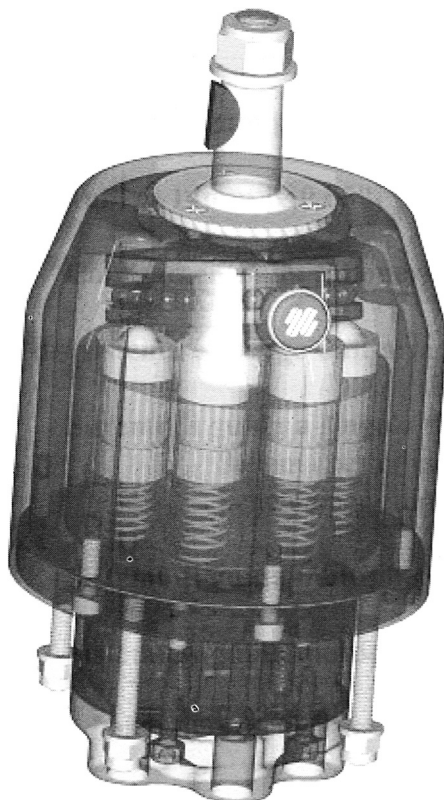
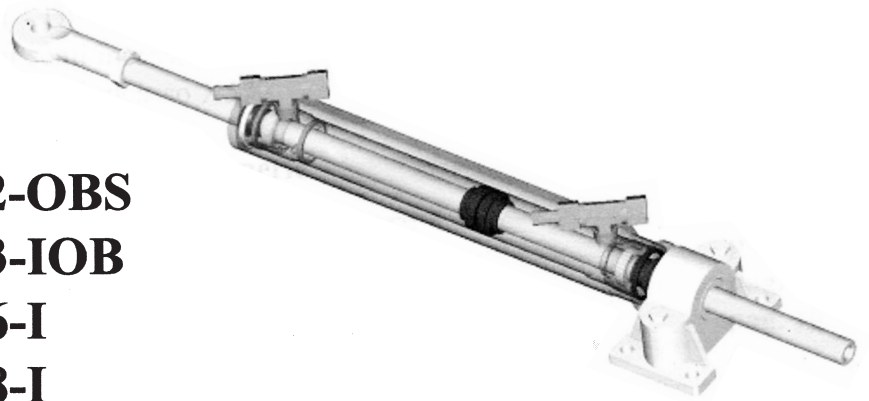




HYDRAULIC STEERING SYSTEMS INSTALLATION MANUAL

CYLINDERS UC132-OBS
UC133-IOB
UC116-I
UC168-I
UC215-I
UC293-I







PUMPS SERIE UP 39
SERIE UP 33
SERIE UP 28

TABLE OF CONTENTS

General safety warnings	pag. 2
Guarantee	pag. 3
Diagrams	pag. 4
Helm installation	pag. 5
Steering gear dimensions and features	pag. 5
UP28F - UP33F - UP39F	pag. 6
UP33R - UP39R	pag. 6
UP28T - UP 33T - UP39T	pag. 6
Half embedding kit X56	pag. 7
Half embedding kit X57	pag. 8
Mounting configuration	pag. 9
UP28F - UP33F – UP39F	pag. 9
UP33R - UP39R	pag. 9
Half embedding kit X56	pag. 10
Half embedding kit X57	pag. 10
Cylinder installation	pag. 11
Inboard UC116-I UC168-I UC215-I UC293-I	pag. 11
Outboard UC133-IOB	pag. 13
Outboard UC132-OBS	pag. 14
Mounting the hoses	pag. 15
9.5mm[3/8"] hoses for inboard cylinder	pag. 15
14mm[0.55"] hoses for outboard cylinder	pag. 16
Connection to helm	pag. 17
Filling the system and bleeding	pag. 18
Single station and single cylinder system	pag. 19
Fixed bar cylinder diagram	pag. 20
Moving bar cylinder diagram	pag. 21
Multiple station with fixed bar cylinder/s	pag. 22
Multiple station with moving bar cylinder	pag. 23
Warning, caution and servicing	pag. 25
Technical features	pag. 27
Troubleshooting	pag. 29

WARF AND/OR INSTALLATION PERSONNEL AND USERS OF THE STEERING SYSTEM.

In this documentation the warning and caution notes (with the international danger pictogram “”) are intended to warn the builder or the installation personnel about special instruction to be observed during particular operations or services, which can be very dangerous if not executed or executed careless. **Observe these notes carefully!**

 WARNING	 CAUTION	 NOTICE
Non compliance with these notes CAN CAUSE serious personal injuries and/or material damages.	Non compliance with these notes CAN CAUSE personal injuries and/or light material damages.	Important information for the correct installation of service, does NOT cause any damage

Read these instructions carefully before installing the system. **Ultraflex** is not responsible for damages caused by installations which are not made in compliance with these instructions, by the use of non original components, or by non authorised modifications.

This precision product can work not properly if it's dirty or if there are contaminants inside the system.

The hydraulic steering systems of ULTRAFLEX S.p.A. are designed accordingly to the UNI-EN-ISO 10592 and the A.B.Y.C. project P21 norms.

GENERAL SAFETY WARNINGS

This steering system is supplied accordingly to the UNI-EN-ISO 10592 norm in force at time of delivery. All the components must be suspended independently from the connection tubes. All the connections, fittings, oil filling holes and bleeder holes must be accessible. The steering system can be operated at temperatures between -20°C ($+22^{\circ}\text{F}$) and $+60^{\circ}\text{C}$ ($+166^{\circ}\text{F}$). Store at a temperature between -40°C (-14°F) and $+85^{\circ}\text{C}$ ($+211^{\circ}\text{F}$).

Any improper or incorrect use of the system can lead to risks of serious injuries.

Therefore the instructions and recommendations below must be followed strictly to prevent incidents.

- 1) The steering system has to be installed only by expert and authorised personnel. In particular the operations upon the hydraulic system must be taken out exclusively by professional service technicians.
- 2) When you receive the material, open the packing and control that the steering system has not been damaged during the transport. When needed, the system need to be stored at the indicated temperature range, and the components has to be controlled periodically for wear and tear, moving them with suitable means to avoid damage.
- 3) The installation personnel, operators, maintenance and service personnel must carefully read and follow the instructions and the safety warnings.
- 4) Any functionally defect of the system must be communicated immediately to the specific authorised personnel.
- 5) In case of fault of the system, the vessel must be stopped immediately. The vessel can be used again only when the cause of the fault has been removed and the specialised service personnel authorises the use of the system.
- 6) Removal of safety devices is an indictable criminal offence accordingly to the penal code of the land of destination.
- 7) The user is the only responsible for modifications or transformations of the steering system concerning safety.

- 8) Only original spare parts must be used. **Ultraflex** is not responsible for the use of non-original spare parts, the use of which causes the invalidation of the guarantee.
 - 9) The user is responsible for adjustments to revisions successive to the delivery of the steering system.
 - 10) If the steering system is second-hand, the user must control the integrity of the system and the conformity with the regulations in force.
 - 11) Contact Ultraflex S.p.A. for a new copy of this manual in case the one in your possession is no longer legible or incomplete.
 - 12) The waste materials of the installation and the service (oil, fat, solvents etc.) must be disposed accordingly to the regulations in force and the prescriptions of the local authorities.
 - 13) The guarantee for manufacturing defects falls under the following conditions and terms.
-

GUARANTEE CONDITIONS AND EXCLUSIONS

Ultraflex S.p.A. guarantees the product to be free from defects in materials and workmanship for a period of two years from the time of its manufacturing.

