

Helicopter Start/Servicing System

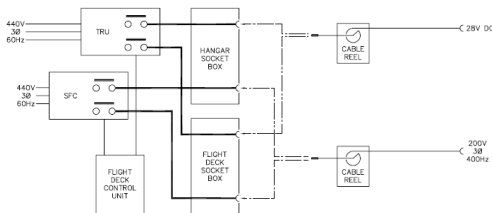
The system addresses the requirements of BS 2G 219:1983, ISO 6858-1982 'General requirements for ground support electrical supplies'. It supplies the 'ac and dc 'ground power' for helicopter starting and servicing.

The ac power is derived from a static frequency converter and the DC power is derived from a Transformer Rectifier Unit. A control box situated near the flight deck is required to select the start/service requirements for a helicopter on the flight deck or the hangar. Distribution of the ac and DC power is by means of contactors and socket outlets. The ac outlet is via a seven pin connector; the dc outlet is via a 3 pin connector.

Flexible cable assemblies are used to connect the power from the socket outlets to the aircraft and are terminated with a suitable aircraft connector. Manually operated cable reeling drums are required for both cables. These cable reeling drums are suitable for stowing on bulkhead spigots.

Typical System Components

- Transformer Rectifier Unit 28V DC 15kW
- Static Frequency Converter 40kVA 200-115/3/400 4w
- Control Unit
- Flight Deck Socket Box
- Hangar Socket Box
- Ac Flexible Cable System (200-115/3/400)
- Dc Flexible Cable System (28Vdc)
- Stowage Reel



15kW TRANSFORMER RECTIFIER UNIT 3RC15kD

Input

440 volts 3 phase 3 wire 60Hz in accordance with STANAG 1008
ACH input: Conditioning heater, 230Volts 1 phase 50 or 60Hz.

Output

28V nominal 26-32V internal adjustment available (18.0V wash)
600A continuous, 1200A 30 seconds, 800A 120 seconds

Protection

Inputs fused, output current limited, over-voltage trip, over-temperature trip.

Controls and Indications

Supply ON/OFF rotary switch, Supply available LED, ACH On LED, Output Available LED, Alarm LED, Fault LED, Earth Fault LED, Output Voltmeter, Output Ammeter, Hangar DC Contactor, Open/closed switch & LED, Flight Deck DC Contactor Open/closed switch & LED, Contactor local/remote selector switch

Ingress Protection

IP23

Mounting and Access.

Deck mounting with top steadies. Hinged door for access for maintenance and installation. Lifting eyes are provided.

Dimensions and Weight

Height (mm)	Width (mm)	Depth (mm)	Weight (kg)
1385	640	715	560

40KVA STATIC FREQUENCY CONVERTER 3CT40KA

Input

440 volts \pm 5% Power factor > 0.85 (full load) 3 phase 3 wire 60 Hz in accordance with STANAG 1008
ACH input: Conditioning heater, 230Volts 1 phase 50 or 60Hz.

Output

200V line/115V/phase, 3 phase, 4wire, 400Hz, 40kVA 0.8 power factor lagging. THD < 5%, Voltage stability \pm 5%
Frequency stability of \pm 0.1%.

Load

40kVA Continuous 116A/phase
60kVA for 5minutes 174A/phase
80kVA for 5seconds 232A/phase

Protection

Input fused, Output short circuit and over current protection. Over-voltage trip, over-temperature trip. Output phase failure protection.

Controls and Indications

Rotary supply ON/OFF switch, Supply Available LED, Output Available LED, ACH ON LED, Alarm LED, Fault LED, Earth fault LED
Output Ammeter, Ammeter phase selector switch, Output Voltmeter
Voltmeter phase selector switch, Ac Contactor Hangar Open/closed switch & LED, Ac Contactor Flight Deck Open/closed switch & LED
Contactor local/remote selector switch, SFC mimic with diagnostic display



Ingress Protection

IP23

Dimensions and Weight

Height (mm)	With (mm)	Depth (mm)	Weight (kg)
1653	680	845	650

Mounting

Deck mounting or mounting on shock mounts. Top steadies are recommended if shock mounts are used.

