

SLEWING WINCH

1.0 GENERAL

Reference Drawing 900-400-333. This specification describes a single drum electrically driven slewing winch.

2.0 OPERATING DATA

The winch is designed for the following ratings:

7.0 tonnes at 3.08 M/Min. (1.62 RPM)

7.0 tonnes at 14.14 M/Min. (7.44 RPM)

7.0 tonnes at 28.28 M/Min. (14.88 RPM)

The above rating is at the second layer (605 mm dia.) and is based on the availability of 52.8 HP.

3.0 DRUM CAPACITY (Two Part)

40 M of 22 mm diameter wire rope in two layers with a minimum of 75 mm of free flange (each half).

4.0 COMPONENT PARTS

4.1 Power System

A 52.8HP(38/19/4.1 KW) pole changing motor (McClure Frame No. TS36/250) complete with disc brake with a base speed of 1800 RPM is used to drive through a splined shaft into a quadruple spur gear box.

4.2 Gears

A fabricated steel gear box houses all gears in an oil tight splash lubricated enclosure. The output shaft is extended to carry the winch drum.

The box is equipped with oil dams to ensure lubrication of the bearings during periods of non use. Filler breathers and level gauges are fitted to the box.

4.0 COMPONENT PARTS - continued

4.2 Gears - continued

Four reductions are used:

1st - 20 T : 67 T (5 dp)
2nd - 22 T : 61 T (4 dp)
3rd - 18 T : 71 T (3 dp)
4th - 28 T : 89 T (2 1/2 dp)
Overall reduction is 116.45

All gears are manufactured from SAE 4140 or better with machine cut teeth.

4.3 Bearings

Self-aligning spherical roller bearings are used to carry all final gear reduction shafts. Input and intermediate shafts are carried on roller bearings.

4.4 Shafts

All winch shafts are manufactured from alloy steel and are designed such that high stress concentrations are not present under loaded conditions.

4.5 Drum

The drum is of welded steel construction with rope anchors at each end. Design of the anchors allows each half of the drum to be wound in opposite directions.
One half of the drum is keyed to the shaft, the other half is mounted on bushings to allow for differential alignment. The rotatable part of the drum is secured to the fixed part by countersunk screws.

Dimensions: 533 dia. barrel, 330 mm wide (each half)
750 dia. flange.

4.0 COMPONENT PARTS - continued

4.6 Outboard Frame

The frame is of all welded steel construction and is designed and built to ensure that all assemblies remain in perfect alignment during the operation of the winch. Design of the frame incorporates an integral bearing with an oversize housing to allow for high vertical loading.

4.7 Base

A fabricated base structure is provided to carry the gear box, drum, electric motor and outboard frame. The base is designed to be bolted to the ships deck.

4.8 Control System

A standard separate contactor and relay panel of Industrial Marine and Switchgear manufacture with necessary accelerating and reversing contactors, overload relays, etc.

4.9 Control Panel

A combination controller of the joystick type is used to control both the topping and slewing winch. The lever is designed for a dual station panel mount. The panel is complete with on/off key lock switch ammeter. Panel is designed for installation in a winch house. Panel also carries the controls for:

- (a) Topping winch
- (b) Main hoist
- (c) Auxiliary hoist
- (d) Auxiliary hydraulic hoist
- (e) Chain handling reel (option)

4.0 COMPONENT PARTS continued

4.10 Disc Brake

The input drive shaft is extended to carry the main disc brake. The disc brake is of Simplatrol manufacture (Model No. 37).

Design of the brake is fail safe, i.e. brake applies when power is interrupted.

5.0 PAINTING

The winch frame will be sand blasted and given two coats of primer and two coats of marine enamel.

AUXILIARY HOIST

1.0 GENERAL

Reference Drawing 900-400-377. This specification describes a single drum electrically driven auxiliary hoist winch.

2.0 OPERATING DATA

The winch is capable of the following ratings:

8.5 tonnes at 2.5 M/Min. (1.3 RPM)

8.5 tonnes at 11.5 M/Min. (6.05 RPM)

8.5 tonnes at 23.0 M/Min. (12.10 RPM)

6.5 tonnes at 30.0 M/Min. (15.78 RPM)

The above rating is at the second layer (610 mm dia.) and is based on the availability of 60 HP.

3.0 DRUM CAPACITY

30 M of 26 mm diameter wire rope in two layers with a minimum of 75 mm free flange.

4.0 COMPONENT PARTS

4.1 Power System

A 52.8 HP S.C.R. controlled DC motor (McClure Frame No. DD 250B) with a base speed of 1800 RPM is used to drive through a splined shaft into a quadruple reduction spur gear box.

Motor characteristics:

| | |
|---------------|----------|
| HP | 52.8 |
| Maximum Speed | 2400 RPM |
| Base Speed | 1800 RPM |
| Base Amps | 76 |

4.0 COMPONENT PARTS - continued

4.2 Gears

A fabricated steel gear box houses all gears in an oil tight splash lubricated enclosure. The output shaft is extended to carry the winch drum.

The box is equipped with oil dams to ensure lubrication of the bearings during periods of non use. Filler breathers and level gauges are fitted to the box.

Four reductions are used:

1st - 21 T : 67 T (5 dp)

2nd - 22 T : 61 T (4 dp)

3rd - 18 T : 71 T (3 dp)

4th - 22 T : 95 T (2½ dp)

Overall reduction is 150.67.