If during this period proves defective due to improper materials or workmanship, the manufacturer will repair or replace the defective part without charge for labour or parts.

All the other direct or indirect damages are not covered by this guarantee.

In particular **Ultraflex S.p.A.** is not responsible (except for substitution or repair of defective parts accordingly to the conditions and terms above) and this guarantee will not cover the damage resulting from incorrect installation or use of the product.

This guarantee does not cover the product installed on race boats.

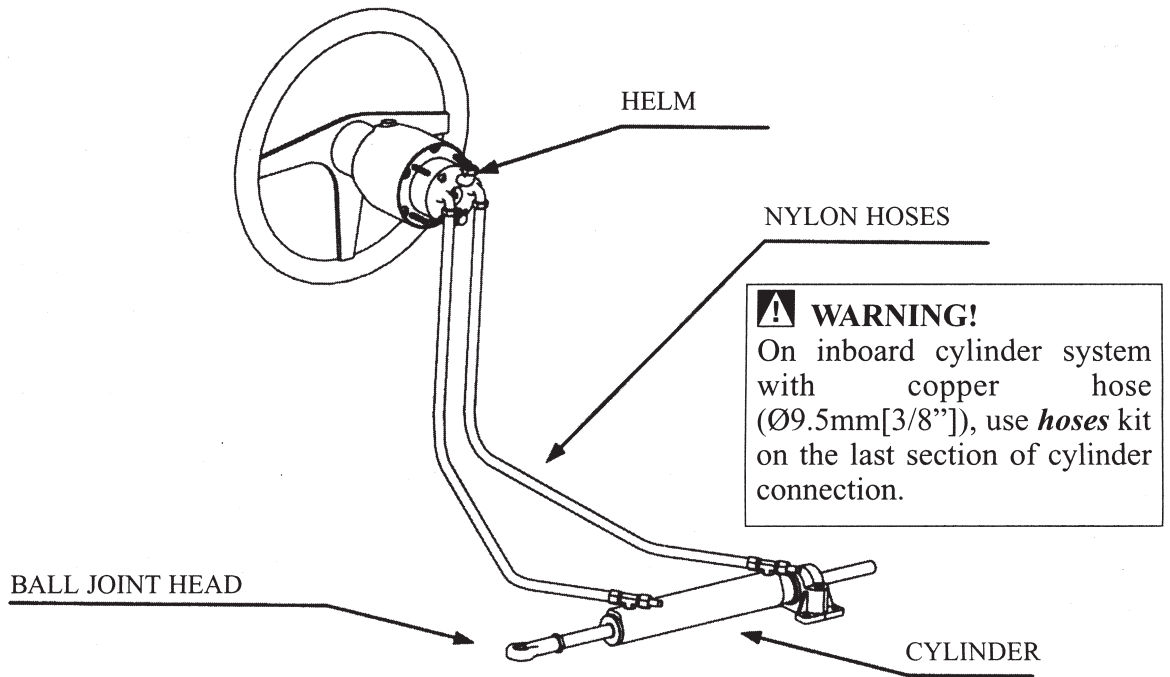
Ultraflex S.p.A. has the right to make the necessary modifications on her products.

The **Ultraflex** steering system are marked **CE**, accordingly to the community regulation 94/25 and the norm ISO 10592. The **CE** inspection has been taken out by an inspection body notified by the European Community.

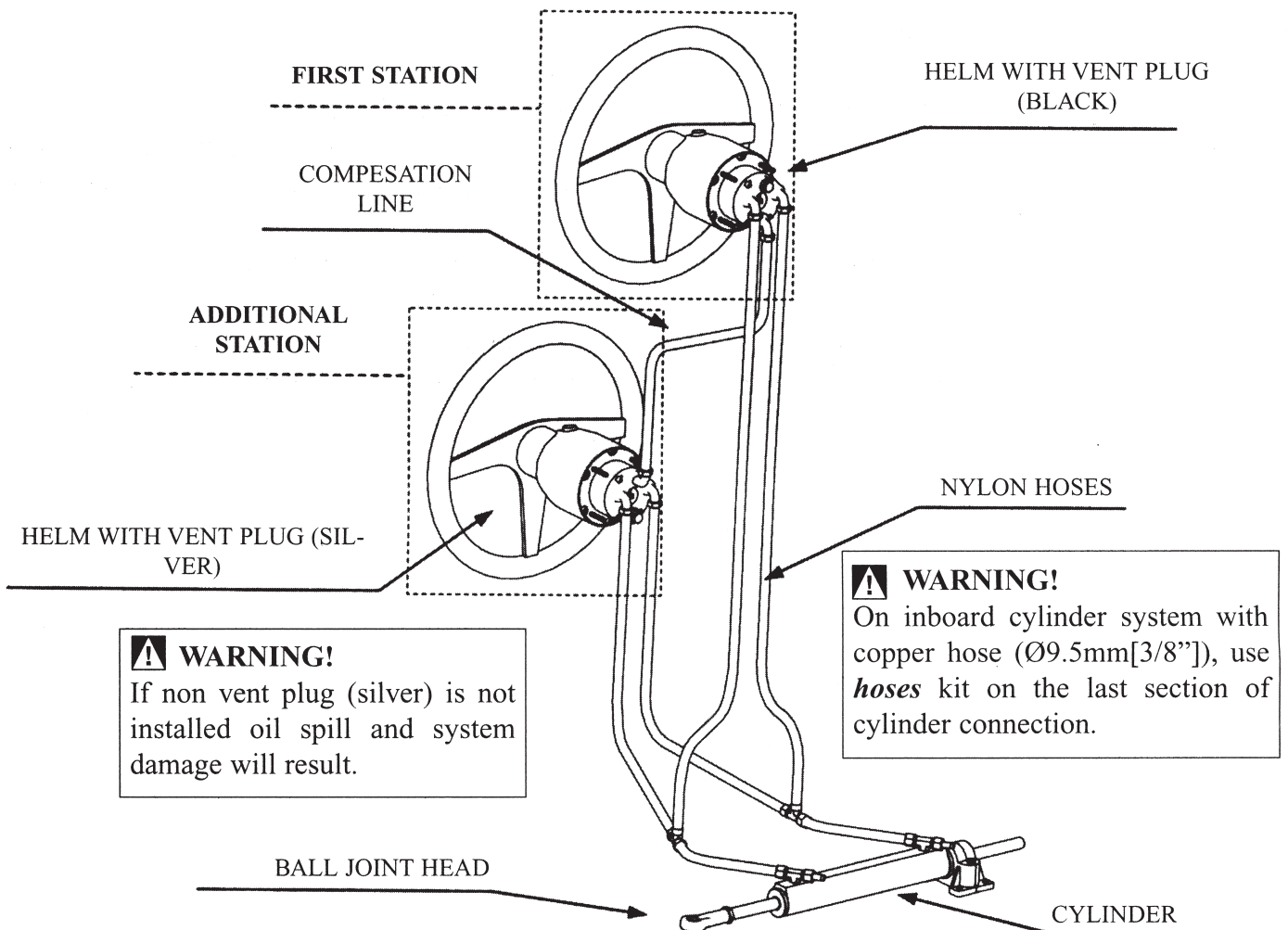
On the vessels marked **CE** must be used only **CE** marked steering systems. (Art. 3 and 5 of regulation 94/25/CE).

