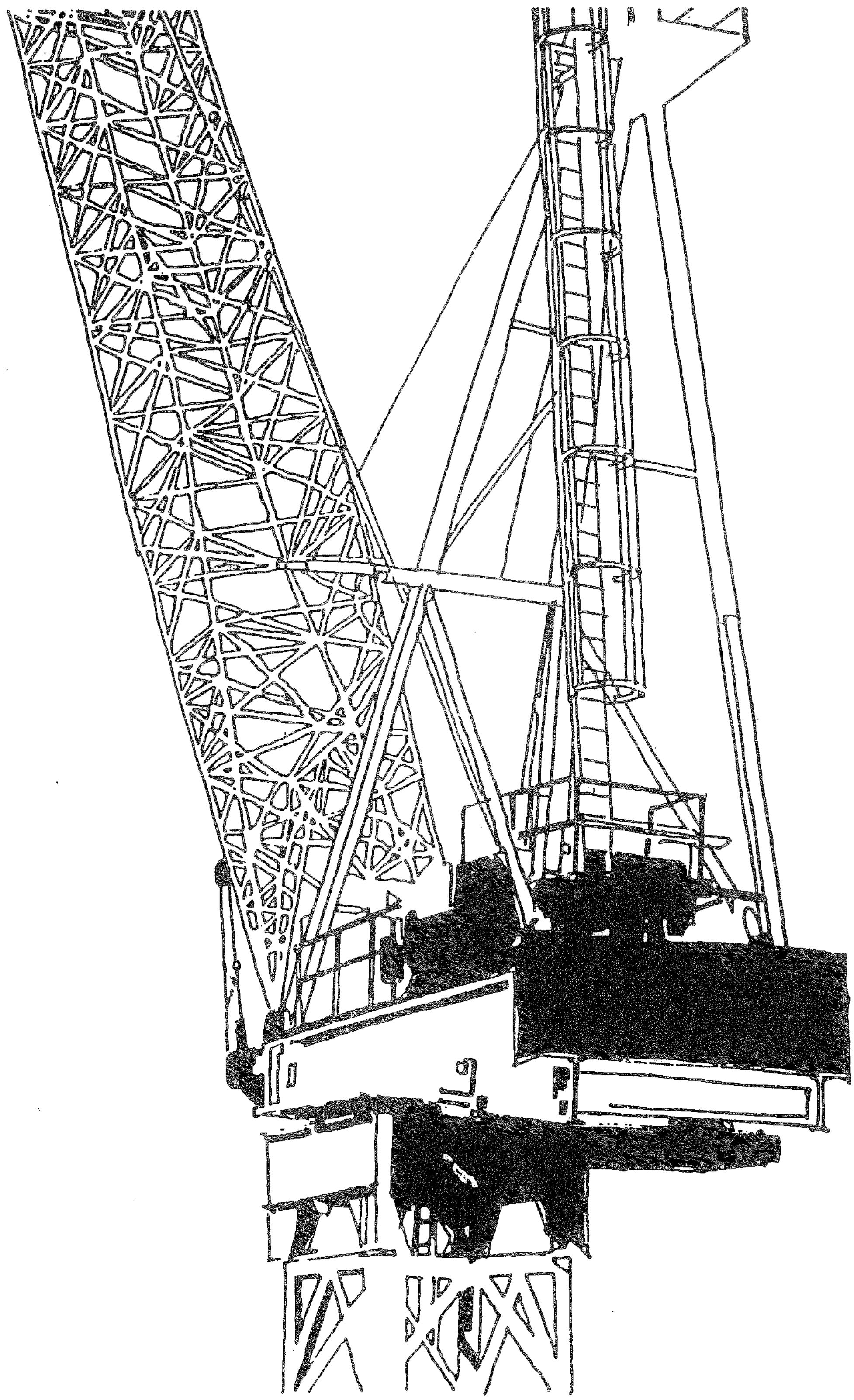
FAVELLE



FAVELLE TOWER CRANES

GENERAL DESCRIPTION

The Favelle M Series is the model designation for a large crane system. A characteristic of this system is that there are several combinations of assembly enabling maximum utilisation on each particular project.

