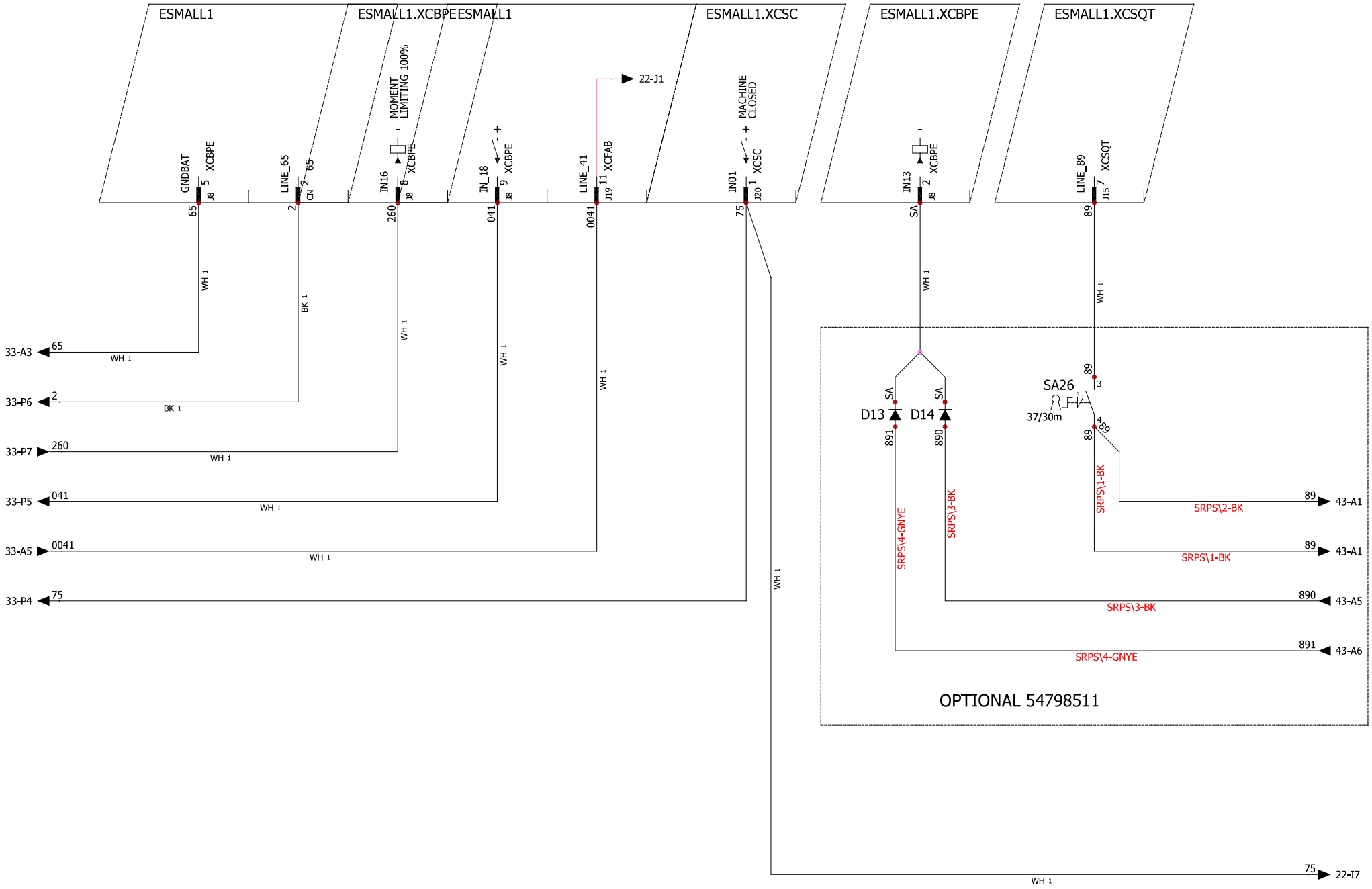
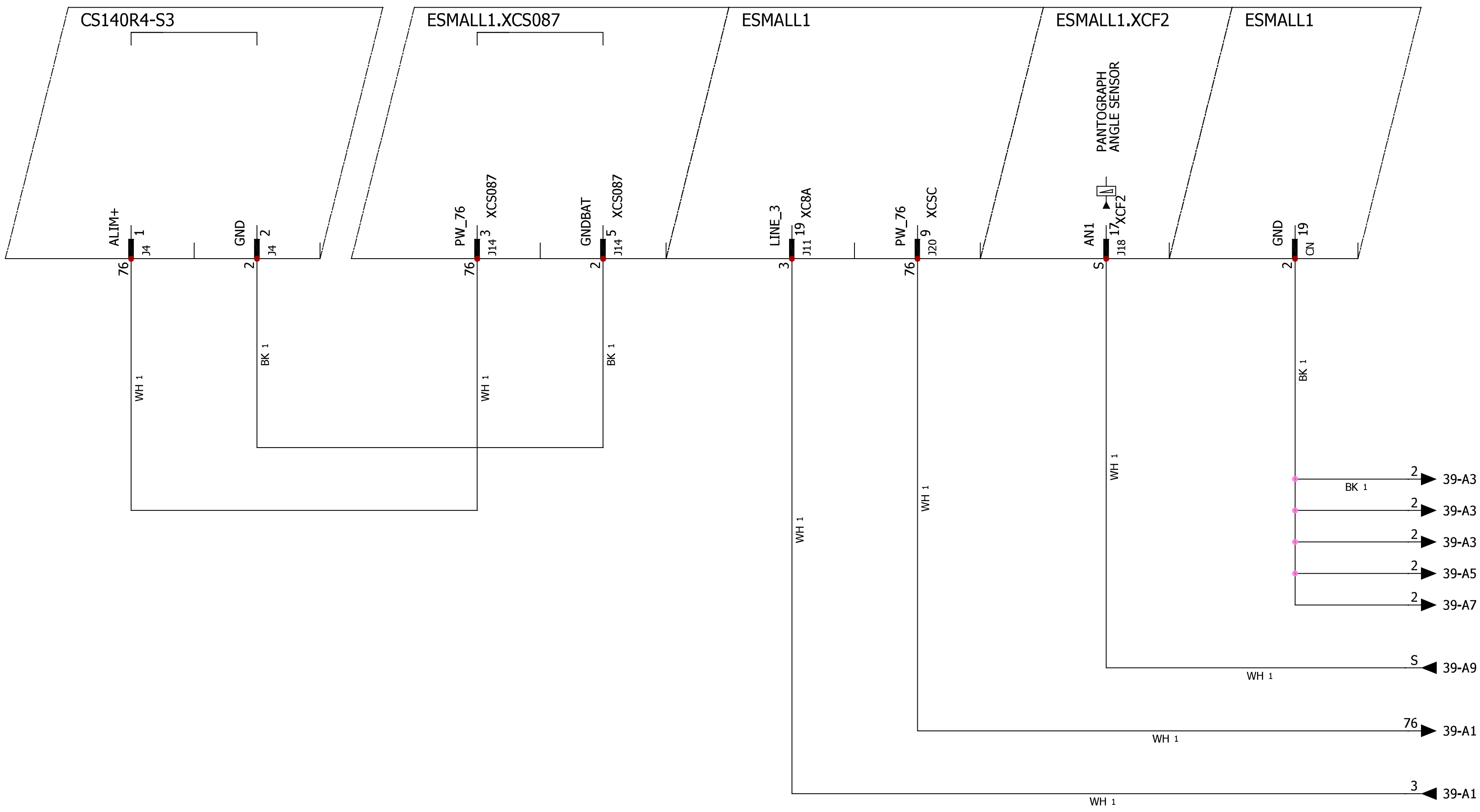


Disegno N°	PROGETTO 37DJ-E_HE+HE STAB. AUTOMATICA 37DJ0071	REVISIONE N.° 0	Data ultima rev. 02/03/2021
ELECTRICAL DRAWING			
CAD		CLIENTE: SOCAGE	
SOLIDWORKS Electrical	37DJ-E SPEED-HE+HE RC		

DESCRIZIONE
CHASSIS BOX LIMITATOR

Data Emissione	02/03/2021
Foglio N°	35
Fogli Tot N°	59
Disegnato da:	Francesco Gennari



PROGETTO	REVISIONE N.° 0	Data ultima rev.	DESCRIZIONE	Data Emissione	02/03/2021
37DJ-E_HE+HE STAB. AUTOMATICA 37DJ0071		02/03/2021	CHASSIS BOX TURRET LINE	Foglio N°	36
	CLIENTE: SOCAGE			Fogli Tot N°	59
37DJ-E SPEED-HE+HE RC				Disegnato da:	Francesco Gennari

Disegno N°
ELECTRICAL DRAWING
CAD
SOLIDWORKS Electrical

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Data Emissione	02/03/2021
Foglio N°	37
Fogli Tot N°	59
Disegnato da:	Francesco Gennari

DESCRIZIONE
CHASSIS BOX
TURRET LINE

SOCAGE

REVISIONE N.° 0	Data ultima rev. 02/03/2021

CLIENTE: SOCAGE

PROGETTO
37DJ-E_HE+HE
STAB. AUTOMATICA
37DJ0071

37DJ-E SPEED-HE+HE RC

Disegno N°
ELECTRICAL DRAWING
CAD
SOLIDWORKS Electrical

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PROGETTO
37DJ-E_HE+HE
STAB. AUTOMATICA
37D00071

REVISIONE N.° 0

Data ultima rev. 02/03/2021

CLIENTE: SOCAGE

DESCRIZIONE
TOWER BOX
ELECTROVALVES

Data Emissione 02/03/2021
Foglio N° 38
Fogli Tot N° 59
Disegnato da: Francesco Gennari

37DJ-E SPEED-HE+HE RC

Disegno N°
ELECTRICAL DRAWING
CAD
SOLIDWORKS Electrical

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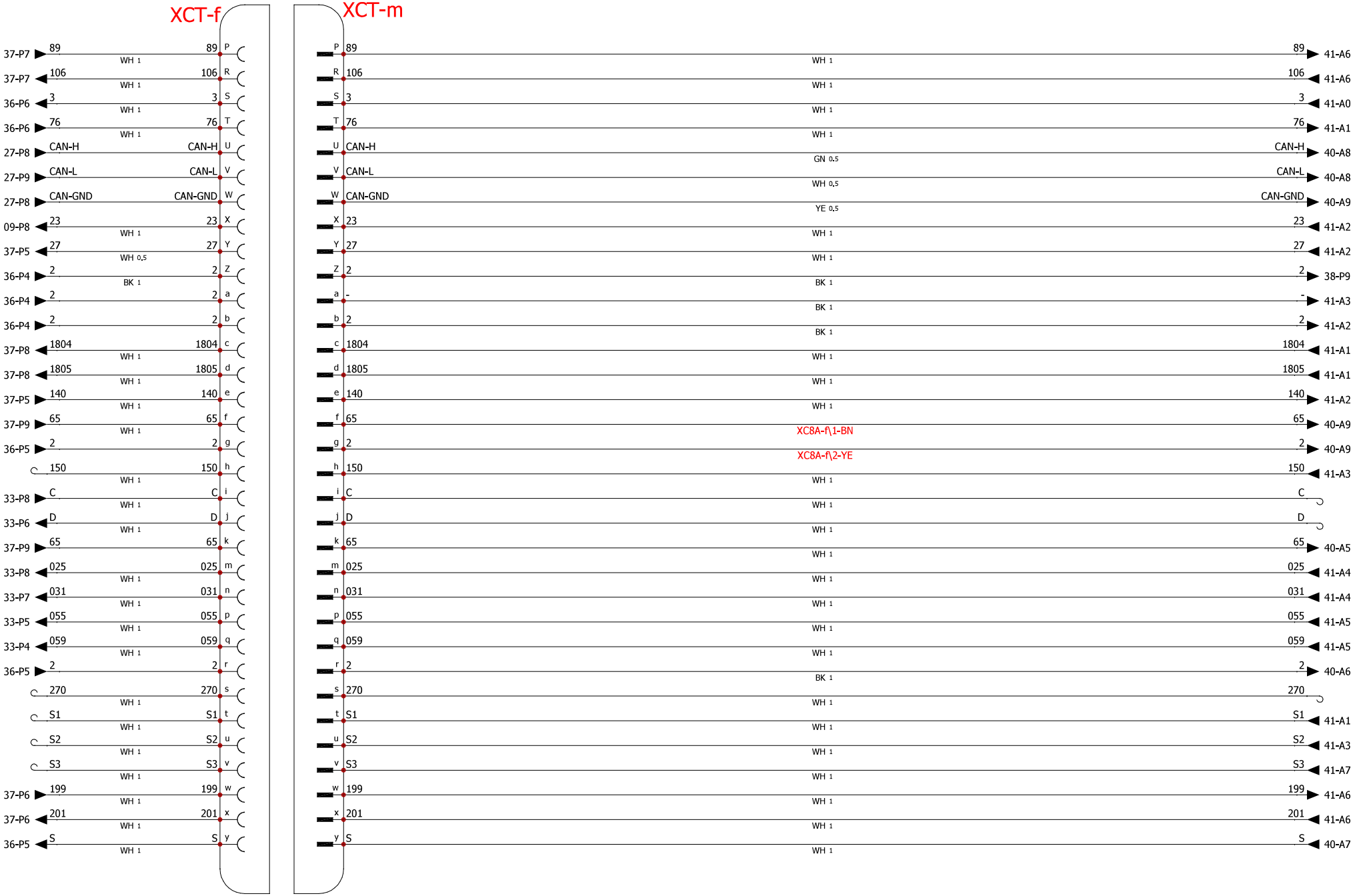

Disegno N°	PROGETTO	REVISIONE N.° 0	Data ultima rev.	DESCRIZIONE	Data Emissione 02/03/2021
ELECTRICAL DRAWING	37DJ-E_HE+HE STAB. AUTOMATICA 37DJ0071		02/03/2021	TOWER	Foglio N° 39
CAD	CLIENTE: SOCAGE				Fogli Tot N° 59
SOLIDWORKS Electrical	37DJ-E SPEED-HE+HE RC				Disegnato da: Francesco Gennari

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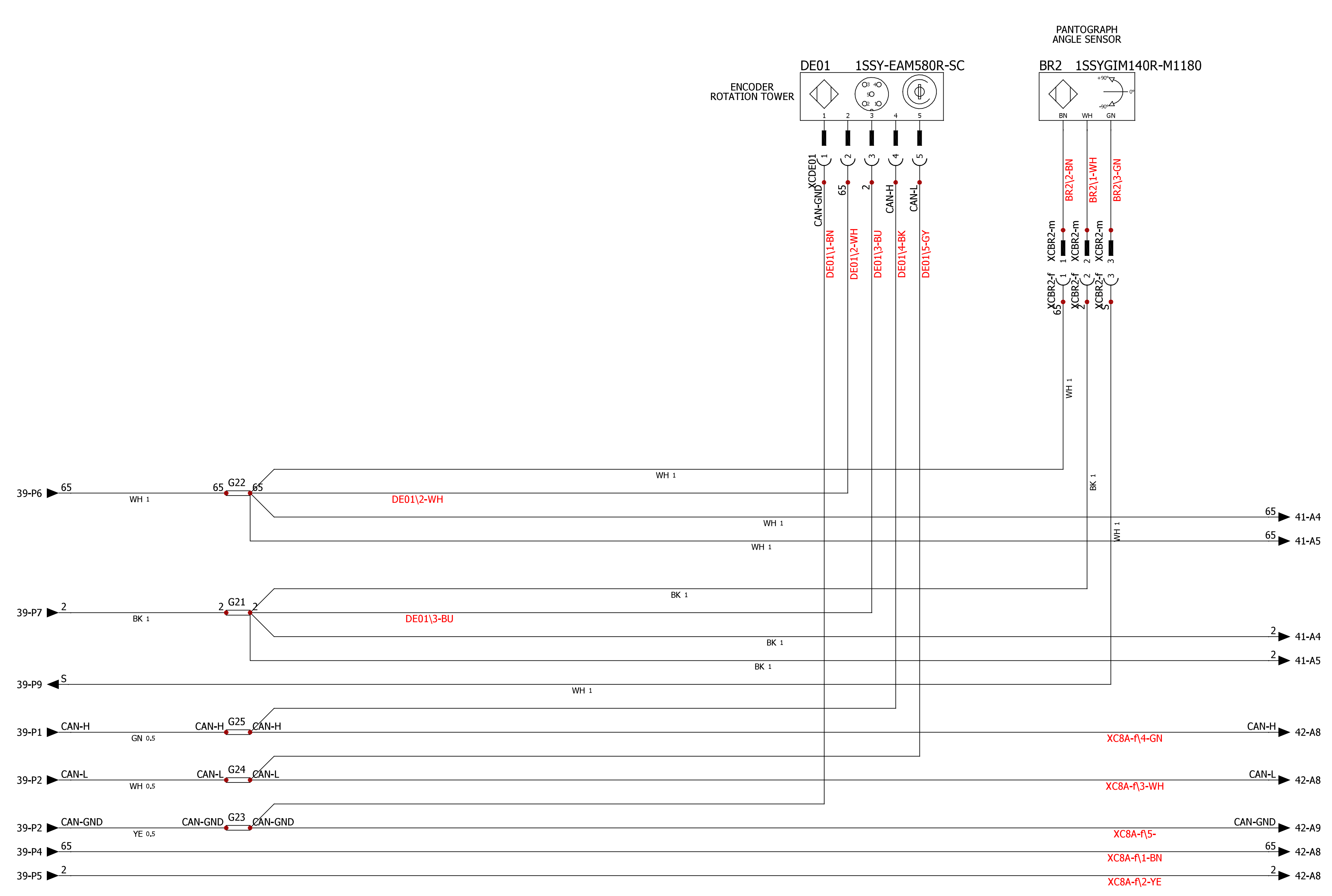

PROGETTO 37DJ-E_HE+HE STAB. AUTOMATICA 37DJ0071	REVISIONE N.° 0	Data ultima rev. 02/03/2021	DESCRIZIONE TOWER LINE SENSORS
CLIENTE: SOCAGE			
Disegno N° 37DJ-E SPEED-HE+HE RC	ELECTRICAL DRAWING	CAD	SOLIDWORKS Electrical

SOCAGE

Data Emissione	02/03/2021
Foglio N°	40
Fogli Tot N°	59
Disegnato da:	Francesco Gennari

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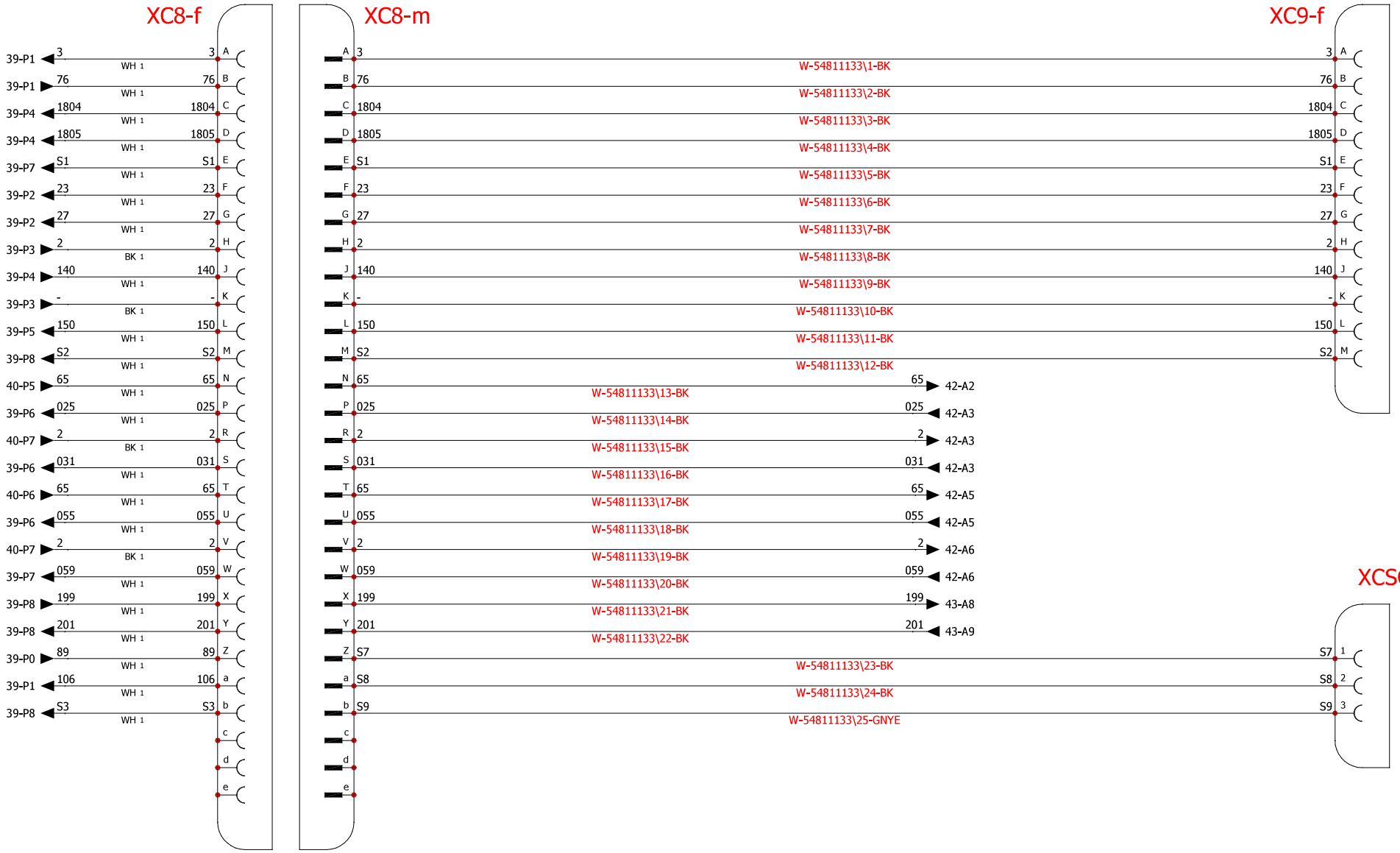