The **Ultraflex S.p.A.** guarantee falls immediately if the **Ultraflex** components are installed in a steering system together with components of other manufacturers, witch are not specified on pag. 4 of the Ultraflex catalogue "*Hydraulic Steering Systems*".

SINGLE STATION SYSTEM DIAGRAM



TWIN STATION SYSTEM DIAGRAM



HELM INSTALLATION

Ultraflex helms may be mounted on horizontal or vertical dash board or with any angle in between but the filler plug must be in the uppermost position.

For a correct helm installation to the dash board:

- Refer to manual instruction of your helm.
- Read manual and **sheet instructions** carefully. The sheet with the dash board **template** is enclosed with the helm.
- Use only original components (screws, nuts, flanges, etc.)

⚠ WARNING!

Use only self-locking nuts supplied, otherwise separation of helm and loss of steering control may result.

⚠ WARNING!

Use only Loctite 542 or Loctite 545 to tighten conical pipe fitting to the helm. Never use Teflon tape or sealant on any connections. Use carefully sealing fluid. If it arrives in the hydraulic system may causing damage and failure.

Fit and screw manually pipe fittings completely. Then tighten with the proper wrench for 1 and 1/2 - 2 and 1/2 turns until correct position for hoses connections. However do not exceed a torque wrench setting of 17.6 [N·m] (156 [in.·lbs]).

STEERING GEAR DIMENSIONS AND FEATURES

FRONT MOUNT STEERING GEAR (UP28F – UP33F – UP39F)

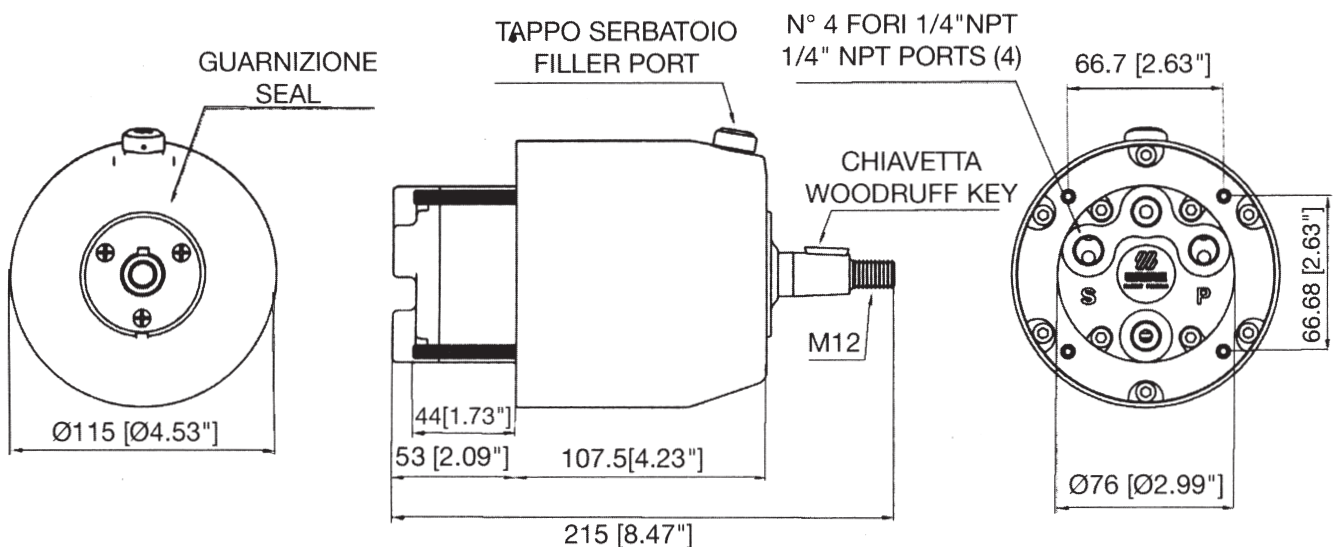


fig. 1

REAR MOUNT STEERING GEAR (UP28R - UP33R - UP39R)

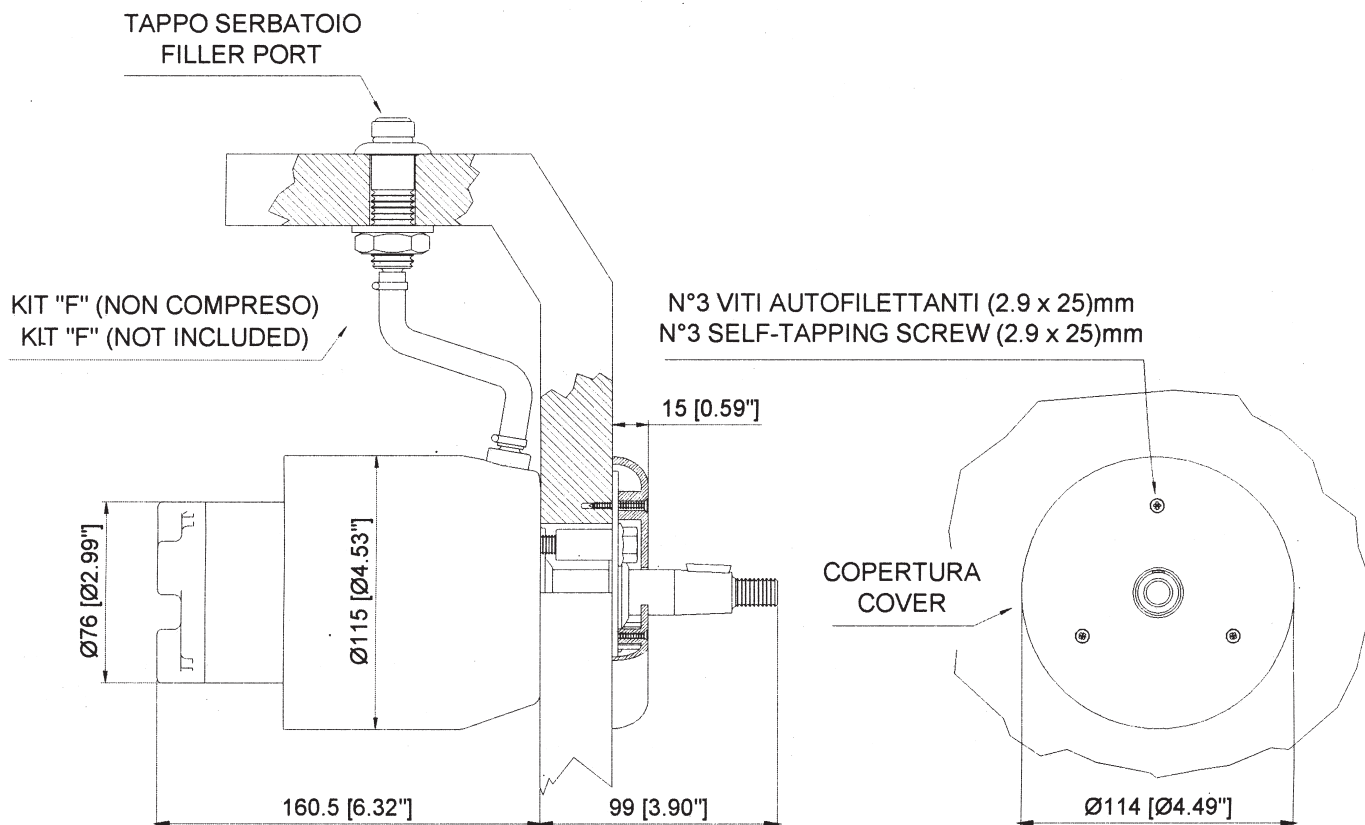


fig. 2

STEERING GEAR WITH TILT X52 (UP28T - UP33T - UP39T)