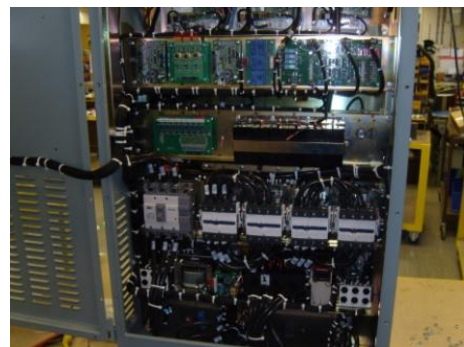
Access

The Static Frequency Converter is front maintainable. Allow a minimum of 600 mm in front of the unit for access.

Cable Entry

User connections are made to internal rail mounted terminals. Access for the cables is by a gland plate that can be drilled or punched as required for glands.

An external M10 earth stud is situated adjacent to the gland plate.



CONTROL UNIT

The Control Unit is intended for use in the ship's helicopter service and start system. Its function is to select the output from the 400Hz ac and DC supplies for start or service duty.

Controls

DC Contactor Hangar Open, DC Contactor Hangar Closed
 DC Contactor Flight Deck Open, DC Contactor Flight Deck Closed
 Wash, Ac Contactor Hangar Open, Ac Contactor Hangar Closed
 Ac Contactor Flight Deck Open, Ac Contactor Flight Deck Closed
 Panel Dim Potentiometer

Indications

TRU On, TRU Alarm, TRU Fault, DC Earth Fault, DC Contactor control available. DC Contactor Hangar Open/closed
 DC Contactor Flight Deck Open/closed, Wash, SFC On, SFC Alarm, SFC Fault, Ac Earth Fault, Ac contactor control available, Ac Contactor Hangar Open/closed, Ac Contactor Flight Deck Open/closed

Ingress Protection

IP66

Mounting

Bulkhead mounting

Dimensions and Maintenance Envelope

Height (mm)	Width (mm)	Depth (mm)	Weight (kg)
500	570	138	15

A minimum of 600mm should be allowed in front of the panel for maintenance purposes.



GENERAL SYSTEM REQUIREMENTS

Internal Wiring

Halogen free wire

Shock

Maximum vertical acceleration (half sine-wave pulse) of amplitude 117.7m/s² (12g) and of duration 9ms (rise time to peak velocity) and 24ms (fall time to zero velocity).

Vibration

The unit, when 'hard' mounted, is designed to meet shipboard vibration. Typically: 5 to 33Hz +/- 0.125mm

Ambient Temperature

Internal equipment will operate satisfactorily in ambient temperatures within the range 0°C and 40°C.

Weather-deck equipment will operate in ambient air temperatures of -10°C to +35°C and be able to withstand direct solar radiation with temperatures up to 65°C.

Relative Humidity

The equipment will operate in a relative humidity ranging from 10% to 95% non-condensing.

Ships Motion

The equipment is designed to withstand, without damage or degradation of performance or spillage of fluids, ship motion due to the action of the sea and weather as well as accelerations and velocities deriving from deliberate ship manoeuvres.

Roll angles	± 30°
Pitch angles	± 10°
Steady list angles	± 15°
Steady trim angles	± 5°

FLIGHT DECK SOCKET BOX

The Socket Box provides access for the ac 400Hz and the dc supplies used to start or to service the helicopter. The box is provided with one seven pin ac plug and one dc three pin dc plug.

Ingress Protection IP 56 (Mounting seal IP 67)

Mounting Flush deck mounting.

Dimensions and Maintenance Envelope

Height (mm)	Width (mm)	Depth (mm)	Weight (kg)
208	630	330	15

The socket protrusion above the deck is 175mm with the cap fitted. Space must be allowed above the Socket Box to withdraw it for maintenance purposes and for access to insert and withdraw the flexible cable socket and cable assemblies.

HANGAR SOCKET BOX

Access for the ac 400Hz and the dc supplies used to start or to service the helicopter. One seven pin ac plug and one dc three pin dc plug.

Ingress Protection IP 55

Mounting Bulkhead mounting

Dimensions and Maintenance Envelope

Height (mm)	Width (mm)	Depth (mm)	Weight (kg)
690	500	210.5	30



FLEXIBLE CABLES

Dc and ac cable assemblies. One end of each assembly is terminated with a right angle socket and will match the socket boxes. The other end of each assembly is terminated in straight socket suitable for connecting to the aircraft. (BS 4G 173, ISO461).

Length: 14metres nominal

Weight : 70kg/80kg

STOWAGE REEL

For storing the cable assemblies

O/D (mm)	Width (mm)	Fixing I/D (mm)	Weight kg
990	205	32	35

(Depth over the socket cap is 381mm)