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**COBRA  
STEERING SYSTEMS  
INSTALLATION AND  
MAINTENANCE GUIDE**

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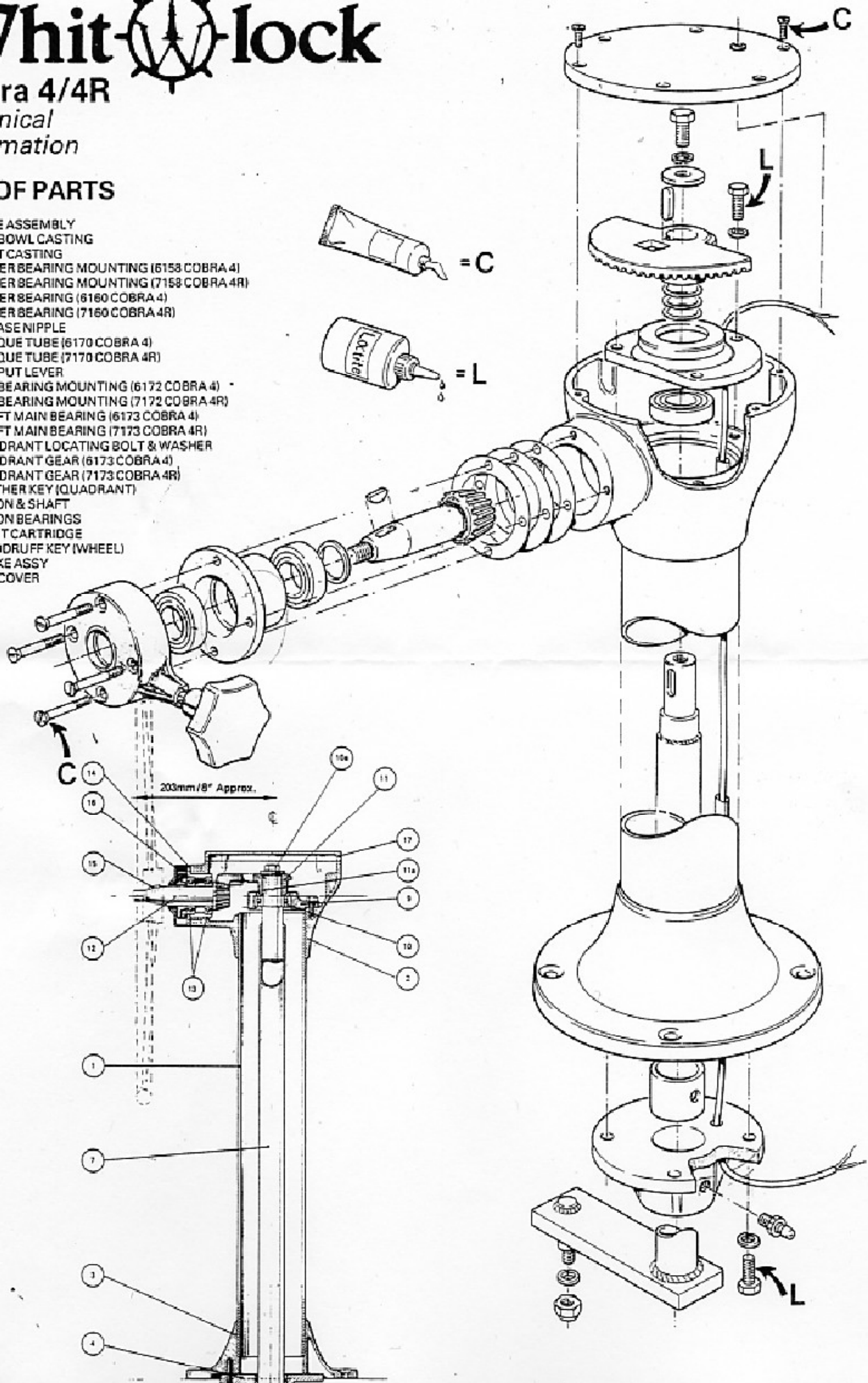
COBRA 6R DELUXE/  
COBRA 6  
MONOCOLUMN/  
COBRA PREMIERE XL  
Complies with ISO 8847

