

Ulrich

INSTRUCTION AND PARTS MANUAL

FOR

WINCH MODEL 'BOUGHTON VH10'

BUILD No MG [REDACTED] 3277

VH10 / L13

SERIAL NO. ?

Ulrich

Attachments Limited

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VH10/40
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BOUGHTON WINCH MODEL VH10

OPERATING INSTRUCTIONS

The Boughton VH 10 winch is hydraulic in operation. The hydraulic motor on the winch is driven by the pump via a hydraulic control valve.

A 'free drum' is provided by means of a dog clutch on the winch. The lever is situated on the side of the winch.

Pull lever 'OUT' to disengage.

On a new unit, ensure that the winch gearcase is filled to the correct level BEFORE use. See Lubrication Instructions.

To Set Winch in Motion:

1. Engage dog clutch on winch
2. Set pump in motion (if not already running).
3. Move control valve lever to give required rotation of winch drum.

LUBRICATION INSTRUCTIONS

Winch Gearcase: Correct Grade - S.A.E. 90 E.P. or equivalent.

Approximate Capacity - 1.1/4 gallons.

The filler plug is situated in the top of the gearcase, the drain plug in the bottom and the level plug in the domed end cover.

The gearcase on a new winch should be drained of oil, flushed out and refilled with fresh oil after 50 hours use. Thereafter, drain and refill with fresh oil every 400 working hours.

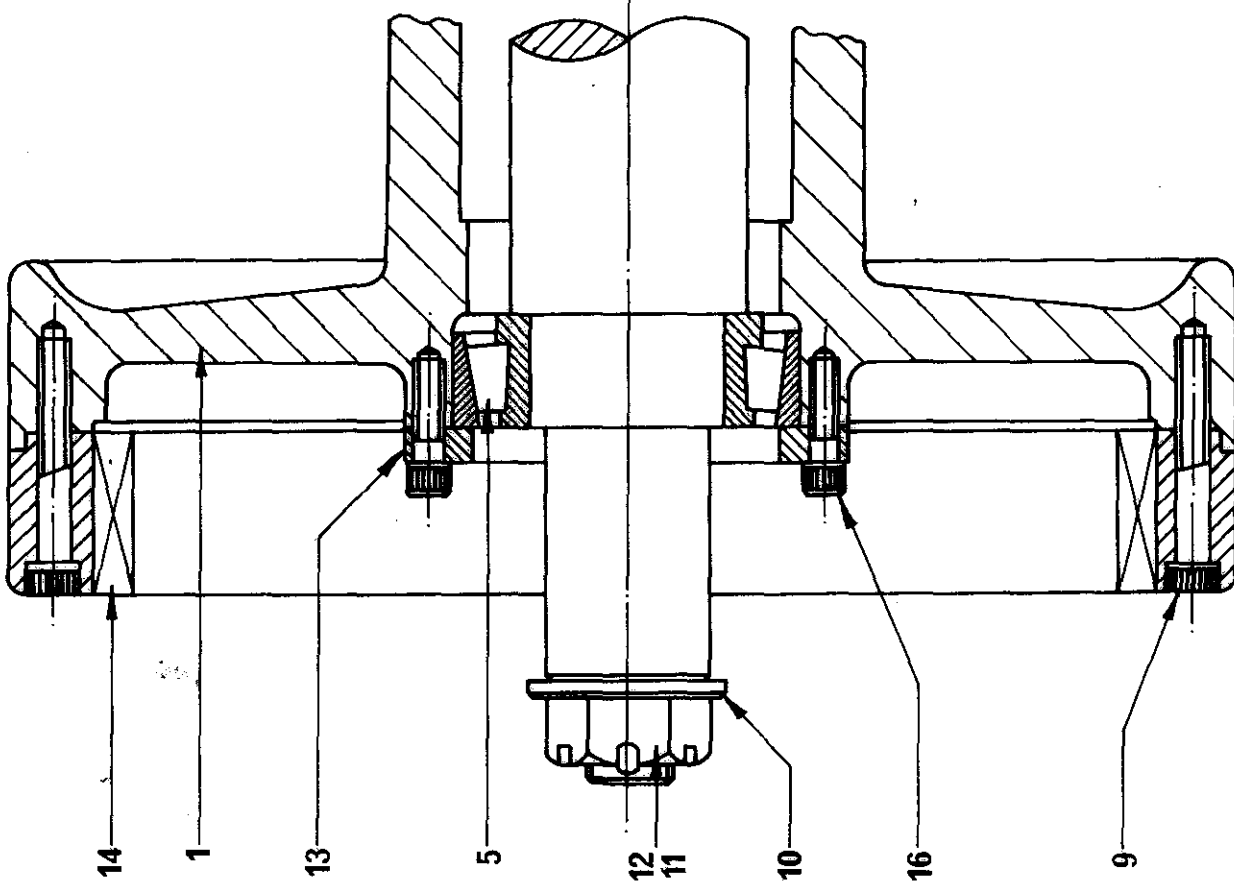
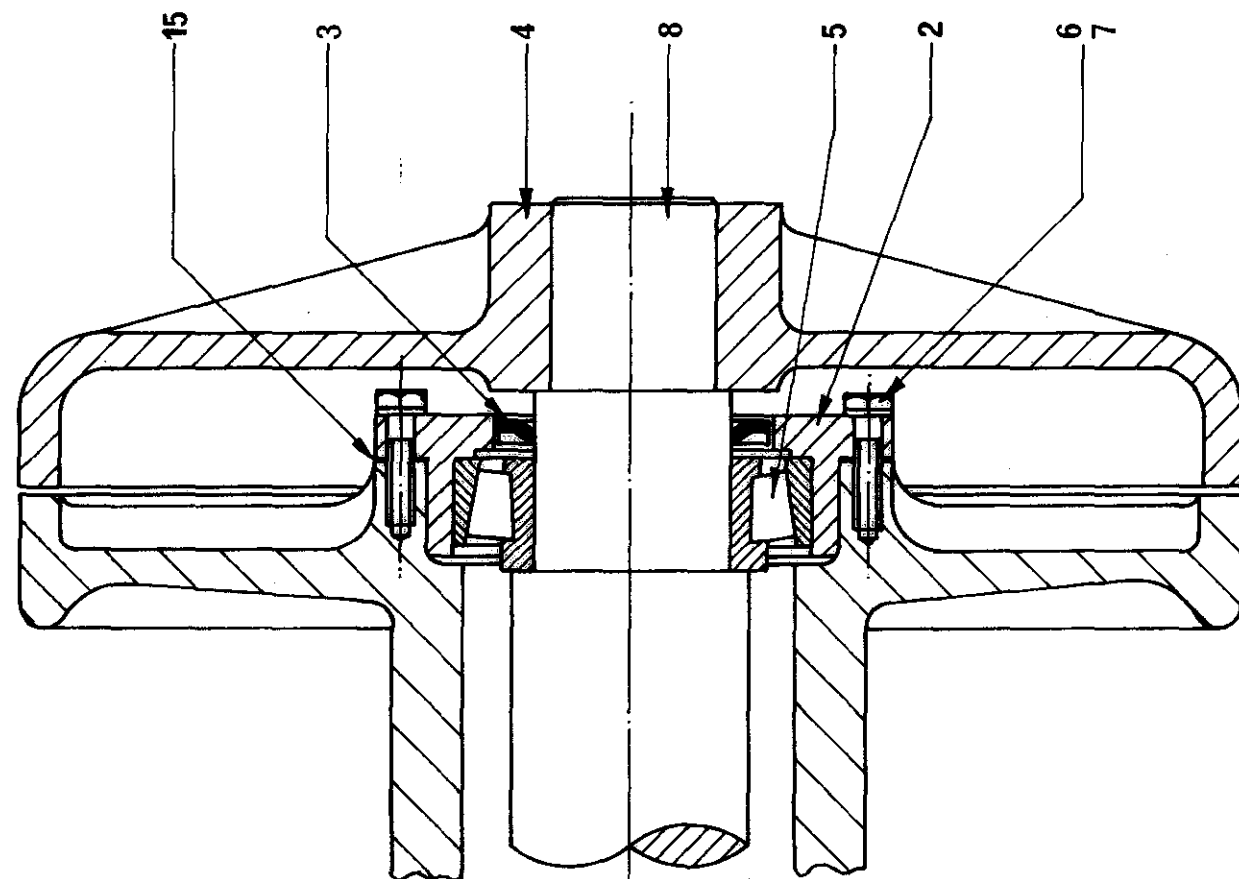
HYDRAULIC SYSTEM: Correct Grade - S.A.E. 10 Hydraulic Oil.
Use clean oil and keep it clean.

