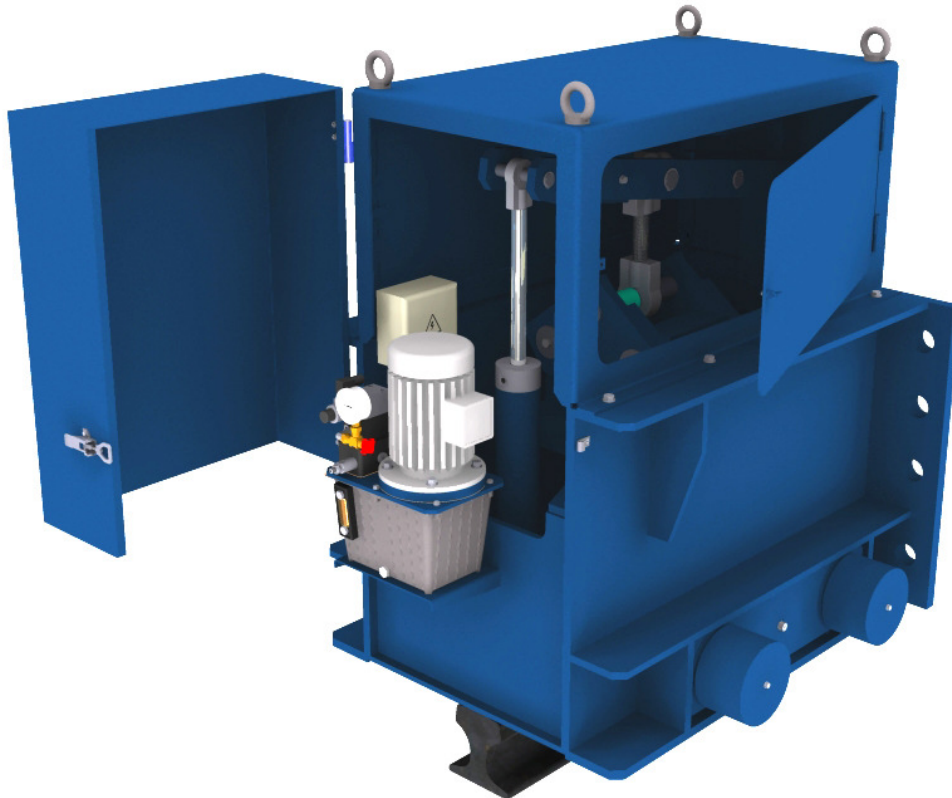


SELF BLOCKING RAIL CLAMPS

JULY 2008

CATALOGUE "TA"**Rima S.r.l.**

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DESCRIPTION

These rail clamps are storm brakes suitable for high forces: from 250 to 1500 kN.

They are self-blocking type; in case a force acts on the crane and tends to put the same into motion, they press on the rail sideways. This pressing gets stronger as the crane moves. The rail clamps can withstand horizontal force only.

The value of forces indicated are calculated with friction coeff. of 0.25 (see after).

As the real coeff. in normal conditions is much higher (approx 0,59 - TUV German register certificated), the rail clamps can generate higher forces. Higher safety and braking shoes life are guaranteed

• *Advantages of self-blocking system*

Thanks to its working concept, the holding force given by the self-blocking rail clamp is a reaction to the force applied by the wind. The force given by the clamp is equal to the force of the wind deducted the force given by gantry brakes; this means that also the pressing force applied by the jaws to the rail side surface is, in all condition, the minimum needed to hold the crane in its position with proper safety factor.

The clamp start pushing on the rail sides only if the wind force overcomes the gantry brakes capacity.

All what above allows total intensity and working hours in a year to be almost negligible.

With regard to braking shoes, optimized design, careful choice of material, developed heat treatment cycles (combining correct surface hardness and necessary core ductility), guarantee both best performances and long life.

Above described features lead to following advantages:

1) Jaws duration is very long (our experience is that jaws life reaches also 10 years) minimising replacement needs.

2) All mechanical components are working quite seldom and most of times under low loads, minimizing maintenance needs.

3) Rails are preserved from wear and damages

• *Further advantages of self-blocking system*

- The holding capacity doesn't decrease significantly for reasons of wear of braking shoes.
- Holding capacity doesn't suffer variation of width of rail, being this clamp able to absorb differences of +/- 1,5 mm respect to the nominal width of the rail
- Vertical allowance of the position respect the rail of +/- 12 mm is big enough to permit a fixed installation also in the middle of the seal beam (no wheels are needed)

- Independence of the holding force from the fatigue deriving from heavy duty cycle (the absence of springs renders this device suitable to the continuous open/close applications)
- Fast opening with low power: opening is made just rising up the light weight of the calliper (not working against strong springs and wasting energy)
- Working at low pressure with life advantage for hydraulic components
- Particular suitability to high speed cranes thanks to the free movement:

Since while the crane is travelling, the braking calliper is lifted up over the rail level, we can adopt a very wide gap between guides and rails (10 mm or more), with the benefit of very seldom contacts.

This, together with accurate choice of guide materials and treatment allows a long duration of guides.

• *Friction coefficient (TUV certified)*

On new generation of self blocking rail clamps it has been applied a very innovative concept of "variable friction coefficient".

To maximize the safety, calculated average working friction coefficient is around 0,25, while the friction coefficient of our braking shoes it is much higher (0.59 also in the worst conditions, i.e. presence of grease on the rail, certified by German Register TUV). Real high values of working friction coeff. (always below guaranteed level) are needed only in extreme wind load conditions, therefore very seldom.

• *Advantages in comparison with spring types*

We would like to underline here the main disadvantages of spring rail clamps (and rail brakes) respect to self blocking type:

- The transversal (vertical) force applied by the jaws to the rail side (top) surface is always at maximum value, causing both wear of rails and wear of jaws (maintenance manual of spring clamps indicate a control of jaws wear and relevant periodical substitution)
- The holding force decreases with wear of jaws requesting than, to keep the needed safety of the crane, frequent interventions of substitution.
- The allowance regarding the width of rails is similar to brand new rail tolerances causing a weakening of the holding force in case of rails wear.
- To allow big vertical movements respect to the rail, requested in case of installation on the crane main frame, spring clamps are to be realised in the "on trolley" execution generating an increase of maintenance needs (wheels, pin, lubrication, etc.).
- In case of heavy duty application (several opening / closing cycles during the day) the springs loose force and come to collapse because of fatigue, than have to be replaced often



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- In case a fast opening is required, a big power hydraulic unit must be used with high cost and waste of energy since cylinders are working against the strong spring force.
- Rail brakes need to be installed only at centre of gantry equalizers.

System is operated at very low pressure level (abt 7,5 MPa) increasing largely the duration of hydraulic components, while on spring rail clamps pressure are quite high (more 15 Mpa). Higher values of pressure could be found only in case rail clamps have to be unlocked after high wind load application.

■ *Technical features*

- Installation: side bolted;
- Vertical float = ± 12 mm ;
- Horizontal float = ± 40 mm ;
- Tolerance respect to nominal width of the rail = ± 1.5 mm (or more upon request);
- Opening time (signal for operation) = 4 s ;
- Closing time = adjustable from 4 to 12 s ;
- Duty = 24 hours full operation per day;
- Life: $\geq 2.000.000$ cycles

On request these values can be modified.

UTILIZATION / FUNCTIONING

This rail clamps are to be considered as parking devices (safety against the movement caused by wind) and they work pressing on rail sides.

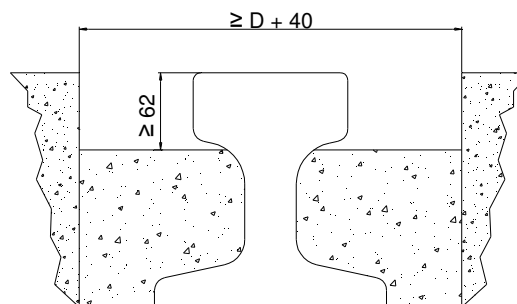
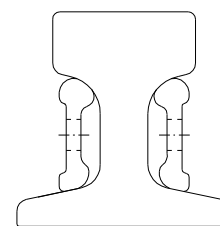
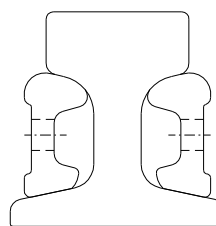
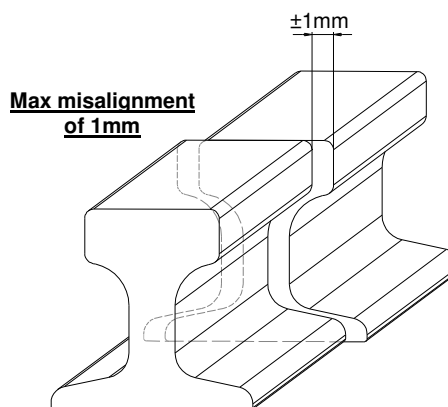
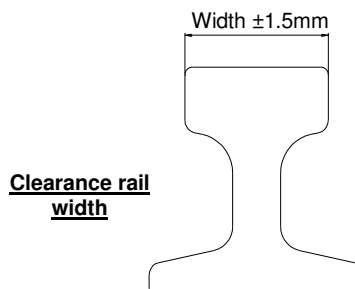
The jaws are connected to the frame by a swinging pendulum device. In "closed position" (ready to work) the jaws lean on the upper surface of rail but they don't apply any force to the side-surface of the rail. When the wind force is stronger than the blocking force given by the gantry drive brakes, and a small movement of the crane starts, the inclined planes of the blocks, moving with the crane frame, oblige the rollers to push the friction shoes against the sides of the rail.

