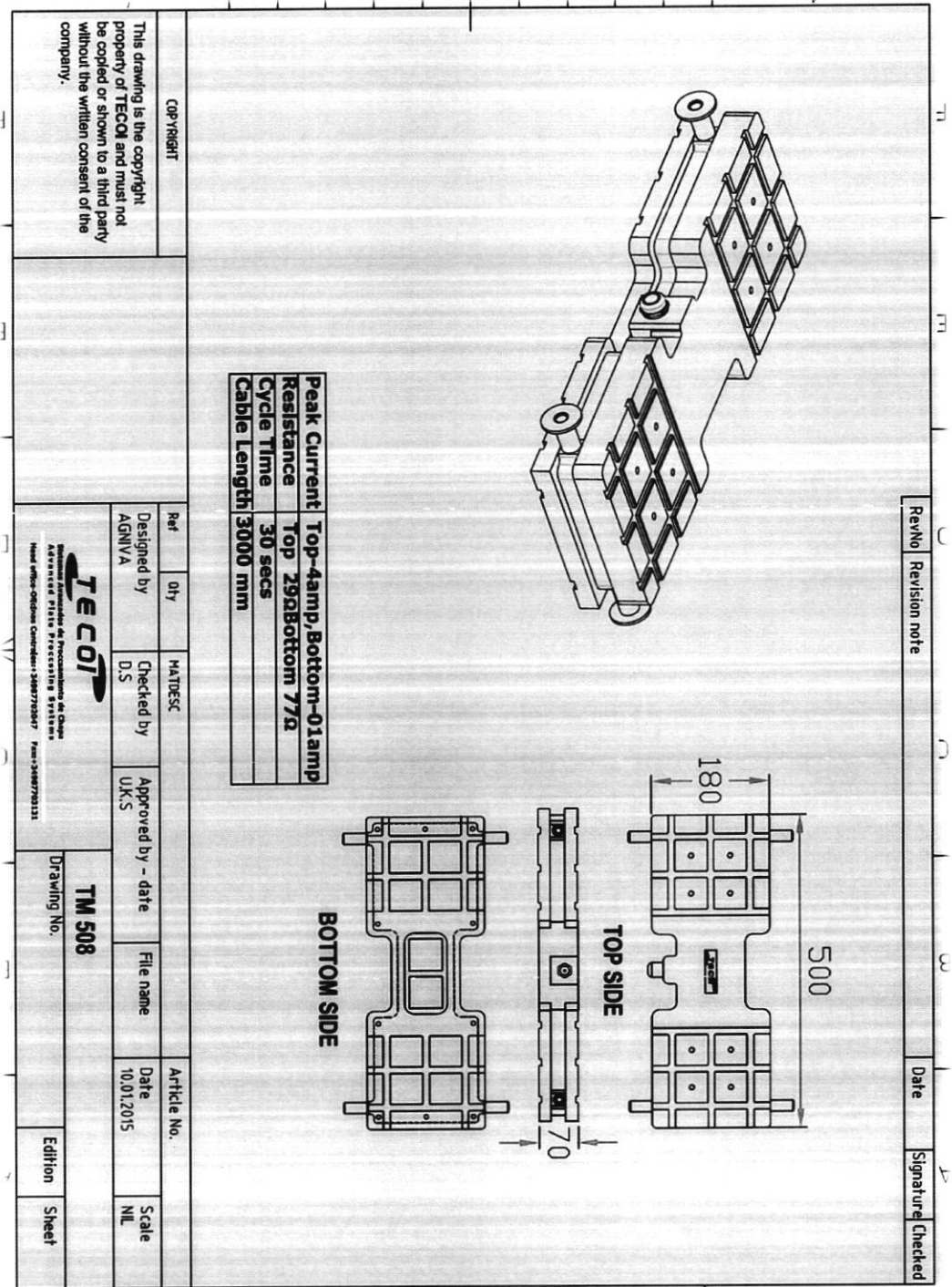
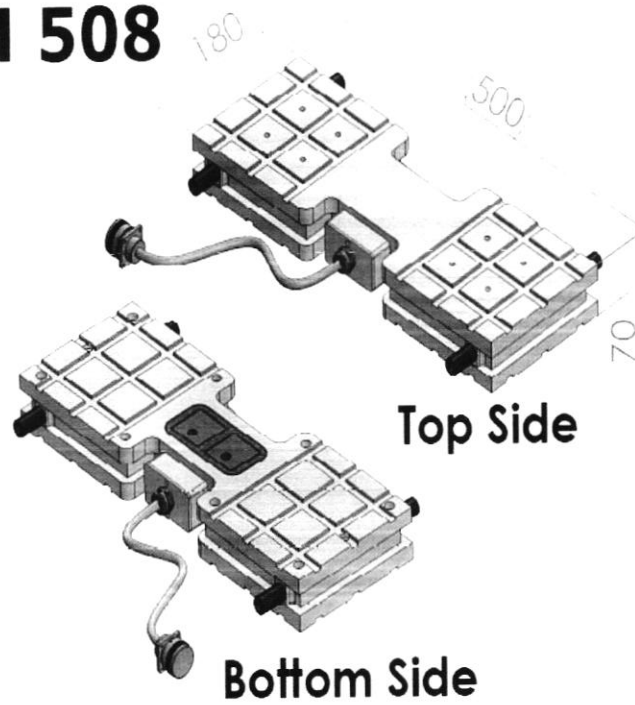