# Whitlock

## Cobra 4/4R Technical Information

### KEY OF PARTS

- 1 TUBE ASSEMBLY
- 2 TOP BOWL CASTING
- 3 FOOT CASTING
- 4 LOWER BEARING MOUNTING (6158 COBRA 4)
- 5 LOWER BEARING MOUNTING (7159 COBRA 4R)
- 6 LOWER BEARING (6160 COBRA 4)
- 7 LOWER BEARING (7160 COBRA 4R)
- 8 GREASE NIPPLE
- 9 TORQUE TUBE (6170 COBRA 4)
- 10 TORQUE TUBE (7170 COBRA 4R)
- 11 OUTPUT LEVER
- 12 TOP BEARING MOUNTING (6172 COBRA 4)
- 13 TOP BEARING MOUNTING (7172 COBRA 4R)
- 14 SHAFT MAIN BEARING (6173 COBRA 4)
- 15 SHAFT MAIN BEARING (7173 COBRA 4R)
- 10a QUADRANT LOCATING BOLT & WASHER
- 11 QUADRANT GEAR (6173 COBRA 4)
- 11 QUADRANT GEAR (7173 COBRA 4R)
- 11a FEATHER KEY (QUADRANT)
- 12 PINION & SHAFT
- 13 PINION BEARINGS
- 14 INPUT CARTRIDGE
- 15 WOODRUFF KEY (WHEEL)
- 16 BRAKE ASSY
- 17 TOP COVER



## Cobra 4/4R Maintenance

Your Cobra steering system has been designed and manufactured to the highest standards to provide many years of trouble free service. To get the best from your system there are some simple maintenance hints.

- 1.1 Once a season unscrew the six countersunk stainless screws which retain the top cover. Clean and refit using Whitlock anti-seize cream.
- 1.2 Carry out the same procedure on the four stainless steel countersunk screws which retain the brake cover. Note it is necessary to remove the steering wheel to access these screws. Be careful not to loose the steering wheel key!
- 1.3 At least twice a season thoroughly clean the pedestal in fresh water and apply a coat of good quality car wax polish.
- 1.4 If any paint has been accidentally chipped, immediately rub down the area locally using a fine grade of wet and dry abrasive and touch in with yacht enamel designed for aluminium surfaces. International Yacht Paints have suitable products.
- 1.5 Twice a season regrease the lower bearing via the grease nipple, using a medium viscosity thixotropic grease. This grease is available from Whitlock Marine or its agents in a handy ½ kg tub.
- 1.6 Periodically check that the tiller lever, draglink assembly and output lever nut are securely fastened.
- 1.7 Every two years remove the compass and top cover (see point 1.1 above) to inspect the gears and check the integrity of the quadrant key and fastening bolt. Rotate the steering wheel until the system reaches the rudder stop and apply additional moderate turning effort to check there is no relative movement between quadrant and down shaft assembly. Remember to seal the top cover, compass wire grommet and compass fixing bolts on re-assembly.

### Reshimming pedestal to adjust gear mesh

It is possible after a period of time for a small amount of play to develop in the gear mesh. This will not exceed 10mm on the rim of a 1000mm diameter wheel and can be easily removed following the procedure set out below.

- 2.1 Remove steering wheel and steering wheel key.
- 2.2 Remove the 4 countersunk stainless steel screws which retain the brake cover.
- 2.3 Withdraw the brake assembly.
- 2.4 Refit the steering wheel without the key and by pulling on the wheel withdraw the input socket assembly. If you are unable to apply sufficient force it is permissible to use a wooden bolster on the hub of the steering wheel and strike with a hammer.
- 2.5 Remove 1 plastic shim which is situated between the input socket and the face of the top bowl casting.
- 2.6 Re-assemble in the opposite order using anti-seize paste on the countersunk screws.

## Cobra 4/4R Trouble Shooting

Please note the most likely cause of damage is incorrectly set or missing rudder stops. It is essential the rudder stops operate before the travel limiter in the head of the pedestal. If in any doubt regarding this point contact your boat builder or local Whitlock agent. No warranty is offered where rudder stops are incorrectly fitted.