(See scheme of working principle according to drawing at page 9/10/11).

RAIL

Braking shoes of our rail clamp have been designed to work on rails commonly on the market whose hardness is between 200 and 270 HB ($\sigma = 70$ to 90 daN/mm²). The certification of TUV are referred to above given values of rail hardness.

In case of different values we must be informed at order, Because this could affect the rail clamp functioning.



Channel features

In the case what above shown cannot be respected, we have to be informed about effective conditions at offer stage.

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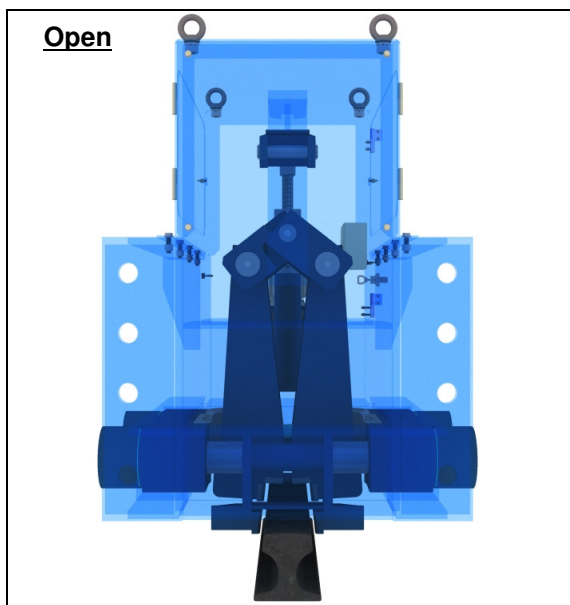
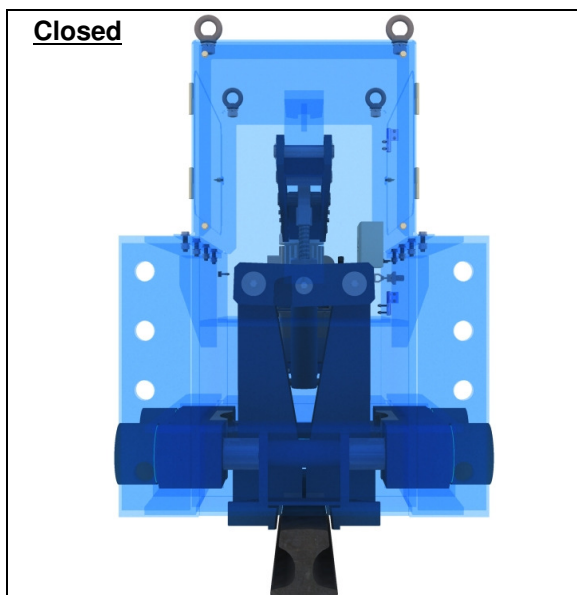
OPERATING

• *Opening of Rail Clamps*

A hydraulic cylinder in pressure opens the rail clamps, this is achieved by:

- a) starting the motor of the hydraulic unit by closing its remote control switch,
- b) energising the coil of the electric pilot check valve installed in the unit.

The power is sufficient to release the rail clamps without moving the crane.



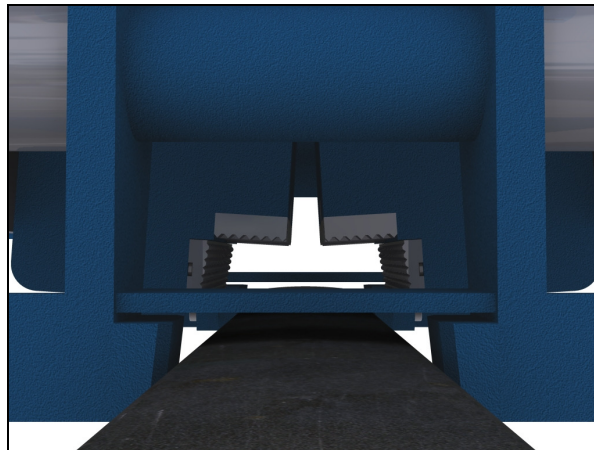
▪ *Closing of Rail Clamps*

Since clamp must close onto the rail only after crane stop, clamp closure is delayed through the use of a fixed flow regulator shop calibrated for a delay of 8 s. Different values can be given upon request at order; shorter values are not recommendable since dangerous.

In addition to this an adjustable flow regulator is provided to increase the delay up to further 4 s.

The fixed flow regulator solution has been adopted to minimize the variation of the delay upon temperature variation.

We suggest the client to inform us always about requested delay at order, to optimize the calibration.



ASSEMBLY DESCRIPTION

▪ *Rail Clamps*

Each rail clamp is composed by:

- Steel framework with lifting lugs and removable hinged inspection doors;
- Steel levers and counterweight;
- Pins in stainless steel AISI 420;
- Heat treated steel rollers and sliding blocks;
- Guides with rail sweeping device;
- Steel jaws with braking shoes in 39NiCrMo3, knurled, quenched and tempered;
- Hydraulic cylinder for rail clamp opening with piston rod in NIKROM (carbon steel + Ni + Cr); The cylinder is easy replaceable in ca. 20 min;
- Stainless steel tie-rod for emergency manual release;
- Inductive limit switches for clamp release indication and restore hydraulic unit. Protection IP 65;
- Inductive limit switches for jaws position IP65;
- External grease lubrication fittings button head type;
- Bolts, if diameter is less than 12 mm in stainless steel, if over galvanized.



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- *Hydraulic Unit (acc. dwg page 7/8)*

It is suitable for sea-environment, completely assembled, wired, oil filled and flushed (acc. NAS 9). Cover in carbon steel with hinged door. All the electrical components are wired on option into electrical box (protection IP 55)

- *Emergency manual opening device*

For the emergency manual opening device we use a stainless steel tie rod assembled inside the rail clamp. To open the rail clamp is requested only the turning of a nut by a standard key tool.

The advantages of this system in comparison with the one with hand pump are the following:

- The opening is possible even in case of damage of the cylinder or of the flexible hose for the connection to the cylinder.
- The rail clamp remains open in the time with absolute security while in the hand pump execution eventual small leakages into the cylinder or into the cock valves may cause the undesired closing of the rail clamps.

- *Standard painting (only frame and external parts)*

Total thickness : 210 micron.

- Surfaces preparation: Sandblasting SA 2 ½.
- 1° Coat: Moist curing inorganic two-component zinc primer. Consists on complex ethyle silicate and zinc dust in high rate (>86% in dry film).
Thickness = 70/80 micron
- 2° Coat: Two-component epoxy-polyamide primer and undercoat with zinc phosphate and micaceous iron oxide.
Thickness = 80/90 micron
- 3° Coat: Two-component aliphatic acryl-urethane based paint no yellowing. Reacoatable for long time.
Thickness = 60/70 micron

Final colour: Standard RIMA RAL 5019.

- *Fluids for normal temperatures*

- Hydraulic oil: ISO VG 15.
- Grease: SKF LGLT2.

ELECTRIC CONTROL UNIT

It is usually foreseen by the crane manufacturer by means of relays or PLC. On request, it can be supplied on plate or in a box (IP 55).

Here after is illustrated the sketch we suggest, which foresees the use of a suitable temporised relay (dwg. SCE-TA-01).

This relay is necessary to signal possible malfunctions in the hydraulic unit (for ex. oil deficiency or breakages of some hydraulic or electric components). Through this solution temperature and limit switcher are not needed.

The logic control of the rail clamps closing is established by the user. The rail clamps are usually closed at the end of the crane work, or on signal of a suitable anemometer which signals that the wind speed is higher than the max. allowed speed.

As the electro-valve has to be always excited, the magnet must be in direct current; if the customer wants to feed the coil valve with alternated current, a suitable rectifier is to be supplied.

WARRANTY

12/18 months

Warranty is subject to the following conditions:

- The electric diagram is made accordingly to the scheme we suggest (SCE-TA-01) or is made accordingly to a scheme designed by client but in any case approved by us.
- All maintenance procedures described in the manual provided with the supply are observed. In particular must be strictly observed the rules relevant to cleanliness and filters replacement.

In case one or more of above conditions should not be respected, the guarantee will be considered not valid.

TESTING

All the rail-clamps are tested on a test bench before delivery, at a nominal force power.



DOCUMENTATION

The documentation is worded according to EG (89/392/EWG) e Euro-EN 292-1/2; 1991 D rules.

- Use and Maintenance Manual
- Certificate of execution according to rules
- Over all dimension drawings;
- Hydraulic and electric diagrams;
- Suggested spare part list;
- Test Certificate;
- Material certificate (EN 10204-2.1) for all main parts;

Documentation is in Italian or English on cd-rom.