Disegno N°	PROGETTO 37DJ-E_HE+HE STAB. AUTOMATICA 37DJ0071	REVISIONE N.° 0	Data ultima rev. 02/03/2021	DESCRIZIONE PANTOGRAPH CABLE	Data Emissione 02/03/2021
ELECTRICAL DRAWING					Foglio N° 41
CAD	CLIENTE: SOCAGE				Fogli Tot N° 59
SOLIDWORKS Electrical	37DJ-E SPEED-HE+HE RC				Disegnato da: Francesco Gennari

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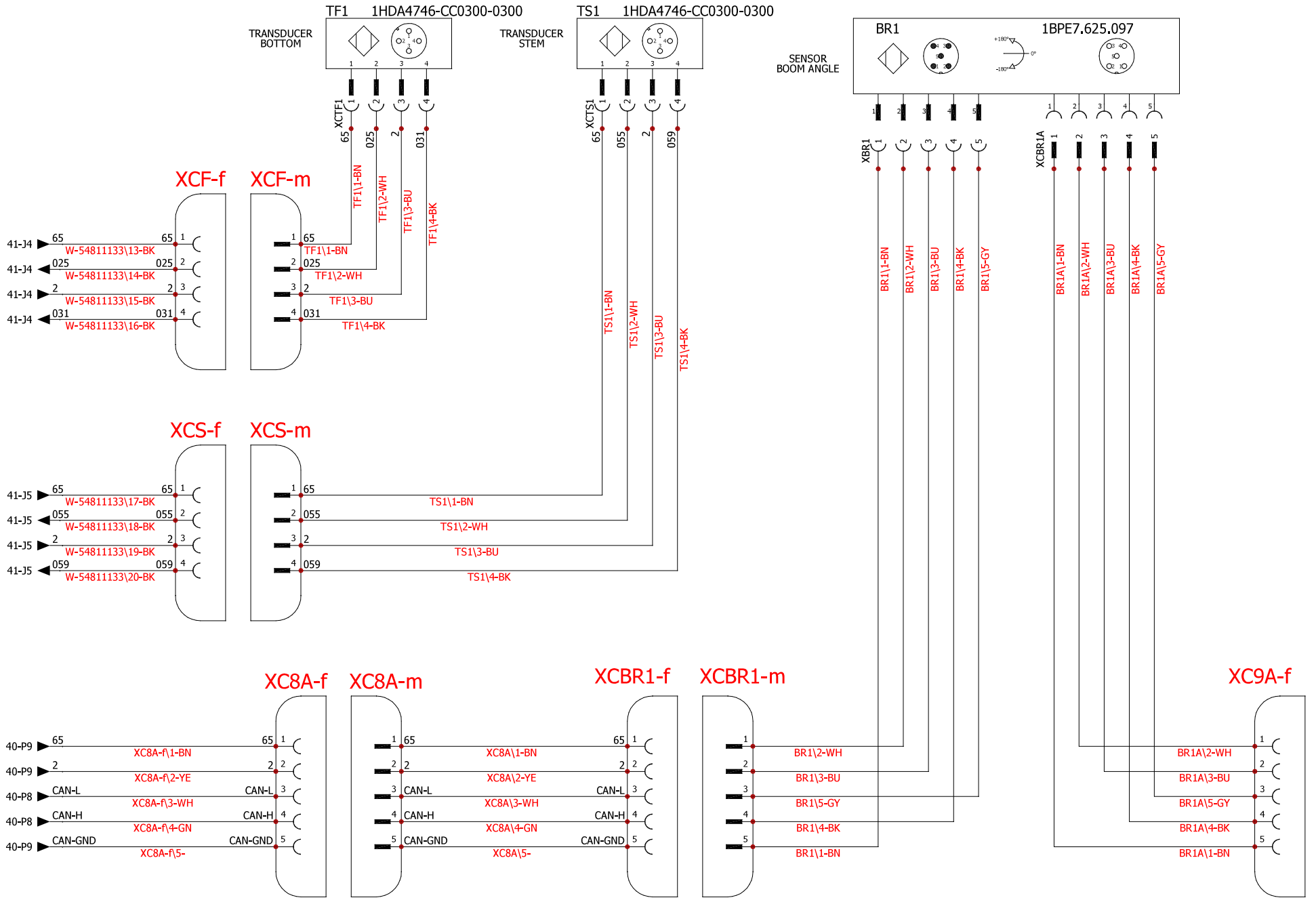

Disegno N°	PROGETTO 37DJ-E_HE+HE STAB. AUTOMATICA 37DJ0071	REVISIONE N.° 0	Data ultima rev. 02/03/2021
ELECTRICAL DRAWING	CLIENTE: SOCAGE		
CAD SOLIDWORKS Electrical	37DJ-E SPEED-HE+HE RC		

DESCRIZIONE
PANTOGRAPH CABLE

Data Emissione	02/03/2021
Foglio N°	42
Fogli Tot N°	59
Disegnato da:	Francesco Gennari

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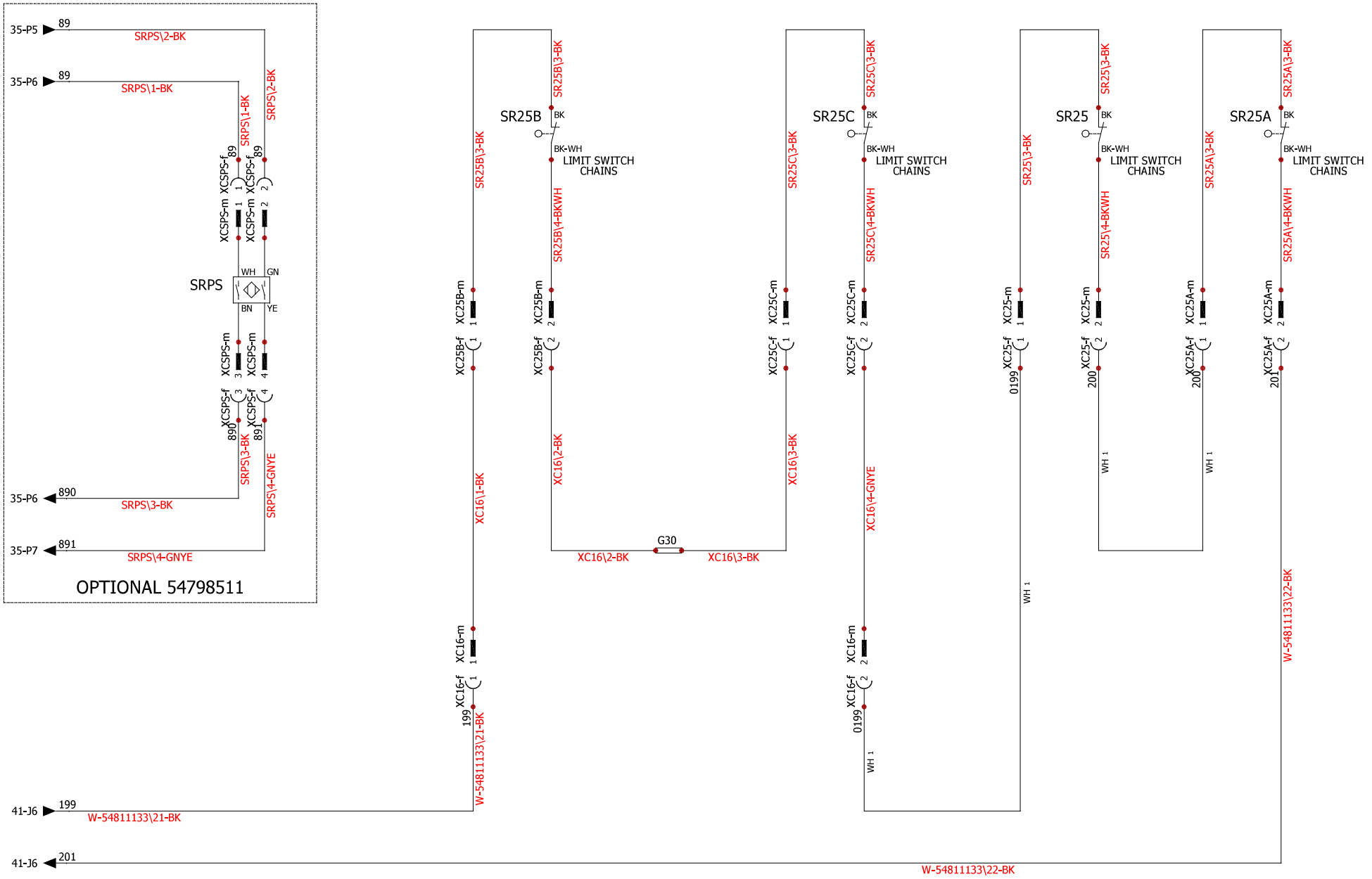

Disegno N°	PROGETTO	REVISIONE N.° 0	Data ultima rev.	DESCRIZIONE	Data Emissione 02/03/2021
ELECTRICAL DRAWING	37DJ-E_HE+HE		02/03/2021	SENSOR BOOM LINE	Foglio N° 43
CAD	STAB. AUTOMATICA	CLIENTE: SOCAGE			Fogli Tot N° 59
SOLIDWORKS Electrical	37DJ0071	37DJ-E SPEED-HE+HE RC			Disegnato da: Francesco Gennari

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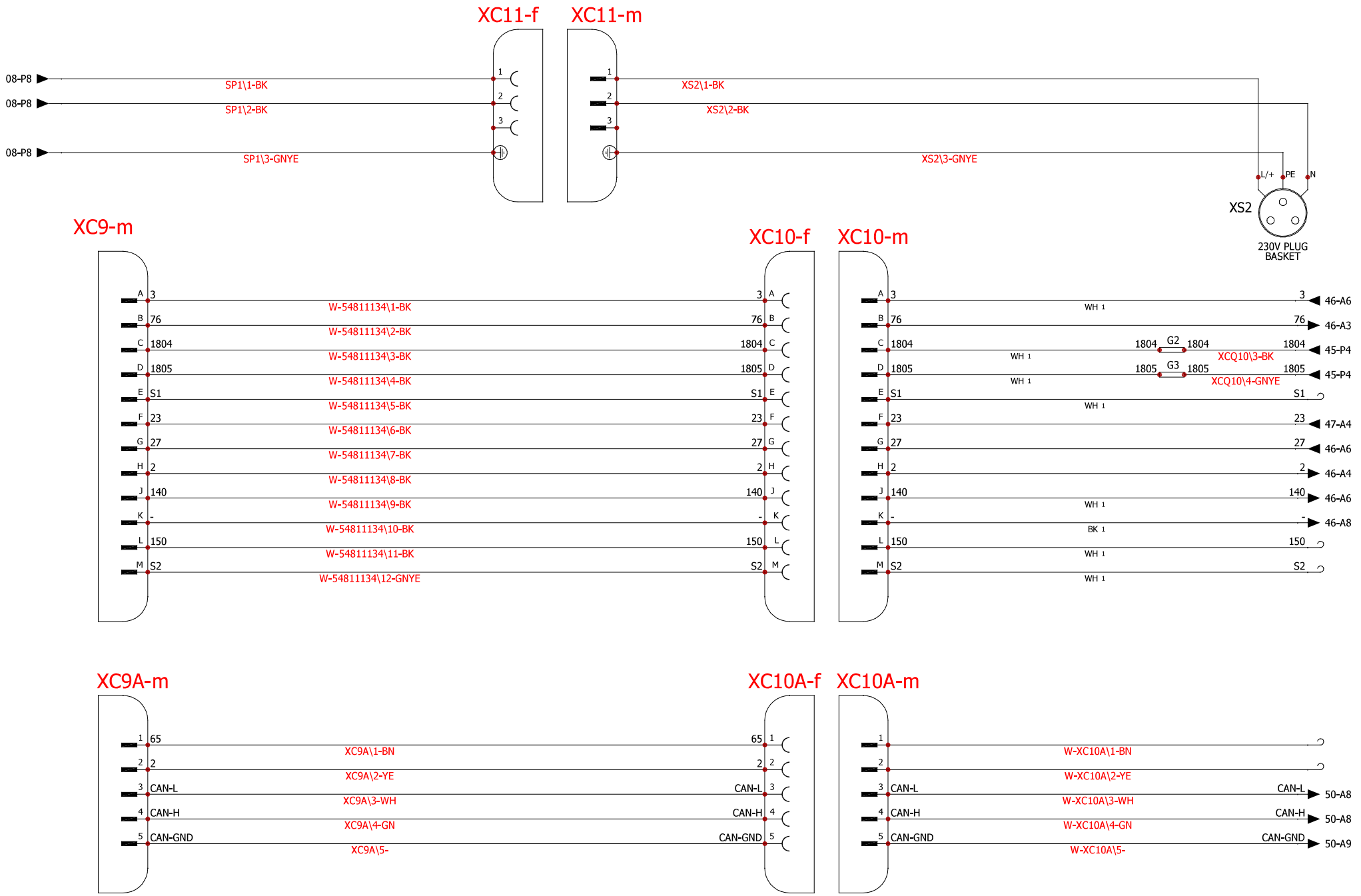

Disegno N°	PROGETTO	REVISIONE N.° 0	Data ultima rev.
ELECTRICAL DRAWING	37DJ-E_HE+HE		02/03/2021
CAD	STAB. AUTOMATICA	CLIENTE: SOCAGE	DESCRIZIONE
SOLIDWORKS Electrical	37DJ0071	37DJ-E SPEED-HE+HE RC	BOOM CABLE JIB

Data Emissione	02/03/2021
Foglio N°	44
Fogli Tot N°	59
Disegnato da:	Francesco Gennari

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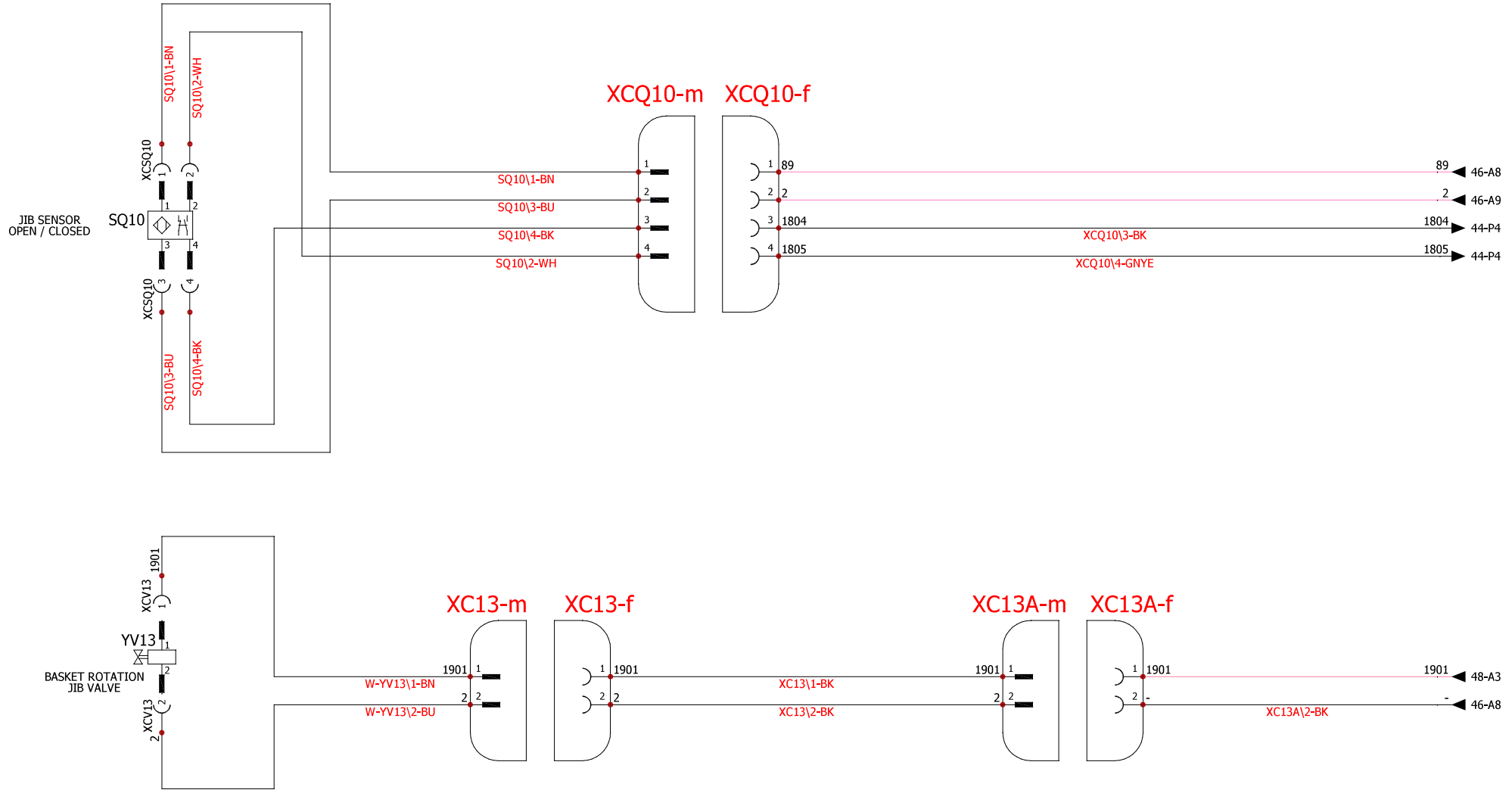
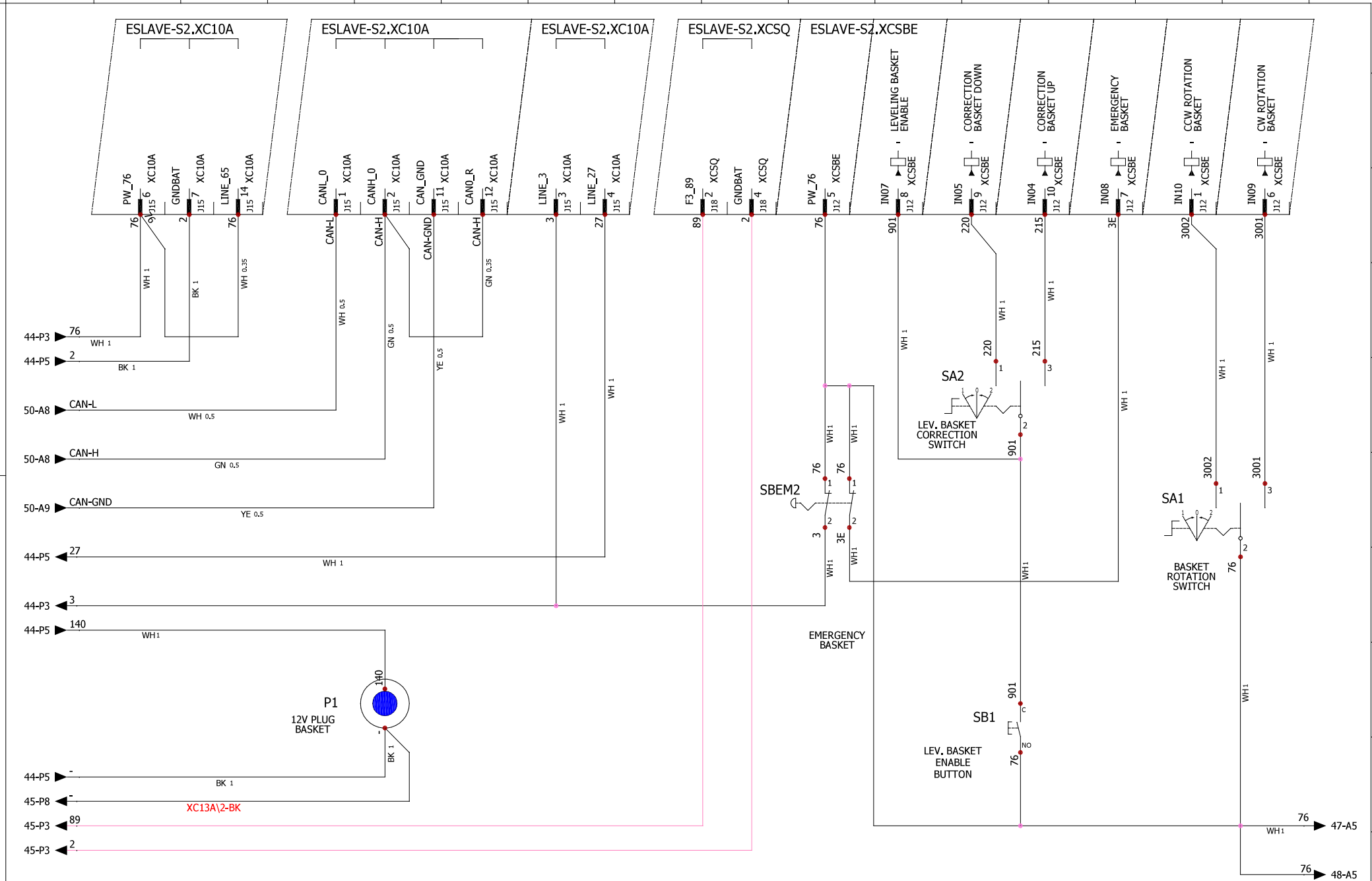