The basic crane unit can be applied to either external or internal climbing, a stationary base, a travelling base, a travelling portal base or a pedestal for barge mounting.

Boom sections are available in either 6m or 9m increments allowing the basic boom to be extended. All sections are jig manufactured to ensure interchangeability for ease of assembly.

STANDARD SPECIFICATION

ENGINE

Caterpillar diesel engine with a 24 volt starting and charging system. The engine radiator and the hydraulic oil cooler are mounted on a common frame for ease of maintenance.

A Donaldson air cleaner and mufflers are standard equipment.

GEARBOX

Gearbox is of robust construction, mounted direct to the diesel engine and driven via a flexible coupling. Separate variable displacement hydraulic pumps are provided for each crane motion providing a smooth stepless speed control in each direction.

WINCH

Hoist Motors: Variable displacement hydraulic motors are fitted to individual epicyclic gearboxes driving pinions meshing with the hoist drum final drive gear. Each motor has its own separate oil immersed multidisc dynamically rated brake of failsafe design. The hoist motors provide a stepless speed control and are load and/or horsepower dependent.

Luff Motor: Fixed displacement axial piston motor, of bent axis design with outstanding starting efficiency and high maximum speed is fitted to an epicyclic reduction gearbox directly coupled to the luff drum. Braking is provided by an oil immersed multidisc brake, dynamically rated and of failsafe design.

WIRE ROPES

Both hoist and luff ropes are of non-rotating construction with steel buttons at the drum ends for quick and easy installation.

SLEW SYSTEM

The slew bearing is a double row ball type of Rothe-Erde manufacture, with ample grease points provided for ease of lubrication. The slew drive has sufficient torque to handle the safe working load under adverse wind conditions.

CABIN

The cabin is ergonomically designed to provide maximum efficiency of operation in adverse weather and site conditions. All the windows are of safety glass construction with the side windows slide opening to provide adequate ventilation. Windscreen wipers and washers are fitted to the front window. All motion controls come readily to hand with special foot control for left and right slew. The cabin seat is fully adjustable to provide optimum comfort. A cabin heater is provided. Excellent visibility is provided for the operator with a full length front window shaped to allow full vision without the need to leave his seat. This is a necessary requirement for rail travel cranes so that any obstructions may be seen on the track prior to travelling.

CONTROLS

Operating controls for all crane movements are sensitive 'dead man' type hydraulic pressure related, incorporating automatic brake control. These valves give stepless control to each crane motion. Hoist, luff and slew speeds have been selected to provide optimum performance together with a safe controlled operation for all types of load.

INDICATION EQUIPMENT

The protection equipment installed on the crane has been developed in conjunction with local manufacturers and agents and provides a simple but extremely effective means of indicating the following information to the operator.

Crane Safety System:

This system gives the operator a clear and continuous picture of his margin of safety by way of indicating the actual load on the hook, as well as the maximum safe working load at that particular radius. Automatic visual and audible alarm warning are pre-determined at the time of erection by selecting and installing the appropriate machine cut cams relative to boom length and the number of falls in the hoist system. A linear type radius indicator is also fitted as a 'back up'.

Engine Annunciator Panel:

Full engine protection is supplied as a standard unit with visual and audible indication for low engine oil pressure, high engine water temperature, low hydraulic oil level, low boost pressure and filter by-pass warning.

SAFETY DEVICES AND LIMITS

Oil pressure relief on all functions provides automatic protection in the event of excessive pressure. Safety hold valves on climbing cylinders prevent slip, even in the event of hose failure.