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EXECUTIONS

- *Standard execution*

- Working temperature: -20°, +40°
- Environment: marine
- Installation with side flange
- Hydraulic unit integrated in the clamp, filled with oil and provided with terminal box
- Limit switch that signals clamp open
- Limit switch for maintain rail clamp open.

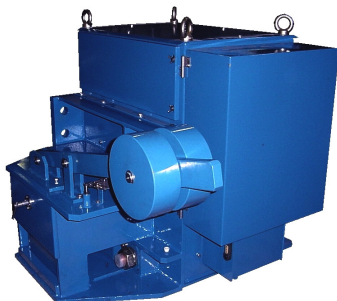
- *Special execution (on request, with extra price)*

- Working temperature different from standard
- Double side flanges or upper flange (with hydraulic unit supplied separately from rail clamps)
- Hydraulic unit suitable to operate with more than one rail clamps
- Electrical board (on plate or box IP55);
- Limit switch which signals "rail clamps closed"
- Horizontal and vertical clearance increased
- Security side stowage pins (to insert suitable holes on the quay)
- Manufacturing according Q.C.P. different from our standard (Nuclear plan or special application)
- Language of documentation different from standard
- Certificates of materials (EN 10204-2.2, EN 10204-3.1 o EN 10204-3.2) for all main components.

Without hydraulic unit



Without hydraulic unit, with hand pump



With parking pin

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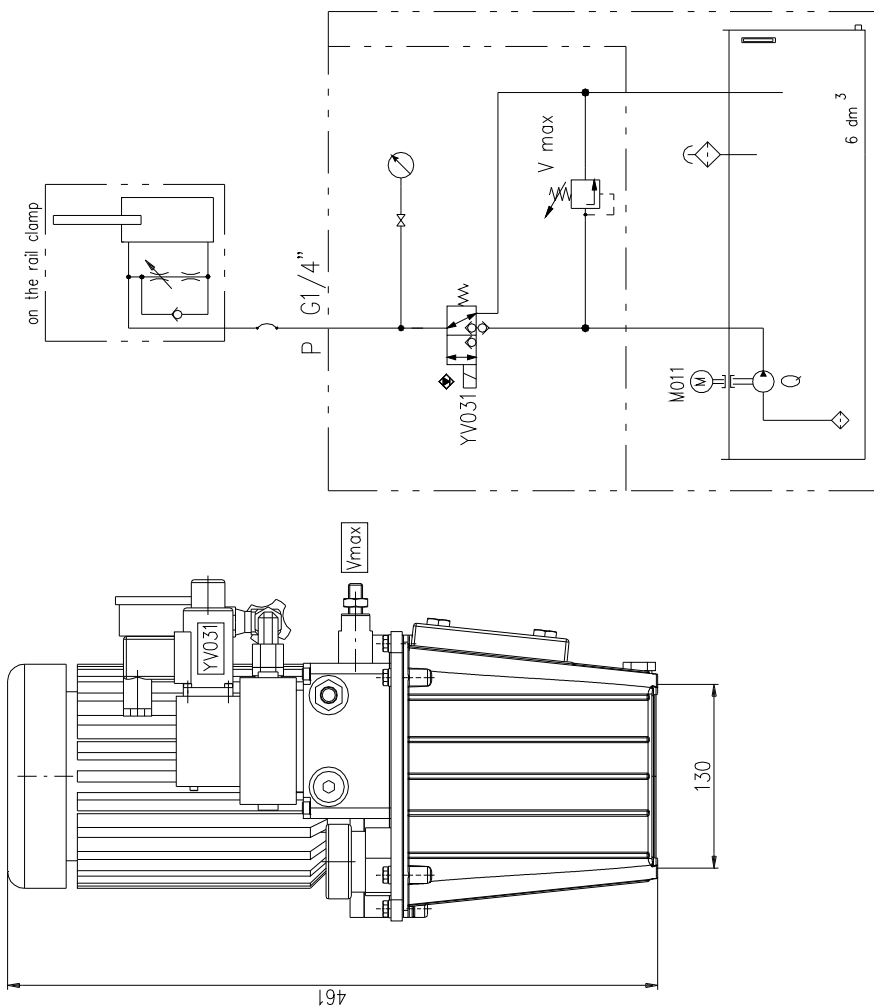
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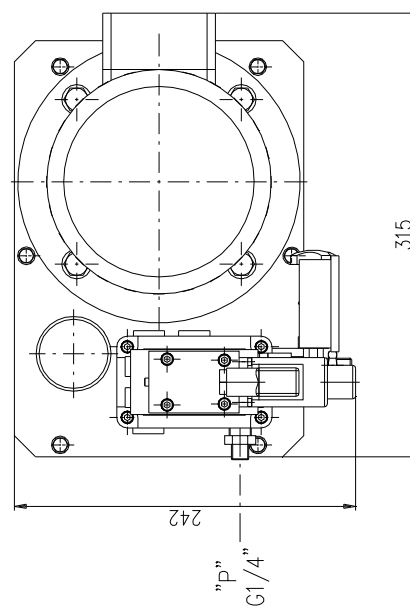
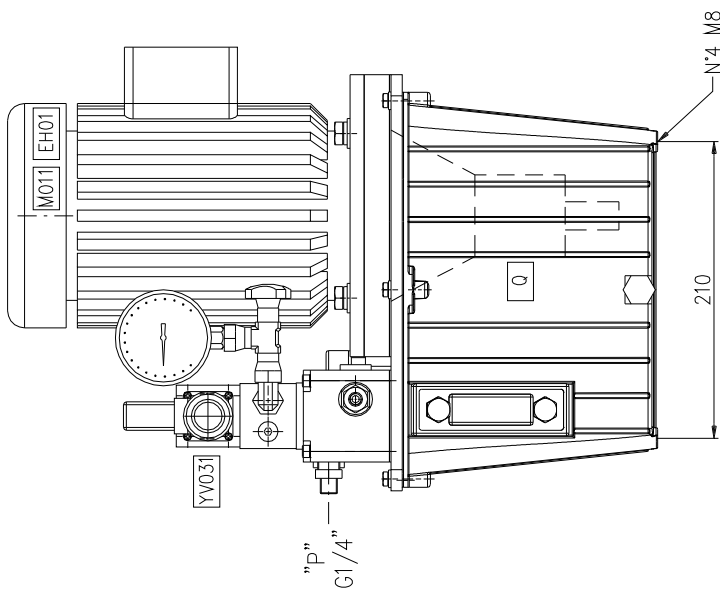