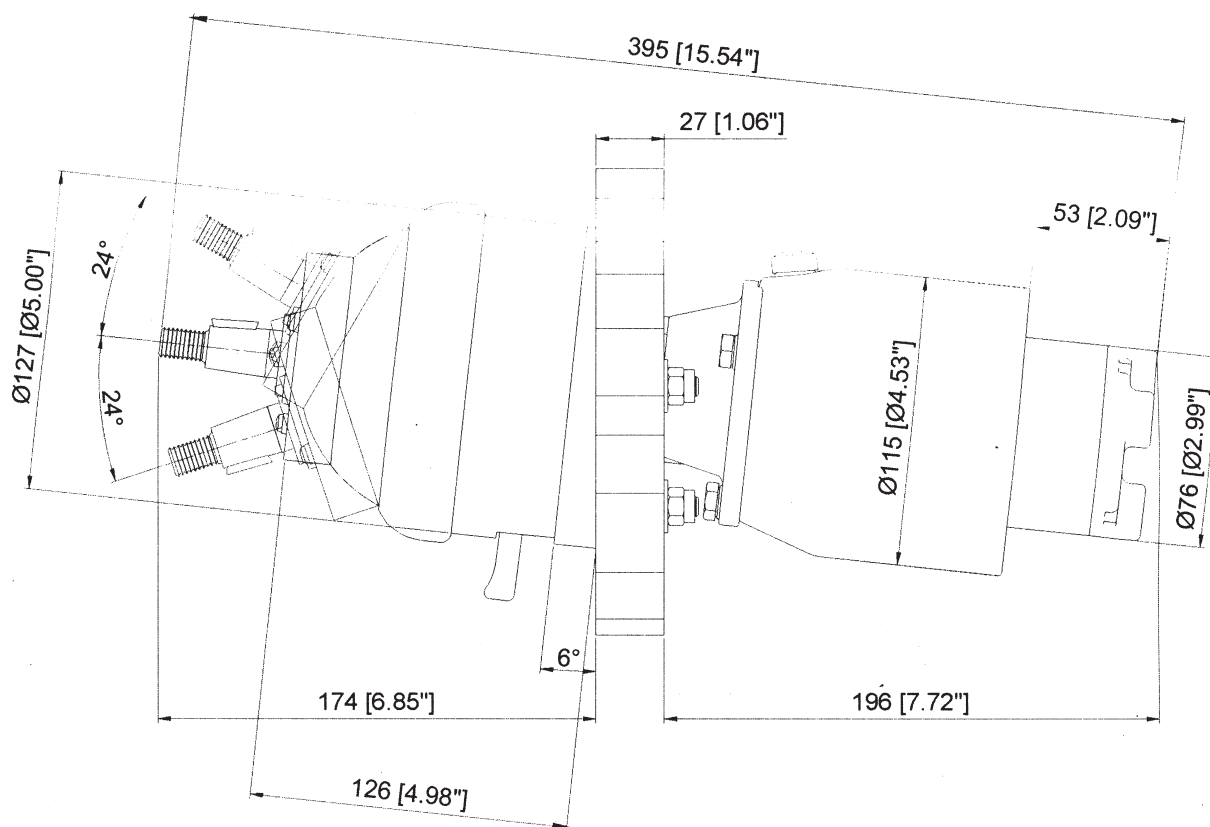
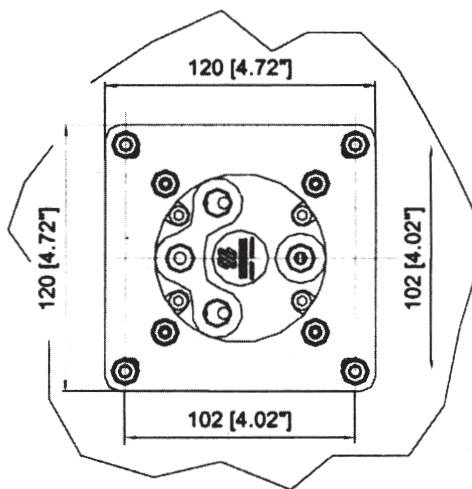


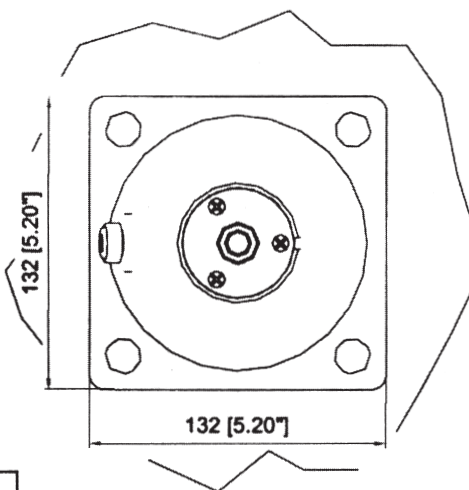
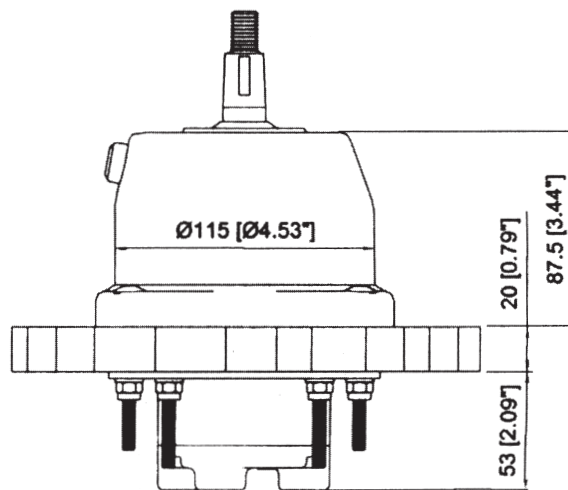
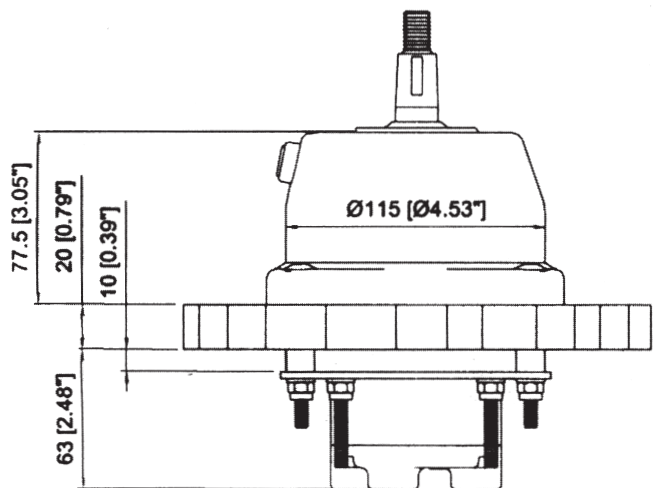
fig. 3

**HALF EMBEDDING UP28F – UP33F – UP39F STEERING GEAR X56 SQUARE FLANGE
(ex: application on 20mm [0,79"] dashboard)**



APPLICATION WITH 10mm [0,39"] SPACERS

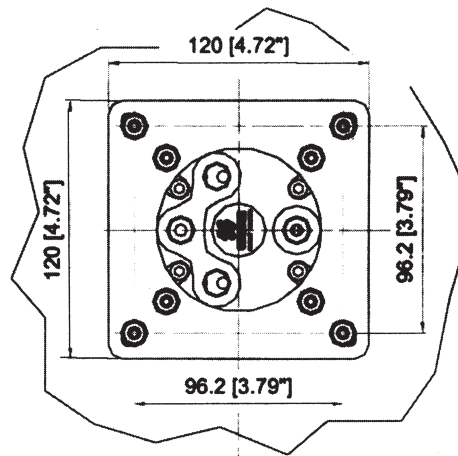
APPLICATION WITHOUT 10mm [0,39"] SPACERS



NOTE:
Helm projection springs form dashboard thickness.