The Cobra system is an extremely robust unit and is unlikely to develop any major faults. If damage should occur, the equipment can be stripped down as follows:

- 3.2 Remove steering wheel and input socket assembly as described in section 2.1-2.4.
- 3.3 Unscrew M 10 hexagon head set screw which secures quadrant to downshaft assembly. Also withdraw spring washer and heavy duty plain washer.
- 3.4 Using a sprocket extractor withdraw quadrant from downshaft. *Please note:* one leg of the extractor passes through square aperture in quadrant and the other fits under lip directly opposite. It is necessary to place a circular packing piece under the extractor bolt to prevent damage to the M 10 thread at the top of the downshaft. It is permissible to refit the M 10 hexagon screw in place of a packer providing it is fully tightened before extractor is fitted.
- 3.5 Unscrew the four M 10 stainless steel bolts and spring washers which locate the lower bearing assembly to the pedestal foot.
- 3.6 Remove quadrant feather key from the downshaft.
- 3.7 Using a wood, aluminium or copper bolster press downshaft through output socket bearing.
- 3.8 Withdraw downshaft, output lever and lower bearing assembly from the bottom of the pedestal.
- 3.9 Re-assemble in the reverse procedure. Please note it is essential to apply Loctite retainer grade 601 to the 4 x M 10 screws securing the lower bearing housing and the M 10 screw securing the quadrant to the down shaft. Also apply anti-seize cream to the input socket and top plate screws. Reseal the compass wire grommet, compass mounting screws and pedestal top plate on re-assembly to prevent ingress of water.

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Nya Varvet,  
S-421 71 V. Frolunda,  
Sweden.

British Marine srl,  
Via Castagnevizza 4,  
00054 Fiumicino,  
Roma, Italy.

Brage Marin,  
Nordhavn 6000,  
Kolding, Denmark.

Bueher and Walt,  
rte de Soleure 8,  
CH 2072 St. Blaise/Neuchatel,  
Switzerland.

Bukh Diesel,  
Vertriebsgesellschaft MbH,  
Kornstrasse 243,  
D-2800 Bremen 1,  
W. Germany.

Great Circle Trading Co. Ltd.,  
90 Signet Drive,  
Unit 20,

Weston, Ontario,  
Canada M9L 1T5.

Yacht Hellas S.A.,  
P.O. Box 10189,  
541.10 Thessaloniki,  
Greece.

Halon Marine Developments AS.,  
P.O. Box 5360,  
0304 Oslo 3,  
Norway.

Marine Power and Service Ltd.,

Nautivaruste Oy,  
Paaskylankatu 5,  
SF-00500, Helsinki,  
Finland.

Plastimo USA Inc.,  
3605 Selnick Drive,  
Route 100 Industrial Park,  
Baltimore,  
MD 21227, USA.

Messrs Plastimo,  
BP 162,  
56104 Lorient Cedex,  
France.

Power Marine and  
Machine (Pty) Ltd.,  
P.O. Box 88,  
Constantia 7848,  
South Africa.

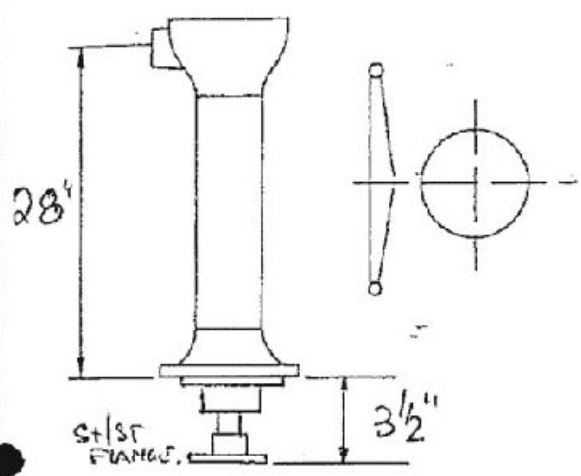
Whitlock Europe,  
Industriehavn 24,  
Postbus 269,  
3220 AG Hellevoetsluis,  
Netherlands.