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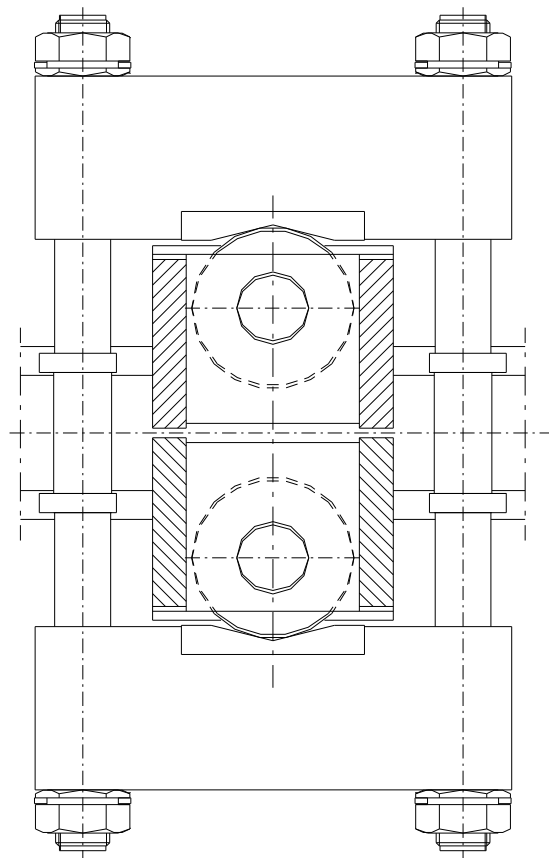
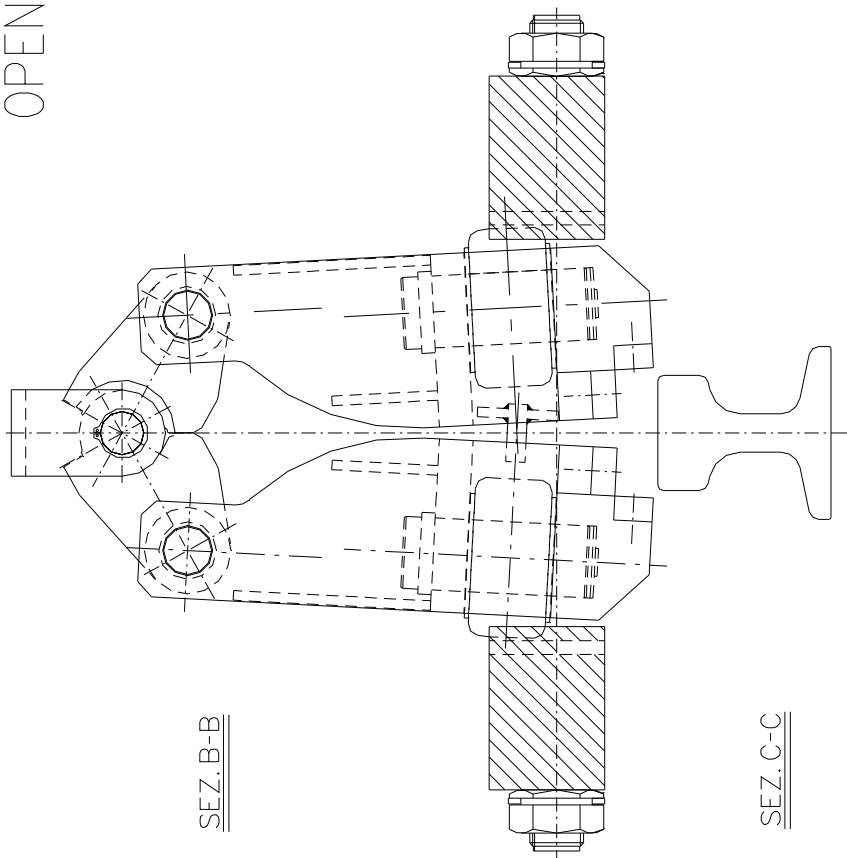
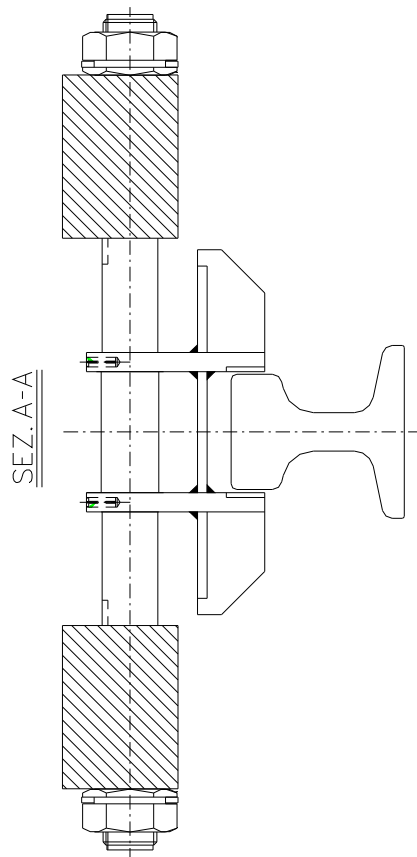
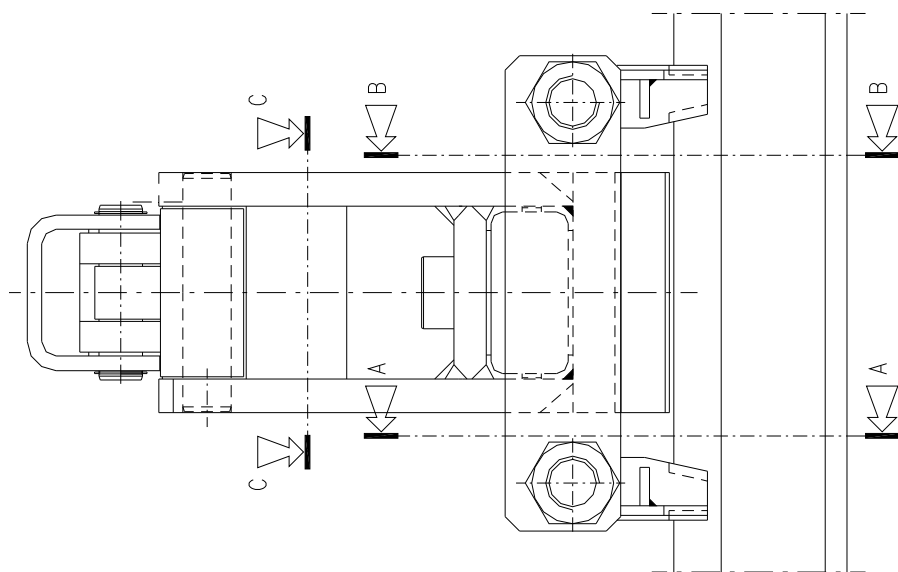