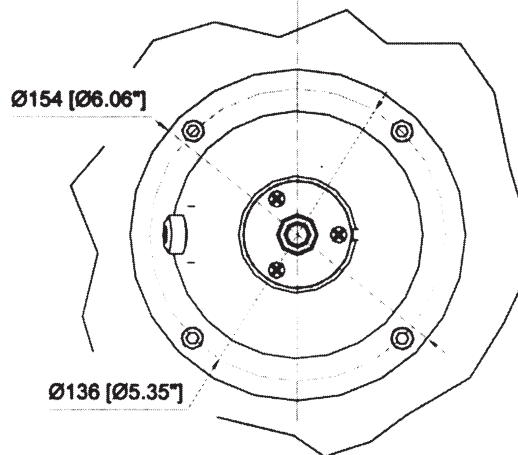
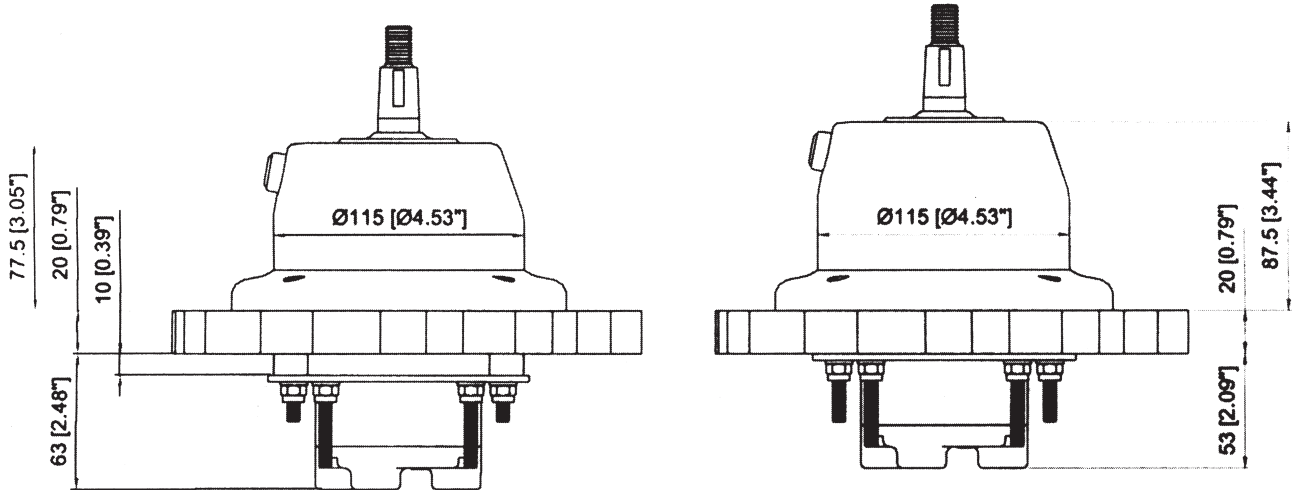
fig. 4

HALF EMBEDDING UP28F – UP33F – UP39F STEERING GEAR X57 ROUND FLANGE
 (ex: application on 20mm [0,79"] dashboard)



APPLICATION WITH 10mm [0,39"] SPACERS

APPLICATION WITHOUT 10mm [0,39"] SPACERS



NOTE:
 Helm projection springs form dashboard thickness.