Whitlock Southern,  
Shamrock Quay,  
William Street, Northam,  
Southampton, SO1 1OL.

Messrs. Welebnj,  
Brunnenfeldstrasse 15,  
A-4030 Linz,  
Austria.

Bias Mail Pty Ltd.,  
P.O. Box 11,  
Willoughby,  
New South Wales.

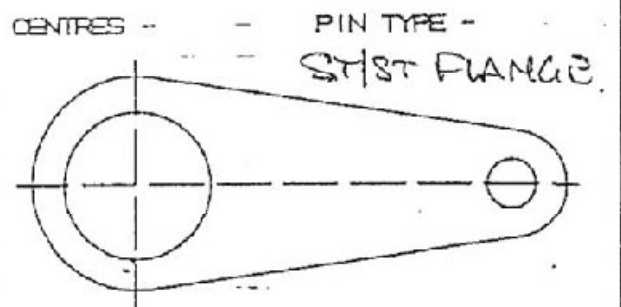
PEDESTAL TYPE — COBRA SEDGELUXE



BED TUBE = 25 7/8"  
DOWN TUBE = 34 1/4"

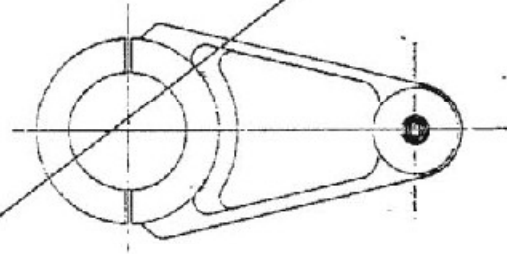
TOP PLATE TYPE — STD G/RAIL  
GUARD RAIL TYPE — STD G/RAIL

OUTPUT LEVER TYPE -



TILLER LEVER BORE -

CENTRE 1 - PIN TYPE -  
CENTRE 2 - PIN TYPE -  
KEYWAY WIDTH -



BEVELHEAD TYPE  
GEARBOX TYPE

REUSE ST/ST FLANGE UNDER A&D.  
+ RESET AS ORIGINAL.