All gears are manufactured from SAE 4140 or better with machine cut teeth.

4.3 Bearings

Self-aligning spherical roller bearings are used to carry all final gear reduction shafts. Input and intermediate shafts are carried on roller bearings.

4.4 Shafts

All winch shafts are manufactured from alloy steel and are designed such that high stress concentrations are not present under loaded conditions.

4.5 Drum

The drum is of welded steel construction with a rope anchor at one end and is designed to be keyed to the main shaft. Dimensions: 533 mm dia. barrel, 406 mm wide with 760 mm dia. flange.

4.0 COMPONENT PARTS - continued

4.6 Outboard Frame

The frame is of all welded steel construction and is designed and built to ensure that all assemblies remain in perfect alignment during the operation of the winch. Design of the frame incorporates an integral bearing with an oversize housing to allow for high vertical loading.

4.7 Base

A fabricated base structure is provided to carry the gear box, drum, electrical motor and outboard frame. The base is designed to be bolted to the ships deck.

4.8 Control System (See S.C.R. Drive Description Section)

A four quadrant S.C.R. converter of Cortina manufacture is provided for the DC supply to the motor. The converter is designed for below deck installation. Design of the system allows for speed control with constant torque (limited).

4.9 Control Panel

Single station remote control panel is provided to control the winch. The panel will contain a key lock on/off switch, hoist control and ammeter. Panel is designed for installation in a winch house. Panel also carries the controls for:

- (a) Slewing Winch
- (b) Topping winch
- (c) Main hoist
- (d) Auxiliary hydraulic winch
- (e) Chain handling reel

4.10 Brake

The input drive shaft is extended to carry the main disc brake. The disc brake is of Simplatrol manufacture (model No. 37). Design of the brake is fail safe, i.e. brake applies when power is interrupted.

5.0 PAINTING

The winch frame will be sand blasted and given two coats of primer and two coats of marine enamel.

WHIP HOIST

1.0 GENERAL

Reference Drawing 900-400-380. This specification describes a single drum electrically driven whip hoist winch.

2.0 OPERATING DATA

The winch is capable of the following ratings:

6.0 tonnes at 0-35 M/Min. (0-18 RPM)

3.0 tonnes at 0-60 M/Min. (0-30 RPM)

The above rating is at the second layer (610 mm diameter), and is based on the availability of 60 HP.

3.0 DRUM CAPACITY

30 M of 26 mm diameter wire rope in two layers with a minimum of 75 mm free flange.

4.0 COMPONENT PARTS

4.1 Power System

A 52.8 HP S.C.R. controlled DC motor (McClure Frame No. DD 250B) with a base speed of 1800 RPM is used to drive through a splined shaft into a quadruple reduction spur gear box.

Motor characteristics:

HP 52.8

Maximum Speed

2400 RPM

Base Speed

1800 RPM

Base Amps

76

4.2 GEARS

A fabricated steel gear box houses all gears in an oil tight splash lubricated enclosure. The output shaft is extended to carry the winch drum.

4.0 COMPONENT PARTS - continued

4.2 Gears continued

The box is equipped with oil dams to ensure lubrication of the bearings during periods of non use. Filler breathers and level gauges are fitted to the box.

Four reductions are used:

| | | | | | |
|-----|---|------|---|------|--------|
| 1st | - | 29 T | : | 59 T | (5 dp) |
| 2nd | - | 22 T | : | 61 T | (4 dp) |
| 3rd | - | 18 T | : | 71 T | (3 dp) |
| 4th | - | 28 T | : | 89 T | (2½dp) |

Overall reduction is 70, 72.

All gears are manufactured from SAE 4140 or better with machine cut teeth.

4.3 Bearings

Self-aligning spherical roller bearings are used to carry all final gear reduction shafts. Input and intermediate shafts are carried on roller bearings.

4.4 Shafts

All winch shafts are manufactured from alloy steel and are designed such that high stress concentrations are not present under loaded conditions.

4.5 Drum

The drum is of welded steel construction with a rope anchor at one end and is designed to be keyed to the main shaft. Dimensions: 533 mm dia. barrel, 406 mm wide with 760 mm dia. flange.

4.6 Outboard Frame

The frame is of all welded steel construction and is designed and built to ensure that all assemblies remain in perfect alignment during the operation of the winch. Design of the frame incorporates an integral bearing with an oversize housing to allow for high vertical loading.

4.0 COMPONENT PARTS - continued

4.7 Base

A fabricated base structure is provided to carry the gear box, drive, electrical motor and outboard frame. The base is designed to be bolted to the ship's deck.

4.8 Control System (See S.C.R. Drive Description Section)

A four quadrant S.C.R. converter of Cortina manufacture is provided for the DC supply to the motor. The converter is designed for below deck installation. Design of the system allows for speed control with constant torque (limited).

4.9 Control Panel

A single station remote control panel is provided to control the winch. The panel will contain a key lock on/off switch, hoist control and ammeter. Panel is designed for installation in a winch house. Panel also carries the controls for:

- a) Slewing Winch
- b) Topping Winch
- c) Main Hoist
- e) Chain Reel (Option)

4.10 Brake

The input drive shaft is extended to carry the main disc brake. The disc brake is of Simplatrol manufacture (Model No. 37). Design of the brake is fail safe, i.e. brake applies when power is interrupted.

5.0 PAINTING

The winch frame will be sand blasted and given two coats of primer and two coats of marine enamel.