ELECTRIC MOTOR	0.75 kW, 400V-50HZ
GEAR PUMP	2.4 l/min
ELECTROVALVE	24 V DC
PRESSURE RELIEF VALVE	20 MPa

HYDRAULIC UNIT TYPE SCI-TA06-02 FOR ALL TYPE OF AUTOMATIC RAIL CLAMPS



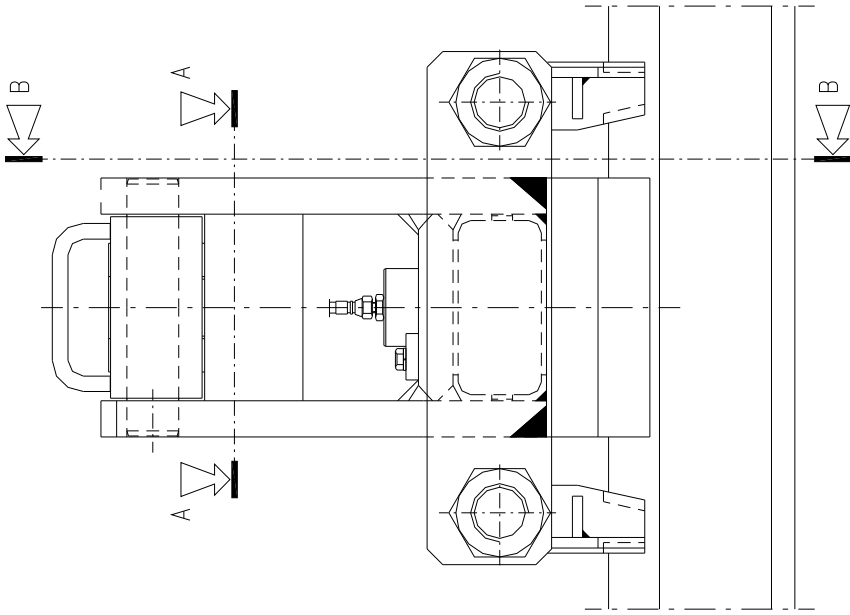
OPEN CLAMP



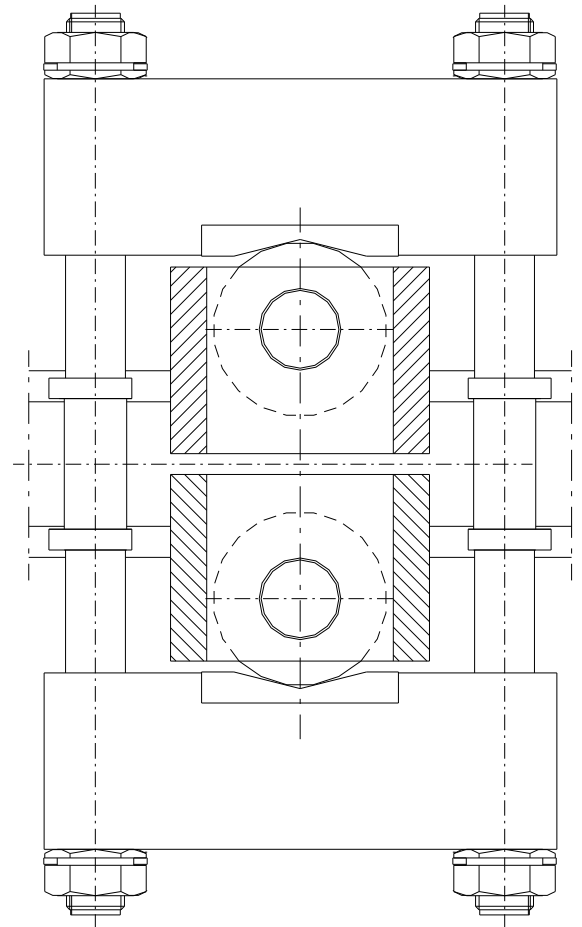
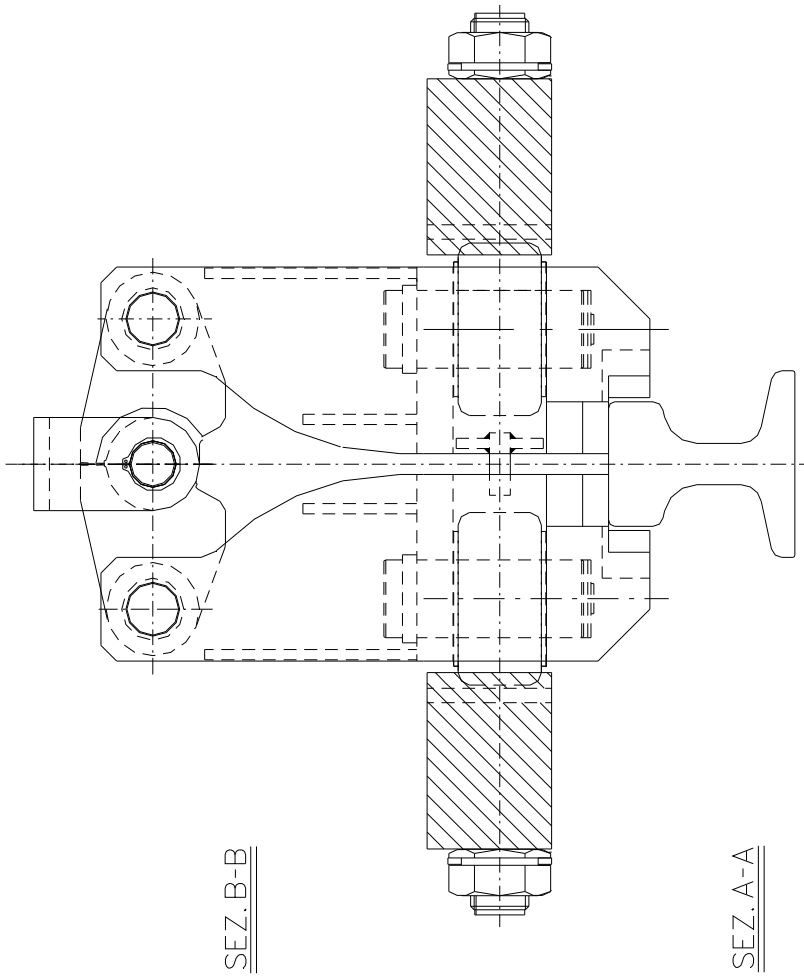
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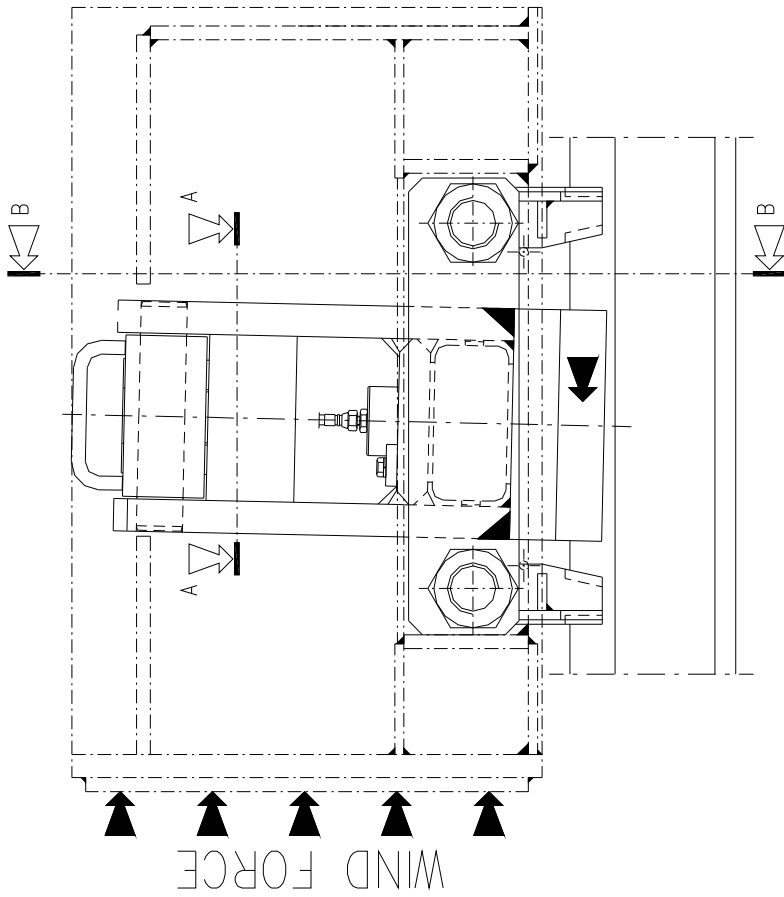


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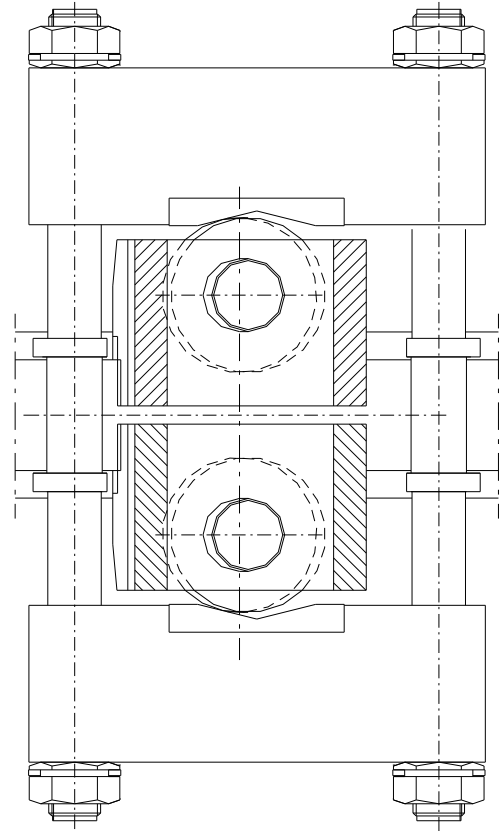
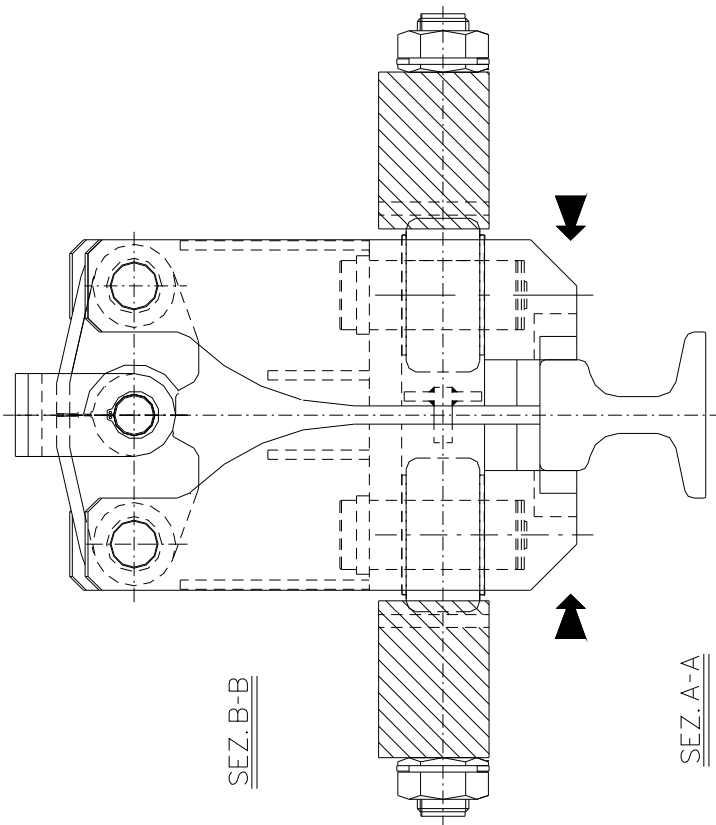


CLOSED CLAMP WITHOUT LOAD





CLOSED CLAMP WITH LOAD





via Bettola 32
I-20092 Cinisello Balsamo (MI)
Tel.: 02-66 05 3.1
Fax: 02-66 01 28 02

/MG File: Rima-02

Cinisello, 02/05/98

TEST REPORT

Customer: RIMA S.r.l.
STEMMAN-TECHNIK GmbH

Object: Brakes Type R2291 and R2271

N° of order: 100987 (TÜV Italy)

Technical files: See Annex

Site of testing activity: Caronno Pertusella (Varese, Italy)

Date of test: 2/5/1998

Test description: The test was carried out with knurled sliding for brakes type R 2271, in order to have the same specific pressure of the sliding type R2291.
The minimum friction coefficient was recorded for each condition of rail's surface state.
Values are shown in the schedule.
See annex for more informations.
In addition the rail clamp was pushed as far as the rail clamp started to slip (only by greasy rail).

Type of knurled sliding (R2271)	State of side surface of rail	Radial force F ₁ [kN]	Axial force F ₂ [kN]	Friction coefficient $\mu = F_2 / 2 * F_1$	Slipping force F ₂ [kN]
<input type="checkbox"/> 2 x 2 mm	dry	99.6	100	> 0.5	//
<input type="checkbox"/> 2 x 2 mm	wet	99.6	100	> 0.5	//
<input type="checkbox"/> 2 x 2 mm	greasy	99.6	100	> 0.5	119 ($\mu \approx 0.59$)
<input type="checkbox"/> 2,3 x 2,3 mm	dry	95.2	103	> 0.5	//
<input type="checkbox"/> 2,3 x 2,3 mm	wet	95.2	103	> 0.5	//
<input type="checkbox"/> 2,3 x 2,3 mm	greasy	95.2	103	> 0.5	113 ($\mu \approx 0.54$)


Ing. Giorgio Mazzoni

TÜV ITALIA S.R.L.
Società del Gruppo TÜV SÜDDEUTSCHLAND
Amministratore Delegato: Roberto Majocchi - Sede legale: Via Bettola 32 - 20092 Cinisello Balsamo (MI)
Capitale sociale Lit. 850.000.000 interamente versato - Cod. Fisc. 08922920155 - P. IVA 02055510966 - Registro delle imprese di Milano (Trib. Monza) No. 273786 - R.E.A. 1255140