ADJUSTMENT

Dog Clutch

This is actuated by a sliding yoke which is held in position (either in engagement or disengagement) by a spring loaded click pin. The pressure on this click pin can be adjusted by a set screw and locknut in the side of the winch domed end cover.

It is unwise to have this spring too lightly loaded as the clutch might vibrate in or out of mesh.



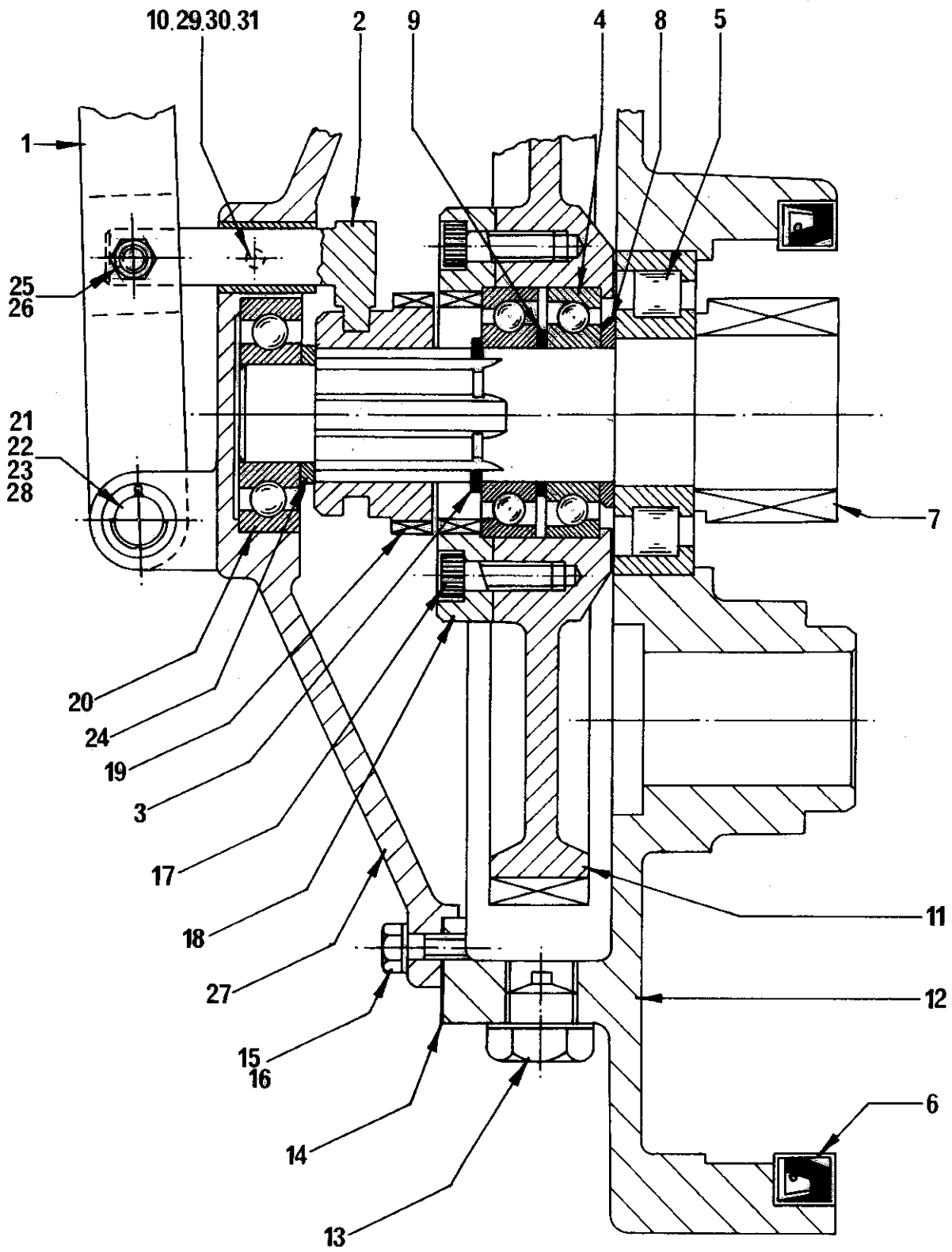
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DRUM AND SHAFT ASSEMBLY