fig. 5

MOUNTING CONFIGURATION

FRONT STEERING GEAR

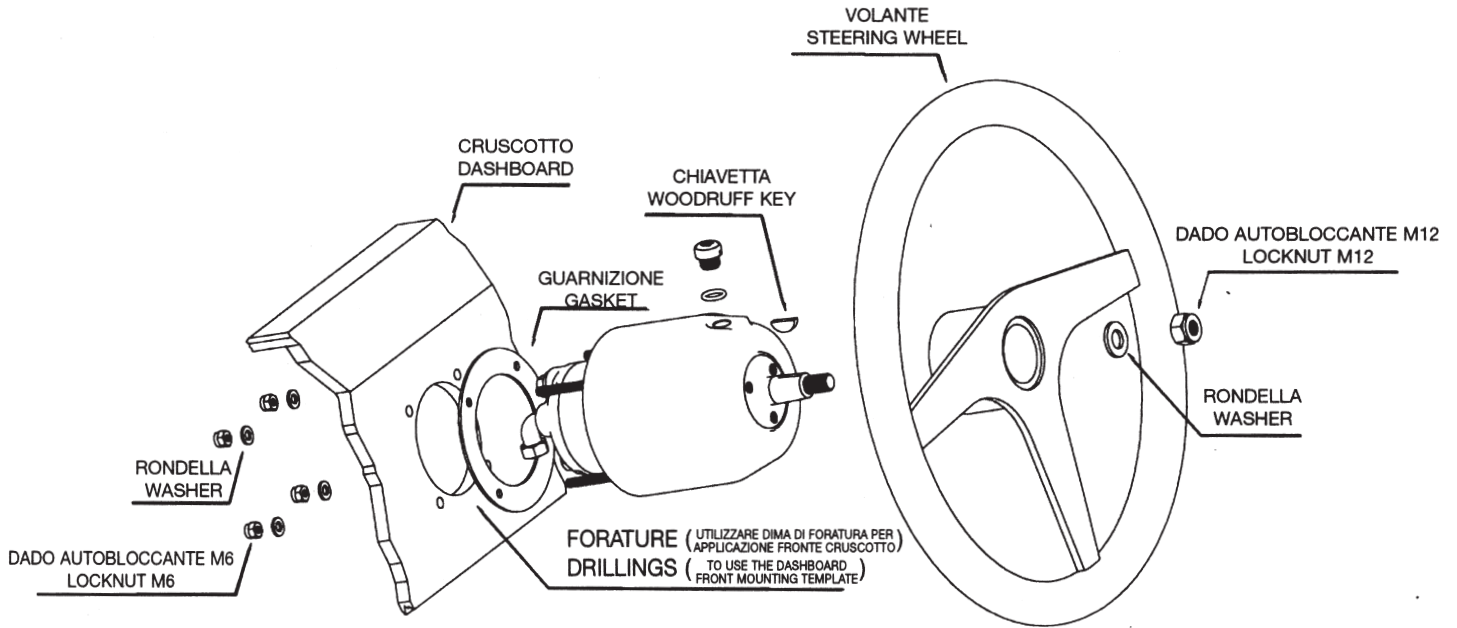


fig. 6

REAR STEERING GEAR

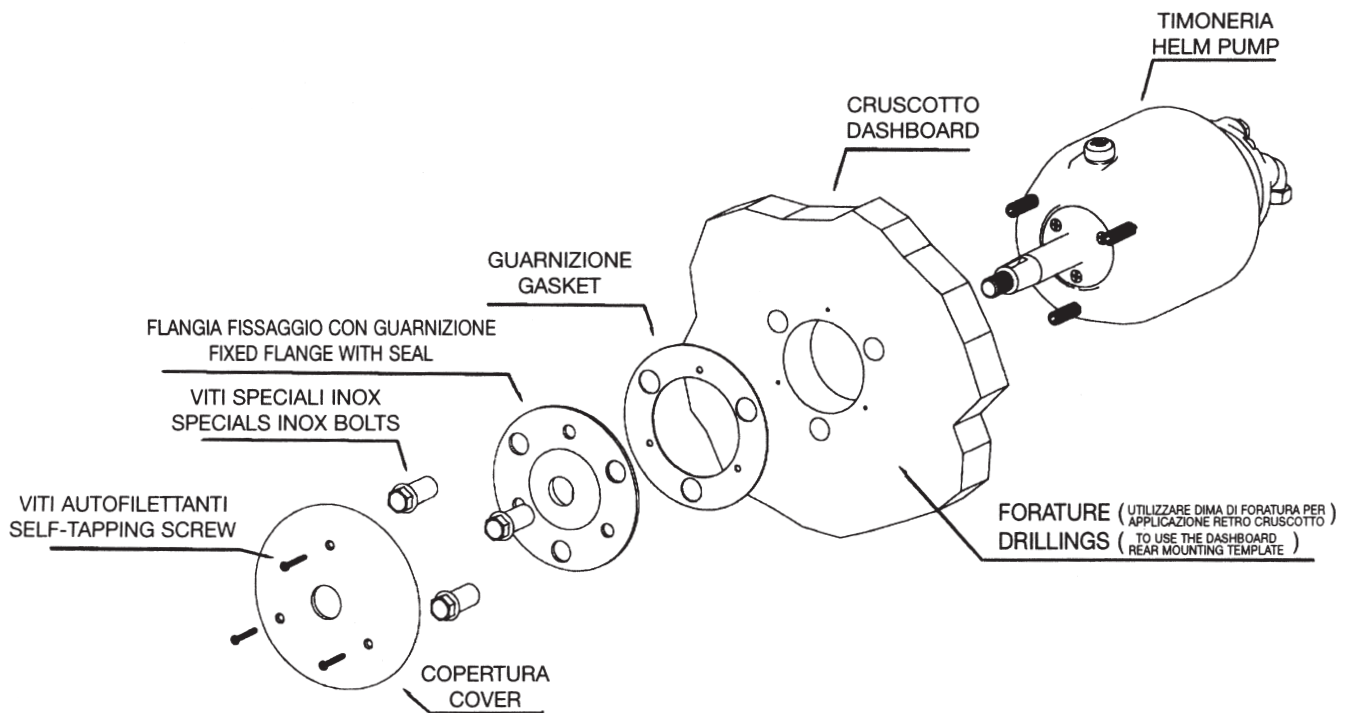


fig. 7

HALF EMBEDDING STEERING GEAR X56

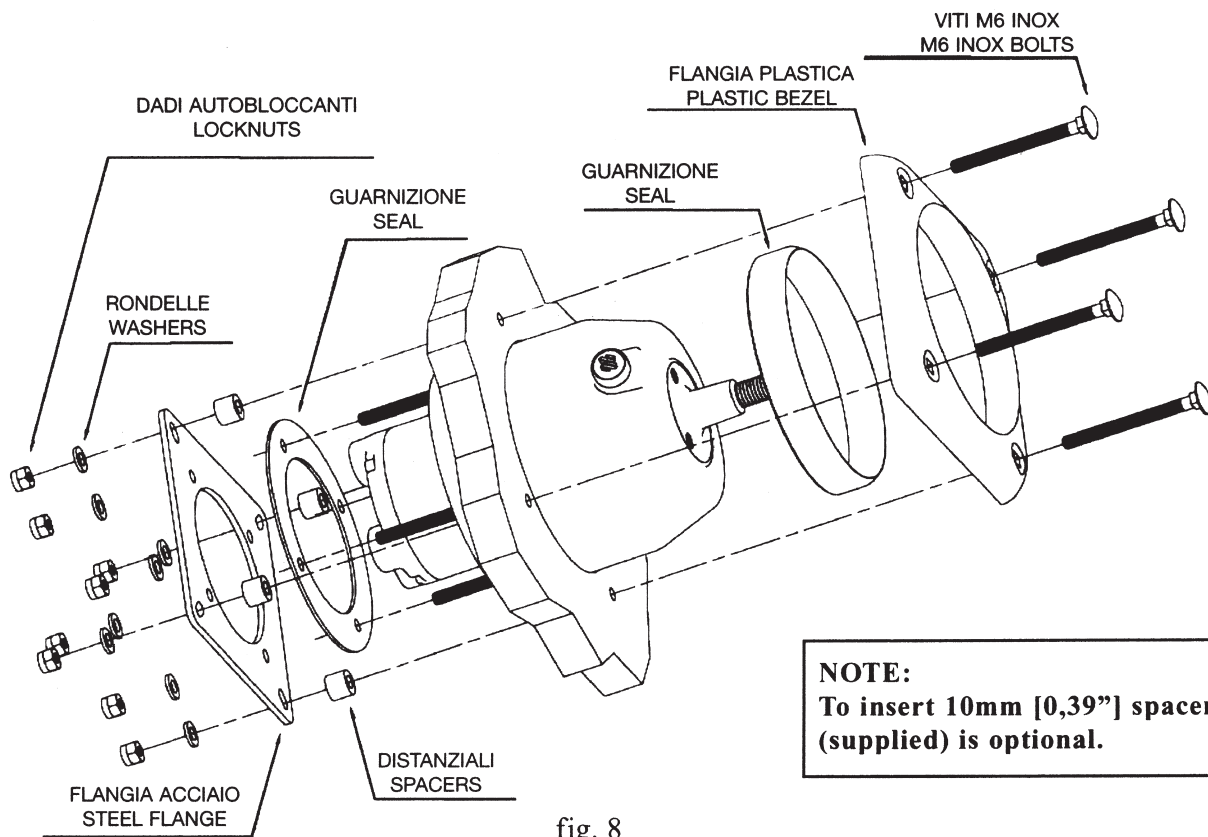


fig. 8

HALF EMBEDDING STEERING GEAR X57

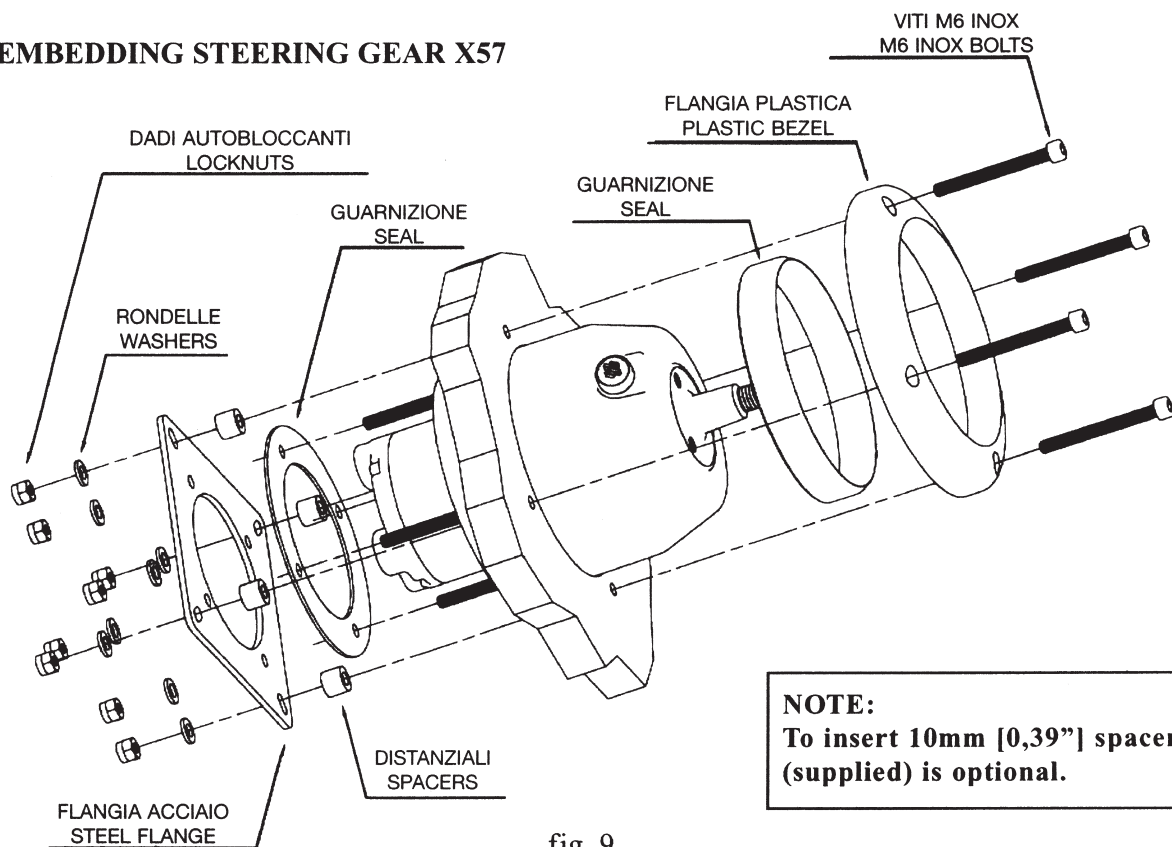


fig. 9

⚠ WARNING!

Using additional spacers, check that M6 lock nuts supplied are completely tighten on the securing screw (untill stop ring).

CYLINDER INSTALLATION

INBOARD CYLINDER UC116-I UC168-I UC215-I UC293-I