13. TM508 MAGNET



5.6 MAGNET OVERVIEW

**TM 508**



## **7 TECHNICAL FEATURES OF MAGNET**

It is a magnet, which for the first time combines the holding power of the Electro Magnets with the absolute independence of the Permanent Magnet. It can be switched ON (Magnetized) and OFF (Demagnetized) from the Control Panel through the Pendant Control like standard Electro Magnet. It does not generally require servicing and is not liable to be damaged in normal use due to heating.

### ***Features:***

- EPM consist of PERMANENT MAGNET CIRCUITS which are switched electrically using momentary pulse of electric supply.
- The Permanent Magnets operate at full saturation when the holding surface comes into contact with the load to be lifted.
- The entire holding power of the Permanent Magnets is concentrated in the holding surface as magnetic leakage is eliminated.
- Electrical Power is applied for very short periods, only for Magnetization and Demagnetization. Thus power consumption is practically negligible.
- EPM holding force is entirely independent of power supply and remains constant with time even when Power is cutoff.
- EPM has no moving parts such No wear, no servicing.
- EPM Chucks does not heat up when kept ON.
- No Deformation – No Variation in Holding Surface.

### **7.1 EPM MATERIAL CLAMPING SYSTEM –ITS DESIGN AND CAPABILITY**

TECOI Electro Permanent Magnetic Material Clamping System is most suitable for efficient clamping of assorted size of steel Plates/ Billets of varying thickness and lengths used in a heavy fabrication setup, totally fail safe and practically free from maintenance. EPM is efficient clamping system because once the Load is lifted there is no possibility of the lifted material falling down due to Power Failure or accidental cable cut. This can be installed in the Storage Yard or Production Shops of where storing and distribution is done for various types of Billets.

### **7.2 HOLDING POWER DURATION**

Due to the special features of the Magnetic circuit (regeneration of field strength at each magnetization and full protection against external damage) the holding power remains unaltered with time. Once switched ON, the Chucks have the same constant holding power until it is switched OFF. There is no decay of magnetic power with time as there is no heat generation like Electro Magnets.

## **7.3 DUTY CYCLE**

As TECOI Clamping system using Electro Permanent Magnetic Chucks requires Electrical Power just during Magnetization and Demagnetization, it can be used for a long duration of time without any heating..

## **7.4 ENERGY SAVING**

The circuit of TECOI Electro Permanent Magnetic Material Clamping System consumes electric power only to Magnetize/ Deactivate its magnetic permanent field. Each operation takes approx 1 second.

Any electro magnet uses electric power for half of the duration of a working cycle (activation lifter – transfer – descent – deactivation and the inverse anchoring maneuver of the next load).

As the electric input power values of a TECOI's EPM system are although more to those of an electro magnet, it is observed that during a working stage of about 6 minutes, the electric input (VA) of the 2 systems carrying out the same operation is quite different.

$$\begin{array}{lcl} \text{TECOI EPM System} & = & \text{VA} * (2+2+2) = \text{VA} * 6 \text{ sec} \\ \text{Electro Magnet} & = & \text{VA} * (6*2*60) = \text{VA} * 180 \text{ sec} \end{array}$$

Thus Power Saving is over 96% in a 6 Minute Operating Cycle for same magnet.

## **7.5 PERFORMANCE UNIFORMITY AND TOTAL AUTONOMY**

The technical features of a TECOI's EPM system (regeneration of the saturation level of every working stage; no overheating; total immobility of its components; perfect shielding from external interference) ensures a long lasting maintenance of all original performances.

Moreover, TECOI's clamping systems are not subjected to any type of energy drops during a normal working day. Thus performance is kept constant during the entire working time. During the load clamping transferring stage, TECOI's clamping system is physically independent from any external source of energy.

## **7.6 PERMISSIBLE CONDITION OF THE PLATE SURFACE**

Generally rolled/ mill scales as received from the supplier of Steel can be handled with the System. It should be made sure that the materials to be handled are free from any foreign materials like stones/ welds etc. projecting above the material.