Disegno N° / ELECTRICAL DRAWING	PROGETTO 37DJ-E_HE+HE STAB. AUTOMATICA 37DJ0071	REVISIONE N.° 0	Data ultima rev.	DESCRIZIONE JIB SENSORS	Data Emissione: 02/03/2021
CAD / SOLIDWORKS Electrical			02/03/2021		Foglio N°: 45
	CLIENTE: SOCAGE				Fogli Tot N°: 59
	37DJ-E SPEED-HE+HE RC				Disegnato da: Francesco Gennari



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PROGETTO	37DJ-E_HE+HE STAB. AUTOMATICA 37DJ0071
REVISIONE N.°	0
Data ultima rev.	02/03/2021
CLIENTE:	SOCAGE
37DJ-E SPEED-HE+HE RC	
DESCRIZIONE	BASKET BOX
Data Emissione	02/03/2021
Foglio N°	46
Fogli Tot N°	59
Disegnato da:	Francesco Gennari

Disegno N° | ELECTRICAL DRAWING | CAD | SOLIDWORKS Electrical

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Disegno N°	
ELECTRICAL DRAWING	
CAD	
SOLIDWORKS Electrical	

PROGETTO
37DJ-E_HE+HE
STAB. AUTOMATICA
37D00071

REVISIONE N.° 0

Data ultima rev.	
02/03/2021	

CLIENTE: SOCAGE

37DJ-E SPEED-HE+HE RC

DESCRIZIONE
BASKET BOX
SWITCH AND LIGHT

Data Emissione	02/03/2021
Foglio N°	47
Fogli Tot N°	59
Disegnato da:	Francesco Gennari

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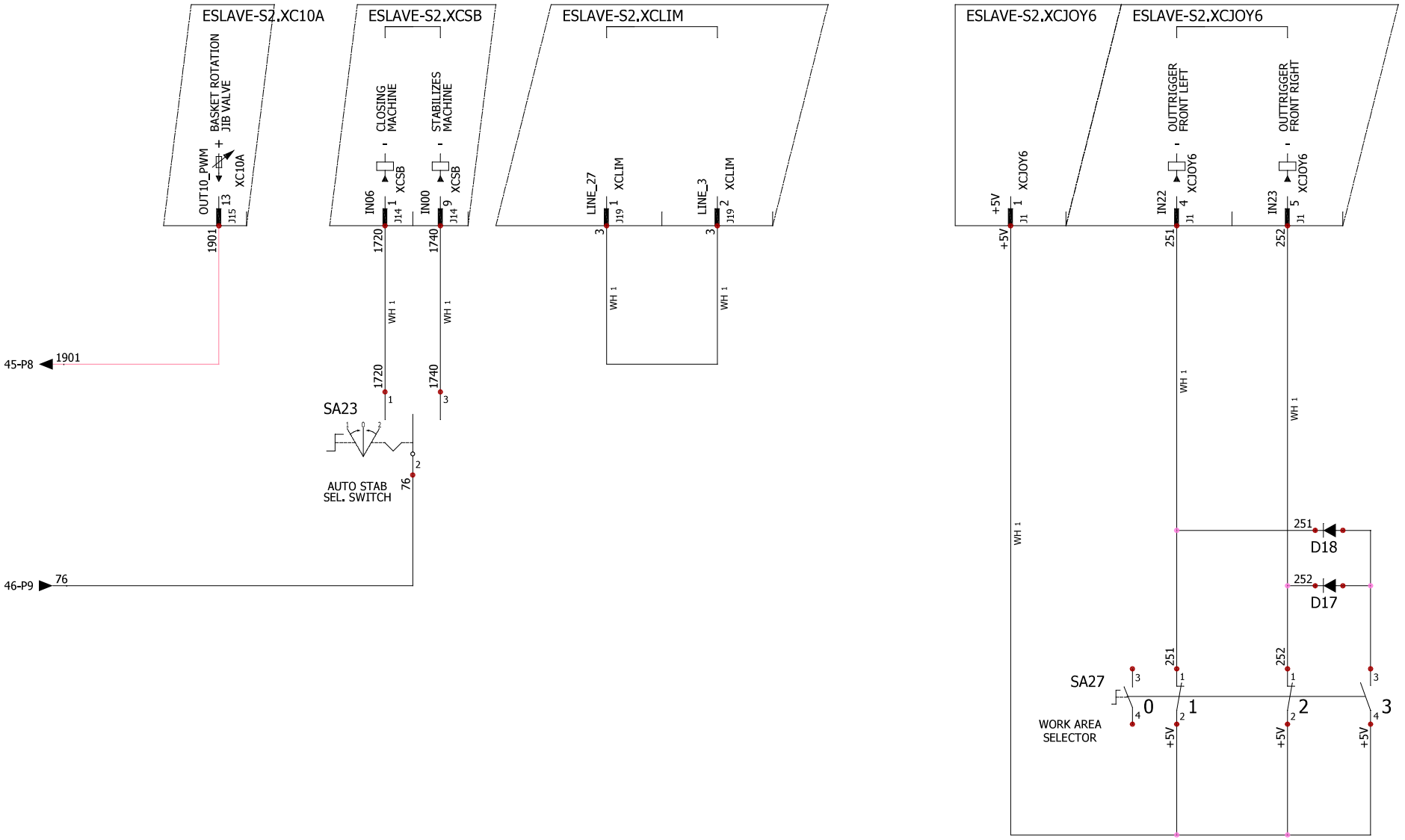

Disegno N°	PROGETTO	REVISIONE N.° 0	Data ultima rev.	DESCRIZIONE	Data Emissione 02/03/2021
ELECTRICAL DRAWING	37DJ-E_HE+HE STAB. AUTOMATICA 37DJ0071		02/03/2021	BASKET BOX WORK SELECTOR	Foglio N° 48
CAD	CLIENTE: SOCAGE				Fogli Tot N° 59
SOLIDWORKS Electrical	37DJ-E SPEED-HE+HE RC				Disegnato da: Francesco Gennari

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PROGETTAZIONE E ASSISTENZA
Via Valla, 51 - 41037 MIRANDOLA (MO) - P.IVA 02127590368
Tel. 0535.38040 Fax 0535-657512 E-mail: tecnico@diasteca.com

Disegno N°	
ELECTRICAL DRAWING	
CAD	
SOLIDWORKS Electrical	

PROGETTO
37DJ-E_HE+HE
STAB. AUTOMATICA
37D00071

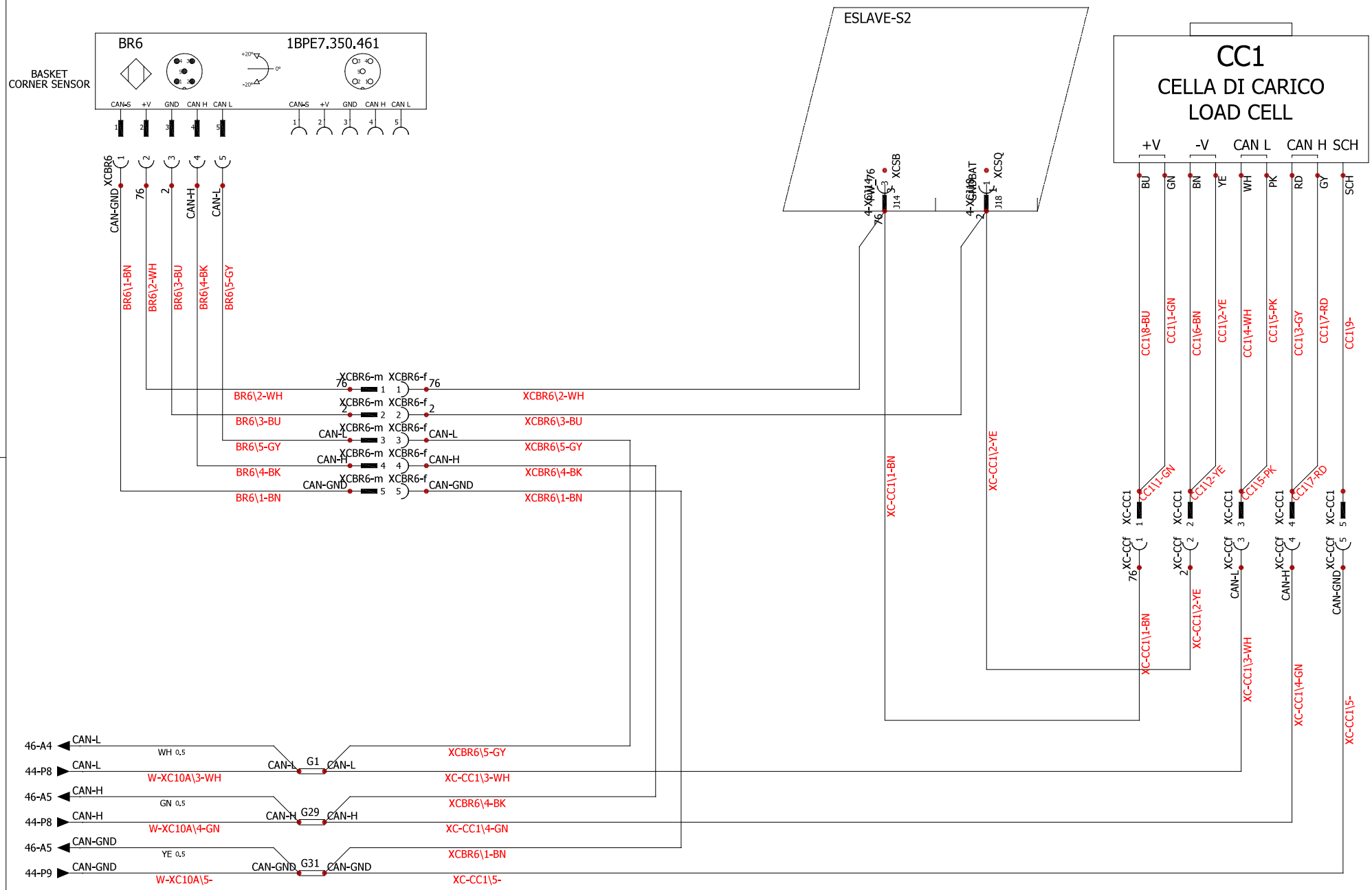
REVISIONE N.° 0	Data ultima rev.
	02/03/2021

CLIENTE: SOCAGE

37DJ-E SPEED-HE+HE RC

DESCRIZIONE
BASKET BOX
JOYSTICKS LINE

Data Emissione	02/03/2021
Foglio N°	49
Fogli Tot N°	59
Disegnato da:	Francesco Gennari



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PROGETTO	37DJ-E_HE+HE STAB. AUTOMATICA 37DJ0071
REVISIONE N.° 0	Data ultima rev. 02/03/2021
CLIENTE:	SOCAGE
	37DJ-E SPEED-HE+HE RC
DESCRIZIONE	BASKET BOX CAN SENSORS
Data Emissione	02/03/2021
Foglio N°	50
Fogli Tot N°	59
Disegnato da:	Francesco Gennari

Disegno N° — ELECTRICAL DRAWING — CAD — SOLIDWORKS Electrical

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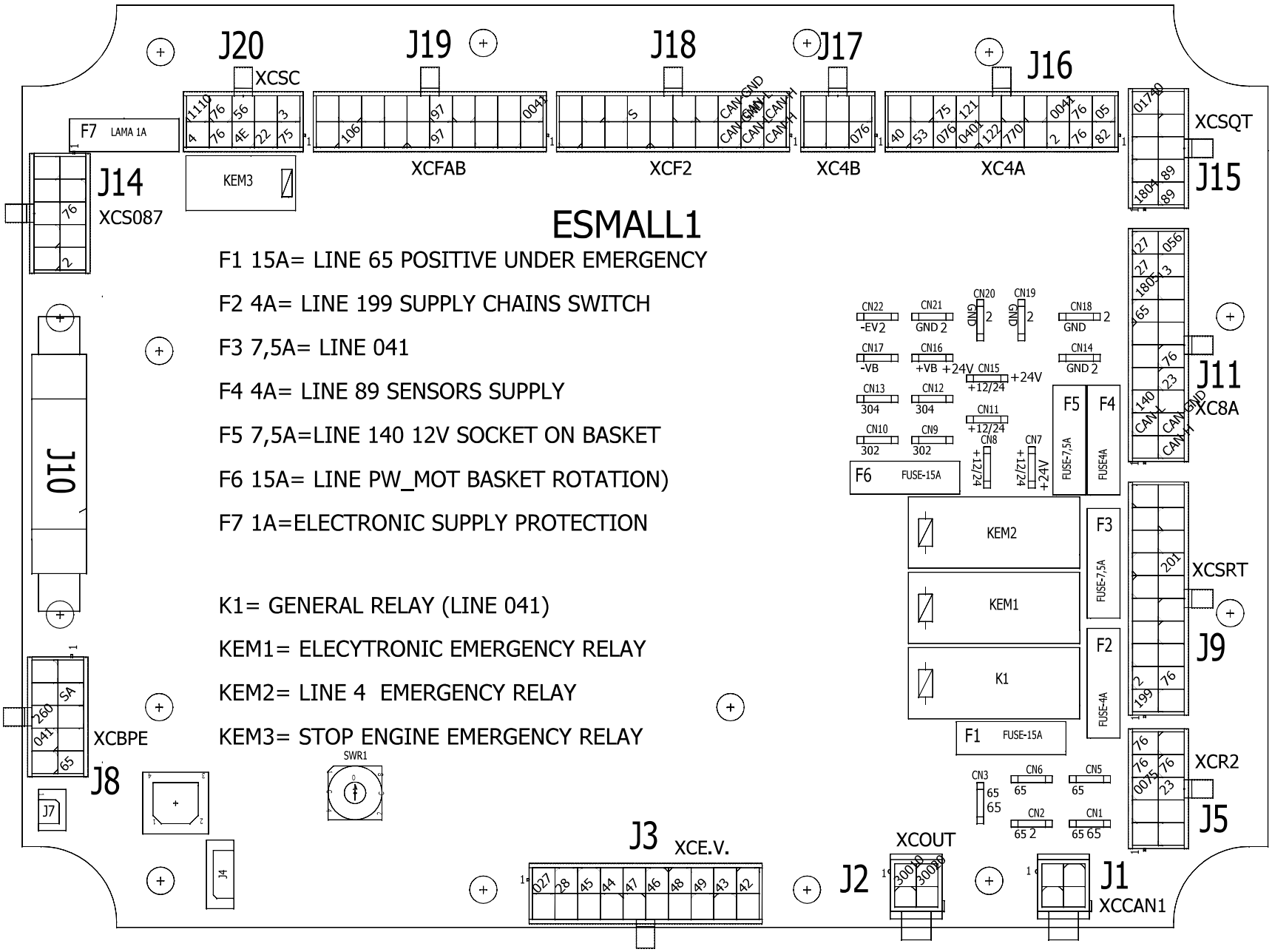

ESMALL1

F1 15A= LINE 65 POSITIVE UNDER EMERGENCY

F2 4A= LINE 199 SUPPLY CHAINS SWITCH

F3 7,5A= LINE 041

F4 4A= LINE 89 SENSORS SUPPLY

F5 7,5A=LINE 140 12V SOCKET ON BASKET

F6 15A= LINE PW_MOT BASKET ROTATION)

F7 1A=ELECTRONIC SUPPLY PROTECTION

K1= GENERAL RELAY (LINE 041)

KEM1= ELECYTRONIC EMERGENCY RELAY

KEM2= LINE 4 EMERGENCY RELAY

KEM3= STOP ENGINE EMERGENCY RELAY

Disegno N°	PROGETTO 37DJ-E_HE+HE STAB. AUTOMATICA 37DJ0071	REVISIONE N.° 0	Data ultima rev. 02/03/2021	DESCRIZIONE LAYOUT ESMALL BOARD	Data Emissione 02/03/2021
ELECTRICAL DRAWING					Foglio N° 51
CAD	CLIENTE: SOCAGE				Fogli Tot N° 59
SOLIDWORKS Electrical	37DJ-E SPEED-HE+HE RC				Disegnato da: Francesco Gennari

AUTOMAZIONI INDUSTRIALI ELETTRICHE ED ELETTRONICHE
QUADRI ELETTRICI DI COMANDO - SOFTWARE P.L.C.
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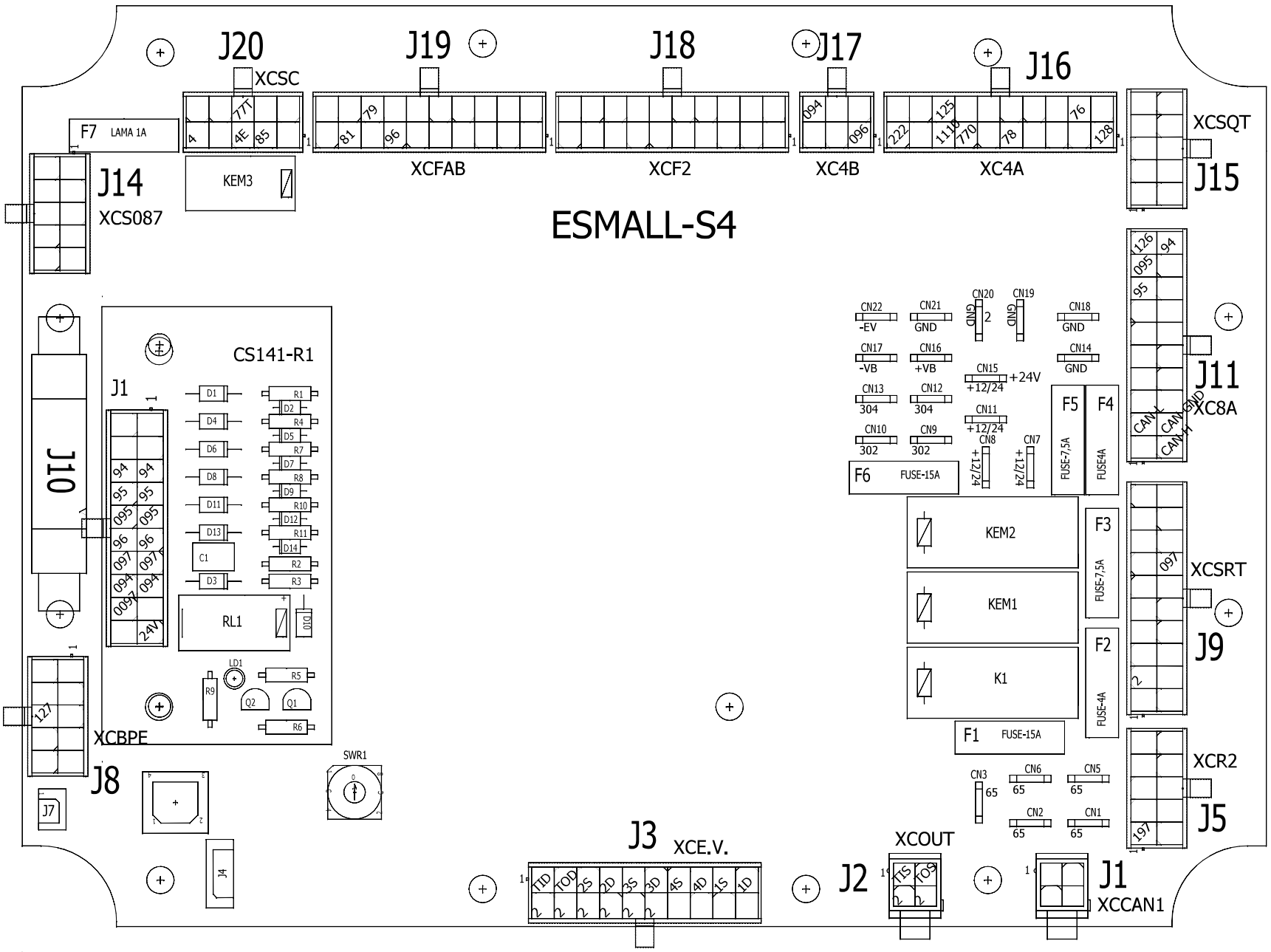

