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ROTARY CONVERTER – MT RANGE -INSTALLATION & OPERATING INSTRUCTIONS

The TRANSWAVE converter offers no inherent overload protection to either the circuit cable or the motor. Adequate overload protection for both the motor and the supply circuit to the converter is the responsibility of the customer. The customer should also ensure that the electricity system and cable supplying the converter is of sufficient capacity to allow the motor to start without causing undue supply disturbances as a consequence of voltage drop.

THE CUSTOMER MUST ENSURE THAT THE OUTPUT NEUTRAL FROM THE CONVERTER IS NOT CONNECTED TO THE ELECTRICITY PROVIDER'S SUPPLY NEUTRAL OR THE SUPPLY NEUTRAL FROM A GENERATOR. THE SINGLE PHASE SUPPLY NEUTRAL MUST BE KEPT ELECTRICALLY SEPARATE FROM THE CONVERTER OUTPUT NEUTRAL TO AVOID DAMAGING THE CONVERTER.

Ensure that the details on the converter rating plate are compatible with the electricity supply system and the required motor loads.
The incoming supply should be connected to the converter via an isolator and protection device (i.e. Fuse or Type C "motor rated" circuit breaker). Recommended fuse ratings and cable sizes are indicated below.

The output from the converter takes the form of an industrial-style three-phase neutral and earth socket (Notation: L1, L2, L3 and N reading clockwise from earth) or terminals (MT15 upwards). All earth connections should be securely connected to a good earth point. Removal of the socket will compromise any warranty offered by the manufacturers.

ROTARY CONVERTER RATINGS CYCLIC LOAD		SINGLE PHASE SUPPLY VOLTAGE 220/240 VOLT		
Minimum Load	Maximum Load Single Motor	Maximum Load Multi Motor	Fuse or Type "C" Circuit Breaker	Cable*
No minimum	0.75kW/1hp	1.1kW/1.5hp	13A	2.5mm
No minimum	1.1kW/1.5hp	1.5kW/2hp	13A	2.5mm
No minimum	1.5kW/2hp	2.2kW/3hp	20A	4.0mm
No minimum	2.2kW/3hp	3kW/4hp	25A	4.0mm
No minimum	3kW/4hp	4kW/5.5hp	25A	4.0mm
No minimum	4W/5.5hp	5.5kW/7.5hp	30A	4.0mm
No minimum	5.5kW/7.5hp	7.5kW/10hp	40A	6.0mm
No minimum	7.5kW/10hp	11kW/15hp	60A	10.0mm
No minimum	11kW/15hp	15kW/20hp	80A	16.0mm
No minimum	15kW/20hp	18.5kW/25hp	100A	25.0mm
No minimum	18.5kW/25hp	22kW/30hp	120A	25.0mm

*Minimum size for run of up to 20m. For longer cable runs see current edition of BS7671/AS300 amendment 2.

The MT converter incorporates a three-phase motor, which establishes the artificial three-phase output from the converter when energised.

Before any machinery is connected to the output of the converter, switch the converter on by using the 'ON' button located on the converter. The converter will automatically attain its full operating speed within a few seconds.

The initial surge required to start the motor is provided by the boost circuit of the converter. The "boost on" light indicates the circuit is energised. The circuit is controlled automatically from within the converter, switching on whenever a motor is starting against load and switching off once the motor has attained its full running speed. If the boost light does not go out within a few seconds the converter should be switched off to avoid the possibility of electrical damage. The reason for this condition should be checked and corrected before the converter is restarted.

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Note that if voltages were checked at this point phase to phase readings would be similar to those experienced on a mains three-phase supply. Phases L1-L2 and L2-L3 are set higher than L1-L3. These higher voltages will reduce once demand is connected to the converter output.

Note that the voltages do not relate to earth as they would on a mains three-phase supply. Switch the converter off and connect driven machines to the converter output.

Care should be taken with the connection of the machine to the output socket. If the machine has a contactor starter the 400/415v control coil must be fed from the phases marked L1 and L3. If the control circuit is fed incorrectly (i.e. connected to the phase marked L2) the contactor could chatter when operating. Similarly, a control transformer and/or lighting transformer with a primary winding of 415v must be fed from the L1 and L3 phases.

CONNECTION TO THE L2 PHASE COULD DAMAGE EITHER THE CONTACTOR COIL OR THE CONTROL TRANSFORMER.

The MT converter can accommodate both a 415v control circuit (as above) and a single phase 240v control circuit provided the L1 phase is used in conjunction with the output Neutral.

Multi-motor applications should be supplied from the converter output via a three-phase radial or similar. Note that the output neutral is for control circuit loads only. It should not be connected to any single-phase inductive or resistive loads.

If the rotation of the driven machine motor is incorrect, ensure that the converter phases marked L1 and L3 are changed for 415-volt phase-phase control circuitry. For 240-volt phase-neutral control circuitry, ensure that the phase-neutral supply is maintained, and the other two phases reversed. Any two phases can be swapped on the motor side of the control wiring.

The motor starting current is limited to approximately three times the full load current of the motor. The starting characteristics of a three-phase motor supplied by a converter are similar in nature to Star/Delta starting on a three-phase system. Significant reductions in starting torque are experienced when compared with direct-on- line starting on a three-phase supply. For machinery supplied by a converter, direct-on-line starting is recommended. For machinery fitted with Star/Delta starters, the period in the star connection should be as short as possible to ensure a successful start.

NOTE - The output from a TRANSWAVE Converter cannot be compared directly to a mains three-phase electricity supply. The TRANSWAVE Converter offers an artificial means by which a three-phase motor (or motors) can be operated from a single-phase electricity supply. The TRANSWAVE Converter cannot be made to work equally on all motors, even though the horsepower, speed and voltage ratings are the same. Motors of differing manufacture and motors designed for differing applications vary considerably in their electrical characteristics. It is not always possible to make a universally applicable converter to operate a motor of given horsepower and rating. TRANSWAVE Converters are not designed for use in conjunction with continuous duty applications.