Diag. Ref.	Boughton Part No.	Description	Qty
1	BW 17276-2	Rope Drum	1
2	BW 66374-1	Bearing Cap	1
3	BW 70368	Oil Seal	1
4	BW 66389-1	Main Shaft Bracket	1
5	BW 2263	Taper Roller Bearing	2
6	BW 10117	5/16" UNF x 1" Hex Bolt	6
7	BW 10106	5/16" Spring Washer	6
8	BW 60115-2	Main Shaft	1
9	BW 10400	3/8" UNF x 2.1/4" Socket Head Cap Screw	14
10	BW 8019 -1	Washer	1
11	BW 10273	1" UNF Hex Slotted Nut	1
12	BW 10096	3/16" dia 2" Split Pin	1
13	BW 21077-1	Bearing Cap	1
14	BW 66640-1	Annulus Gear	1
15	BW 2510 -30	Shim .0015" thick)	
	BW 2510 -31	Shim .003" thick)	as reqd.
	BW 2510 -32	Shim .005" thick)	
16	BW 10868	5/16" UNF x 1" Wedglock Socket Head Cap Screw	6



DOG CLUTCH AND PRIMARY DRIVE GEAR ASSEMBLY

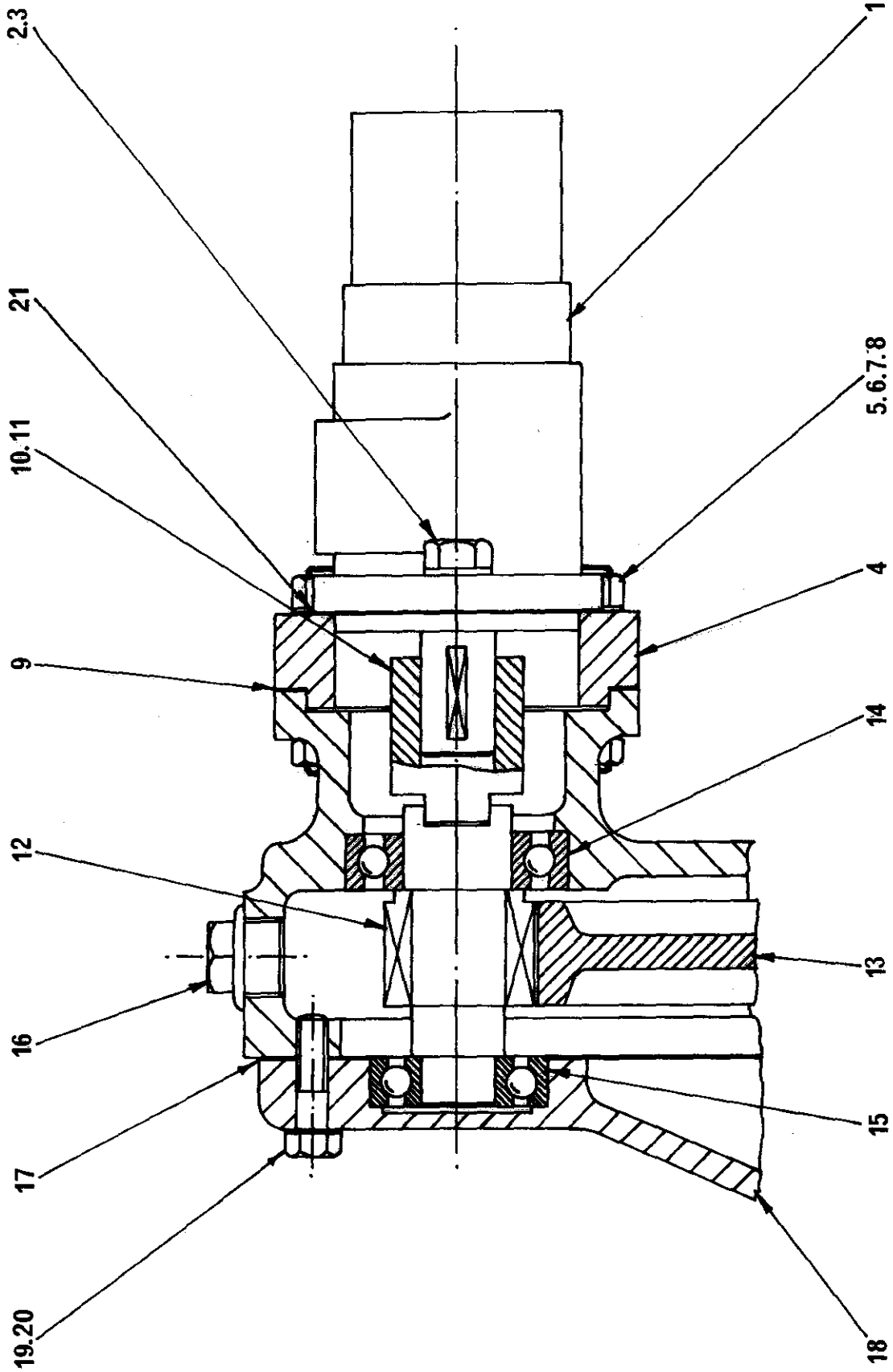
<u>Diag.</u> <u>Ref.</u>	<u>Part No.</u>	<u>Description</u>	<u>Qty.</u>
1	BW 8032 -1	Clutch Lever	1
2	BW 8013 -1	Clutch Yoke	1
3	BW 5699	External Circlip	1
4	BW 8038	Ball Race	2
5	BW 50026	Roller Race	1
6	BW 65975	Oil Seal	1
7	BW 51179 -1	Final Drive Pinion	1
8	BW 8035 -1	Spacer	1
9	BW 8034 -1	Spacer	1
10	BW 0617	Spring	1
11	*BW 7916 -1	Primary Drive Gear (75 Teeth)	1
-	**BW 51124 -2	Primary Drive Gear (70 Teeth)	1
12	BW 68830 -1	Gear Case	1
13	BW 6781	Magnetic Drain Plug	2
14	BW 8558 -1	Gasket - End Cover to Gear Case	1
15	BW 10371	3/8"UNC x 1" long Hex Screw	9
16	BW 10080	3/8" Spring Washer	9
17	BW 10399	3/8"UNF x 1" long Socket Head Cap Screw	6
18	BW 66473 -1	Clutch Ring	1
19	BW 66474 -1	Clutch Engagement Member	1
20	BW 0604	Ball Race	1
21	BW 0123 -2	Pin	1
22	BW 10092	1/8"Dia. x 1" long Split Pin	1
23	BW 10090	1/2" Plain Washer	1
24	BW 8033 -1	Spacer	1
25	BW 10123	3/8"UNF x 1.1/2" long Hex Bolt	1
26	BW 10398	3/8"UNF Hex Locknut	2
27	BW 7912 -5	Domed End Cover	1
28	BW 9602 -1	Bush	2
29	BW 0493 -1	Click Pin	1
30	BW 10292	1/2"UNC x 1.1/2" Hex Bolt	1
31	BW 10627	1/2"UNC Hex Nut	1