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SCHEMA ELETTRICO PER 2 CENTRALINE E 2 TENAGLIE AUTOBLOCCANTI

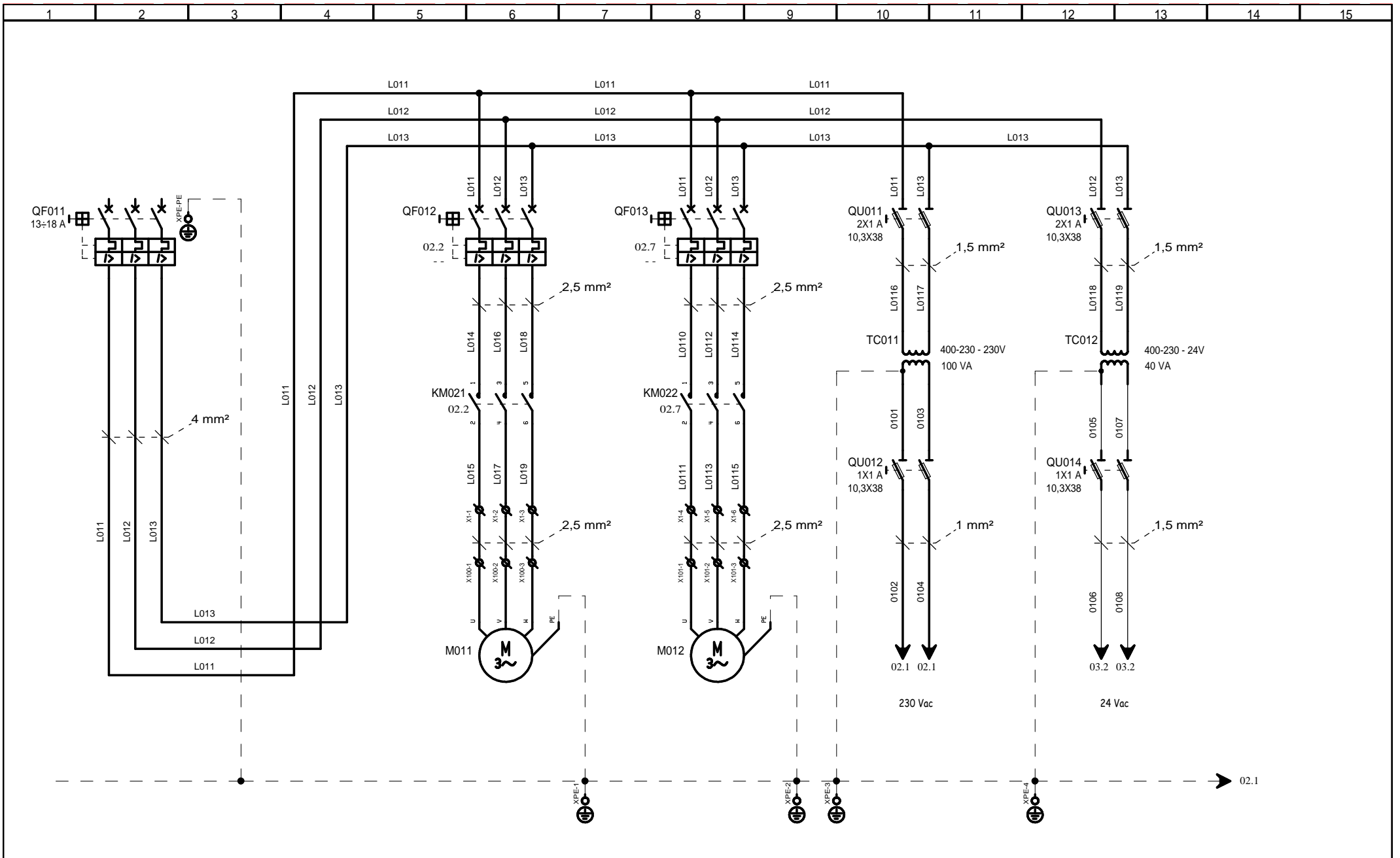
ELECTRICAL DIAGRAM FOR 2 HYDRAULIC UNITS AND 2 AUTOMATIC RAIL CLAMPS

SCHÉMA ÉLÉCTRIQUE POUR 2 CENTRALES HYDRAULIQUES ET 2 PINCES D'ANCRAGES AUTOMATIQUES

ELEKTRISCHE SCHALTPLAN FÜR 2 HYDRAULIK AGGREGATE UND 2 SELBSTSCHLIESSENDE SCHIENENZANGEN

DATA CONSEGNA DELIVERY DATE DONNÉE DE CONSIGNÉ LIEFERDATUM		TENSIONE DI ESERCIZIO / RATING VOLTAGE TENSION DE MARCHE / BETRIEBSPANNUNG	GRADO PROTEZIONE / PROTECT. DEGREE DEGRÉ DE PROTECTION / SCHUTZ-GRAD	NORME CEI-EN / CEI-EN STANDARDS RÈGLE CEI-EN / CEI-EN VORSCHRIFT
POTENZA MAX ASSORBITA MAX RATING POWER PUISSANCE MAXI MAX BETRIEBSKRAFT	3 kW	400 Vac	IP 55	60439-1
CORR. MAX SPUNTO MAX PEAK CURRENT COURANT DE POINTE MAXI MAX SPITZESTROM	20 A	TENSIONE COMANDI / CONTROL CIRCUITS VOLTAGE TENSION AUXILIAIRE / STEUERSPANNUNG	In base al DPR 547/55, Dlgs 626/94, Dlgs 494 Norma CEI EN 50110-1, Norma CEI EN 11-27 - I lavori elettrici all'interno dell'apparecchiatura di comando possono essere eseguiti solo da PES o da PAV con attestato di idoneità (PES = persona esperta, PAV = persona avvertita) Tale idoneità sarà confermata dal preposto ai lavori elettrici. In compl. with DPR 547/55, Dlgs 626/94 CEI EN 50110-1, CEI 11-27 specifications, electrical works inside control equipm. must be performed only by EP or WP with techn. degree (EP = expert person, WP = warned person). This feature will be checked by an electrical maintenance division chief.	
C.D.T.% MAX. CONSENTITA MAX ADMITTED VOLTAGE DROP % CHUTE DE TENSION ADMISE % MAXI MAX ZUGEL SPANNUNGSABFALL %	5	24 Vac	Conformément à DPR 547/55, Dlgs 626/94, Dlgs 494, Règle CEI EN50110-1 - CEI 11-27, les travaux électriques à l'intérieur de l'appareillage de commande doivent être exécutés seulement de PE ou PAV (PE=personne d'expertes, PAV= personne avvertis) avec le degré technique Ces possibilités seront vérifiées par un chef de division de entretien électrique	
SEZIONE RACCOMANDATA RECOMMENDED WIRING SECTION SECTION RECOMMANDÉE EMPFOHLEN KABELANTEIL	2,5 mm ²	TENSIONE SEGNALI / SIGNALS VOLTAGE TENSION SIGNAUX / SIGNALESPPANNUNG	Gemäß DPR 547/55, Dlgs 626/94, Dlgs 494 Vorschrift CEI EN 50110-1 - CEI 11-27 muß innere Elektrosteuerungseinrichtung/Arbeiten von AP oder von GP mit technischem Grad (AP=Ausgebildeter Person, GP=Gewarter Person) durchgeführt werden. Diese Eigenschaft muß durch die Elektroarbeiten meister überprüft werden	
CORRENTE DI CORTO C.T.O MAX SHORT CIRCUIT CURRENT COURANT DE COURT CIRCUIT MAX KURZSCHLUSSSTROM	17 kA	24 Vac		

 1 - 21042 - Caronno P.Ia (VA) - Italy Via E. Fermi , 255 Tel. +39-2-9650694 Fax. +39-2-9657860 Web: http://www.rimagroup.com	DESCRIZIONE / DESCRIPTION DESCRIPTION / BESCHREIBUNG	COMMESSA / JOB TRAVAIL / BESTELLUNG	DISEGNATORE / DRAWN BY DESSINATEUR / ZEICHNER	MODIFICHE / UPGRADE MISE A JOUR / PRÜFUNG	DISEGNO N° / DRAWING N° DESSIN N° / ZEICHNUNG N°	TOT. FOGLI N° TOT. SHEETS N° TOT. FEUILLES N° GES. BLÄTTERN N°
	COPERTINA FRONT PAGE PAGE DE GARDE VORDERSEITE		E.C.		SCE-TA-01	6
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DESCRIZIONE / DESCRIPTION
 DESCRIPTION / BESCHREIBUNG

ALIMENTAZIONE / CIRCUITI DI POTENZA
 MAINS / POWER CIRCUITS
 RESEAU / CIRCUIT DE PUISSANCE
 NETZANSCHLUß / KRAFTSTROMKREIS

COMMESSA / JOB
 TRAVAIL / BESTELLUNG

DISEGNATORE / DRAWN BY
 DESSINATEUR / ZEICHNER

E.C.