Disegno N°	PROGETTO 37DJ-E_HE+HE STAB. AUTOMATICA 37DJ0071	REVISIONE N.° 0	Data ultima rev. 02/03/2021	DESCRIZIONE LAYOUT ESMALL S4 BOARD	Data Emissione 02/03/2021
ELECTRICAL DRAWING					Foglio N° 52
CAD		CLIENTE: SOCAGE			Fogli Tot N° 59
SOLIDWORKS Electrical	37DJ-E SPEED-HE+HE RC				Disegnato da: Francesco Gennari

AUTOMAZIONI INDUSTRIALI ELETTRICHE ED ELETTRONICHE
QUADRI ELETTRICI DI COMANDO - SOFTWARE P.L.C.
PROGETTAZIONE E ASSISTENZA
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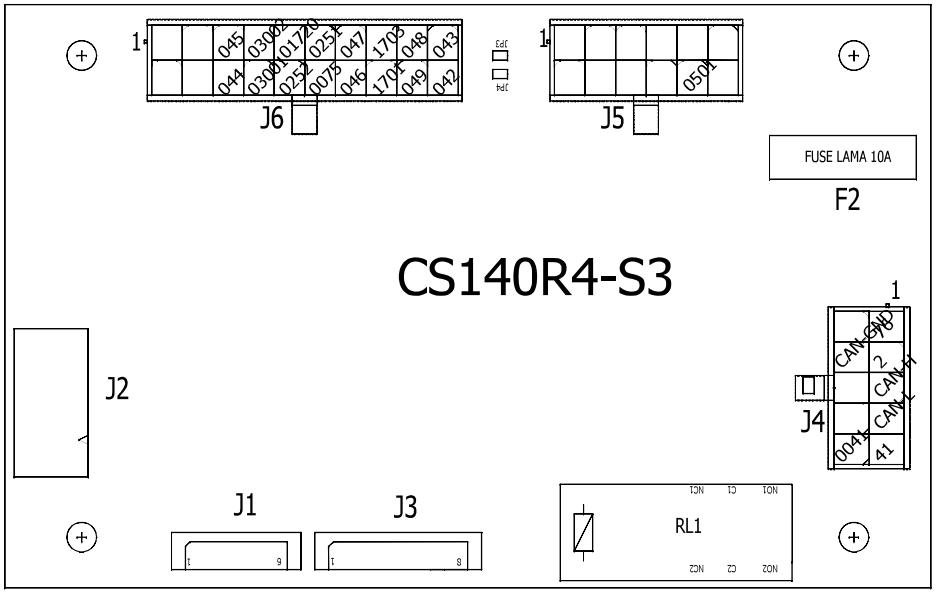
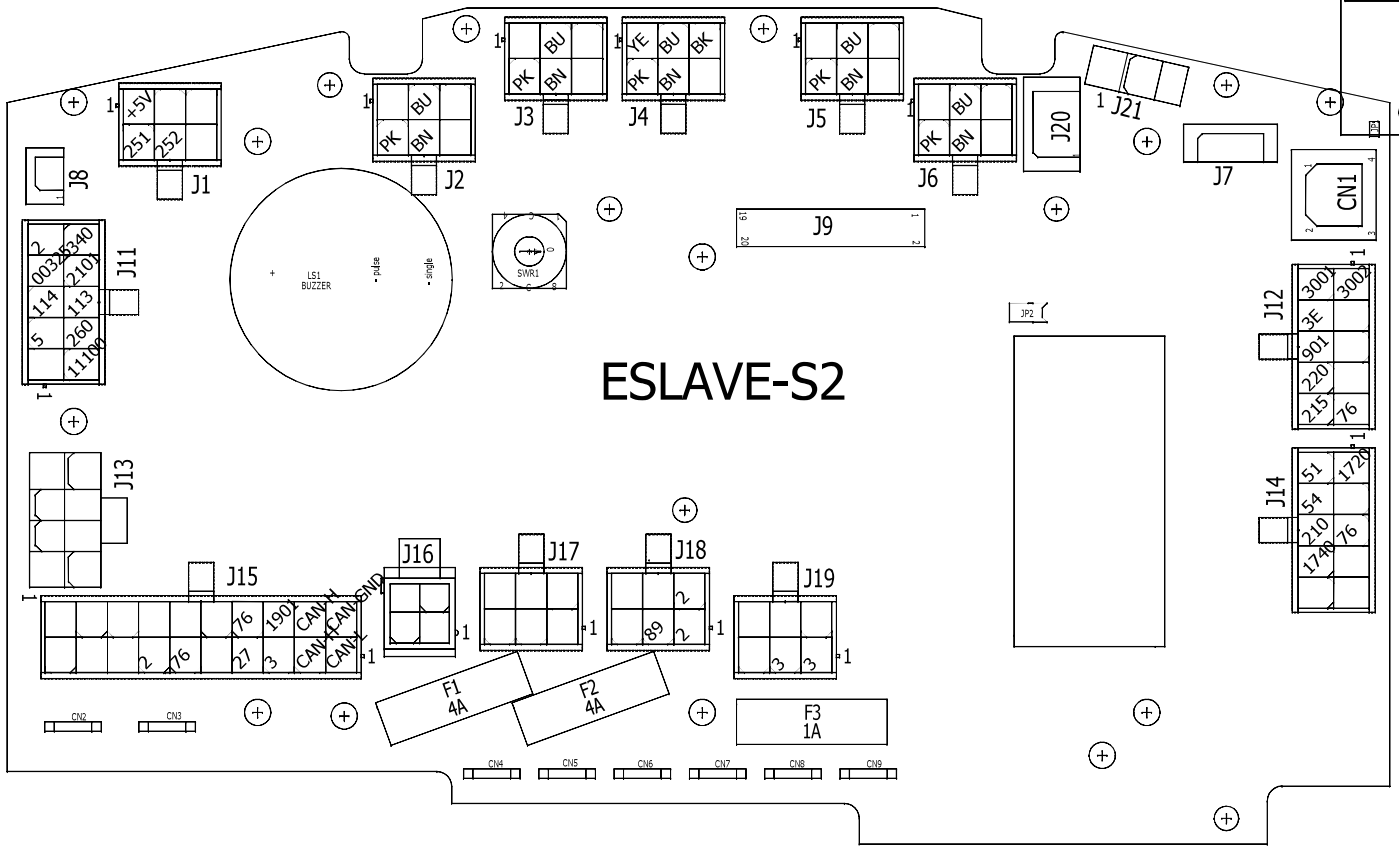
CHASSIS BOX

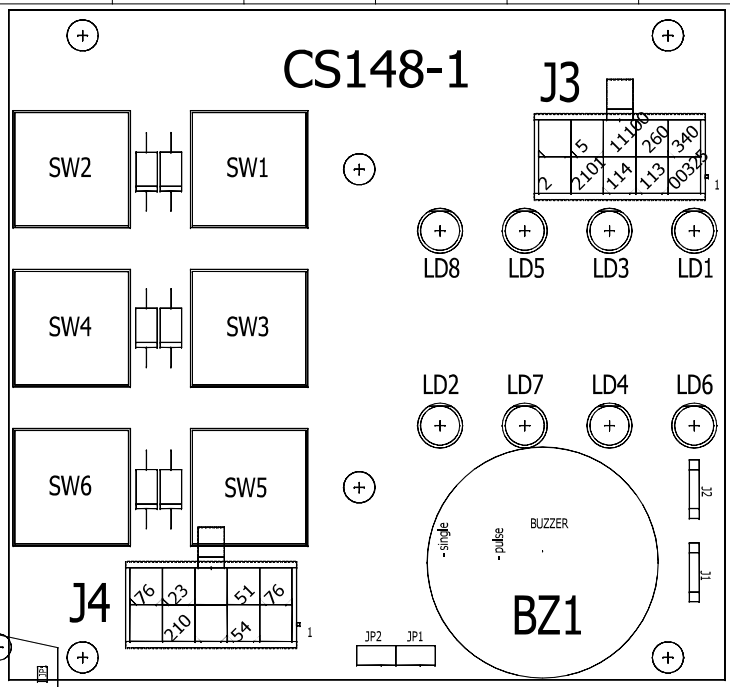


Disegno N°	PROGETTO: 37DJ-E_HE+HE STAB. AUTOMATICA 37DJ0071	REVISIONE N.° 0	Data ultima rev. 02/03/2021
ELECTRICAL DRAWING	CLIENTE: SOCAGE		
CAD SOLIDWORKS Electrical	37DJ-E SPEED-HE+HE RC	DESCRIZIONE: LAYOUT CHASSIS BOX	

Data Emissione	02/03/2021
Foglio N°	53
Fogli Tot N°	59
Disegnato da:	Francesco Gennari

BASKET BOX





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Disegno N°	PROGETTO	REVISIONE N.° 0	Data ultima rev.
ELECTRICAL DRAWING	37DJ-E_HE+HE		02/03/2021
CAD	STAB. AUTOMATICA	CLIENTE: SOCAGE	
SOLIDWORKS Electrical	37DJ0071	37DJ-E SPEED-HE+HE RC	

DESCRIZIONE
LAYOUT
BASKET BOARDS

Data Emissione	02/03/2021
Foglio N°	54
Fogli Tot N°	59
Disegnato da:	Francesco Gennari

AUTOMAZIONI INDUSTRIALI ELETTRICHE ED ELETTRONICHE
QUADRI ELETTRICI DI COMANDO - SOFTWARE P.L.C.
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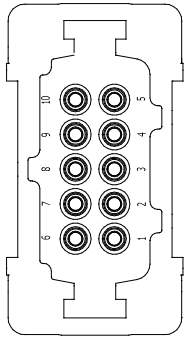

XC1

Pin	Equipot	Color	Number	Description	Destination	Cross-ref
1	76	WH		GENERAL LINE	ESMALL1.XC4A:2	09-A-6
2	97	WH		MACHINE READY TO GO	ESMALL1.XCFAB:5	09-A-6
3	40	WH		ENGINE TRUCK START	ESMALL1.XC4A:10	09-A-6
4	53	WH; WH		ENGINES STOP	XCCAB-f:16; ESMALL1.XC4A:9	09-A-6
5	02	WH		OIL PILOT LIGHT|D+	XCCAB-f:15	09-A-6
6	76	WH		GENERAL LINE	ESMALL1.XC4A:12	09-A-6
7	0401	WH		INCREASE ENGINE 1000 RPM	ESMALL1.XC4A:7	09-A-6
8	24V	WH		POSITIVE UNDER KEY SWITCH	G6	09-A-6
9	0501	WH		INCREASE ENGINE 1200RPM	CS140R4-S3:11	09-A-6
10	23	WH		CLACSON	ESMALL1:8	09-A-6
GND	2	BK		GND 0V	ESMALL1.XC4A:3	09-A-6

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Disegno N° | ELECTRICAL DRAWING | CAD | SOLIDWORKS Electrical

PROGETTO
37DJ-E_HE+HE
STAB. AUTOMATICA
37DJ0071

REVISIONE N.° 0

Data ultima rev. 02/03/2021

CLIENTE: SOCAGE

37DJ-E SPEED-HE+HE RC

DESCRIZIONE
CONNECTOR LIST
XC1

Data Emissione	02/03/2021
Foglio N°	55
Fogli Tot N°	59
Disegnato da:	Francesco Gennari

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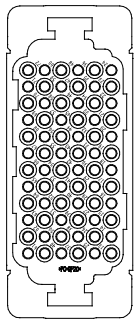

XCCAB-f

Pin	Equipot	Description	Destination	Cross-ref	Pin	Equipot	Description	Destination	Cross-ref	Pin	Equipot	Description	Destination	Cross-ref
1	75		ESMALL1.XC4A:18	12-N-8	26	77T		ESMALL-S4:8	12-K-8	51	4TO		KATR:12	20-C-4
2	176		G9	12-N-0	27	94		CS141-R1:3	10-K-4	52	4TI		KATR:22	20-G-4
3	176		G9	12-M-0	28	176		G9	12-I-0	53	C		M92E-1:2	15-K-0
4	82		ESMALL1.XC4A:1	12-M-8	29	85		ESMALL-S4:2	12-I-8	54	24V		XCCAB-f:7	09-H-9
5	176		G9	12-H-0	30	95		CS141-R1:4	10-I-4	55	096		KA44C:A1	16-M-5
6	79		ESMALL-S4:18	12-H-8	31	41		CS140R4-S3:5	22-G-5	56	176		G9	13-F-0
7	24V		XCCAB-f:54	09-H-9	32	0075		ESMALL1.XCR2:3; XCCAB-f:53	22-F-5	57	125		ESMALL-S4:18	13-E-7
8	2		XCCAB-f:42	10-N-4	33	0075		XCCAB-f:32	22-C-5	58	197		KA45C:A1	16-J-5
9	96		CS141-R1:6	10-E-4	34	1S		ESMALL-S4.XCE.V.:9; SA12:1	19-I-5	59	128		ESMALL-S4:1	13-D-7
10	176		G9	12-D-0	35	1D		ESMALL-S4.XCE.V.:10; SAM2:3	19-I-3	60	122		ESMALL1.XC4A:6	15-K-1
11	78		ESMALL-S4:5	12-D-8	36	2D		SA13:3; ESMALL-S4.XCE.V.:4	19-I-4	61	094		CS141-R1:8	16-E-4
12	05		ESMALL1.XC4A:11	17-E-7	37	2S		SA13:1; ESMALL-S4.XCE.V.:5	19-I-5	62	127		ESMALL-S4:8	13-B-7
13	076		ESMALL1:8	17-D-7	38	3S		SA15:1; ESMALL-S4.XCE.V.:5	19-G-5	63	126		ESMALL-S4:10	13-C-7
14	102		G18	17-C-7	39	3D		SA15:3; ESMALL-S4.XCE.V.:6	19-H-6	64	121		ESMALL1.XC4A:17	15-K-1
15	02		XC1:5	17-F-7	40	4S		ESMALL-S4.XCE.V.:7; SA11:1	19-H-5	65	095		CS141-R1:5	16-C-4
16	53		XC1:4	17-G-7	41	4D		ESMALL-S4.XCE.V.:8; SA11:3	19-H-3	66	240		KASTAB:87	23-B-4
17	2		XCCAB-f:24	17-G-7	42	2		XCCAB-f:GND; XCCAB-f:46	22-A-6	67	004E		SBEM1:2	18-D-0
18	176		G9	12-F-0	43	2		KATR:A2	13-I-8	68	3		ESMALL1.XCSC:6	18-D-9
19	81		ESMALL-S4:9	12-F-8	44	2		KATR:A2	13-K-8	69	004		SBEM1:2	18-D-0
20	097		CS141-R1:7	10-G-4	45	1TO		KATR:14	20-C-4	70	770		ESMALL-S4.XC4A:7	18-D-1
21	760		F2:2	08-G-6	46	1TI		KATR:24	20-F-4	71	S1		IS6	14-B-8
22	2		ESMALL1:18	08-H-6	47	2TO		KATR:34	20-J-4	72	S2		IS7	14-B-8
23	0760		KART1:85-	08-J-6	48	2TI		KATR:44	20-N-4	GND	2		KASTAB:85-; XCCAB-f:22	22-B-6
24	2		XCCAB-f:17; ESMALL1:8	08-L-6	49	3TO		KATR:32	20-J-4					
25	176		G9	12-K-0	50	3TI		KATR:42	20-N-4					

Disegno N°	CAD	PROGETTO	REVISIONE N.° 0	Data ultima rev.		DESCRIZIONE	Data Emissione	02/03/2021
ELECTRICAL DRAWING	SOLIDWORKS Electrical	37DJ-E_HE+HE STAB. AUTOMATICA 37DJ0071		02/03/2021	SOCAGE	CONNECTOR LIST XCCAB-f	Foglio N°	56
			CLIENTE: SOCAGE				Fogli Tot N°	59
		37DJ-E SPEED-HE+HE RC					Disegnato da:	Francesco Gennari

AUTOMAZIONI INDUSTRIALI ELETTRICHE ED ELETTRONICHE
QUADRI ELETTRICI DI COMANDO - SOFTWARE P.L.C.
PROGETTAZIONE E ASSISTENZA
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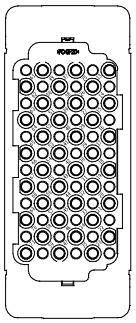

XCCAB-m

Pin	Equipot	Description	Destination	Cross-ref	Pin	Equipot	Description	Destination	Cross-ref	Pin	Equipot	Description	Destination	Cross-ref
1	75		XC3-f:1	12-N-7	26	77T		XC51-f:4	12-K-7	51	4TO		XCV4TO:1	20-C-5
2	176		XC3-f:2	12-N-1	27	94		XC51-f:6	10-K-5	52	4TI		XCV4TI:1	20-G-5
3	176		XC3-f:3	12-M-1	28	176		XC52-f:3	12-I-1	53	C		XC45C-f:1	15-J-0
4	82		XC3-f:4	12-M-7	29	85		XC52-f:4	12-I-7	54	24V		G6	09-I-9
5	176		XC53-f:3	12-H-1	30	95		XC52-f:6	10-I-5	55	096		XC44C-f:1	16-M-6
6	79		XC53-f:4	12-H-7	31	41		XCVEM:1	22-G-6	56	176		XC24B-f:3	13-E-0
7	24V		G6	09-I-9	32	0075		XCV1:1	22-E-6	57	125		G34	13-E-6
8	2		G12	10-N-5	33	0075		XCV1A:1	22-C-6	58	176		XC45C-f:1	16-J-6
9	96		XC53-f:6	10-E-5	34	1S		XCV1S:1	19-L-6	59	128		G33	13-D-6
10	176		XC12-f:1	12-D-1	35	1D		XCV1D:1	19-M-6	60	122		XC42C-f:2	15-J-1
11	78		XC12-f:2	12-D-7	36	2S		XCV2S:1	19-E-6	61	094		XC42C-f:2	16-E-5
12	05		XC2:1	17-E-7	37	2D		XCV2D:1	19-F-6	62	127		G8	13-B-6
13	076		XC2:2; G35	17-D-7	38	3S		XCV3S:1	19-G-6	63	126		G32	13-C-6
14	102		XC2:3	17-C-7	39	3D		XCV3D:1	19-H-6	64	121		XC43C-f:2	15-J-1
15	02		XC2A:1	17-F-7	40	4S		XCV4S:1	19-I-6	65	095		XC43C-f:2	16-C-5
16	53		XC2A:2	17-G-7	41	4D		XCV4D:1	19-J-6	66	240		SA12:2	23-B-5
17	2		XC2A:3	17-G-7	42	2		G13	22-A-7	67	004E		SBEM3:1	18-E-0
18	176		XC50-f:3	12-F-1	43	2		XCHL8A-f:2	13-I-8	68	3		SBEM3:2	18-E-9
19	81		XC50-f:4	12-F-7	44	2		XCHL6A-f:2	13-K-8	69	004		SBEM3:1	18-E-0
20	097		XC50-f:6	10-G-5	45	1TO		XCV1TO:1	20-C-5	70	770		HL1	18-E-1
21	760		SC1	08-G-7	46	1TI		XCV1TI:1	20-F-5	71	S1		IS8	14-C-8
22	2		SC1	08-H-7	47	2TO		XCV2TO:1	20-J-5	72	S2		IS9	14-C-8
23	0760		T1	08-J-7	48	2TI		XCV2TI:1	20-N-5	GND	2		G17	22-B-7
24	2		T1	08-L-7	49	3TO		XCV3TO:1	20-J-5					
25	176		XC51-f:3	12-K-1	50	3TI		XCV3TI:1	20-N-5					

Disegno N° | ELECTRICAL DRAWING | CAD | SOLIDWORKS Electrical

PROGETTO
37DJ-E_HE+HE
STAB. AUTOMATICA
37DJ0071

REVISIONE N.° 0

Data ultima rev.
02/03/2021

CLIENTE: SOCAGE

37DJ-E SPEED-HE+HE RC

SOCAGE

DESCRIZIONE
CONNECTOR LIST
XCCAB-m

Data Emissione	02/03/2021
Foglio N°	57
Fogli Tot N°	59
Disegnato da:	Francesco Gennari

AUTOMAZIONI INDUSTRIALI ELETTRICHE ED ELETTRONICHE
QUADRI ELETTRICI DI COMANDO - SOFTWARE P.L.C.
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XCT-f