DRAGLINK TYPE

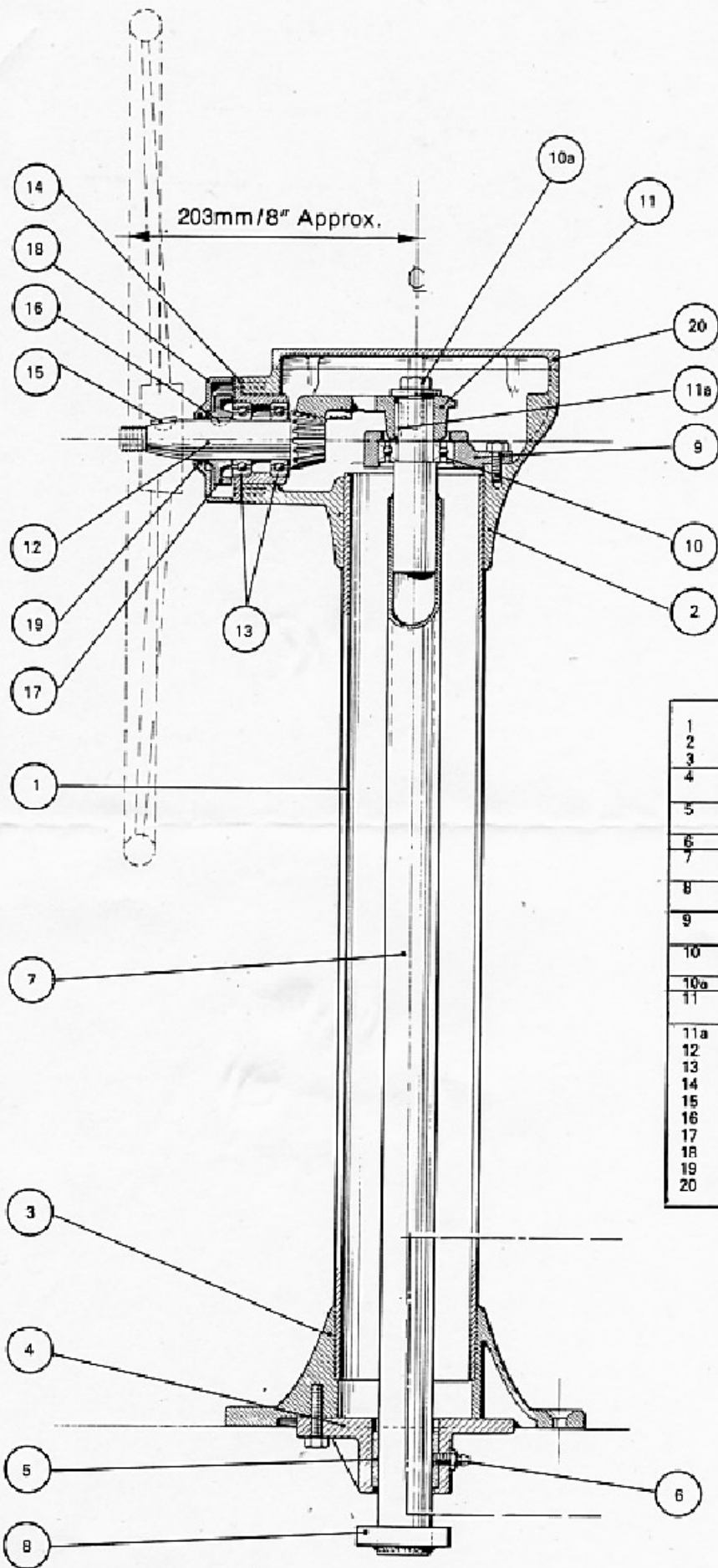
D1 CENTRES  
MATERIAL

D2 CENTRES  
MATERIAL

LINESHAFT TYPE

- L1 \_\_\_\_\_
- L2 \_\_\_\_\_
- L3 \_\_\_\_\_
- L4 \_\_\_\_\_
- L5 \_\_\_\_\_
- L6 \_\_\_\_\_
- L7 \_\_\_\_\_
- L8 \_\_\_\_\_

SPECIALS - SEE OVER



1	TUBE ASSEMBLY
2	TOP BOWL CASTING
3	FOOT CASTING
4	LOWER BEARING MOUNTING (6158 COBRA 3)
5	LOWER BEARING MOUNTING (7158 COBRA 3R)
6	LOWER BEARING (6160 COBRA 3)
7	LOWER BEARING (7160 COBRA 3R)
8	GREASE NIPPLE
9	TORQUE TUBE (6170 COBRA 3)
10	TORQUE TUBE (7170 COBRA 3R)
11	DRAG LINK (6171 COBRA 3)
11a	DRAG LINK (7171 COBRA 3R)
12	TOP BEARING MOUNTING (6172 COBRA 3)
13	TOP BEARING MOUNTING (7172 COBRA 3R)
14	SHAFT MAIN BEARING (6173 COBRA 3)
15	SHAFT MAIN BEARING (7173 COBRA 3R)
16	QUADRANT LOCATING BOLT & WASHER
17	QUADRANT GEAR (6173 COBRA 3)
18	QUADRANT GEAR (7173 COBRA 3R)
19	FEATHER KEY (QUADRANT)
20	PINION & SHAFT
20a	PINION BEARINGS
20b	PINION BEARING MOUNTING
20c	WOODRUFF KEY (WHEEL)
20d	WOODRUFF KEY (DAMPER DRUM)
20e	DAMPER DRUM
20f	DAMPER DRUM COVER
20g	SEAL
20h	TOP COVER

Note: External dimensions as Mamba 3 & 3R.

Fig. 12 Section through pedestal assembly.

## Cobra 6R Deluxe/King Cobra MK6 Maintenance

Your Cobra steering system has been designed and manufactured to the highest standards to provide many years of trouble free service. To get the best from your system there are some simple maintenance hints.

1.1 Once a season unscrew the 4 countersunk stainless screws which retain the top cover. Clean and refit using Whitlock anti-seize.