NOT ILLUSTRATED:-

BW 5224		Level Plug (1/4"BSP)	3
BW 0481 -1		Dowel Pin	1
BW 1762		Hand Grip - Clutch Lever	1

NOTE:-

- * use with BW 8024-1 Primary Drive Pinion (10 Teeth) - 31.5:1 Ratio
- ** use with BW 51125-1 Primary Drive Pinion (15 Teeth) - 19.5:1 Ratio



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HYDRAULIC MOTOR AND DRIVE ASSEMBLY

<u>Diag.</u> <u>Ref.</u>	<u>Part No.</u>	<u>Description</u>	<u>Qty</u>
1	BW 34509	Hydraulic Motor	1
2	BW 10129	1/2" UNF x 1.1/4" long Hex Head Bolt	2
3	BW 10084	1/2" Spring Washer	2
4	BWY 19173-1	Motor Flange	1
5	BWS 0448 -429	Stud	4
6	BW 10694	1/2" UNC Locknut	4
7	BW 10627	1/2" UNC Hex Nut	4
8	BW 10084	1/2" Spring Washer	4
9	BW 66669	Gasket	1
10	BWS 19174-1	Sleeve Dog	1
11	BW 10925	5/16" UNF x 3/8" long Grub Screw	1
*12	BWY 51125-1	Primary Drive Pinion (15 teeth)	1
**	BWS 8024 -1	Primary Drive Pinion (10 teeth)	1
*13	BWX 51124-2	Primary Drive Gear (70 teeth)	1
**	BWX 7916 -1	Primary Drive Gear (75 teeth)	1
14	BW 8036	Ball Race	1
15	BW 8037	Ball Race	1
16	BW 6792	3/4" BSP Filler Plug	1
17	BWY 8558 -1	Gasket	1
18	BWW 7912 -5	Domed End Cover	1
19	BW 10548	3/8" UNC x 1.1/2" long Hex Head Bolt	3
20	BW 10080	3/8" Spring Washer	3
21	BWS 34581	Gasket (Motor to Adaptor)	1

* Primary Pinion BW 8024-1 used with Primary Gear BW 7916-1(31.5:1 Ratio).

** Primary Pinion BW51125-1 used with Primary Gear BW51124-2(19.5:1 Ratio).

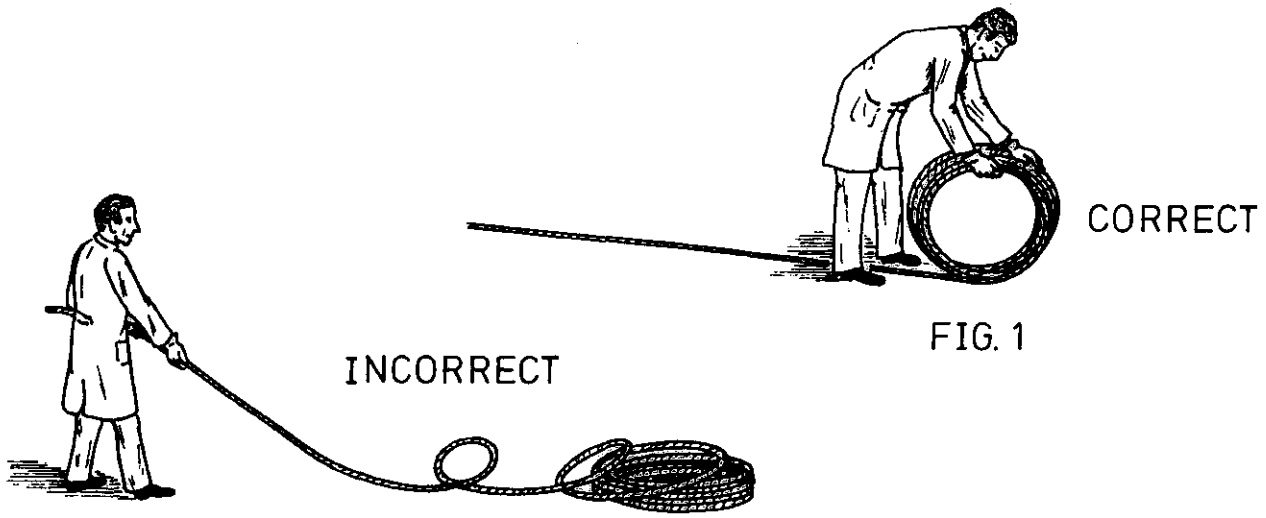


FIG. 2

CORRECT AND INCORRECT METHOD OF UNCOILING SMALL COILS.