Pin	Equipot	Color	Description	Destination	Cross-ref	Pin	Equipot	Color	Description	Destination	Cross-ref
A	42	WH	PANTOGRAPH SLOPE VALVE	ESMALL1.XCE.V.:10	38-L-4	c	1804	WH	JIB CLOSED SIGNAL	ESMALL1:1	39-C-0
B	43	WH	LOWERING PANTOGRAPH VALVE	ESMALL1.XCE.V.:9	38-K-4	d	1805	WH	JIB OPEN SIGNAL	ESMALL1:8	39-C-0
C	44	WH	TURRET ROTATION CCW VALVE	ESMALL1.XCE.V.:4	38-E-4	e	140	WH	12V BASKET SOCKET LINE	ESMALL1.XC8A:3	39-C-0
D	45	WH	TURRET ROTATION CW VALVE	ESMALL1.XCE.V.:3	38-D-4	f	65	WH	SENSOR SUPPLY	XCT-f:k; ESMALL1.65:3	39-C-0
E	46	WH	BOOM SLOPE VALVE	ESMALL1.XCE.V.:6	38-G-4	g	2		GND 0V SENSORS	XCT-f:b; XCT-f:r	39-C-0
F	47	WH	LOWERING BOOM VALVE	ESMALL1.XCE.V.:5	38-F-4	h	150	WH	SPARE	G11	39-C-0
G	49	WH	EXTENSION BOOM RETURN VALVE	ESMALL1.XCE.V.:8	38-J-4	i	C	WH	+ WQ SERVICE POSITIVE	M92E-1:2	39-C-0
H	48	WH	EXTENSION BOOM EXIT VALVE	ESMALL1.XCE.V.:7	38-I-4	j	D	WH	SPARE	M92E-1:2	39-C-0
J	28	WH	TILT BASKET OPEN VALVE	ESMALL1.XCE.V.:2	38-C-4	k	65		SENSOR SUPPLY	XCT-f:f	39-C-0
K	027	WH	TILT BASKET CLOSE VALVE	ESMALL1.XCE.V.:1	38-B-4	m	025	WH	4-20mA SIGNAL FROM BOTTOM 1	M92E-1:4	39-C-0
L	30010	WH	BASKET ROTATION CCW VALVE	ESMALL1.XCOUT:1	38-N-4	n	031	WH	4-20mA SIGNAL FROM BOTTOM 2	M92E-1:5	39-C-0
M	30020	WH	BASKET ROTATION CW VALVE	ESMALL1.XCOUT:2	38-O-4	p	055	WH	4-20mA SIGNAL FROM STEAM 1	M92E-1:3	39-C-0
N						q	059	WH	4-20mA SIGNAL FROM STEAM 2	M92E-1:6	39-C-0
P	89	WH	SENSOR SUPPLY	ESMALL1:6	39-C-0	r	2		GND 0V SENSORS	XCT-f:g	39-C-0
R	106	WH	BOOM CLOSED SWITCH	ESMALL1:9	39-C-0	s	270	WH	SPARE	G14	39-C-0
S	3	WH	EMERGENCY LINE	ESMALL1:19	39-C-0	t	S1	WH	SPARE	G15	39-C-0
T	76	WH	GENERAL LINE	ESMALL1:9	39-C-0	u	S2	WH	SPARE	G16	39-C-0
U	CAN-H		CAN-H LINE		39-C-0	v	S3	WH	SPARE	G19	39-C-0
V	CAN-L		CAN-L LINE		39-C-0	w	199	WH	MICRO CHAINS LINE	ESMALL1.XCSRT:1	39-C-0
W	CAN-GND		SHIELD CAN LINE		39-C-0	x	201	WH	MICRO CHAINS LENS	ESMALL1.XCSRT:17	39-C-0
X	23	WH	CLACSON	ESMALL1:14	39-C-0	y	S	WH	PANTOGRAPH ANGLE SENSOR	ESMALL1.XCF2:17	39-C-0
Y	27	WH	LOAD LIMITER	ESMALL1.XC8A:10	39-C-0	z					
Z	2	BK;	GND 0V	ESMALL1:19; XCT-f:a	39-C-0	aa					
a	2		GND 0V BASKET LINE	XCT-f:Z; XCT-f:b	39-C-0						
b	2		GND 0V BASKET LINE	XCT-f:a; XCT-f:g	39-C-0						

Disegno N° | ELECTRICAL DRAWING | CAD | SOLIDWORKS Electrical

PROGETTO
37DJ-E_HE+HE
STAB. AUTOMATICA
37DJ0071

REVISIONE N.° 0

Data ultima rev.
02/03/2021

CLIENTE: SOCAGE

37DJ-E SPEED-HE+HE RC

DESCRIZIONE
CONNECTOR LIST
XCT-f

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Foglio N°	58
Fogli Tot N°	59
Disegnato da:	Francesco Gennari

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XCT-m

Pin	Equipot	Color	Description	Destination	Cross-ref	Pin	Equipot	Color	Description	Destination	Cross-ref
A	42	WH	PANTOGRAPH SLOPE VALVE	XCVP1:1	38-L-5	c	1804	WH	JIB CLOSED SIGNAL	XC8-f:C	39-E-0
B	43	WH	LOWERING PANTOGRAPH VALVE	XCVP2:1	38-K-5	d	1805	WH	JIB OPEN SIGNAL	XC8-f:D	39-E-0
C	44	WH	TURRET ROTATION CCW VALVE	XCVR1:1	38-E-5	e	140	WH	12V BASKET SOCKET LINE	XC8-f:J	39-E-0
D	45	WH	TURRET ROTATION CW VALVE	XCVR2:1	38-D-5	f	65	BN	SENSOR SUPPLY	XC8A-f:1	39-E-0
E	46	WH	BOOM SLOPE VALVE	XCVB1:1	38-G-5	g	2	YE	GND 0V SENSORS	XC8A-f:2	39-E-0
F	47	WH	LOWERING BOOM VALVE	XCVB2:1	38-F-5	h	150	WH	SPARE	XC8-f:L	39-E-0
G	49	WH	EXTENSION BOOM RETURN VALVE	XCVT2:1	38-J-5	i	C	WH	+ WQ SERVICE POSITIVE	G26	39-E-0
H	48	WH	EXTENSION BOOM EXIT VALVE	XCVT1:1	38-I-5	j	D	WH	SPARE	G27	39-E-0
J	28	WH	TILT BASKET OPEN VALVE	XCVL2:1	38-C-5	k	65	WH	SENSOR SUPPLY	G22	39-E-0
K	027	WH	TILT BASKET CLOSE VALVE	XCVL1:1	38-B-5	m	025	WH	4-20mA SIGNAL FROM BOTTOM 1	XC8-f:P	39-E-0
L	30010	WH	BASKET ROTATION CCW VALVE	XCVRC1:1	38-N-5	n	031	WH	4-20mA SIGNAL FROM BOTTOM 2	XC8-f:S	39-E-0
M	30020	WH	BASKET ROTATION CW VALVE	XCVRC2:1	38-O-5	p	055	WH	4-20mA SIGNAL FROM STEAM 1	XC8-f:U	39-E-0
N						q	059	WH	4-20mA SIGNAL FROM STEAM 2	XC8-f:W	39-E-0
P	89	WH	SENSOR SUPPLY	XC8-f:Z	39-E-0	r	2	BK	GND 0V SENSORS	G21	39-E-0
R	106	WH	BOOM CLOSED SWITCH	XC8-f:a	39-E-0	s	270	WH	SPARE	G28	39-E-0
S	3	WH	EMERGENCY LINE	XC8-f:A	39-E-0	t	S1	WH	SPARE	XC8-f:E	39-E-0
T	76	WH	GENERAL LINE	XC8-f:B	39-E-0	u	S2	WH	SPARE	XC8-f:M	39-E-0
U	CAN-H	GN	CAN-H LINE	G25	39-E-0	v	S3	WH	SPARE	XC8-f:b	39-E-0
V	CAN-L	WH	CAN-L LINE	G24	39-E-0	w	199	WH	MICRO CHAINS LINE	XC8-f:X	39-E-0
W	CAN-GND	YE	SHIELD CAN LINE	G23	39-E-0	x	201	WH	MICRO CHAINS LENS	XC8-f:Y	39-E-0
X	23	WH	CLACSON	XC8-f:F	39-E-0	y	S	WH	PANTOGRAPH ANGLE SENSOR	XCBR2-f:3	39-E-0
Y	27	WH	LOAD LIMITER	XC8-f:G	39-E-0	z					
Z	2	BK	GND 0V	G20	39-E-0	aa					
a	-	BK	GND 0V BASKET LINE	XC8-f:K	39-E-0						
b	2	BK	GND 0V BASKET LINE	XC8-f:H	39-E-0						

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PROGETTO
37DJ-E_HE+HE
STAB. AUTOMATICA
37DJ0071

REVISIONE N.° 0

Data ultima rev. 02/03/2021

CLIENTE: SOCAGE

37DJ-E SPEED-HE+HE RC

DESCRIZIONE
CONNECTOR LIST
XCT-m

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Foglio N°	59
Fogli Tot N°	59
Disegnato da:	Francesco Gennari

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XC8-f

Pin	Equipot	Color	Number	Description	Destination	Cross-ref
A	3	WH		EMERGENCY LINE	XCT-m:S	41-C-0
B	76	WH		GENERAL LINE	XCT-m:T	41-C-0
C	1804	WH		JIB OPEN SIGNAL	XCT-m:c	41-C-0
D	1805	WH		JIB CLOSED SIGNAL	XCT-m:d	41-C-0
E	S1	WH		SPARE	XCT-m:t	41-C-0
F	23	WH		CLACSON	XCT-m:X	41-C-0
G	27	WH		LOAD LIMITER	XCT-m:Y	41-C-0
H	2	BK		GND 0V BASKET LINE	XCT-m:b	41-C-0
J	140	WH		12V BASKET SOCKET LINE	XCT-m:e	41-C-0
K	-	BK		GND 0V	XCT-m:a	41-C-0
L	150	WH		SPARE	XCT-m:h	41-C-0
M	S2	WH		SPARE	XCT-m:u	41-C-0
N	65	WH		SENSOR SUPPLY	G22	41-C-0
P	025	WH		4-20mA SIGNAL FROM BOTTOM 1	XCT-m:m	41-C-0
R	2	BK		GND 0V SENSORS	G21	41-C-0
S	031	WH		4-20mA SIGNAL FROM BOTTOM 2	XCT-m:n	41-C-0
T	65	WH		SENSOR SUPPLY	G22	41-C-0
U	055	WH		4-20mA SIGNAL FROM STEAM 1	XCT-m:p	41-C-0
V	2	BK		GND 0V SENSORS	G21	41-C-0
W	059	WH		4-20mA SIGNAL FROM STEAM 2	XCT-m:q	41-C-0
X	199	WH		MICRO CHAINS LINE	XCT-m:w	41-C-0
Y	201	WH		MICRO CHAINS LENS	XCT-m:x	41-C-0
Z	89	WH		SPARE	XCT-m:P	41-C-0
a	106	WH		SPARE	XCT-m:R	41-C-0
b	S3	WH		SPARE	XCT-m:v	41-C-0
c						41-C-0
d						41-C-0
e						41-C-0

Disegno N° | ELECTRICAL DRAWING | CAD | SOLIDWORKS Electrical

PROGETTO
37DJ-E_HE+HE
STAB. AUTOMATICA
37DJ0071

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Data ultima rev.
02/03/2021

CLIENTE: SOCAGE

37DJ-E SPEED-HE+HE RC

DESCRIZIONE
CONNECTOR LIST
XC8-f

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Foglio N°	60
Fogli Tot N°	59
Disegnato da:	Francesco Gennari

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XC8-m

Pin	Equipot	Color	Number	Description	Destination	Cross-ref
A	3	BK	1	EMERGENCY LINE	XC9-f:A	41-D-0
B	76	BK	2	GENERAL LINE	XC9-f:B	41-D-0
C	1804	BK	3	JIB OPEN SIGNAL	XC9-f:C	41-D-0
D	1805	BK	4	JIB CLOSED SIGNAL	XC9-f:D	41-D-0
E	S1	BK	5	SPARE	XC9-f:E	41-D-0
F	23	BK	6	CLACSON	XC9-f:F	41-D-0
G	27	BK	7	LOAD LIMITER	XC9-f:G	41-D-0
H	2	BK	8	GND 0V BASKET LINE	XC9-f:H	41-D-0
J	140	BK	9	12V BASKET SOCKET LINE	XC9-f:J	41-D-0
K	-	BK	10	GND 0V	XC9-f:K	41-D-0
L	150	BK	11	SPARE	XC9-f:L	41-D-0
M	S2	BK	12	SPARE	XC9-f:M	41-D-0
N	65	BK	13	SENSOR SUPPLY	XCF-f:1	41-D-0
P	025	BK	14	4-20mA SIGNAL FROM BOTTOM 1	XCF-f:2	41-D-0
R	2	BK	15	GND 0V SENSORS	XCF-f:3	41-D-0
S	031	BK	16	4-20mA SIGNAL FROM BOTTOM 2	XCF-f:4	41-D-0
T	65	BK	17	SENSOR SUPPLY	XCS-f:1	41-D-0
U	055	BK	18	4-20mA SIGNAL FROM STEAM 1	XCS-f:2	41-D-0
V	2	BK	19	GND 0V SENSORS	XCS-f:3	41-D-0
W	059	BK	20	4-20mA SIGNAL FROM STEAM 2	XCS-f:4	41-D-0
X	199	BK	21	MICRO CHAINS LINE	XC16-f:1	41-D-0
Y	201	BK	22	MICRO CHAINS LENS	XC25A-f:2	41-D-0
Z	S7	BK	23	SPARE	XCSC:1	41-D-0
a	S8	BK	24	SPARE	XCSC:2	41-D-0
b	S9	GNYE	25	SPARE	XCSC:3	41-D-0
c						41-D-0
d						41-D-0
e						41-D-0

Disegno N° | ELECTRICAL DRAWING | CAD | SOLIDWORKS Electrical

PROGETTO
37DJ-E_HE+HE
STAB. AUTOMATICA
37DJ0071

REVISIONE N.° 0

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CLIENTE: SOCAGE

37DJ-E SPEED-HE+HE RC

DESCRIZIONE
CONNECTOR LIST
XC8-m

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Disegnato da:	Francesco Gennari

AUTOMAZIONI INDUSTRIALI ELETTRICHE ED ELETTRONICHE
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XC9-f

Pin	Equipot	Color	Number	Description	Destination	Cross-ref
A	3	BK	1	EMERGENCY LINE	XC8-m:A	41-N-0
B	76	BK	2	GENERAL LINE	XC8-m:B	41-N-0
C	1804	BK	3	JIB OPEN SIGNAL	XC8-m:C	41-N-0
D	1805	BK	4	JIB CLOSED SIGNAL	XC8-m:D	41-N-0
E	S1	BK	5	SPARE	XC8-m:E	41-N-0
F	23	BK	6	CLACSON	XC8-m:F	41-N-0
G	27	BK	7	LOAD LIMITER	XC8-m:G	41-N-0
H	2	BK	8	GND 0V BASKET LINE	XC8-m:H	41-N-0
J	140	BK	9	12V BASKET SOCKET LINE	XC8-m:J	41-N-0
K	-	BK	10	GND 0V	XC8-m:K	41-N-0
L	150	BK	11	SPARE	XC8-m:L	41-N-0
M	S2	BK	12	SPARE	XC8-m:M	41-N-0

XC9-m

Pin	Equipot	Color	Number	Description	Destination	Cross-ref
A	3	BK	1	EMERGENCY LINE	XC10-f:A	44-B-3
B	76	BK	2	GENERAL LINE	XC10-f:B	44-B-3
C	1804	BK	3	JIB OPEN SIGNAL	XC10-f:C	44-B-3
D	1805	BK	4	JIB CLOSED SIGNAL	XC10-f:D	44-B-3
E	S1	BK	5	SPARE	XC10-f:E	44-B-3
F	23	BK	6	CLACSON	XC10-f:F	44-B-3
G	27	BK	7	LOAD LIMITER	XC10-f:G	44-B-3
H	2	BK	8	GND 0V BASKET LINE	XC10-f:H	44-B-3
J	140	BK	9	12V BASKET SOCKET LINE	XC10-f:J	44-B-3
K	-	BK	10	GND 0V	XC10-f:K	44-B-3
L	150	BK	11	SPARE	XC10-f:L	44-B-3
M	S2	GNYE	12	SPARE	XC10-f:M	44-B-3

Disegno N° | ELECTRICAL DRAWING | CAD | SOLIDWORKS Electrical

PROGETTO
37DJ-E_HE+HE
STAB. AUTOMATICA
37DJ0071

REVISIONE N.° 0 | Data ultima rev. 02/03/2021

CLIENTE: SOCAGE

37DJ-E SPEED-HE+HE RC

DESCRIZIONE
CONNECTOR LIST
XC9

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Foglio N°	62
Fogli Tot N°	59
Disegnato da:	Francesco Gennari

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XC10-f

Pin	Equipot	Color	Number	Description	Destination	Cross-ref
A	3	BK	1	EMERGENCY LINE	XC9-m:A	44-I-3
B	76	BK	2	GENERAL LINE	XC9-m:B	44-I-3
C	1804	BK	3	JIB OPEN SIGNAL	XC9-m:C	44-I-3
D	1805	BK	4	JIB CLOSED SIGNAL	XC9-m:D	44-I-3
E	S1	BK	5	SPARE	XC9-m:E	44-I-3
F	23	BK	6	CLACSON	XC9-m:F	44-I-3
G	27	BK	7	LOAD LIMITER	XC9-m:G	44-I-3
H	2	BK	8	GND 0V BASKET LINE	XC9-m:H	44-I-3
J	140	BK	9	12V BASKET SOCKET LINE	XC9-m:J	44-I-3
K	-	BK	10	GND 0V	XC9-m:K	44-I-3
L	150	BK	11	SPARE	XC9-m:L	44-I-3
M	S2	GNYE	12	SPARE	XC9-m:M	44-I-3

XC10-m

Pin	Equipot	Color	Number	Description	Destination	Cross-ref
A	3	WH; WH		EMERGENCY LINE	SBEM2:2; ESLAVE-S2.XC10A:3	44-K-3
B	76	WH		GENERAL LINE	ESLAVE-S2.XC10A:6	44-K-3
C	1804	WH		JIB OPEN SIGNAL	G2	44-K-3
D	1805	WH		JIB CLOSED SIGNAL	G3	44-K-3
E	S1	WH		SPARE	IS5	44-K-3
F	23	WH		CLACSON	CS148-1:9	44-K-3
G	27	WH		LOAD LIMITER	ESLAVE-S2.XC10A:4	44-K-3
H	2	BK		GND 0V BASKET LINE	ESLAVE-S2.XC10A:7	44-K-3
J	140	WH		12V BASKET SOCKET LINE	P1	44-K-3
K	-	BK		GND 0V	P1	44-K-3
L	150	WH		SPARE	IS3	44-K-3
M	S2	WH		SPARE	IS4	44-K-3

Disegno N° | ELECTRICAL DRAWING | CAD | SOLIDWORKS Electrical

PROGETTO
37DJ-E_HE+HE
STAB. AUTOMATICA
37DJ0071

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CLIENTE: SOCAGE

37DJ-E SPEED-HE+HE RC

DESCRIZIONE
CONNECTOR LIST
XC10

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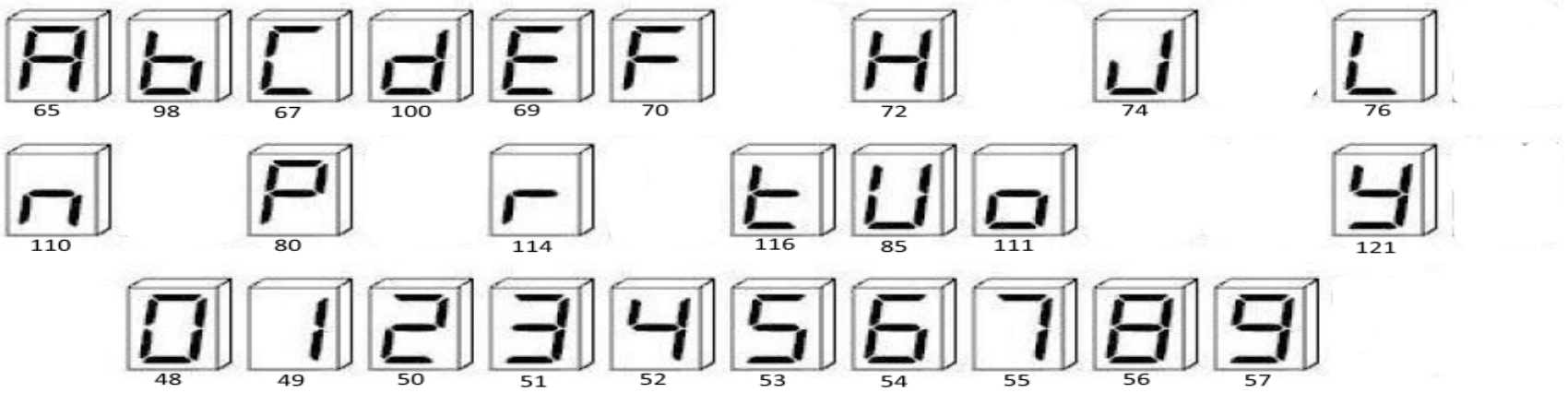
Foglio N°	63
Fogli Tot N°	59
Disegnato da:	Francesco Gennari