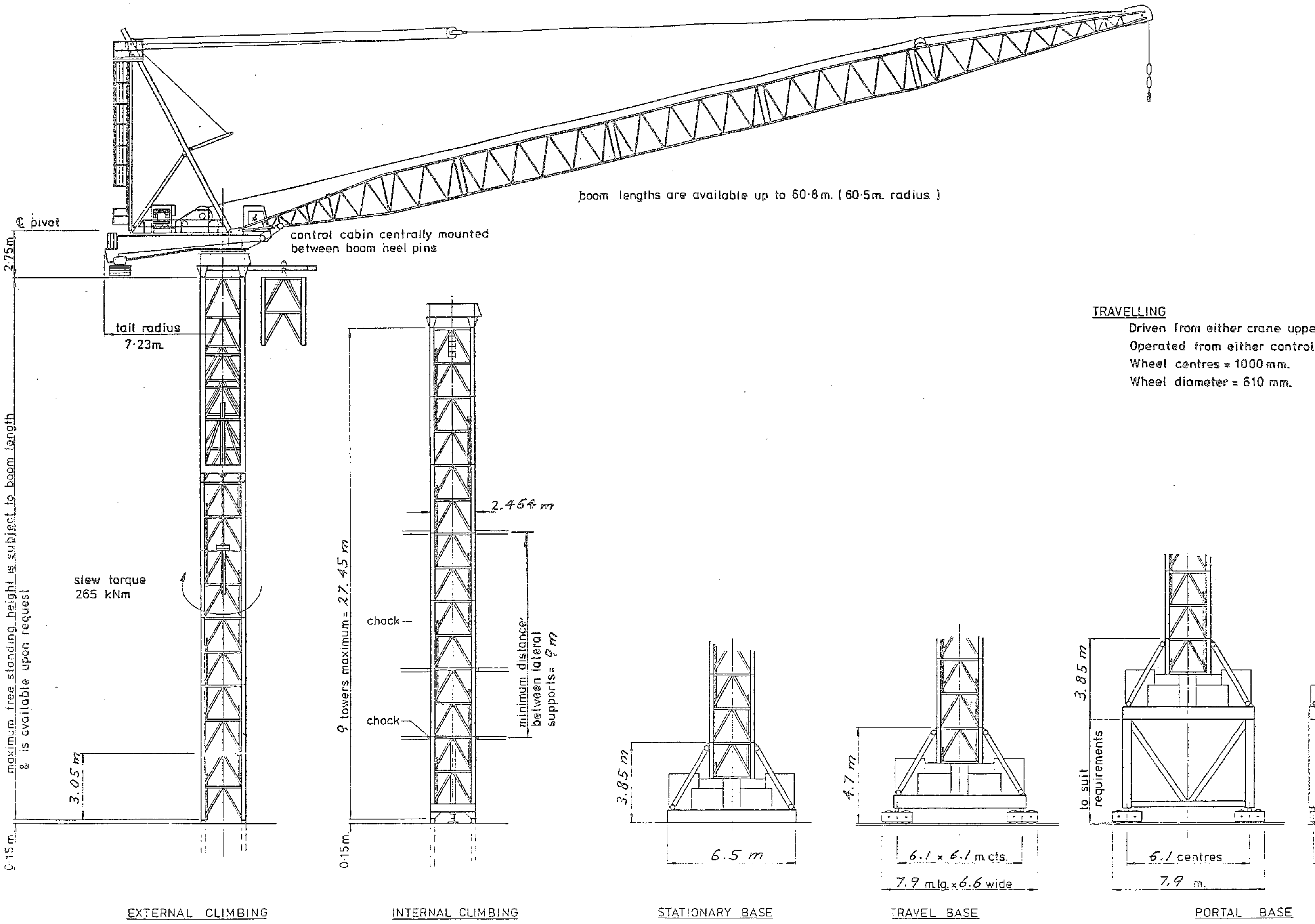
Motion cease limits are fitted to 'hoist up', 'hoist down' and 'luff out' modes and automatically apply the system brakes when activated. A deceleration limit valve is fitted to the 'luff in' mode which gradually slows boom operation until stopped, whereupon the brakes are automatically applied. A 'luff in' ultimate limit is fitted which provides a total shutdown in the unlikely event of failure of the deceleration and top luff in limit. Both luff and hoist brakes operate with the same efficiency in either direction and will stall the hydraulics under any conditions.