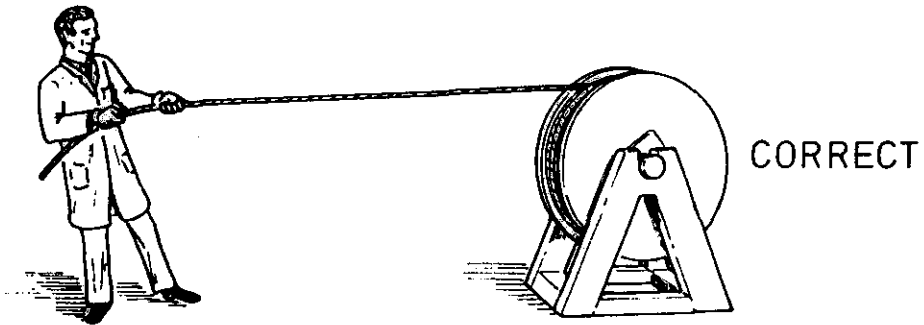


FIG. 3

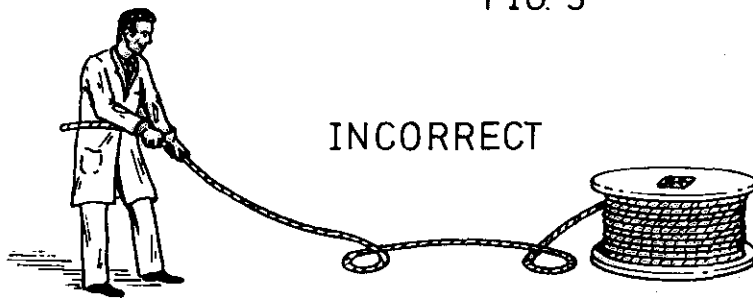


FIG. 4

CORRECT AND INCORRECT METHOD OF UNCOILING ROPE ON REELS.

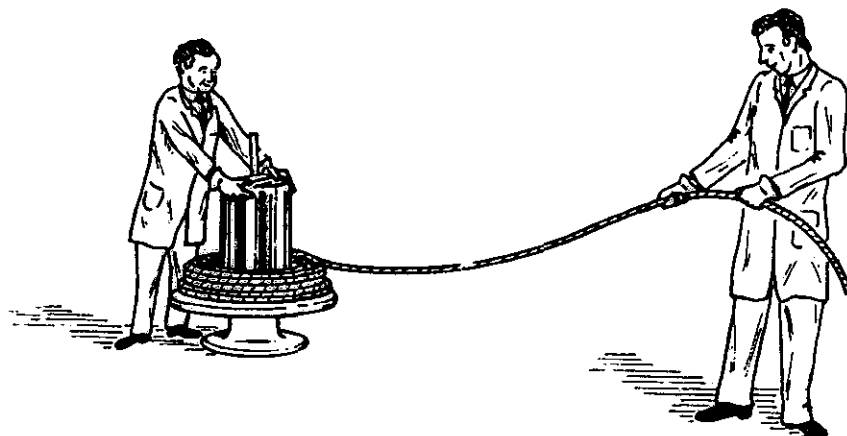


FIG. 5

CORRECT METHOD OF UNCOILING LARGE COILS.

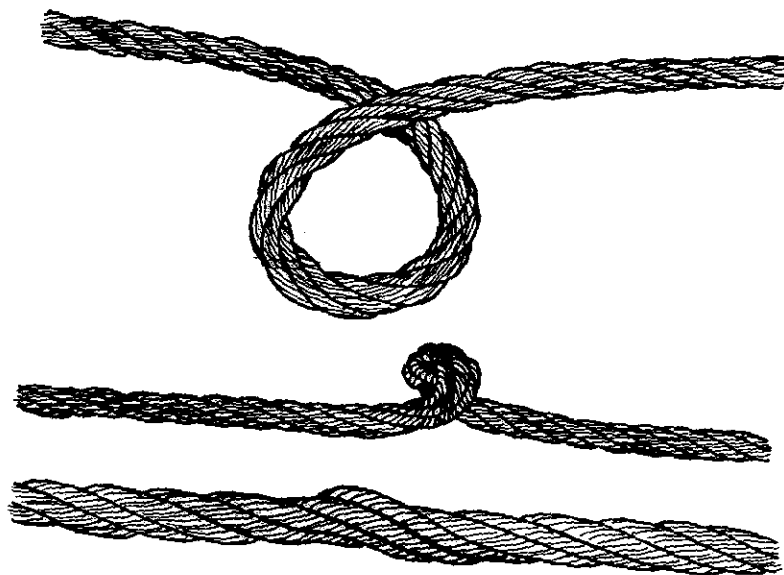


FIG. 6 KINKS

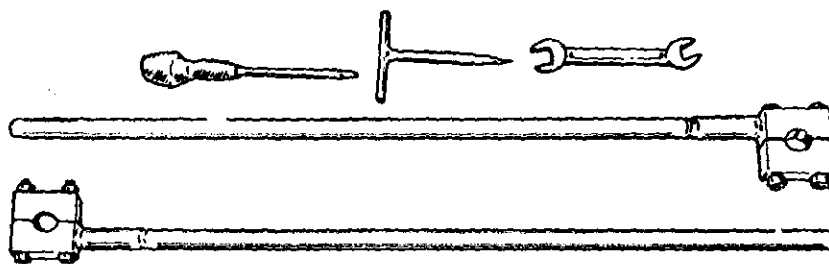


FIG. 7 TOOL SET

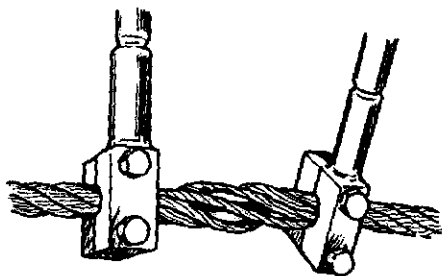


FIG. 8

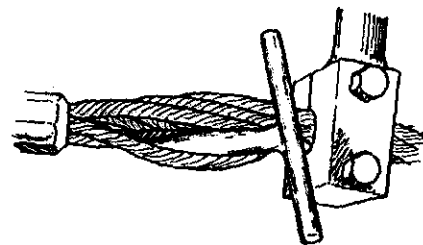
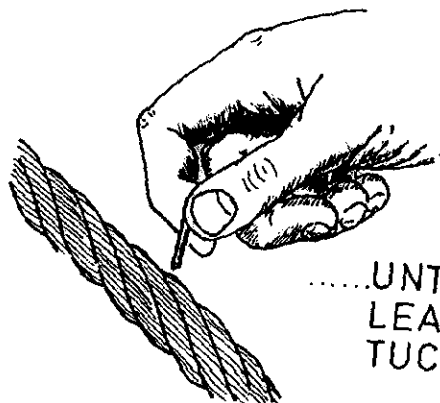
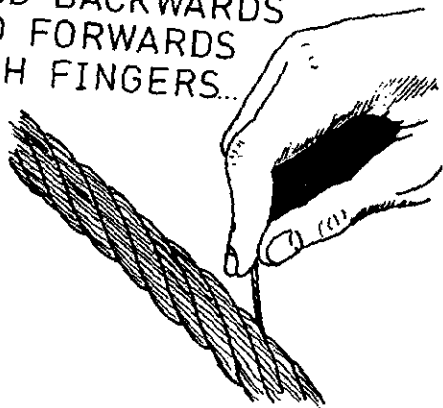


FIG. 9

METHOD OF EXAMINATION

BEND BACKWARDS
AND FORWARDS
WITH FINGERS..