04/02/2021



416 combinazioni A-Y, A-9

CODE	DIASTECA	
	CCU-S LIGHT ERRORS	TROUBLESHOOTING
1	Detected error on the BYPASS supply exit. The processor A detected an anomaly.	The YVEM valve may be shorted or connected incorrectly. Check the wiring or replace the CCU.
2	Detected error on the BYPASS supply exit. The processor A detected an anomaly.	The YVEM valve may be shorted or connected incorrectly. Check the wiring or replace the CCU.
3	OUTS1 (rotation CW) is high even if it is not controlled.	Check the wiring of the YVR1 connection and to the CS135 KAYVL4 relay functionality
4	OUTS1 (rotation CW) is controlled by another device too.	Check the wiring of the YVR1 connection and to the CS135 KAYVL4 relay functionality
5	OUTS1 (rotation CW) in short circuit.	Check the wiring of the YVR1 connection and to the CS135 KAYVL4 relay functionality
6	OUTS2 (rotation CCW) is high even if it is not controlled.	Check the wiring of the YVR2 connection and to the CS135 KAYVL5 relay functionality
7	OUTS2 (rotation CCW) is controlled by another device too.	Check the wiring of the YVR2 connection and to the CS135 KAYVL5 relay functionality
8	OUTS2 (rotation CCW) in short circuit.	Check the wiring of the YVR2 connection and to the CS135 KAYVL5 relay functionality
9	OUTS3 (Lowering + Extension) is high even if it is not controlled.	Check the wiring of the connection. at YVB YVT1 and to the CS135 KAMSG e KAVB
10	OUTS3 (Lowering + Extension) is controlled by another device too.	Check the wiring of the connection. at YVB YVT1 and to the CS135 KAMSG e KAVB
11	OUTS3 (Lowering + Extension) in short circuit.	Check the wiring of the connection. at YVB YVT1 and to the CS135 KAMSG e KAVB
12	OUTS4 (Jib) is high even if it is not controlled.	not used
13	OUTS4 (Jib) is controlled by another device too.	not used
14	OUTS4 (Jib) in short circuit.	not used
15	Not used	not used
16	Error on Pollack entrance	Check the bridge that leads to line 65 on IN14
17	Processor B detected an error on OUTS1	Check the wiring of the YVR1 connection and to the CS135 KAYVL4 relay functionality
18	Processor B detected an error on OUTS1	Check the wiring of the YVR1 connection and to the CS135 KAYVL4 relay functionality
19	Processor B detected an error on OUTS1	Check the wiring of the YVR1 connection and to the CS135 KAYVL4 relay functionality
20	Processor B detected an error on OUTS2	Check the wiring of the YVR2 connection and to the CS135 KAYVL5 relay functionality
21	Processor B detected an error on OUTS2	Check the wiring of the YVR2 connection and to the CS135 KAYVL5 relay functionality
22	Processor B detected an error on OUTS2	Check the wiring of the YVR2 connection and to the CS135 KAYVL5 relay functionality
23	Processor B detected an error on OUTS3	Check the wiring of the connection. at YVB YVT1 and to the CS135 KAMSG e KAVB
24	Processor B detected an error on OUTS3	Check the wiring of the connection. at YVB YVT1 and to the CS135 KAMSG e KAVB
25	Processor B detected an error on OUTS3	Check the wiring of the connection. at YVB YVT1 and to the CS135 KAMSG e KAVB
26	Processor B detected an error on OUTS4	not used
27	Processor B detected an error on OUTS4	not used
28	Processor B detected an error on OUTS4	not used
29	Pressure in the bottom side is under the lower limit.	Check the pressure sensor BPF and wiring.
30	Pressure in the bottom side is above the higher limit.	Check the pressure sensor BPF and wiring.
31	Pressure in the rod side is under the lower limit.	Check the pressure sensor BPS and wiring.
32	Pressure in the rod side is above the higher limit.	Check the pressure sensor BPS and wiring.

33	Sensor’s data of elevation angle are under the lower limit.	Check the angle sensor BR1, the correct fixing and wiring.
34	Sensor’s data of elevation angle are above the higher limit.	Check the angle sensor BR1, the correct fixing and wiring.
35	Pressure in the rod side is above the higher limit (processor B)	Check the pressure sensor BPS and wiring.
36	Sensor’s data of elevation angle are under the lower limit (processor B)	Check the angle sensor BR1, the correct fixing and wiring.
37	Sensor’s data of elevation angle are above the higher limit (processor B)	Check the angle sensor BR1, the correct fixing and wiring.
38	Error Encoder CanOpen Safety: slow data refresh	Check the CANOpen Safety encoder and / or its wiring.
39	Error Encoder CanOpen Safety: slow data validation	Check the CANOpen Safety encoder and / or its wiring.
40	Error Encoder CanOpen Safety: error data incoherence	Check the CANOpen Safety encoder and / or its wiring.
41	Not used	not used
42	Pressure in the bottom side under the lower limit (processor B)	Check the wiring of the BPF sensor and the sensor itself.
43	Pressure in the bottom side above the higher limit (processor B)	Check the wiring of the BPF sensor and the sensor itself.
44	Pressure in the rod side under the lower limit (processor B)	Check the wiring of the BPS sensor and the sensor itself.
45	Not used	Not used
46	Not used	Not used
47	CAN reception timeout of the message "load in the basket" by Diasteca control unit	Not used
48	Error of zero sensor (IN11).	Check the SQ1 harness input and the correspondence with the encoder position.
49	Not used	Not used
50	Not used	Not used
51	Delayed communication between the two processors.	Reset the control unit and if necessary top up the configuration file.
52	Incoherence between the pressure measures detected by processors A and B.	Check the connection of the BPS and BPFe pressure sensors to the control unit parameters (0-7-8) (13-14).
53	Incoherence between readings of processors A and B of the elevation angles.	Check BR1 sensor cables and the functioning parameters of the two processors (par. 37, 48, 49)
54	Incoherence between the processors A and B as for the moment limiting device working curve.	Check functioning parameters, in particular those of the working curve of the two processors.
55	An encoder movement has been detected, even if rotation is blocked: switch DV off	Check the fixing of the DEO1 encoder and / or the rotation lock valves YVR1 and YVR2 and that the machine stops on the change of area
56	An ultrapressure, higher than the set extrablock parameter, has been detected	Check hydraulic system and that the machine blocks at the right distance.
57	Data saving in EEPROM not successful.	Save again. If the error persists, send the control unit to the service department.
58	Incoherence in left, rear outrigger’s micro switch (IN1 line 129 and IN7 line 59)	Check micro switches SR45C (N.O) and SR21B
59	Incoherence in left, front outrigger’s micro switch (IN2 line 126 and IN8 line 122)	Check micro switches SR42C (N.O.) and SR24B
60	Incoherence in right, front outrigger’s micro switch (IN3 line 127 and IN9 line 121)	Check micro switches SR43C (N.O.) and SR23B
61	Incoherence in right, rear outrigger’s micro switch (IN4 linea 128 and IN10 linea 58)	Check micro switches SR44C (N.O.) and SR22B
62	CAN reception timeout for message from Jib angle sensor	Check micro switch BR5 CAN Jib angle.
63	Incoherence between the two angles detected by the Jib angle sensor	Check micro switch BR5 CAN Jib angle.
64	Not used	Not used
65	Not used	Not used
66	Extrablock of not allowed operation detected via CAN: clockwise rotation	Sw internal problem
67	Extrablock of not allowed operation detected via CAN: counterclockwise rotation	Sw internal problem
68	Extrablock of not allowed operation detected via CAN: boom lowering	Sw internal problem
69	Extrablock of not allowed operation detected via CAN: boom extension	Sw internal problem
70	Extrablock of not allowed operation detected via CAN: Jib lowering	Sw internal problem
71	Extrablock of not allowed operation detected via CAN: Jib rising	Sw internal problem
72	Incoherence sensor low BP2 between YVGEN switched off	Check entrance IN17, connections BP2 and exit pont YVGEN.
73	Not used	Not used

CODE	DIASTECA	
	M92E ERRORS	TROUBLESHOOTING
1	Bottom pressure sensor, channel 1 on B4: sensor signal too low	Check the pressure sensor TF1 and wiring.
2	Bottom pressure sensor, channel 1 on B4: sensor signal too high	Check the pressure sensor TF1 and wiring.
3	Bottom pressure sensor, channel 2 on B6: sensor signal too low	Check the pressure sensor TF1 and wiring.
4	Bottom pressure sensor, channel 2 on B6: sensor signal too high	Check the pressure sensor TF1 and wiring.
5	Rod pressure sensor, channel 1 on C3: sensor signal too low	Check the pressure sensor TS1 and wiring.
6	Rod pressure sensor, channel 1 on C3: sensor signal too high	Check the pressure sensor TS1 and wiring.
7	Rod pressure sensor, channel 2 on C6: sensor signal too low	Check the pressure sensor TS1 and wiring.
8	Rod pressure sensor, channel 2 on C6: sensor signal too high	Check the pressure sensor TS1 and wiring.
9	The control unit has been programmed but the initial configuration has not been performed	Program the control unit and set the parameters
10	CAN communication missing from TAC MK2, channel 1	Check the CAN bus connection with the boom angle sensor BR1
11	CAN communication missing from TAC MK2, channel 2	Check the CAN bus connection with the boom angle sensor BR1
12	CAN communication missing from SP MK2, channel 1	Check the CAN bus connection with the planarity sensor
13	CAN communication missing from SP MK2, channel 2	Check the CAN bus connection with the planarity sensor
14	Time-out CAN communication PDO h181	Check the CAN bus connection
15	Time-out CAN communication to encoder, channel 1	Check the CAN bus connection with the encoder sensor DE01
16	Time-out CAN communication to encoder, channel 2	Check the CAN bus connection with the encoder sensor DE01
17	Not used	Not used
18	Position control error of bottom pressure sensor, channel 1, when the boom is in rest position (zero or significant point)	Check the parameters
19	Position control error of bottom pressure sensor, channel 2, when the boom is in rest position (zero or significant point).	Check the parameters
20	Position control error of the rod pressure sensor,, channel 1, when the fifth wheel is on the centering micro (zero or significant point)	Check the parameters
21	Position control error of the rod pressure sensor,, channel 2, when the fifth wheel is on the centering micro (zero or significant point)	Check the parameters
22	Error on check position of channel 1 TAC MkII when the boom i is in rest position (zero or significant point).	Check wiring and mounting of the TAC MkII BR1 sensor.
23	Error associated with the SP sensor. Its presence indicates an error in the parameter setting.	Check the parameters
24	Internal error: time-out microprocessor communication	Internal error. Contact BPE
25	Internal error: auxiliary microprocessor output	Check the wiring of the safety outputs. Remove the connections from safety outputs No. 1 and No. 2.
26	Internal error: main microprocessor output	Check the wiring of the safety outputs. Remove the connections from safety outputs No. 1 and No. 2.
27	Internal Error: Analog Input Control	Check the wiring to the pressure sensors TF1 nad TS1
28	Wiring error: Incorrect usage of positive service	Check that the service positive WQ (line C) is used only to supply the enabled digital inputs.
29	Imperial micro-switch input control: difference detected between digital inputs wired to C2 and C7	Check the wiring of the imperial micro-switch SRB5-SRB7
30	Bottom pressure differential error: reading difference between channels is too high	Check the wiring. Check the transducers of bottom
31	Rod pressure differential error: reading difference between channels is too high	Check the wiring. Check the transducers of rod
32	Differential TAC MkII error: Excessive difference between channel reading 1 and channel reading 2	Check the CAN bus connection with the sensor. Check the boom angle transducer.
33	Differential SP MkII error X axis: Excessive difference between channel reading 1 and channel reading 2	Check the CAN bus connection with the sensor. Check the planarity sensor
34	Differential SP MkII error Y axis: Excessive difference between channel reading 1 and channel reading 2	Check the CAN bus connection with the sensor. Check the planarity sensor
35	Not used	Not used
36	Internal error: RAM memory error	Internal error. Contact BPE
37	Internal Error: Parameter Memory Error	Internal error. Contact BPE
38	Internal error: firmware / program memory error	Internal error. Contact BPE

39	Internal Error: Table Memory Error	Internal error. Contact BPE
40	Internal error: ALU error	Internal error. Contact BPE
41	In Extrablock condition, forbidden maneuvers have been active for a longer time than allowed	Check the joysticks wiring.
42	Internal error: Flash memory error	Internal error. Contact BPE
43	Internal error: error on parameter STORE	Internal error. Contact BPE
44	Encoder differential error: reading difference between channels is too high	Check the CAN bus connection with the encoder sensor DE01
45	The parameters of the secondary micro have not been set or are incorrect	check the parameters configuration
46	Not used	Not used
47	Bottom pressure differential error channel 1: excessive difference between readings performed by 2 microprocessors	Check the pressure sensor TF1 and wiring.
48	Encoder positioning check error channel 1, when the encoder is in rest position	Check the CAN bus connection with the encoder sensor DE01
49	Encoder positioning check error channel 2, when the encoder is in rest position	Check the CAN bus connection with the encoder sensor DE01
50	Moment limit block condition	Warning
51	Moment limit extra-block condition	Warning
52	Not used	Not used
53	Not used	Not used
54	Not used	Not used
55	Not used	Not used
56	Geometric moment block for entry to front area not allowed. Super-allarm condition reached	Warning
57	The machine is in a short area with an angle beyond ANGMAXS and I slide out beyond SFIMAXS	Warning
58	Blocking of extension and lowering operations of the arm, extension over% RVSFI	Warning
59	Blocking of the extension maneuver, extension over 100%	Warning
60	Internal error: ALU test for memory integrity	Check the parameters
61	Internal error: table memory error	Check the parameters
62	Arm angle mounting error. The value of the arm angle is too negative	check the wiring. Check the transducer
63	TAC MkII difference error mounted on JIB: excessive difference between reading channel 1 and reading channel 2	Check the CAN bus connection with the sensor. Check the transducer.
64	Arm extension difference error: excessive difference between reading channels 1 and 2.	Check the CAN bus connection with the sensor. Check the transducer.
65	Right rear crossbar extension difference error: excessive difference between reading channels 1 and 2.	Check the CAN bus connection with the sensor. Check the transducer.
66	Left rear crossbar extension difference error: excessive difference between reading channels 1 and 2.	Check the CAN bus connection with the sensor. Check the transducer.
67	Error due to the check on the 'Movements Check'. The congruence of the extension of the arm with respect to the extension / return of the arm maneuvers is checked.	check the wiring, check the transducer, check the parameters
68	Not used	Not used
69	Not used	Not used
70	Time-out comunicazione CAN con TAC MkII su JIB, canale 1.	check the wiring. Check the transducer
71	Time-out comunicazione CAN con TAC MkII su JIB, canale 2.	check the wiring. Check the transducer
72	Time-out comunicazione CAN con sfilo traversa posteriore DX, canale 1	check the wiring. Check the transducer
73	Time-out comunicazione CAN con sfilo traversa posteriore DX, canale 2	check the wiring. Check the transducer
74	Time-out comunicazione CAN con sfilo traversa posteriore SX, canale 1	check the wiring. Check the transducer
75	Time-out comunicazione CAN con sfilo traversa posteriore SX, canale 2	check the wiring. Check the transducer
76	Not used	Not used
77	Not used	Not used
78	Not used	Not used
79	Not used	Not used

80	Error checking the position of the rear right crossbar when the micro signals that it must be closed.	Check the wiring of the crossbar extension sensor.
81	Error checking the position of the rear left crossbar when the micro signals that it must be closed.	Check the wiring of the crossbar extension sensor.
82	Error checking the position of the front right cross member when the micro signals that it must be closed.	Check the wiring of the crossbar extension sensor.
83	Error checking the position of the front left cross member when the micro signals that it must be closed.	Check the wiring of the crossbar extension sensor.
84	Error checking the position of the angle sensor (TAC) when the JIB is in support (zero or significant point)	Check the wiring and the assembly of the sensor (TAC)
85	Error checking the position of the extension sensor (Asu) when the arm in closed and in support (zero or significant point)	Check the wiring and the assembly of the sensor (ASu)
86	Machine with MTYPE=50 machine raised form the column and not stabilized	Check the wiring of the microbox. Close manually the machine.
87	the weight selector has been moved from the stored position	put the selector back in the correct position
88	Not used	Not used
89	selector wiring problem, both digital inputs are active	Check the selector wiring. Check the load cell
99	Only with MTYPE machine = 11. Machine with closed extension, pressure above the maximum pressure allowed for reset operations	Check the transducer. Check the parameters
100	Only with MTYPE machine = 11. Machine with closed extension, pressure above the maximum pressure allowed for reset operations (Displayed as 99)	Check the transducer. Check the parameters

CODE	DIASTECA		NOTE
	EMYSYSTEM	TROUBLESHOOTING	
CAN errors			
E0	Emergency signal or Run state not activated	Check the emergency buttons SBEM1-SBEM2. Check the wiring	
E1	Radiocom signal Emergency or Off	Check the radiocom. emergency button. Switch on the radiocom. Check the wiring	
E2	CAN communication Error: Slave 2 (platform)	Check the wiring to Slave 2 (platform)	
E3	CAN communication Error: Moment limiter M92E or FABER control unit	Check the wiring to Moment limiter M92E or FABER control unit	
E4	CAN error: Missing CAN connection to ESMALL S4 subframe	Check the wiring to ESMALL S4	
E5	CAN error: missing connection to SCANRECO radio control	Check the wiring to SCANRECO radio control	
E6	CAN Error: missing connection to JIB sensor	Check the wiring to JIB sensor	
E7	CAN error: missing CAN connection to PLATFORM leveling sensor	Check the wiring to PLATFORM leveling sensor	
E8	Incoherence between channels CH1 and CH2 PLATFORM leveling sensor	Check the wiring to PLATFORM leveling sensor	
E9	CAN Error: subframe leveling/planarity sensor malfunctioning or disconnected (chassis)	Check the wiring	
EA	CAN Error: incoherence between the two subframe leveling/planarity sensor channels CH1 and CH2	Check the wiring	
Eb	CAN Error: Boom in/out extension sensor malfunctioning or disconnected	Check the wiring	
Ec	CAN Error: Platform rotation sensor malfunctioning or disconnected	Check the wiring	
Ed	Electrovalve disconnected	Check the wiring to electrovalves	
EE	Max inclination threshold exceeded (if inclinometer is present) or forbidden maneuver detected	Check the platform inclination. Check the wiring of inclinometer IN1	
EF	Error: analogic PANTOGRAPH UP/DOWN signal is missing	Check the wiring	
F0	Can error magnetic encoder	Check the wiring	
F3	Can Error Encoder EAM580	Check the wiring to EAM580 Encoder	
F4	Can Error Cable transducer	Check the wiring to GCA5 transducer cable	
FA	check movement of the extension sensor	Check the wiring to GCA5 transducer cable	
Fb	verification of turret rotation encoder movements	Check the wiring to EAM580 Encoder	
Fc	Incoherence arm extension movements (output off)	Check the transducer	
Fd	Incoherence turret rotation movements (output off)	Check the transducer	
FE	Incoherence arm extension movements (output on)	Check the wiring	
FF	Incoherence turret rotation movements (output on)	Check the wiring	
Incoherence			

H0	CAN communication Error: Slave 3 (truck)	Check the wiring to Slave 3 control unit	
H1	Incoherence between ch1 and 2 loading cell	Sensor is broken	
H2	Not used	Not used	
H3	Pantograph sensor signal is missing, sensor is broken or unplugged	Check the wiring	
H4	Not used	Not used	
H5	Microbox incoherence	Check the wiring of microbox SR3	
H6	Subframe maneuver not allowed	Turn the selector switch SA5 to tower commands	
H7	Aerial maneuver not allowed	Turn the selector switch SA5 to basket commands	
H8	Platform leveling over 7 degree threshold	Check the platform inclination.	
H9	Pantograph lock pivot inserted	Check the wiring	
HA	YV1 feedback incoeherence	Check the wiring	
Hb	slow chain alarm	Check the wiring	
Hc	Incoherence between ch1 and 2 encoder EAM580	Check encoder	
Hd	Incoherence between ch1 and 2 cable transducer sensor	Check cable transducer sensor	
HE	Platform leveling over 12 degree threshold	Check the platform inclination.	
HF	Incoherence feedback yvem	Check the wiring	
48	Encoder positioning check error channel 1, when the encoder is in rest position	Check the CAN bus connection with the encoder sensor DE01	
49	Encoder positioning check error channel 2, when the encoder is in rest position	Check the CAN bus connection with the encoder sensor DE01	
Joystick alarms			
L0	Error Signal JOY 0 ARTICULATED BOOM	Check the wiring to JOY0	BASKET
L1	Error Signal JOY 1 TOWER ROTATION	Check the wiring to JOY1	
L2	Error Signal JOY 2 BOOM UP/DOWN	Check the wiring to JOY2	
L3	Error Signal JOY 3 BOOM IN/OUT	Check the wiring to JOY3	
L4	Error Signal Mov. 4 PLATFORM LEVELING CORRECTION	Check the wiring to SB1-SA2	
L5	Error Signal Mov. 5 PLATFORM ROTATION	Check the wiring to SA1	
L6	Error Signal JOY 4 JIB	Check the wiring to JOY4	
L6	Error Signal Mov. 6 ARTICULATED BOOM	Check the wiring to SA7	TOWER
L7	Error Signal Mov. 7 TOWER ROTATION	Check the wiring to SA9	
L8	Error Signal Mov. 8 BOOM UP/DOWN	Check the wiring to SA6	
L9	Error Signal Mov. 9 BOOM IN/OUT	Check the wiring to SA8	
LA	Error Signal Mov. 4 PLATFORM ROTATION	Check the wiring to SA10	
Lc	Error Signal Mov. JIB	Check the wiring to SA11	
Warnings			
U1	Platform not installed - Extra block overload limiter	Warning	
U2	Inclinometer > 3°	Warning	
U3	Signal inchoerence alarm NO – NC load limiter	Warning	
U4	Load limiter prealarm	Warning	
U5	Load limiter alarm	Warning	
U6	Tower rotation block CW	Warning	
U7	Tower rotation block CCW	Warning	
U8	Moment limit block condition	Warning	
U9	Retroazione KAEM2 - Fusibile Off / Relè KAEM2 Off	Check line fuse from battery	
UA	Retroazione K1 - Fusibile F3 Off / Relè K1 Off	Check F3 fuse on ESMALL board	

Ub	malfunction error\ incorrect installation magnetic encoder	check meccanic installation	
Uc	extra block limited front sector	Warning	
Ud	sensor rope too retracted / broken	check the assembly	
UE	extension limitation block	Warning	
UF	failure to receive can encoder / arm extension transducer packets	Check cable transducer sensor	
SE	Service-recommended maintenance	Contact the manufacturer	
rC	enabled Recovering procedure		
rE	verified Restart condition		
Pr	configuration error		
Load cell / CAN errors			
c 1	CAN error Esmall		cingolo
c2	Basket/hook is not fixed	Check the transducer	
c3			
c4			
c5	CAN error Eslave S5		cingolo
c6	CAN error Eslave S6		cingolo
c7	CAN error Eslave S7		cingolo
c8	CAN error Load cell platform		
c9	CAN error Encoder signal		cingolo
cA	Platform load cell incoherence between CH1 and CH2		cingolo
cb	Platform weight signal is below zero: Platform on ground.		
cc	Load cell ordinary block signal:		
cd	Load cell extra block signal		

EMPTY PAGE FOR FURTHER INFORMATIONS

***** CHAPTER 7 *****

OPENING ROPE

The documentation contained in this chapter is composed of
n° 6 pages, this one included..