1.2 Carry out the same procedure on the four stainless steel socket screws which retain the input assembly. Note it is necessary to remove the steering wheel and brake spinner to access these screws. Be careful not to lose the steering wheel key!

1.3 At least twice a season thoroughly clean the pedestal in fresh water and apply a coat of good quality car wax polish.

1.4 If any paint has been accidentally chipped, immediately rub down the area locally using a fine grade of wet and dry abrasive and touch in with yacht enamel designed for aluminium surfaces. International Yacht Paints have suitable products.

1.5 Periodically check that the tiller lever, draglink assembly and output lever nut are securely fastened.

1.6 Every two years remove the compass and top cover (see point 1.1 above) to inspect the gears and check the integrity of the quadrant to down tube fixing. Rotate the steering wheel until the system reaches the rudder stop and apply additional moderate turning effort to check there is no relative movement between quadrant and down tube assembly. Inspect for damage or wear to the sealing which fits between the top cover and the head. Replace the top cover, compass wire grommet and compass fixing bolts on re-assembly.

## Reshimming pedestal to adjust gear mesh

It is possible after a period of time for a small amount of play to develop in the gear mesh. This will not exceed 10mm on the rim of a 1000mm diameter wheel and can be easily removed following the procedure set out below.

2.1 Remove steering wheel, brake spinner and steering wheel key.

2.2 Remove the 4 socket stainless steel screws which retain the input assembly.

2.3 Withdraw the input assembly.

2.4 Refit the steering wheel without the key and by pulling on the wheel withdraw the input socket assembly. If you are unable to apply sufficient force it is permissible to use a wooden bolster on the hub of the steering wheel and strike with a hammer.

2.5 Remove 1 plastic shim which is situated between the input socket and the face of the top bowl casting.

2.6 Re-assemble in the opposite order using anti-seize on the cap screws.

The Cobra system is an extremely robust unit and is unlikely to develop any major faults. If damage should occur, the equipment can be stripped down as follows:

3.1 Remove compass and top cover plate which is secured via 4 stainless steel countersunk screws.

3.2 Remove steering wheel and input assembly as described in section 2.1-2.4.

3.3 Disconnect draglink from output lever via aeronut.

3.4 Unship pedestal from cockpit floor by unscrewing four countersunk screws, washers and nuts.

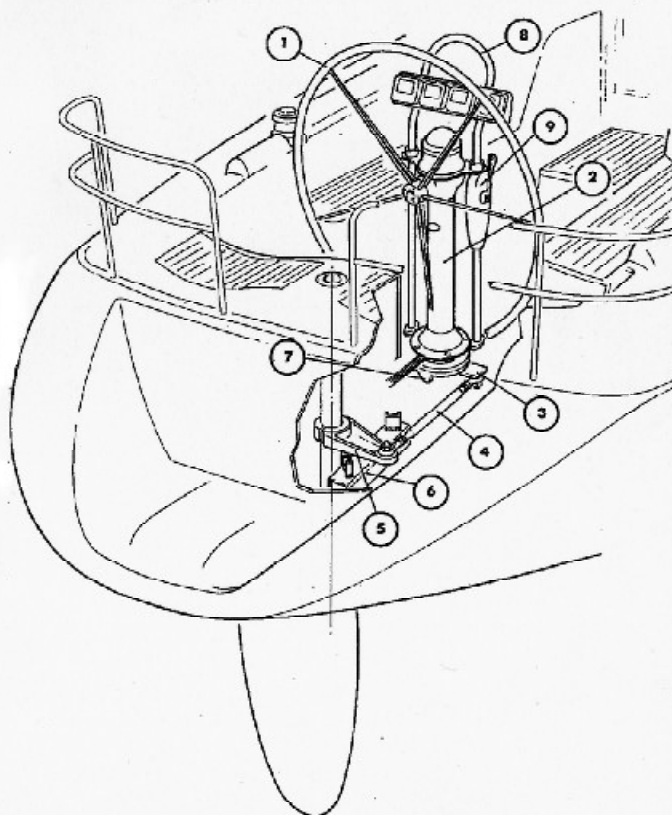
3.5 Grind back weld that secures stainless steel output lever to down tube. Mark relative position of output lever to down tube and then tap off output lever.