.....UNTIL IT BREAKS
LEAVING END
TUCKED INSIDE.

FIG. 10

WIRE ROPE

HANDLING, CARE AND MAINTENANCE

In order to attain the maximum efficiency from the wire rope, attention to the following points will be necessary.

IMPORTANT:

ALWAYS WEAR PROTECTIVE GLOVES WHEN HANDLING WIRE ROPE

UNLOADING

Ropes should be unloaded with care. Never drop the reel or coil from a lorry or truck. Place a steel bar through the central hole of the reel and lift by means of wire rope slings or rope blocks. Never lift a coil of wire rope by its securing bands.

STORAGE

Until required, steel wire ropes should be stored in a clean, dry place preferably under cover, free from damp and rain and away from boilers or escaping steam. Ropes, except when on reels, should be raised from the ground on planks, and coils should be coated with protective grease and covered with sacking. Periodical inspection and renewal of anti-corrosive grease is desirable.

UNCOILING AND UNREELING

Never allow loops to form when uncoiling (Fig. 2) or unreeling (Fig.4) a steel wire rope. Treat it like a hose pipe. A light coil of rope may be unrolled along the ground but should always be kept under control (Fig. 1). A reel should be placed on a turntable, or mounted on stands (Fig. 3) and supported by a bar or tube through the hole in its centre so that the reel can rotate and the rope pulled off in a straight line. If loops form, they must be thrown out, otherwise kinks will form and the malformations so caused will result in a loss of breaking load of up to 25%.

In the case of locked coil ropes and some large stranded ropes, it is necessary to exercise care when rolling the reeled rope along the ground; and when unreeling. This is because ropes are coiled on to reels under comparatively low tension and as a result there is some tendency for the coils to slacken if the reel is rotated in the wrong direction. To avoid this possibility, where necessary, each reel is clearly marked on each flange with a yellow arrow indicating the direction in which the reel should be rolled. It should be noted that the direction of coiling of the rope on the reel is in the opposite direction to the yellow arrow and, therefore, care must be taken when placing the reel on its stand, to ensure that uncoiling can be carried out in the required direction.

PLEASE NOTE:-

A large coil should be placed flat on its side on a revolving turntable (Fig. 5) having a brake or other means of control. Suitable battens should be lashed on top of the coil before the bands which hold the coil in shape are cut. This will prevent the rope from springing off before the turntable is revolved.

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KINKS (Fig. 6)

Possibly the most common form of damage to a wire rope due to improper handling is the formation of a kink. A kink starts with the formation of a loop as illustrated and although it can be formed in a rope in service, it is usually encountered during the handling of a rope prior to its operation.

A loop which has not been drawn tight enough can easily be removed by turning the rope in the correct direction to restore the lay. If the loop is pulled up tightly the rope is irreparably damaged; a severe distortion results and at the particular spot the individual wires are never again in their proper relative positions.

Normal service can never be depended upon after a rope has been kinked. Abrasion and fatigue usually develop rapidly, and owing to distortion, undetected damage can sometimes lead to dangerous situations.

INITIAL OPERATION

After fitting a new rope it is advisable to run through its normal operating cycle for a number of trips under load at a reduced speed. This permits the new rope to adjust itself gradually to working conditions.

Normally it is not a good practice to have more than one layer of rope on a drum, but where this is unavoidable, succeeding layers should coil evenly on the preceding layer of rope.

IMPORTANT

Loose and irregular coiling will probably result in severe surface wear of rope malformation, which in turn may cause premature failure.

LUBRICATION

Correct lubrication of wire ropes is essential if the ropes are to give satisfactory service. Good lubrication not only prolongs the life of the rope but helps to reduce friction and preserves the internal parts.

All ropes are lubricated internally and nearly all externally during manufacture but care should be taken to see that an approved neutral lubrication is externally applied at frequent intervals, during use and whilst not in use if practicable.

Thinner types of lubricant have the best lubricating qualities but if the rope is constantly exposed to the elements or to water, the heavy, thicker lubricants are more suitable. To particularise, it may be said that for conditions which cause corrosion, such as dredging and wet mine shafts, a heavy lubricant gives the best protection. For winches, cranes, derricks, conveyers etc., which have only the elements to contend with, medium lubricants are suggested.

Wire ropes should be dry and cleaned with a wire brush before lubricants are applied, (paraffin is not recommended as a means of cleaning ropes). Heavy and medium types of lubricant must be heated before application to ensure maximum penetration.

INTERNAL EXAMINATION

No rope examination is complete until an assessment of the internal condition at appropriate positions has been made. Internal degradation, mainly by corrosion and fatigue mechanism can be a serious and unsuspected cause of failure.

Simple tools (Fig. 7) used with care enable round strand and multi-strand ropes up to at least 28 mm diameter to be opened sufficiently to permit a reasonable determination of the internal condition. This examination can be carried out on site providing the rope is not under any tension.

WHERE TO EXAMINE

Because it is generally impracticable to examine a rope internally over its entire length, suitable areas have to be selected. In the case of ropes working over drums, pulleys or sheaves, it is usual to examine those areas entering or leaving the grooves when maximum loads, particularly shock loads, are experienced, or areas which remain for long periods, in exposed places such as over a jib head pulley.

On some running ropes, but usually more relevant to standing rope such as pendants the areas adjacent to terminations should be given particular attention.