Note: The examination and replacement criterion of chains described in this chapter, have been extracted from the specific instructions given by the chains constructors

LUBRICATION,MAINTENANCE AND INSPECTION OF ROPE

LUBRICATION AND MAINTENANCE

The maintenance of the rope should be made according to the kind of use (use frequency) and to the use environment of the machine.

In case of normal use of the machine, in normal environmental conditions, we advise you to lubricate every month the ropes with a particular spray weatherproof, hydrophobic and corrosion-proofing (examples: BRILUBE 30 (BRITISH ROPES)-ROPE GREASE (FAREN)-CHAIN & DRIVE SPRAY (ROCOL)-MOBILARMA 798 (MOBIL).

This product is created to lubricate ropes for frequent use and for dangerous use conditions. It is recommended in particular for all external uses where the main cause of deterioration is corrosion.

For the use remove dirt's residuals on the cable: brush and clean with solvents and leave that it dry before the product will be applied.

In case of more dangerous uses (frequency use and the most dangerous environmental conditions) increase the periodicity of greasing time adequately.

ROPES CONTROL (daily visual controls to find important deteriorations. Make every three months a specific control)

WEAR

Strong wear of rope's wires can cause breaks and a rope showing wear behind a certain extent, should be considered a broken rope and should be replaced. It's necessary to apply the substitution criterion (as indicated in the following point).

This limit is reached when the rope diameter appears to behalf the original one.

Anyway, in case of extreme wear of ropes, we suggest to carry out periodic rope inspection more frequently.

BREAKING

The breaking of the single rope's wires is difficult to find because the end of broken wires remains in the original position and they don't protrude from the rope surface.

To see the breaking, it is necessary to remove the layer of lubricating/dirty which covers the rope (it should be useful rubbing along the rope a piece of wood very soft) and, if it's possible, bending with the hands the rope to constraint the damaged wires end to lift and becoming visible.

For the evaluation of the number of broken wires you must consider a maximum of 10 damaged wires in a length of 200 mm.

CORROSION

Like wear, corrosion can cause rope breakage too, because it reduces the metallic wires section, but, reduction in diameter being equal, corrosion is to be considered a kind of deterioration much more dangerous than wear, for this reason, the same prescriptions indicated in the wear paragraph are applirope, but with more attention criterion and much more specific controls.

For the inside rope corrosion, the survry7control must be carry out with the measurement of the reduction of the external diameter (the limit to consider for the replacement of the rope is when the external diameter has e reduction of 10%).

OTHER DECAY SIGNS
Apart from the above described evaluations, the rope should be replaced:

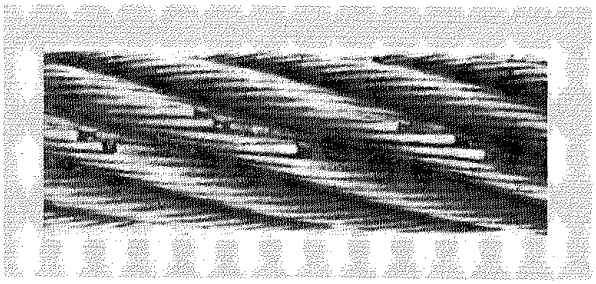
- -when its total diameter has decreased by 10% in comparison to the original, even if this reduction occurs in one single point
- -when a wobbler has completely broken, or when it has been damaged in such way that its section reduces by 40% at a certain point
- -when the rope shows bucklings, torsions, permanent bendings caused by damages or by having laid a sharp corner on it
- -when the core comes out of the rope, even if in one single point
- -when, even if the rope is under stress, one or more wobbler seem to be loosen or protruding

Here there are some photos which described some conditions of wear/damage of the rope that require as soon as possible a replacement

Abrasion and breaking-abrasion and squashing-abrasion and plastic deformation-wires breaking-rubbing-frequent impacts-corrosion-wires breaking-exit of the inside wobblers wires-exit of the metallic core-wires breaking-wires breaking in the metallic core-putting in flasks of antirotating rope-deformation and wear-exit of the core-exit of the core and extension-deformation of the rope

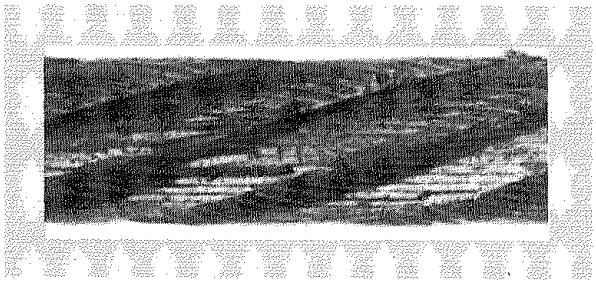
-Abrasion and breaking
-abrasion and squashing
-abrasion and plastic deformation-

- wires breaking
-rubbing
-frequent impacts-
-corrosion



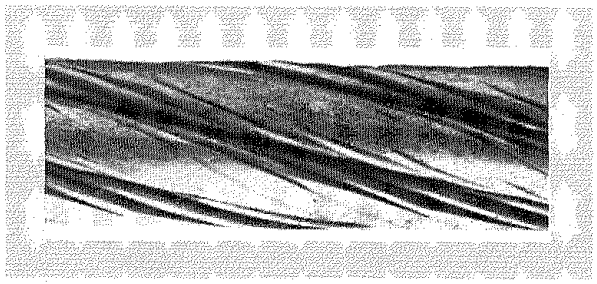
Abrasione e rotture

Rotture di fili

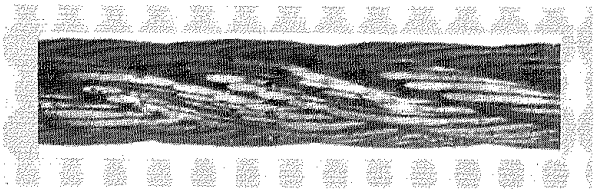


Abrasione e schiacciamento

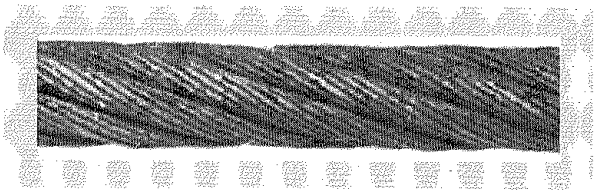
Sfregamento



Abrasione e deformazione plastica,



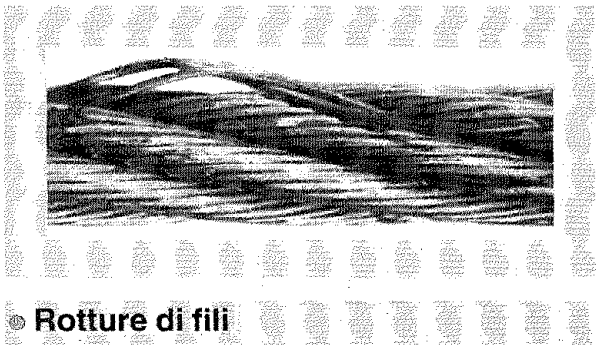
Urti ripetuti



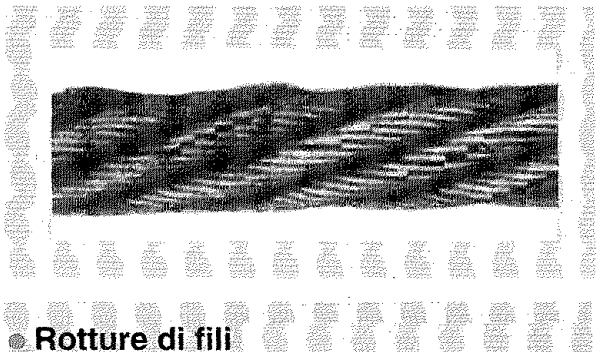
Corrosione

- breaking
- exit of the inside wobblers wires
- exit of the metallic core

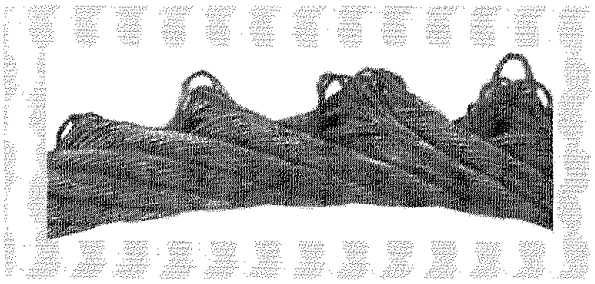
- wires breaking
- wires breaking in the metallic core
- putting in flasks of anti-rotating rope



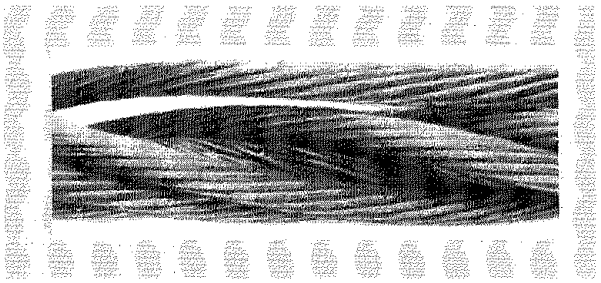
Rotture di fili



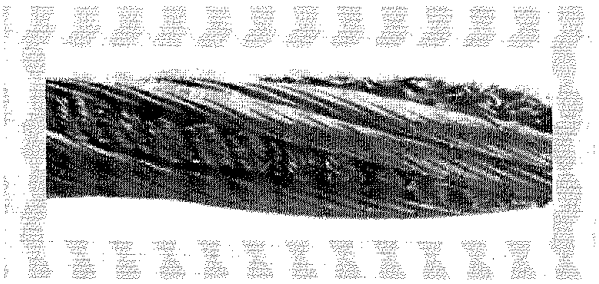
Rotture di fili



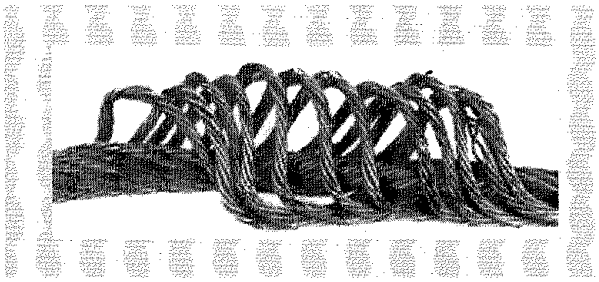
Fuoriuscita dei fili interni dei trefoli



Rotture di fili nell'anima metallica



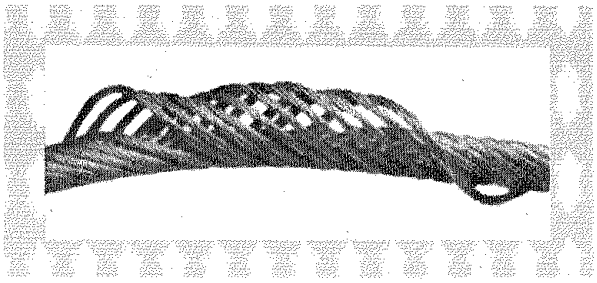
Fuoriuscita dell'anima metallica



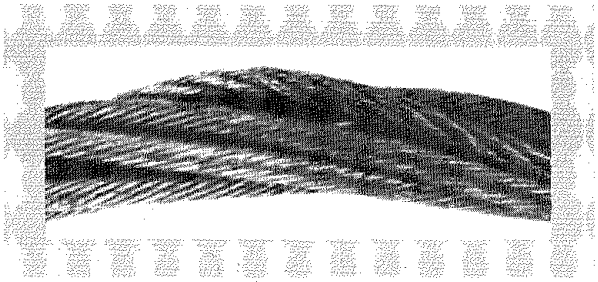
Infiascature di fune antigirevole

- putting in flasks of anti-rotating rope
- deformation and wear
- exit of the core-

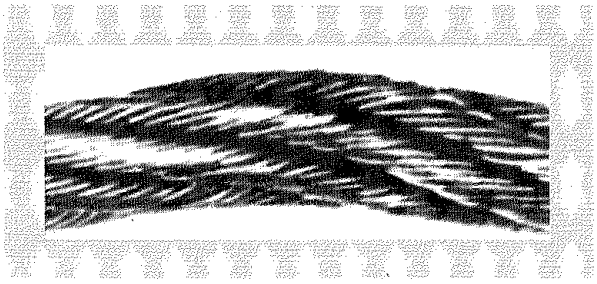
- exit of the core and extension
- exit of the core and extension
- deformation of the rope



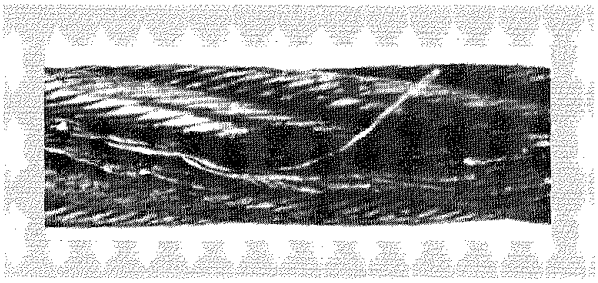
Infiascature di fune antigirevole



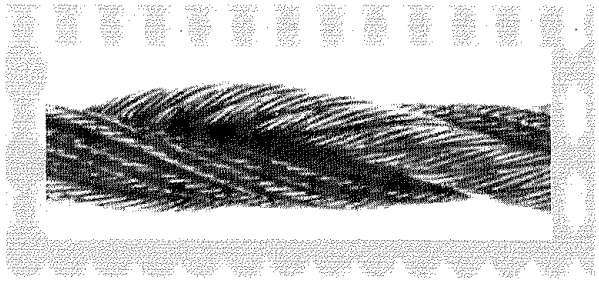
Fuoriuscita dell'anima ed allunga-mento



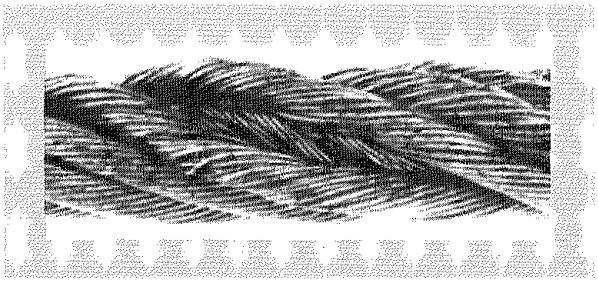
Deformazione e usura



Fuoriuscita dell'anima ed allunga-mento



Fuoriuscita dell'anima -



Deformazione della fune

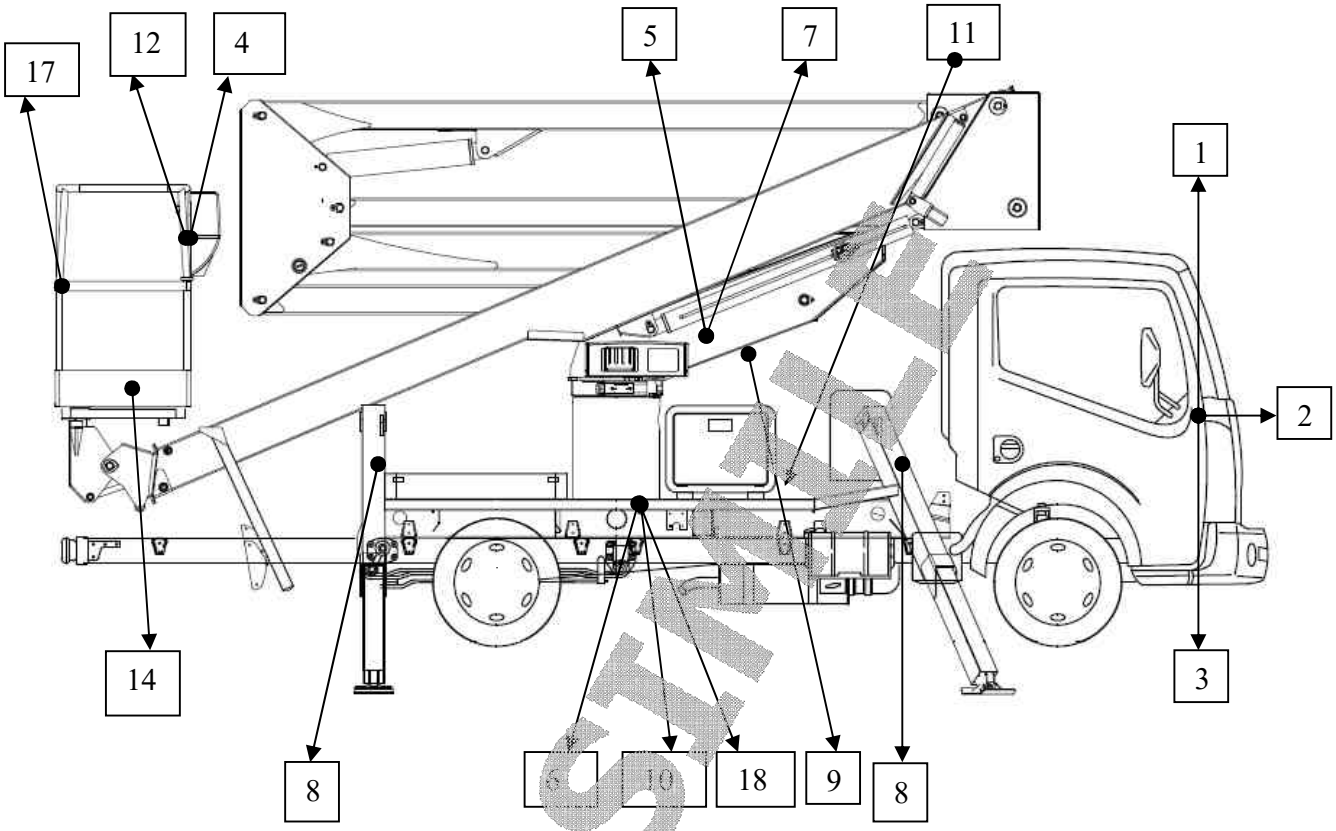
***** CHAPTER 8 *****

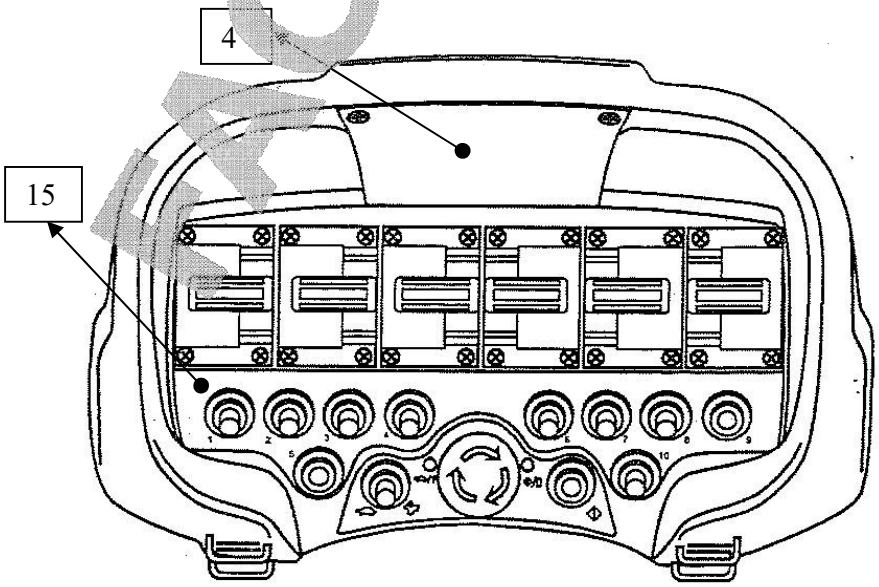
MARKING

The documentation contained in this chapter is composed of
n° 6 pages, this included..