DATA / DATE / DATE / DATUM

21-06-2007

MODIFICHE / UPGRADE
 MISE A JOUR / PRÜFUNG

DISEGNO N° / DRAWING N°
 DESSIN N° / ZEICHNUNG N°

SCE-TA-01

TOT.FOGLI N°
 TOT.SHEET N°
 TOT.FEUILLES N°
 GES.BLÄTTERN N°

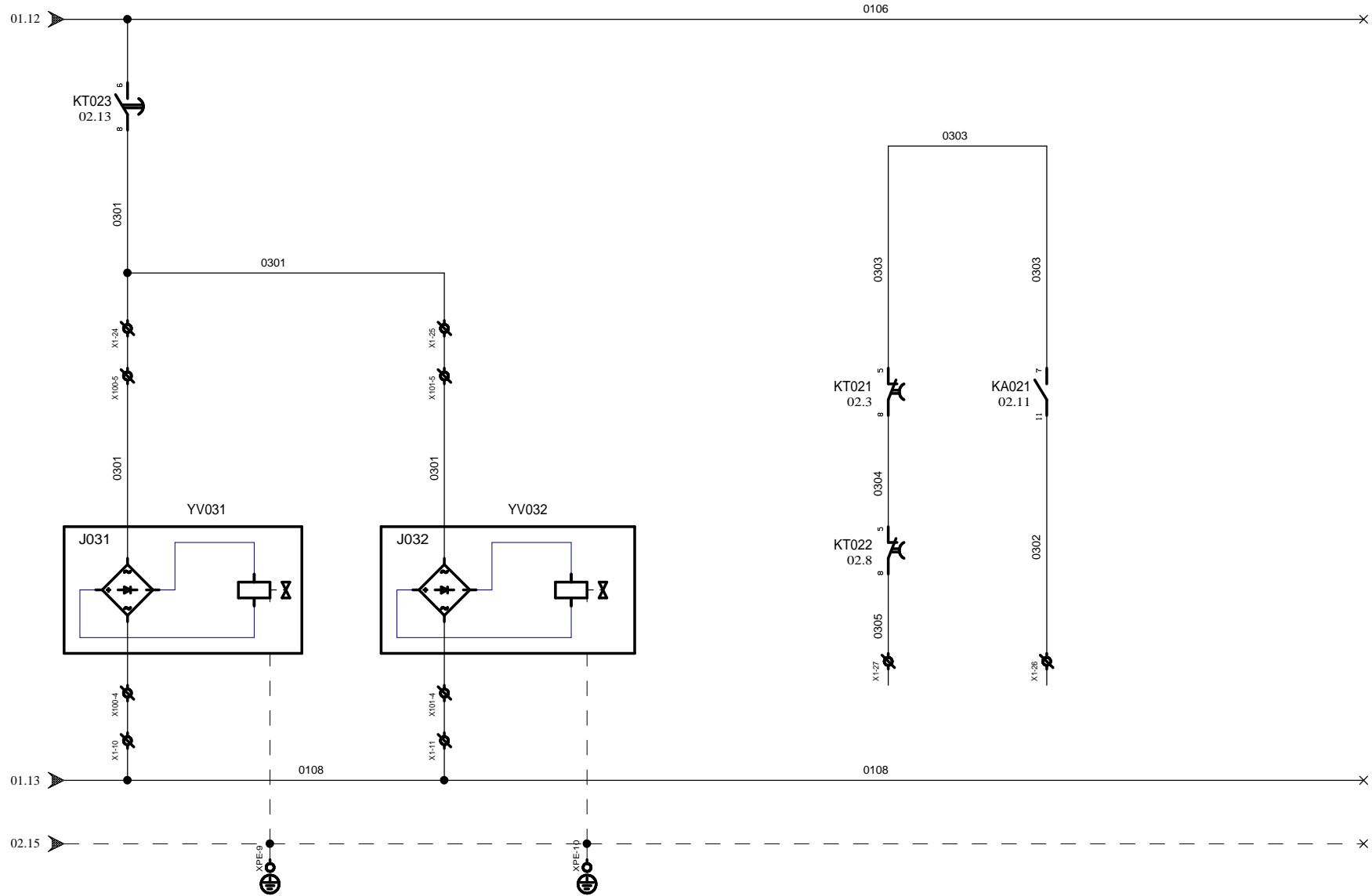
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01

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02



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DESCRIZIONE / DESCRIPTION
 DESCRIPTION / BESCHREIBUNG

ELETTROVALVOLE E SEGNALI
 ELECTROVALVES ANS SIGNALS
 ÉLECTROVANNES ET SIGNALISATIONS
 ELEKTROVENTILE UND SIGNALE

COMMESSA / JOB
 TRAVAIL / BESTELLUNG

DISEGNATORE / DRAWN BY
 DESSINATEUR / ZEICHNER

E.C.

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 TOT.SHEETS N°
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 GES.BLÄTTERN N°