QUALITY CONTROL

Rigid inspection and testing procedures have been adopted to ensure that every crane leaving the factory performs within its designed limits with the utmost reliability. All testing is carried out in compliance with recognised international codes and covers all critical components of the crane as well as all performance aspects of the finished products. Materials are certified and welds are subjected to magnetic particle or full ultrasonic inspection in line with AWS D1.1 codes.

Hydraulic system components are purged, tested, set and sealed. After final assembly the crane is erected on a test pad and fully tested in all aspects.

M300D



TRAVELLING
Driven from either crane upper or from an independant power pack
Operated from either control cabin or from a panel on the base
Wheel centres = 1000 mm.
Wheel diameter = 610 mm.

if lateral supports are more than 0·15m from a tower horizontal brace a suitable frame must be used to distribute the load

concrete ballast supplied by others

DATE	REVISION	BY

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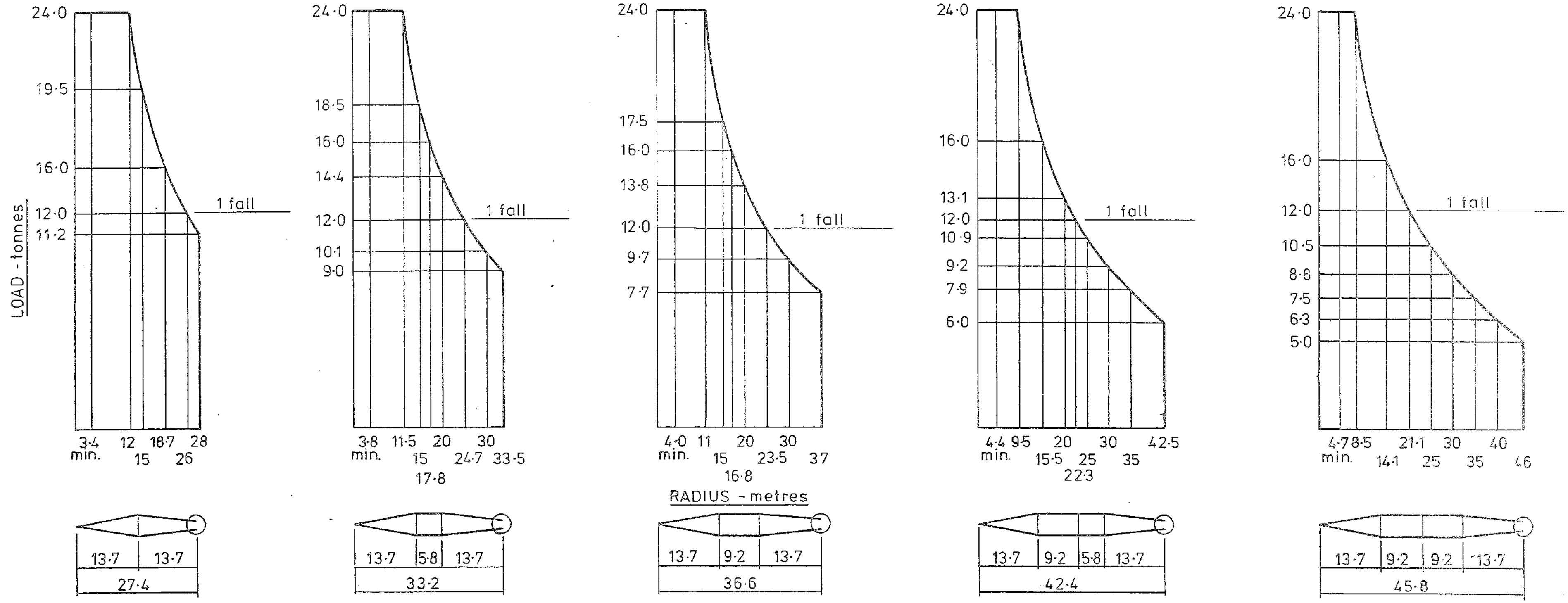
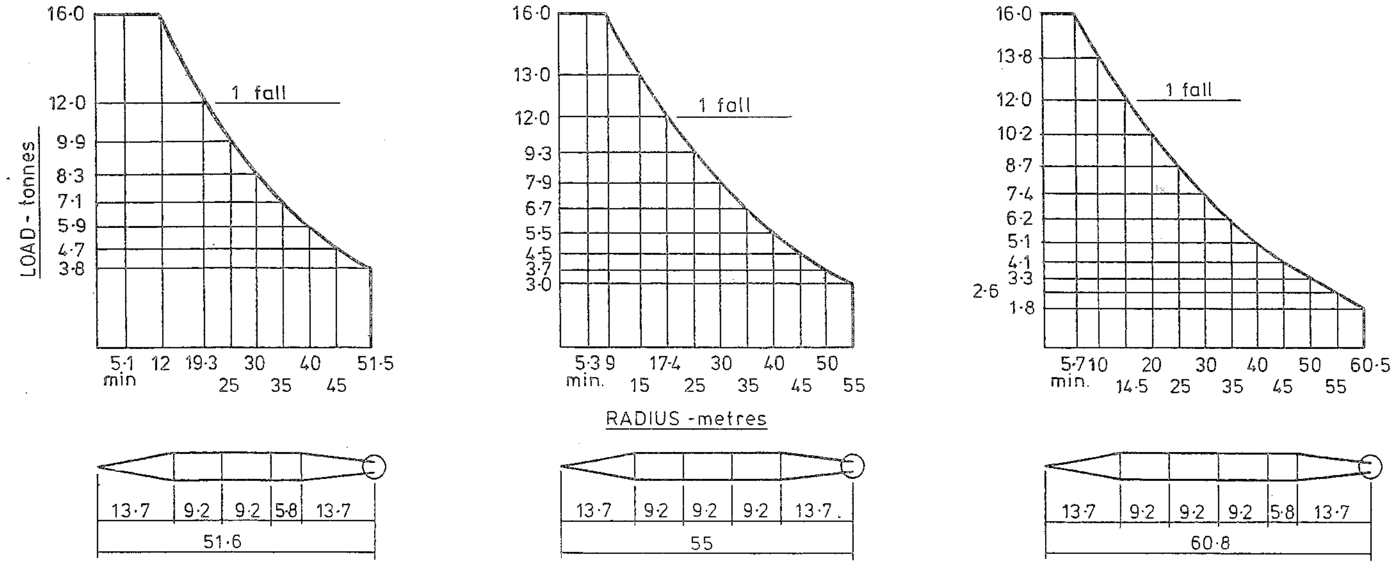
M300D TOWER CRANE