Correct installation is important for an hydraulic steering system function. Bad cylinder installation will produce quick seal and bush deterioration and damage. Minimum load on the piston rod and greatest performance may be get as indicated in fig. 10. The central line of the cylinder is the imaginary line marked out through the hose tiller arm in each end stroke position.

When tiller arm is in end stroke position, "X" and "Y" angle will be the same.

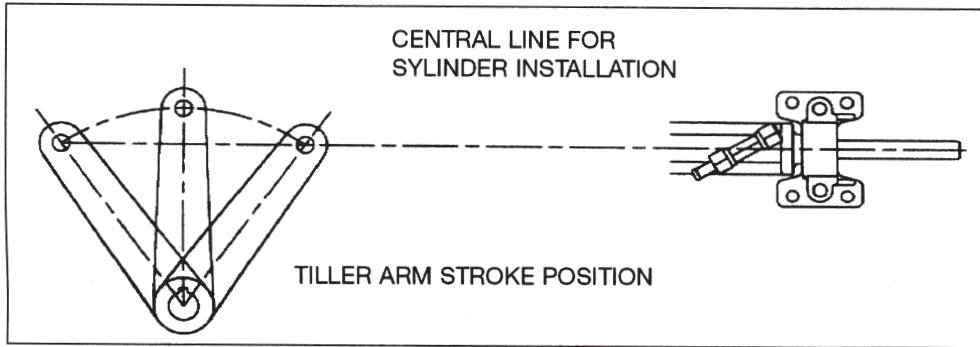


fig. 10

Select your cylinder size in the table of fig. 11.

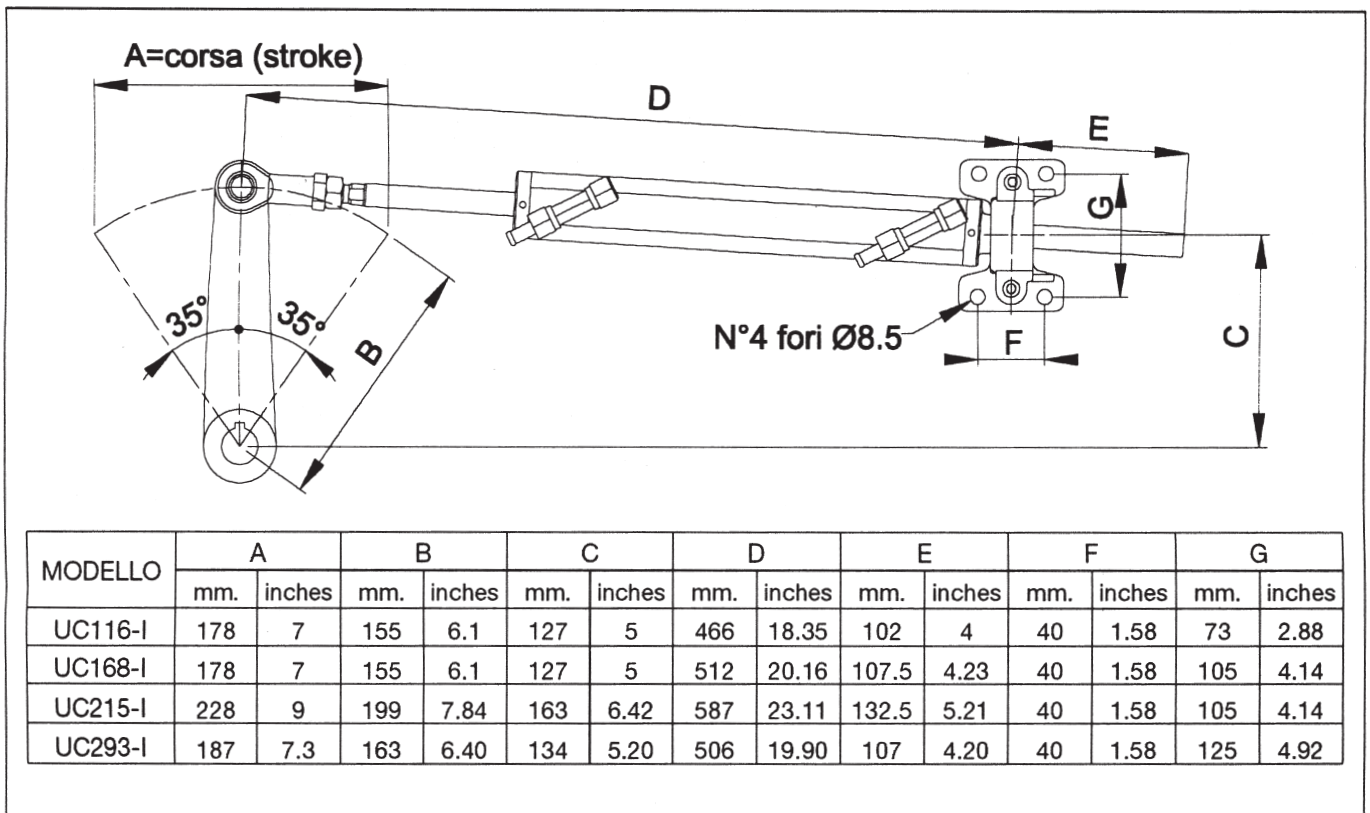


fig. 11

⚠ WARNING!