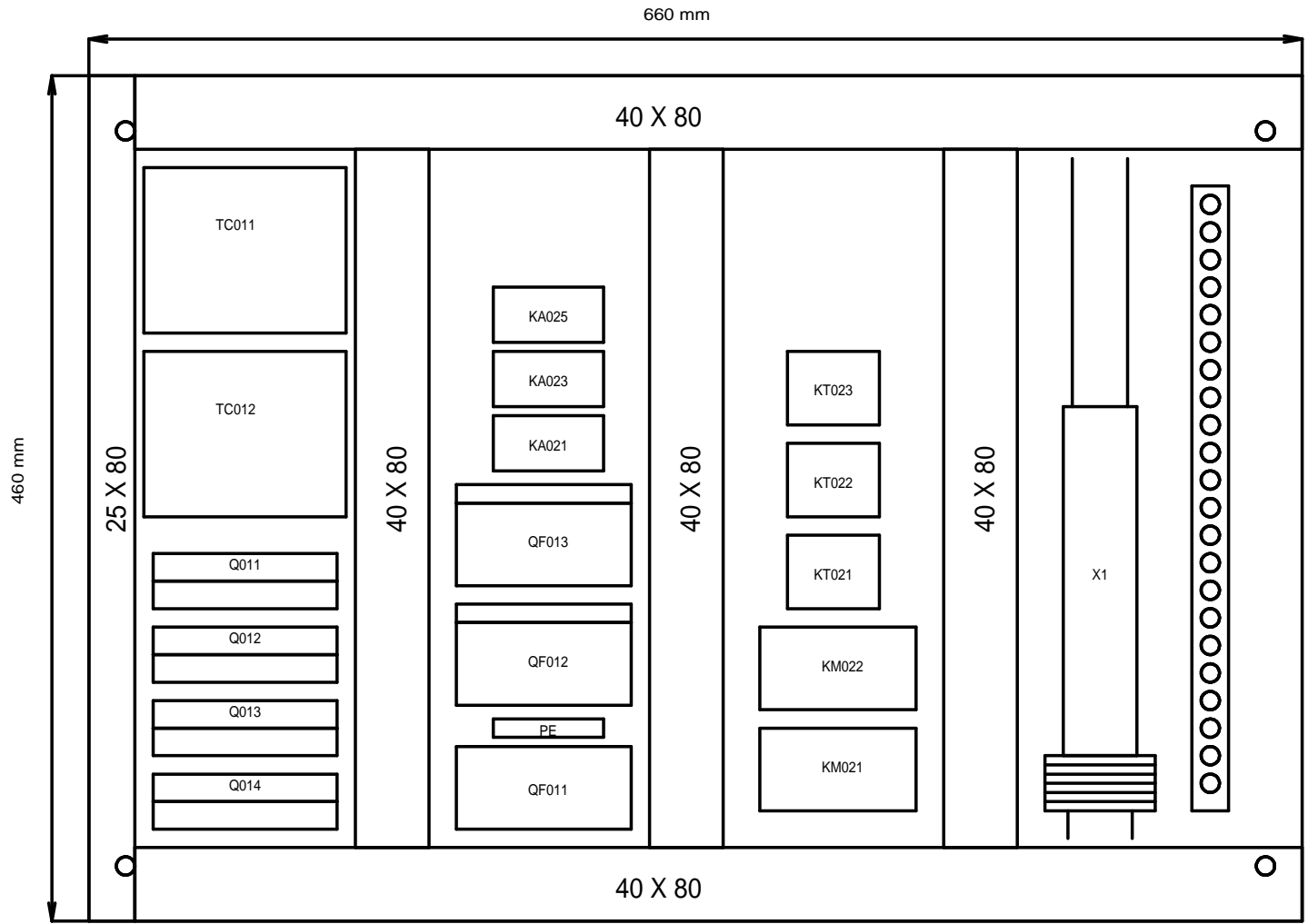
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DESCRIZIONE / DESCRIPTION DESCRIPTION / BESCHREIBUNG	COMMESSA / JOB TRAVAIL / BESTELLUNG	DISEGNATORE / DRAWN BY DESSINATEUR / ZEICHNER	MODIFICHE / UPGRADE MISE A JOUR / PRÜFUNG	DISEGNO N° / DRAWING N° DESSIN N° / ZEICHNUNG N°	TOT.FOGLI N° TOT.SHEETS N° TOT.FEUILLES N° GES.BLÄTTERN N°
DISPOSIZIONE PIASTRA COMPONENTI ELECTRIC PANEL LAYOUT IMPLANTATION PLATINE ARMOIRE SCHALTSCHRANK INNENEINRICHTUNG		E.C.		SCE-TA-01	6
		DATA / DATE / DATE / DATUM			
		21-06-2007			04
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1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
QF011	INTERRUTTORE GENERALE	MAIN SWITCH	DISJONCTEUR PRINCIPAL	HAUPTSCHALTER										
QF012	PROTEZIONE MOTORE POMPA CENTRALINA 1	HYDRAULIC UNIT 1 MOTOR PROTECTIVE SWITCH	DISJONCTEUR MOTEUR ÉQUIPEMENT HYDRAULIQUE 1	HYDRAULISCHE GERÄT 1 MOTORSCHUTZSCHALTER										
QF013	PROTEZIONE MOTORE POMPA CENTRALINA 2	HYDRAULIC UNIT 2 MOTOR PROTECTIVE SWITCH	DISJONCTEUR MOTEUR ÉQUIPEMENT HYDRAULIQUE 2	HYDRAULISCHE GERÄT 2 MOTORSCHUTZSCHALTER										
QU011	FUSIBILE PROTEZIONE TRASFORMATORE CIRCUITI AUSILIARI	AUXILIARY CIRCUITS TRANSFORMER PROTECTION FUSE	COUPE-CIRCUIT PROTECTION TRANSFO CIRCUITS AUXILIAIRES	HILFSSTROMKREISERTRAFU SCHUTZ SICHERUNGSLASTTRENNER										
QU013	FUSIBILE PROTEZIONE TRASFORMATORE ELETTRORVALVOLE	ELECTROVALVES TRANSFORMER PROTECTION FUSE	COUPE-CIRCUIT PROTECTION DU TRANSFO ELECTROVANNES	ELEKTROVENT. STROMKREISERTRAFU SCHUTZ SICHERUNGSLASTTR.										
TC011	TRASFORM. ALIMENTAZIONE CIRCUITI AUSILIARI	AUXILIARY CIRCUITS SUPPLY TRANSFORMER	TRANSFORMATEUR ALIMENTATION CIRCUITS AUXILIAIRES	HILFSKREISE STROMVERSORGUNG TRAFU										
TC012	TRASFORM. ALIMENTAZIONE ELETTRORVALVOLE	ELECTROVALVES SUPPLY TRANSFORMER	TRANSFORMATEUR ALIMENTATION ELECTROVANNES	ELEKTROVENTILE STROMVERSORGUNG TRAFU										
QU012	FUSIBILE PROTEZIONE LINEA AUSILIARI	AUXILIARY CIRCUITS LINE PROTECTION FUSE	COUPE-CIRCUIT PROTECTION LIGNE AUXILIAIRES	HILFSKREISELEITUNG SCHUTZ SICHERUNGSLASTTRENNER										
QU014	FUSIBILE PROTEZIONE LINEA ELETTRORVALVOLE	ELECTROVALVES LINE PROTECTION FUSE	COUPE-CIRCUIT PROTECTION LIGNE ELECTROVANNES	ELEKTROVENTILE LEITUNG SCHUTZ SICHERUNGSLASTTRENNER										
M011	MOTORE POMPA CENTRALINA 1	HYDRAULIC UNIT 1 PUMP MOTOR	MOTEUR POMPE ÉQUIPEMENT HYDRAULIQUE 1	HYDRAULISCHE GERÄT 1 PUMPE MOTOR										
M012	MOTORE POMPA CENTRALINA 2	HYDRAULIC UNIT 2 PUMP MOTOR	MOTEUR POMPE ÉQUIPEMENT HYDRAULIQUE 2	HYDRAULISCHE GERÄT 2 PUMPE MOTOR										
KM021	CONTATTORE MOTORE POMPA CENTRALINA 1	HYDRAULIC UNIT 1 PUMP MOTOR CONTACTOR	CONTACTEUR MOTEUR POMPE ÉQUIPEMENT HYDRAULIQUE 1	HYDRAULISCHE GERÄT 1 PUMPE MOTOR SCHUTZ										
KM022	CONTATTORE MOTORE POMPA CENTRALINA 2	HYDRAULIC UNIT 2 PUMP MOTOR CONTACTOR	CONTACTEUR MOTEUR POMPE ÉQUIPEMENT HYDRAULIQUE 2	HYDRAULISCHE GERÄT 2 PUMPE MOTOR SCHUTZ										
KT021	TEMPORIZZ. SICUREZZA DISINSERZIONE MOTORE CENTRALINA 1	HYDRAULIC UNIT 1 PUMP MOTOR DISABLING SAFETY TIMER	TEMPORISATEUR SECURITÉ ARRÊT ÉQUIPEMENT HYDRAULIQUE 1	HYDRAULISCHE GERÄT 1 ANSCHLAG SCHUTZ ZEITRELAIS										
KT022	TEMPORIZZ. SICUREZZA DISINSERZIONE MOTORE CENTRALINA 2	HYDRAULIC UNIT 2 PUMP MOTOR DISABLING SAFETY TIMER	TEMPORISATEUR SECURITÉ ARRÊT ÉQUIPEMENT HYDRAULIQUE 2	HYDRAULISCHE GERÄT 2 ANSCHLAG SCHUTZ ZEITRELAIS										
KA021	RELÉ CONSENSO TRASLAZIONE PER TENAGLIE APERTE	OPEN CLAMPS TRANSLATION ENABLING RELAY	RELAIS CONSENTEMENT TRANSLATION AVEC PINCES OUVERTES	RELAIS ÜBERTRAGUNG ERMÖGLICHKEIT MIT ÖFFNEN ZANGEN										
KA023	RELÉ ESERCIZIO FINECORSA SR022	SR022 LIMIT SWITCH CYCLE RELAY	RELAIS CYCLE DE FIN DE COURSE SR022	SR022 ENDSCHALTER KREISLAUFRELAIS										
KA025	RELÉ ESERCIZIO FINECORSA SR024	SR024 LIMIT SWITCH CYCLE RELAY	RELAIS CYCLE DE FIN DE COURSE SR024	SR024 ENDSCHALTER KREISLAUFRELAIS										
KT023	TEMPORIZZATORE SICUREZZA CICLO	CYCLE SAFETY TIMER	TEMPORISATEUR POUR SECURITÉ CYCLE	KREISLAUF SCHUTZ ZEITRELAIS										
SR021	FC INDUTTIVO TENAGLIE APERTE CONSENSO TRASLAZIONE 1	TRANSLATION 1 ENABLING OPEN CLAMPS INDUCTIVE LIMIT SW.	FDC INDUCTIF PINCES OUVERTES ET CONSENT. TRANSLATION 1	ÜBERTRAG. ERMÖGLICH.- ÖFFNEN ZANGEN 1 NÄHERUNGSINITIATOR										
SR022	FC INDUTTIVO MANTENIMENTO TENAGLIE APERTE 1	OPEN CLAMPS 1 HOLDING INDUCTIVE LIMIT SWITCH	FDC INDUCTIF DE MAINTIEN PINCES OUVERTES 1	ZANGENÖFFNUNGDAUER 1 NÄHERUNGSINITIATOR										
SR023	FC INDUTTIVO TENAGLIE APERTE CONSENSO TRASLAZIONE 2	TRANSLATION 2 ENABLING OPEN CLAMPS INDUCTIVE LIMIT SW.	FDC INDUCTIF PINCES OUVERTES ET CONSENT. TRANSLATION 2	ÜBERTRAG. ERMÖGLICH.- ÖFFNEN ZANGEN 2 NÄHERUNGSINITIATOR										
SR024	FC INDUTTIVO MANTENIMENTO TENAGLIE APERTE 2	OPEN CLAMPS 2 HOLDING INDUCTIVE LIMIT SWITCH	FDC INDUCTIF DE MAINTIEN PINCES OUVERTES 2	ZANGENÖFFNUNGDAUER 2 NÄHERUNGSINITIATOR										
SA021 *	COMANDO INIZIO CICLO	START CYCLE CONTROL	CONTROLE MARCHE DU CYCLE	KREISLAUF ANFANG										
SR025 *	ANEMOMETRO	AIR-SPEED METER	ANÉMOMÈTRE	LUFTGESCHWINDIGKEITMESSER										
HL021 *	SEGNALAZIONE CONSENSO TRASLAZIONE	TRANSLATION ENABLING SIGNAL	SIGNALISATION CONSENTEMENT TRANSLATION	ÜBERTRAGUNG ERMÖGLICHKEIT SIGNALISIERUNG										
HL022 *	SEGNALAZIONE PRESENZA TENSIONE	POWER ON SIGNAL	SIGNALISATION DE TENSION EN LIGNE	SPANNUNG EIN SIGNALISIERUNG										
YV031	ELETTRORVALVOLA CENTRALINA 1	HYDRAULIC UNIT 1 ELECTROVALVE	ELECTROVANNE ÉQUIPEMENT HYDRAULIQUE 1	HYDRAULISCHE GERÄT 1 ELEKTROVENTIL										
YV032	ELETTRORVALVOLA CENTRALINA 2	HYDRAULIC UNIT 2 ELECTROVALVE	ELECTROVANNE ÉQUIPEMENT HYDRAULIQUE 2	HYDRAULISCHE GERÄT 2 ELEKTROVENTIL										
*	ESCLUSO DALLA FORNITURA DEL QUADRO DI COMANDO	NOT SUPPLIED WITH THE CONTROL EQUIPMENT	PAS EN LA FOURNITURE DU ÉQUIPEMENT DE CONTROLE	NICHT GELIEFERT MIT DAS SCHALTGERÄT										

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						PAGINA PAGE FEUILLE BLATT	05
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