DRAWN	CHECKED	SCALE	DRAWING No.	REV
5-2-97		1:10	300-01	A





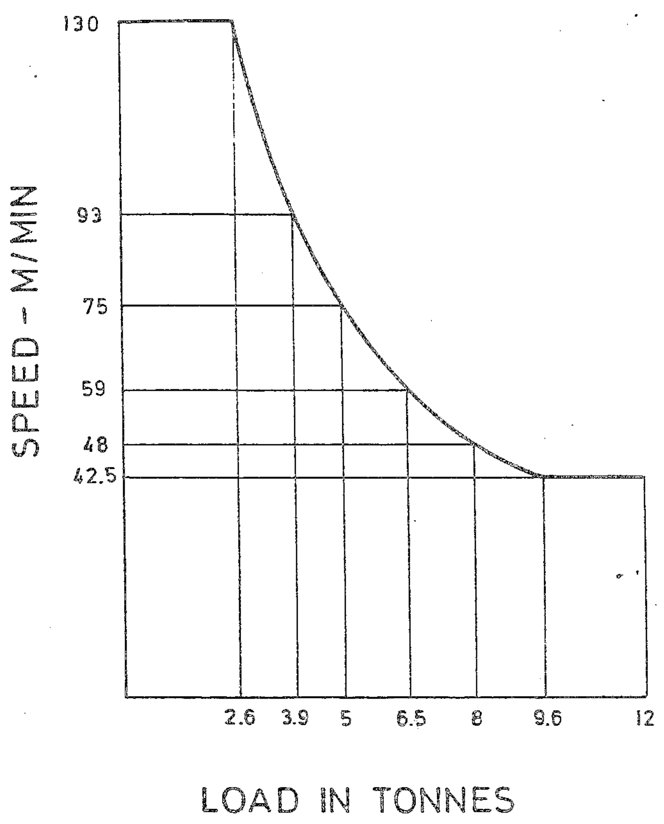
Maximum SWL Single Fall = 12 tonnes

FAVELLE

M 300D 12 tonne WINCH

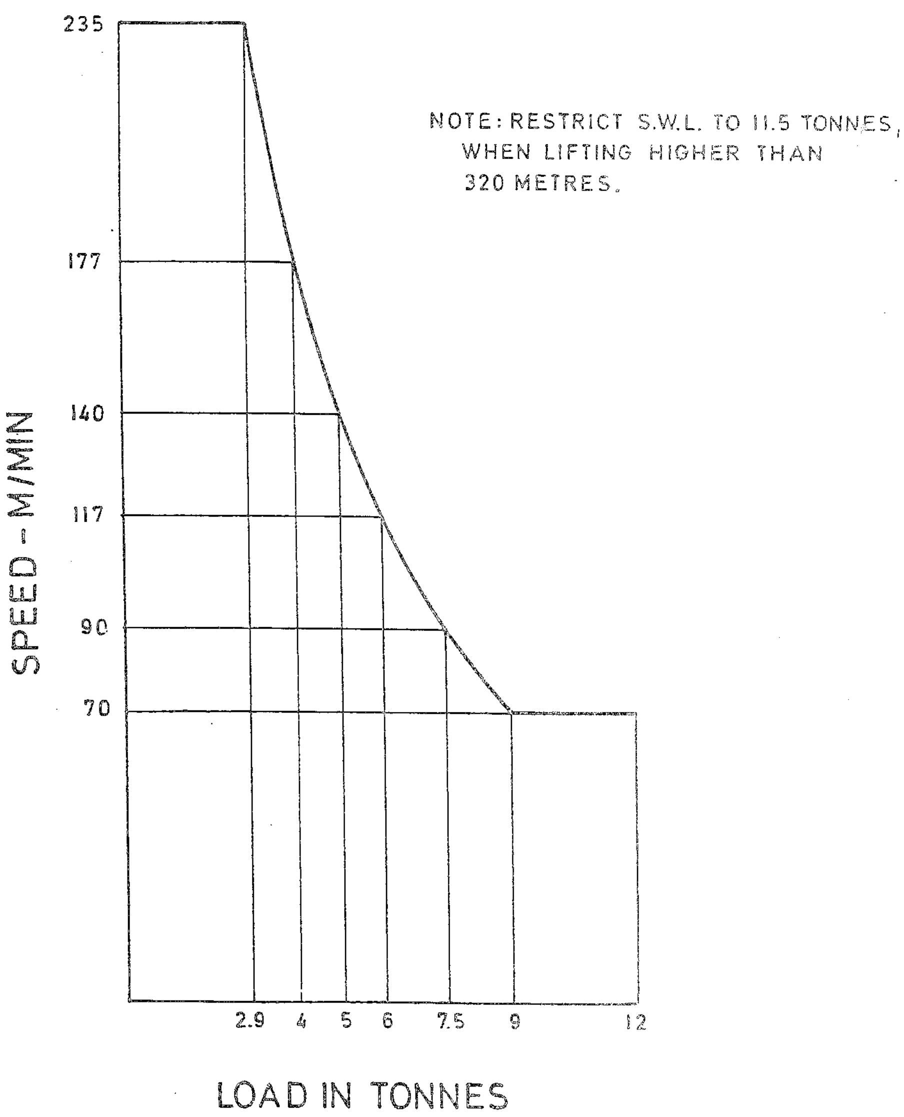
300 - 34/A

12 TONNE WINCH (Mk.4)
PERFORMANCE WITH 250 HP ENGINE



M 300 D 5588/12

12 TONNE HIGH SPEED WINCH
PERFORMANCE WITH 300 HP ENGINE



M 300 D 5588/12HS

COMPONENT WEIGHTS & DIMENSIONS

COMPONENT	MASS (Tonnes)	L x W x H (Metres)
Boom Tip	2.2	14.4 x 2.3 x 2.3
9.2m Boom Insert	1.3	9.5 x 2.4 x 2.4
5.8m Boom Insert	0.9	6.0 x 2.4 x 2.4
Boom Butt	2.3	14.0 x 2.9 x 2.4
Mast complete with buffer	4.4	13.8 x 3.0 x 1.8
Deck (one piece)	10.6	10.0 x 3.1 x 2.0
Front Section of Split Deck including slew drive	6.4	4.5 x 3.1 x 1.4
Rear Section of Split Deck	5.8	5.5 x 3.1 x 2.0
Control Cabin	0.8	1.7 x 1.1 x 2.5
Winch & Power Pack	7.6	3.8 x 2.3 x 1.9
Fixed Counterweight (3 piece)	3 x 5.0 = 15.0	3 at 3.6 x 0.18 x 1.0
Travelling Counterweight (2 piece)	2 x 10.0 = 20.0	2 at 3.6 x 1.3 x 0.28
Slew Mount including Bearing	4.5	3.2 x 2.9 x 1.7
Standard Tower Section	2.1	2.5 x 2.5 x 3.1
Heavy Duty Tower Section	2.9	2.5 x 2.5 x 3.1