THIS CHAPTER CONTAINS MACHINE IDENTIFICATION, SAFETY AND UTILIZATION INSTRUCTION PLATES. IT IS COMPULSORY TO CHECK IF THESE PLATES ARE INTEGRAL AND CLEAR. Following to bringing up to date, some drawings, colours or text expressions could be modified; however, message meaning remains unchanged.

Marking





FAC-SIMILE

1

FAC-SIMILE

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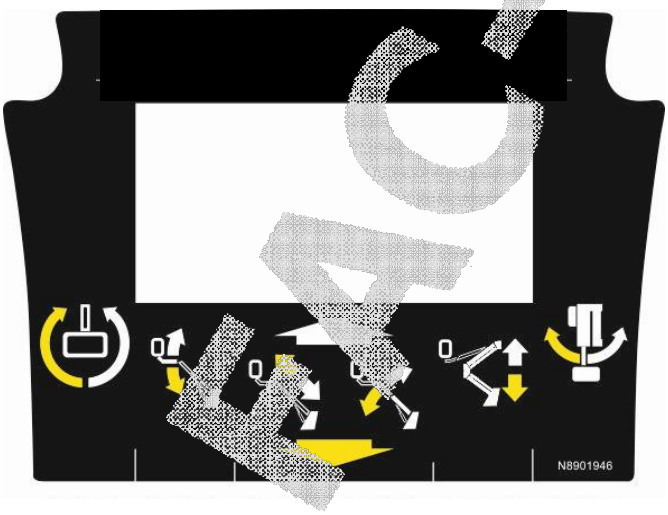

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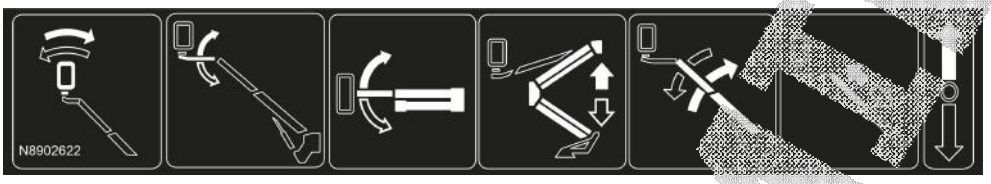

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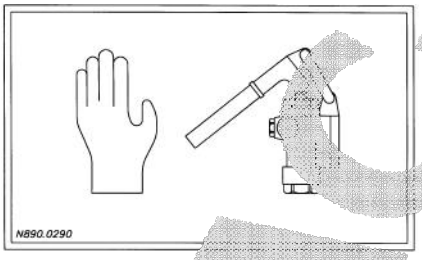

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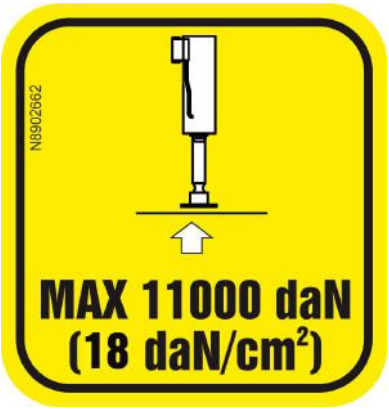

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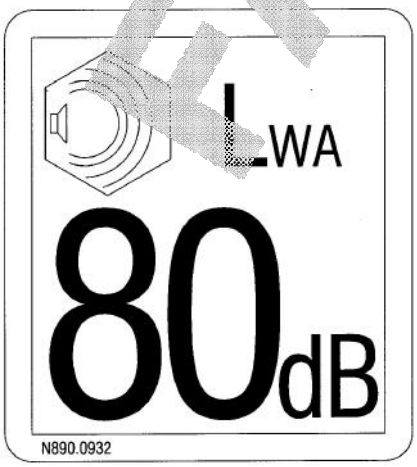

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FAC-SIMILE

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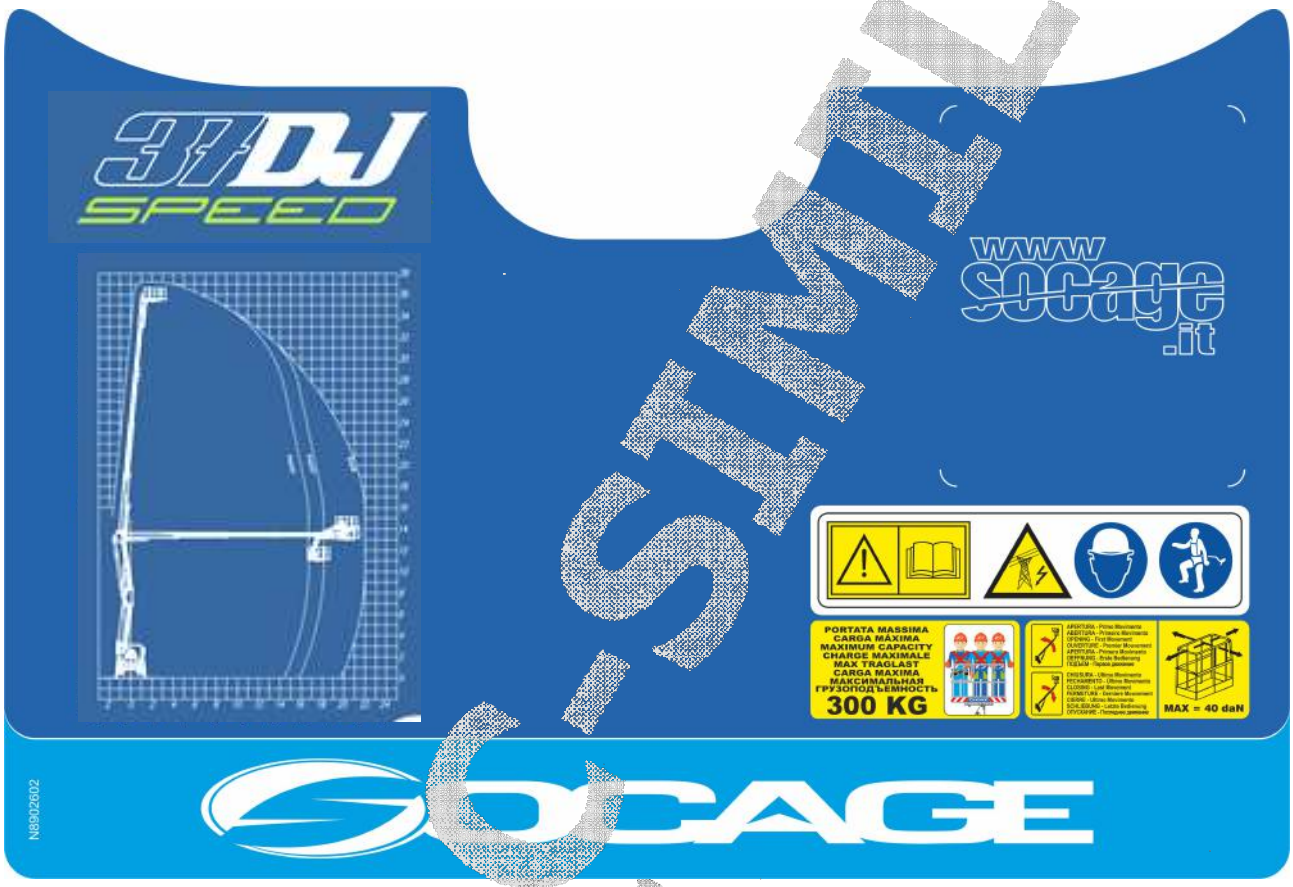

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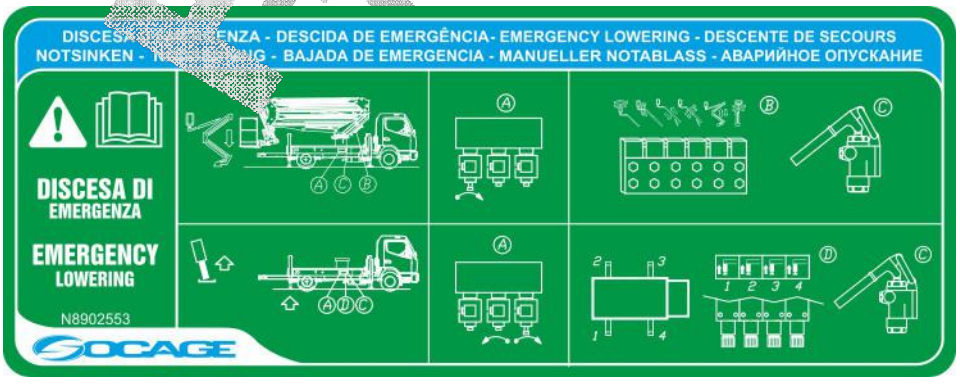

18

FAC-SIMILE

OPTIONAL ADHESIVE FOR INSULATED BASKET

FAC-SIMILE

***** CHAPTER 9 *****

INTEGRATION FOR INSULATED BASKET (OPTIONAL)

The documentation contained in this chapter is composed of
n° 4 pages, this included..

WORKERS-CARRYING INSULATED BASKET

Polyethylene structure equipped with a lateral opening to enter and protected from a bar.
The basket dimensions are the following: mm. 1300x800x1100h..

This basket prevents persons and things from **INVOLUNTARY** contacts with electric lines and it has not to be used for live working.
After the assembly of the isolation the basket is tested with a standard test in which a discharge of 3 times stronger compared to the isolation value for 60 seconds, with the control of the lack of discharges or connection points.

It is advisable that the workers use shoes and gloves made of an insulated material together with a insulated cover to put on the controls before doing some electric maintenance works.

.

ALWAYS REMEMBER:

BASKET INSULATION IS GUARANTEED ONLY FOR INVOLUNTARY CONTACTS WITH ELECTRIC LINES WORKING AT ≤_____V IN ALTERNATE OR CONTINUOUS CURRENT

INSULATION IS VALID ONLY IN DRY CONDITIONS.

DON'T MODIFY OR TAKE ANY PART RELATING TO INSULATION AWAY FROM THE BASKET (INSULATORS, BLACK PROTECTION, CONTROL PUSH-BUTTON, DISTRIBUTOR LEVELS, ETC.).

DON'T PAINT NOR GET DIRTY THE INSULATING COMPONENTS (INSULATORS, BLACK PROTECTION, CONTROL PUSH-BUTTON, DISTRIBUTOR LEVELS, ETC.).

IN CASE OF BREAKING OR SERIOUS DAMAGES DON'T USE THE EQUIPMENT NEAR ELECTRIC LINES BEFORE HAVING DONE THE SUITABLE MANUTENTION AT THE SOCAGE - OR ANOTHER AUTHORIZED WORKSHOP.

IF IT IS PRESENT, SOCKET IS NOT INSULATED. SO IT HAS NOT TO BE USED WHEN THERE IS THE RISK OF TOUCHING ELECTRIC LINES

EMPTY PAGE FOR FURTHER INFORMATIONS

***** CHAPTER 10 *****

ACCESSORIES

The documentation contained in this chapter is composed of
n° 4 pages, this included..

ACCESSORIES

You can install,if you want, a series of accessories.
Here there is a brief description of it and the modalities for their correct use.

ROTATING BEACON ON THE CABIN OF THE VEHICLE

It signales the use of platform when you work near roads or traffic zones.
It can have a magnetic mobile connection (it has to be placed on the cabin roof) or with a fixed connection.
Their ignition isn't automatic, but you have to activate it through the switch/connecting plug that is in the cabin of the vehicle before starting to work with the platform.
WARNING:
It is forbidden to go on road with the rotating beacon lighted.
It is forbidden to go on road with the magnetic rotating beacon that is on the cabin roof (it has to be removed).

OUTLET/ELECTRICAL PLUG 230V-50Hz

Outlet for the connection to the external power grid (400V-50Hz) on the ground, on the platform frame.
WARNING:
Before joining to the external power grid you have to check that the safety devices required for by norm are installed (differential/magnetic-thermic cut-outbox).
Electrical plug on the basket for the connection of the electrical tools (400V-50Hz-10A).

OUTLET/ELECTRICAL PLUG 400V-50Hz

Outlet for the connection to the external power grid (400V-50Hz) on the ground, on the platform frame.
WARNING:
Before joining to the external power grid you have to check that the safety devices required for by norm are installed (differential/magnetic-thermic cut-outbox).
Electrical plug on the basket for the connection of the electrical tools (400V-50Hz-16A).

PNEUMATIC/HYDRAULIC OUTLET ON THE BASKET

Input connection (on the lower part of the machine turret) for the junction to an external air/hydraulic line (connection 3/8''G-max 100 bar/15 l/min). Appropriate use connection on the basket (3/8''G) for the pneumatic/hydraulic tools connection (max 100 bar).

AUXILIARY MOTOR PUMP 230V-50Hz

Auxiliary motor pump (to connect to the external electrical grid 230V-50Hz-3Kw) for the use of platform without the switch of the vehicle motor.

WARNING:

Before joining to the external power grid you have to check that the safety devices provided for by law are installed (differential/magnetic-thermic cut-outbox).

The group is composed of a monophasic electric motor 230V-50Hz-2,5HP, hydraulic pump (flow rate delivered 5/6 l/min-230 bar), electric control system and group for automatic recharge of the vehicle battery.

For its use follow these instructions:

- switch on the electric board of the vehicle (for the working the power take off and the hand brake have to be inserted)
- activate the ignition lock switch which is on the electric board of the motor pump group
- at this point,from the control position it will be possible to switch on the motor pump and working with the machine in the same way of the normal controls (only with movements speed a little bit lower)

EMERGENCY MOTOR PUMP 12V

Auxiliary motor pump (directly connected to the vehicle batteries) for the recovery of the platform in case of emergency (if the hand pump is not used).

The group is composed of an electric motor with a direct current 12V-1,5Kw, hydraulic pump, (flow rate 2/3 l/min-150bar) and electric control system.

For its use follow these instructions:

-activate the drive push button of the motor pump from the control positions and you have to maintain it pressed. Then you can work with the machine in the same way of tha hand controls to make the recovery of the machine in case of emergency.

ANTICOLLISION DEVICES

Series of electrohydraulic devices (see the list below) that can allow the control of the machine parts to avoid some collision risks.

-Anticollision of the boom with the vehicle cabin

Device that locks the descent/boom rotation (or of the pantograph if it exists), in the front zone of the vehicle at a point that doesn't interfere with the cabin structure

-Anticollision of the external raceways of the boom with the back outriggers (during the lok up of the machine)

Device that locks the descent boom in the locking position if the machine is not perfectly aligned in the correct position (to avoid damages of the external raceway of the boom)

-Anticollision of the basket against external obstacles

Device that locks some machine movements (extension boom/rotation) when the sensors on the basket notice the presence of an external obstacle.

STABILIZATION FROM THE BASKET

Electro hydraulic group that allows the use of the electrical controls of the stabilization on the basket (always with the machine/aerial parts in locked position/boom on its transport support) for their use follow the same ways of the controls of the outriggers on ground.

DOUBLE CONTROL OUTRIGGERS POSITION

Electric device that signales the correct position of locking/outriggers transport through the switching off of the red light on the dash board in the vehicle cabin, the correct lock position/outriggers transport (to avoid the danger of putting it into traffic with the outriggers that are not in a correct position).

***** CHAPTER 11 *****

INSPECTION REGISTER

The documentation contained in this chapter is composed of
n° 10 pages, this included..

REFERENCE REGULATIONS

This inspection register is given by Messrs. SOCAGE to the user of this platform, in compliance with 2006/42/EC directive.

PRESERVATION INSTRUCTIONS

This register is to be considered an integral part of the platform and should accompany this equipment during its whole working life up to final scrapping.

ATTENTION!!!

According to the regulation 2006/42/CE together with this register also the certificates of the replaced components must be recorded (motor, mechanisms, structural elements, safety devices and as well as the dedicated components) as well as the reports of important repairings.

COMPILATION INSTRUCTIONS

The following instructions are given according to provisions known at the date of the lifter's putting into the stream of commerce. New provisions could modify the user's obligations.

IMP.: THE FREQUENCY AND IMPORTANCE OF THE TESTS MAY ALSO DEPEND ON THE NATIONAL REGULATIONS.

This register has been conceived to write down, according to proposed charts, the following events related to the useful life of the machine:

- periodic inspections (Max every six months) to be carried out by the person in charge of safety at the company which owns the platform
- transfers of title
- replacement of motor, mechanisms, structural components, safety devices and relevant components
- breakdowns of some importance and appropriate repairs

PERIODIC INSPECTIONS

Inspection date	Date of next inspection	Name of inspector	Comments	Signature

PERIODIC INSPECTIONS

Inspection date	Date of next inspection	Name of inspector	Comments	Signature

DELIVERY OF ..... TO THE FIRST OWNER

This platform, serial number....., manufactured in ....
as indicated in this inspection register was delivered by SOCAGE , on..... to:
.....
.....
.....
according to the conditions set forth by the agreement, with technical, dimension and functional specifications indicated in the instruction manual and in the summary contained in this Register.

MESSRS.

SUBSEQUENT TRANSFERS OF TITLE

On ..... title of the platform in question was transferred to :
.....
.....
.....
We certify that, on the above mentioned date, technical, dimension and functional specifications of the lifter in question are in accordance to original specifications and that changes, if any, have been written down in this Register.

The seller The buyer

....

SUBSEQUENT TRANSFERS OF TITLE

On ..... title of the platform in question was transferred to :
.....
.....
.....
We certify that, on the above mentioned date, technical, dimension and functional specifications of the lifter in question are in accordance to original specifications and that changes, if any, have been written down in this Register.

The seller The buyer
....

REPLACEMENT OF STRUCTURAL COMPONENTS

Date: .....
component description
.....
manufacturer: ..... supplied by: .....
reason for the replacement:
.....
.....
.....

The person in charge of the replacement The user
....

REPLACEMENT OF STRUCTURAL COMPONENTS

Date: .....
component description
.....
manufacturer: ..... supplied by: .....
reason for the replacement:
.....
.....
.....

The person in charge of the replacement The user
....

REPLACEMENT OF STRUCTURAL COMPONENTS

Date: .....
component description
.....
manufacturer: ..... supplied by: .....
reason for the replacement:
.....
.....
.....

The person in charge of the replacement The user
....

REPLACEMENT OF MECHANISMS

Date: .....
component description
.....
manufacturer: ..... supplied by: .....
reason for the replacement:
.....
.....
.....

The person in charge of the replacement The user
....

REPLACEMENT OF MECHANISMS

Date: .....
component description
.....
manufacturer: ..... supplied by: .....
reason for the replacement:
.....
.....
.....

The person in charge of the replacement The user
....

REPLACEMENT OF MECHANISMS

Date: .....
component description
.....
manufacturer: ..... supplied by: .....
reason for the replacement:
.....
.....
.....

The person in charge of the replacement The user
....

REPLACEMENT OF SAFETY DEVICES AND RELEVANT COMPONENTS

Date: .....
component description
.....
manufacturer: ..... supplied by: .....
reason for the replacement:
.....
.....
.....

The person in charge of the replacement The user
....

REPLACEMENT OF SAFETY DEVICES AND RELEVANT COMPONENTS

Date: .....
component description
.....
manufacturer: ..... supplied by: .....
reason for the replacement:
.....
.....
.....

The person in charge of the replacement The user
....

REPLACEMENT OF SAFETY DEVICES AND RELEVANT COMPONENTS

Date: .....
component description
.....
manufacturer: ..... supplied by: .....
reason for the replacement:
.....
.....
.....

The person in charge of the replacement The user
....

PERSONAL SHEET TRAINER

(DA COMPILARSI OBBLIGATORIAMENTE AD OGNI PASSAGGIO D'USO)

DATE	PERSONAL TRAINER			PERSONAL TRAINED			NOTES
	NAME	FUNCTION	SIGNATURE	NAME	FUNCTION	SIGNATURE	

EMPTY PAGE FOR FURTHER INFORMATION