METHOD OF EXAMINATION

The method consists of firmly attaching to the rope two correctly sized clamps about 100 - 200 mm (4 - 8 in) apart. By contra rotating these clamps in the direction to unlay the rope the rope strands will be lifted away from the core. (Fig. 8).

Extreme care is necessary during this operation to ensure that the strands are not excessively moved, such that they become permanently deformed.

With the small openings now presented, a small probe such as a screwdriver, may be used to manipulate the strands and displace any grease or debris which may be obscuring the inner regions.

In this opened condition the usual features to be observed are:-

- a) State of the internal lubrication
- b) Degree of corrosion
- c) Interwire pressure/friction markings
- d) Presence of broken wires. When looking for fractures vigilance will be necessary as the broken ends do not generally readily displace so as to become obvious.

On completion of the examination new grease should be applied internally, and the contra rotation of the clamps reversed with a little force applied so as to re-bed the strands fully into the core.

After removing the clamps, the external surface of the rope should also be regreased if necessary.

If the above procedure has been correctly carried out, the rope will not have been deformed.

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Areas Adjacent to Termination

The procedure can be modified in the case of areas adjacent to socket necks or other terminations as on standing ropes or pendants, etc:

In these instances only one clamp will be necessary as the termination anchorage or a bar through the lugs of the termination will provide the necessary restraint (Fig. 9).

BROKEN WIRES

A rope may have to continue in operation with broken wires, but an early opportunity should be taken to replace the wire rope.

Damage of this kind reduces the wire rope's overall tensile strength and continual use may result in breakage. When ordering a new rope the correct diameter and type of rope is essential so that it matches the winch that you have. Quote the serial number of the winch when ordering.

GROOVES FOR PULLEYS AND DRUMS

The use of correctly grooved pulleys, sheaves and drums is most important, and they should be thoroughly examined before installing a new rope. The size of the groove should be approximately 7.1/2% greater than the nominal diameter of the rope - if the groove is too small early rope failure may be expected.

Although there are specific exceptions (such as the use of V-grooved driving sheaves in lifts and elevators), grooves must have clearance for the rope and adequate circumferential support, to allow the movement of the strands and to facilitate bending. When grooves become worn and the rope is pinched at the sides, strand and wire movement is restricted and the ability of the rope to bend is reduced.

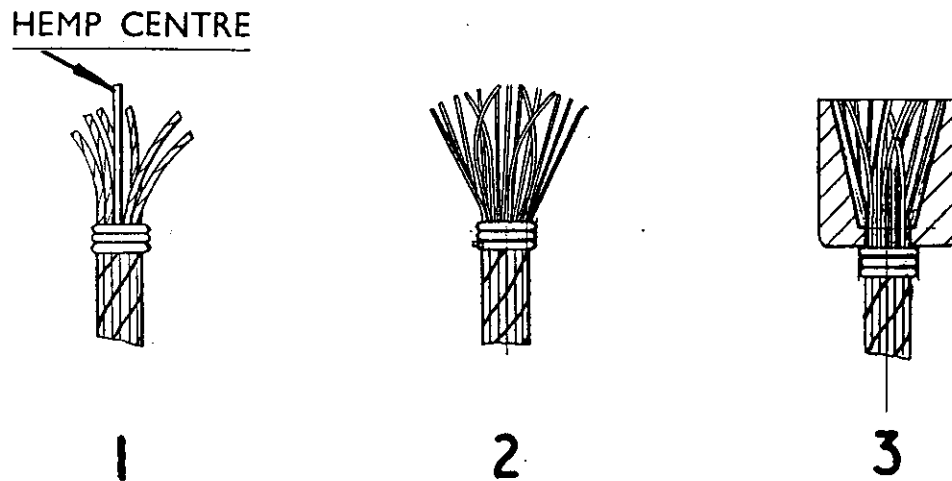
When a new rope is fitted a slight variation in size compared with the worn rope is usually apparent. The new rope may not fit into the previous imprint of the old, and unnecessary wear will take place. This may be remedied by machining out the grooves before fitting the new rope if it is thought wear would be excessive. A new rope has permissible tolerances in its diameter as laid down by British Standards.

SERVING BEFORE CUTTING

In general, ropes should be served on each side of the place where they are to be cut. The length of each serving should be equal to two diameters of the rope for six stranded ropes. For multi-strand and locked coil ropes two such servings should be applied. In the case of locked coil ropes these servings should be equal to twenty diameters of the rope.

When delivered from the factory a new locked coil rope will have five servings at each end. Wherever possible these servings should be retained during installation but should be removed for service. Two new servings should be applied subsequently whenever the rope is cut for adjustment and re-capping (re-socketing).

FITTING CABLE END FERRULES



Boughton Cable Ferrules, if correctly fitted, are simple and efficient, and will not pull out. Proceed as follows :

1. Bind the Cable with wire at a distance down from the end equal to the length of the ferrule. Unravel the main strands and remove the hemp core.
2. Unravel the wires in the strands to form a brush. Clean and remove grease by dipping in petrol. Dry. Repeat operation, using solution of spirits of salt.
3. Re-form the brush-end back to a tight wire using curved tongs, or, better still, a vice with half-round grooves in each jaw, to suit cable size. Push on the ferrule down to the wire binding. Splay out the wires inside the ferrule, melt zinc, test for pouring temperature by dipping stick of wood quickly in and out of metal. Wood should scorch but not ignite. Ferrule and wire assembly should be pre-heated. Pour in the zinc. Allow to cool slowly. Trim if required.