3.6 Remove 3 off M8 stainless steel bolts and spring washers that secure output socket to pedestal bowl. Withdraw quadrant, downshaft and output socket assembly taking care not to mislay plastic shims fitted between output socket and pedestal bowl.

3.7 Refit in reverse order — *Please note:* It is essential to apply Loctite retainer grade 601 to the 3 off M8 bolts/spring washers that secure the output socket to the pedestal bowl. Also apply anti-seize to the input socket and top plate screws. Reseal the compass wire grommet, compass mounting screws and pedestal top plate on re-assembly to prevent ingress of water.

3.8 If it has been necessary to replace the down tube/quadrant assembly, the output lever will have to be repositioned. Lock the pedestal brake with the quadrant in midship's. If the pedestal is mounted in the normal position, forward of the rudder stock, bias the output lever 15 degrees forward of athwartships on either starboard or portside to match tiller arm. Reweld using stainless steel welding rods.

## INSTALLATION INSTRUCTIONS



### 'Basic components of Cobra systems'

#### KEY OF PARTS

1. Steering wheel
2. Pedestal assembly
3. Output lever integral with pedestal
4. Draglink assembly with rose joints
5. Tiller lever
6. (Boat builder supplied) rudder stops
7. Pedestal stop ring
8. Guard rail
9. Single lever engine control

Your Cobra system has been designed and manufactured to the highest standards to provide many years of trouble free service. To aid you with the installation we have prepared these simple guidelines, which are vital to follow if the systems full potential and reliability are to be achieved. The notes should be read carefully before installation is commenced. Should you encounter any problems not covered in these instructions or have any queries please contact your local Whitlock agent who will be pleased to provide technical guidance.

### General Description

The Cobra system is the world's most popular steering for aft cockpit sailboats and has been continually refined since its inception to provide outstanding performance 'feel' and reliability. The basic system comprises of five components.

The steering wheel, available in a range of stock sizes from 16" to 48" diameter and Mini Maxi style up to 60". The standard wheel is manufactured from stainless steel and is fully welded and polished. Racing wheels are also available in 6082T6 alloy and all wheels can be fitted with hide covers and spats.

The pedestal contains the rack and pinion gearing and is supplied as standard with friction brake, compass wiring and compass mounting plate.

The output lever is constructed from stainless steel and is normally prewelded to the pedestal downshaft in the correct position for your installation.

An AHFT10 type stainless steel drag link with teflon lined stainless steel rosejoints is employed on the Cobra 6R Deluxe models, and the larger AHFT12 version is used on the King Cobra derivative. Both types have threaded fittings to allow some final adjustment to be made on site. In general, however, we supply the rod or tube section pre-finished to your specification.

Tiller arms are available to suit rudder stocks from 1 1/2" (25mm) to 5 1/2" (125mm) and can be finished bored and keyed to suit your rudder stock for a nominal charge. Special tiller arms are available for transom mount rudders, severely raked stocks and to accept linear type autopilots.

### Installation — basic steps

1. Sight pedestal
2. Reinforce cockpit floor if necessary
3. Drill cockpit floor and fit pedestal
4. Fit tiller arm
5. Fit rudder stops or Cobra stop ring
6. Install draglink
7. Test system

### CAUTION

Please note that the most likely cause of damage is incorrectly set or missing rudder stops. It is essential the rudder stops operate before the travel limiter in the head of the pedestal. They must be sufficiently rigid to prevent the quadrant from reaching the travel limiter when moderate load is applied to the wheel rim and the tiller is on its stops. Rudder stops must be designed to withstand 150% of the rated load of the steering system. Please refer to the specification page.

If in any doubt regarding the point contact your boat builder or local Whitlock agent. No warranty is offered where rudder stops are incorrectly fitted.

It is bad seamanship to let go of the wheel while manoeuvring the boat astern. In addition, if this misadventure of the equipment occurs at high speed and the wheel is left to run until the steering reaches its rudder stops, damage can occur to the key, the gearing or the pedestal structure.