<u>External Climbing Frame:</u>		
Climbing Cylinder (3.3m stroke)	2 x 1.5 = 3.0	2 at 4.0 x 0.3 x 0.3
Climbing Cylinder (4.1m stroke)	2 x 1.8 = 3.6	2 at 4.9 x 0.3 x 0.3
2 side panels	2 x 2.3 = 4.6	2 at 9.0 x 2.6 x 0.3
2 connecting frames) 2 connecting beams)	1.6 total	2 at 3.1 x 2.4 x 0.2 2 at 3.1 x 0.3 x 0.2
2 supports	2 x 0.3 = 0.6	2 at 2.2 x 0.8 x 0.3

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COMPONENT	MASS (Tonnes)	L x W x H (Metres)
Internal Climbing Frame:		
Climbing Cylinder (3.3m stroke)	2 x 1.5 = 3.0	2 at 4.0 x 0.3 x 0.3
Climbing Cylinder (4.1m stroke)	2 x 1.8 = 3.6	2 at 4.9 x 0.3 x 0.3
Special Tower Section	4.0	2.5 x 2.5 x 3.1
2 outer legs	2 x 0.7 = 1.4	2 at 2.5 x 0.3 x 0.7
inner leg	1.1	2.5 x 0.5 x 0.8
Travel Base:		
2 frames	2 x 4.4 =8.8	2 at 7.6 x 2.9 x 0.8
2 connecting beams	2 x 1.4 = 2.8	2 at 6.4 x 0.3 x 0.8
2 ties	2 x 0.2 = 0.4	2 at 1.9 x 0.3 x 0.3
4 tower braces	4 x 0.5 = 2.0	4 at 4.1 x 0.3 x 0.4
2 driven bogies	2 x 1.4 = 2.8	2 at 1.8 x 1.1 x 1.0
2 idler bogies	2 x 1.0 = 2.0	2 at 1.8 x 0.6 x 1.0
Special tower section including power pack	6.0	2.5 x 2.5 x 3.1