Danfoss

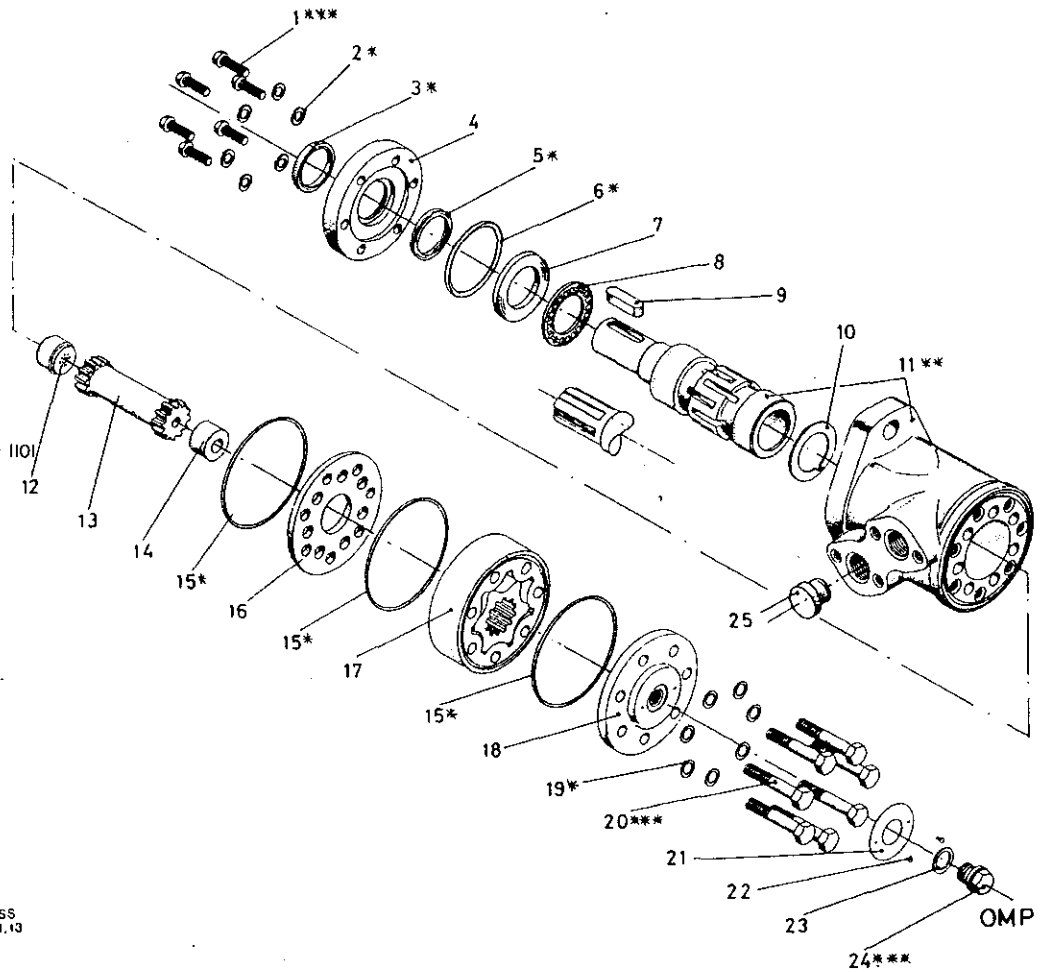
*Indgår i pakningsæt
 **Hus eller udgangsaksel sælges ikke separat
 ***Tilspændingsmoment:
 pos. 1. 0,5-0,8 kpm
 pos. 20. 3 -3,5 kpm
 pos. 24. 2 -2,5 kpm

*Belonging to set of seats - Pt.No. DA 151 1101
 **Separate housing or output shaft not available
 ***Tightening torque:
 item 1. 0,5-0,8 daNm (44- 70 lbf in)
 item 20. 3,0-3,5 daNm (260-305 lbf in)
 item 24. 2,0-2,5 daNm (175-220 lbf in)

*Bestandteil des Dichtungssatzes
 **Gehäuse oder Abtriebswelle werden nicht separat verkauft
 ***Anziehmoment:
 Pos. 1. 0,5-0,8 kpm
 Pos. 20. 3 -3,5 kpm
 Pos. 24. 2 -2,5 kpm

*Appartenant au jeu d'étanchéité
 **Carter et arbre de sortie ne sont pas disponibles a part.
 ***Couple de serrage:
 pos. 1. 0,5-0,8 kgf m
 pos. 20. 3 -3,5 kgf m
 pos. 24. 2 -2,5 kgf m

DANFOSS
 151-331.13



HYDRAULIC MOTOR ASSEMBLY.

Danfoss Ref: OMP 200 151 - 0004. Boughton Reference BW 34509.

Danfoss Ref: OMP 315 151 - 0005. Boughton Reference BW 63000.

Diag.

<u>Ref:</u>	<u>Part No:</u>	<u>Description.</u>	<u>Qty:</u>
1	DA 681X1989	Screw M6, 1 = 20 mm	6
2	DA 684X9008	Spring Ring	6
3	DA 151-1313	Dust Seal Ring 35.1 x 27.1 x 4 mm	1
4	DA 151-1440	Spigot Flange	1
5	DA 633B9003	Quad - Ring 36.8 x 29.7 x 3.5 mm (NBR*)	1
-	DA 633B9005	Quad - Ring 36.8 x 29.7 x 3.5 mm (FPM*)	1
6	DA 633B1191	'O' Ring 47.6 x 3.5 mm (NBR*)	1
7	DA 151.1608	Bearing Race	1
8	DA 151-1458	Axial Needle Bearing	1
9	DA 151-1467	Parallel Key B.S. 46 1/4"x 1/4" x 1/4"	1
10	DA 151-1310	Thrust Bearing	1
11	DA 151-1028	Housing and Output Shaft + Diag. Refs 9 & 12	1
12	DA151-1012	Magnet Trap	1
13	DA 151-1447	Cardan Shaft 1 = 80.5 mm	1
14	DA 151-1449	Spacer 1 = 14,0 mm (OMP 200)	1
-	DA 151-1449	Spacer 1 = 28,0 mm (OMP 315)	2
15	DA 633B1173	'O' Ring 75, 9 x 1,8 mm	3
16	DA 151-1451	Distributor Plate	1
17	DA 151-1022	Gear Wheel Set W = 26.0 mm (OMP 200)	1
-	DA 151-1023	Gear Wheel Set W = 40.9 mm (OMP 315)	1
18	DA 151-1459	End Cover	1
19	DA 684X2481	Washer	7
20	DA 681X1581	Screw M 8 x 50 mm (OMP 200)	7
-	DA 681X1582	Screw M 8 x 65 mm (OMP 315)	7
21	DA 151A0004	Name Plate (OMP 200)	1
-	DA 151A0005	Name Plate (OMP 315)	1
22	DA 681Z1011	Drive Screw	2
23	DA 633L2105	Washer	1
24	DA 151-1524	Drain Plug	1
25	DA 633X1422	Seal Plug	2