## 5.5 BILL OF MATERIALS

Sr No.	Description & Application	Specification	Identification Data (Type Order No.; Document No. Equipment Code etc.)	Quantity		Functional Unit/ Location	Item Designation	Remarks
				Per Item	Total			
1.	CPU 1214C MAKE : SIEMENS	S-7 1200	6ES7 214-1AE31-0XB0	1X	1X	MAIN PANEL	PLC	
2.	SM1222 MAKE : SIEMENS	16 DO DC	6ES72 221-BH32-0XB0	1X	1X	MAIN PANEL	PLC I/O	
3.	ENCLOSURE MAKE : RITTAL	W600xH380xD210	AE 1039.500	1X	1X			
4.	SWITCH MODE POWER SUPPLY MAKE : PHONIX	TRID/PS/3AC/24DC/5	2866310	1X	1X	MAIN PANEL	SMPS	
5.	ROTARY SWITCH MAKE : Schneider	32A 3P VCF1	2700331162	1X	1X	MAIN PANEL	S1	
6.	SOLID STATE RELAY MAKE : CRYDOM	4-30 VDC INPUT, 48-660 VAC OPERATING VOLTAGE, 90A	CWD4890	4X	4X	MAIN PANEL	SSR1- SSR4	
7.	POWER CONTACTOR MAKE : Schneider	24V DC,32 A	LC1D32	2X	2X	MAIN PANEL	MC , DC	
8.	HRC FUSE BASE WITH LINK MAKE : FERRAZ	32A BASE 30A LINK	6J30 A X B AJT-30	2X	2X	MAIN PANEL	F1 , F2	
9.	FUSE BASE WITH GLASS FUSE MAKE : PHOENIX	6A	KUDF4	2X	2X		F5, F6	
10.	FUSE BASE WITH LINK MAKE : FERRAZ	30A BASE 2A LINK	USCC11-DCC24 EDCC2	2X	2X	MAIN PANEL	F3, F4	
11.	CURRENT TRANSDUCER MAKE : PHOENIX	MCR-S10-50-UI-DC-NC	2814728	1X	1X	MAIN PANEL	CS1	
12.	RECTIFIER DIODE MODULE MAKE : SEMIKRON	162A, 1600V	SKKD 162/16	2X	2X	MAIN PANEL	MD1, MD2	
13.	PENDANT BOX MAKE : Schneider	12CHNL PENDANT CONTROL STATION	XAC-B-12	1X	1X			
14.	SELECTOR SWITCH MAKE : Schneider	ROTARY SELECTOR SWITCH 230VAC 2AMP XB5	XB5AD21	4X	4X	PENDANT BOX	SS1-SS4	
15.	ILLUMINATED PUSH BUTTON SWITCH MAKE : Schneider	RED YELLOW GREEN	XB5AW34B5 XB5AW35B5 XB5AW33B5	1X 3X 1X	1X 3X 1X	PENDANT BOX	DP Z12P,Z34P,BP MP	
16.	INDICATION LAMP MAKE : Schneider	GREEN LED	XB7EV03BP	3X	3X	PENDANT BOX	Z12L,Z34L,BL	

### BILL OF MATERIALS FOR PLC PANEL

Sr No.	Description & Application	Specification	Identification Data (Type Order No.; Document No.; Equipment Code etc.)	Quantity		Functional Unit/ Location	Item Designation	Remarks
				Per Item	Total			
1.	JB MAKE : Rittal	junction Box H400xW200xD80	KL1518	4X	4X			
2.	Z1C-Z4C(M) MAKE : Harting	HAN 4A MALE	09200042611	72X	72X	JB		
3.	Z1C-Z4C(F) MAKE : Harting	HAN 4A FEMALE	09200042711	72X	72X	JB		
4.	HOUSING BULKHEAD MAKE : Harting	HOUSING BULKHEAD	09200030306	72X	72X	JB		
5.	HOOD FOR MALE INSERT MAKE : Harting	HOOD FOR MALE INSERT	09200031440	72X	72X	JB		
6.	GLAND MAKE : Harting	MRTAL PG 11 GLAND	09000005082	72X	72X	JB		
7.	CABLE MAKE : Lapp	-----	Classic series	set	set			
8.	CABLE GLAND MAKE : Lapp	-----	PG series	set	set			
9.	TERMINAL MAKE : PHOENIX	UK 10	UK 10	set	set			
10.	TERMINAL MAKE : PHOENIX	UK 5	UK 5	set	set			
11.	EARTH TERMINAL MAKE : PHOENIX	USLKG 10 N	USLKG 10 N	set	set			
12.	Magnets MAKE : ASSFALG	Magnets	TM-508	72X	72X			

## BILL OF MATERIALS FOR JUNCTION BOX