Secure the cylinder to the vessel through bolts, if it is possible. Do not use self-tapping screws. Oil pipe fitting must be in the uppermost position. If it is not possible first fill and bleed the system and then secure the cylinder to the vessel. Protect the piston rod from strokes and scratches that may cause oil leak and loss of steering. Each component is corrosion resisting, but in particular condition corrosion may result. In this case replace the components damaged.

Line up the helm in bow-stern direction. Join the piston rod ball joint to the tiller helm. Loosen pipe fitting nuts. Keeping bow-stern direction and using piston rod stroke, place the bracket complying with “D”, “E” and “C” sizes, as indicated in fig. 11.

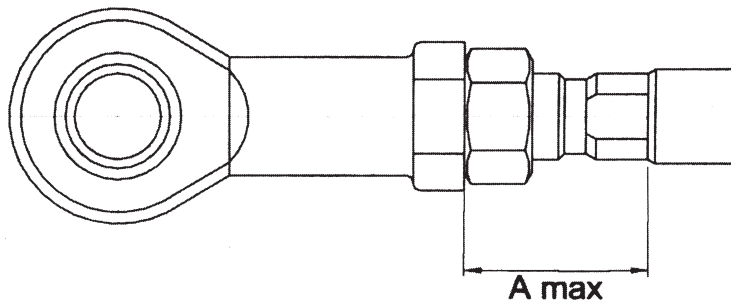
⚠ WARNING!

The ball joint linking the tiller helm assents adjustments to correct possible misaligned situations.

“D” and “E” dimensions are calculated with the joint in central adjustment position. In this position the joint may be unscrewed for 3mm [0,19”].

⚠ WARNING!

Do not exceed dimensions indicated (fig. 11 bis) when unscrewing the ball joint.



	UC116-I	UC168-I	UC215-I	UC293-I
A max	27 mm (1,06”)	25 mm (0,98”)	25 mm (0,98”)	25 mm (0,98”)

fig.11bis

Place the cylinder bracket complying with dimensions indicated in fig 11 and fasten using the four 8mm[5/16”] bolts (not supplied) and the four inox steel locknuts (not supplied). For a correct installation check the cylinder in each end stroke position and in horizontal alignment (Transom alignment). Move the helm and check that the cylinder stroke is free. Check that ball joints are free.

When linking two helms by tie rod, the cylinder may be mounted on the tie rod or on each tiller

IN-OUTBOARD CYLINDER UC133-IOB

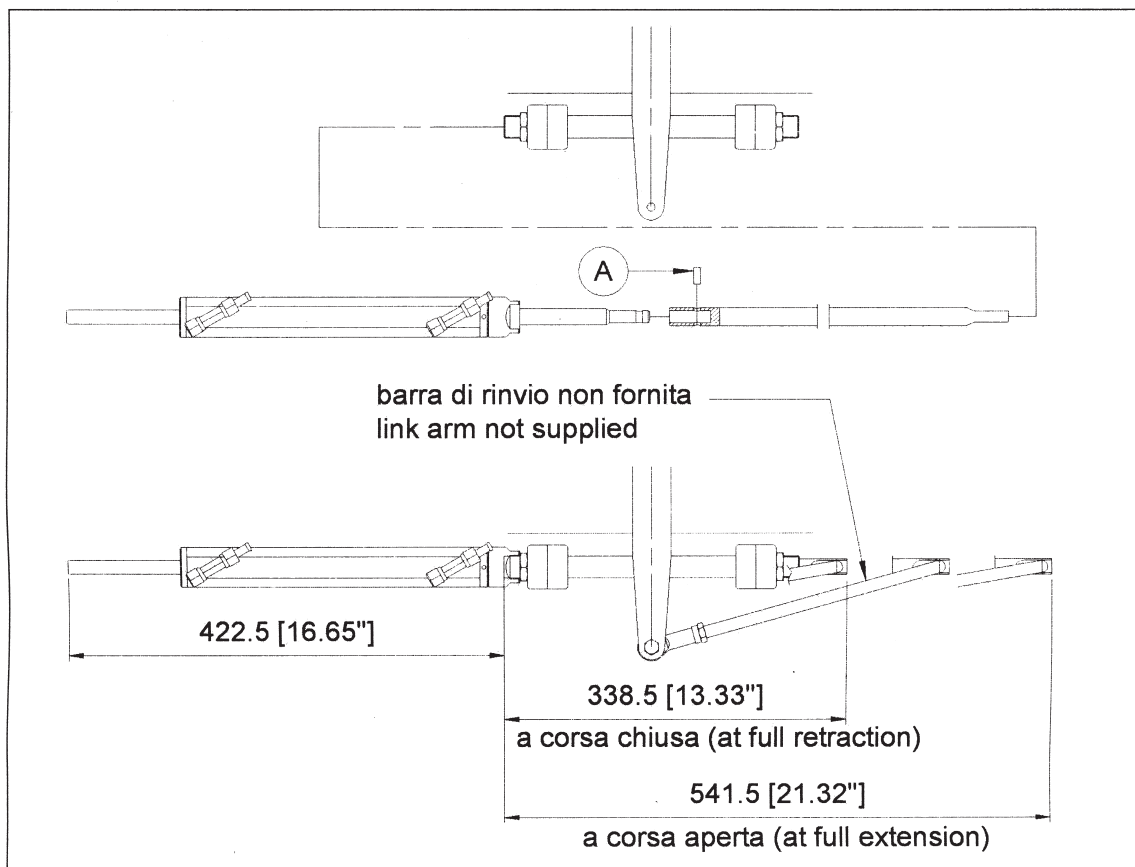


fig.12

Cylinder and control cable fastening system to hose are the same. Before mounting the cylinder lubricate the brace hose with corrosion proofing marine grease.

⚠ NOTICE

To mount UC133-IOB cylinder use the brace hose supplied by the engine constructor.

Insert the end of the piston rod in the extension. Align the holes in the piston rod and in the extension, then insert the special “A” pin (fig 12) linking the rods.

⚠ WARNING!

Do not modify or change the pin and the piston rod and extension holes. Every modification may reduce strength and integrity of this link considerably. A failure may result causing loss of steering and serious property damage and / or personal injury.

Insert the piston rod with the extension (first lubricated) in the brace hose (lubricated) and screw on this hose the cylinder ring nut with a 32[mm] (1-1/4”) wrench, with a max torque wrench setting of 40[N·m] (350[inch·pounds]).

⚠ WARNING!

At the end the pipe setting may result on the upper side to allow the bleeding. In the opposite unscrew the ring nut for 1 turn, slew the cylinder until pipe setting are in the upper position, screw the ring nut hose completely, with a torque wrench setting of 40[N·m] (350[inch·pounds]).

⚠ NOTICE

The transmission rod is not supplied.

LATERAL OUTBOARD CYLINDER UC132-OBS

Mount the *lateral outboard cylinder* UC132-OBS to the tilt hose as the “push-pull” cable of the steering compartment. The cylinder is unsettled, so the thrust force is much more than tractive one. Mounting the cylinder on the correct side of the engine torque thrust, the steering strain may be balanced. Before mounting the cylinder lubricate the brace hose with corrosion proofing marine grease. Insert the end of the piston rod in the extension. Align the holes in the piston rod and in the extension, then insert the special “A” pin (fig 13) linking the rods.

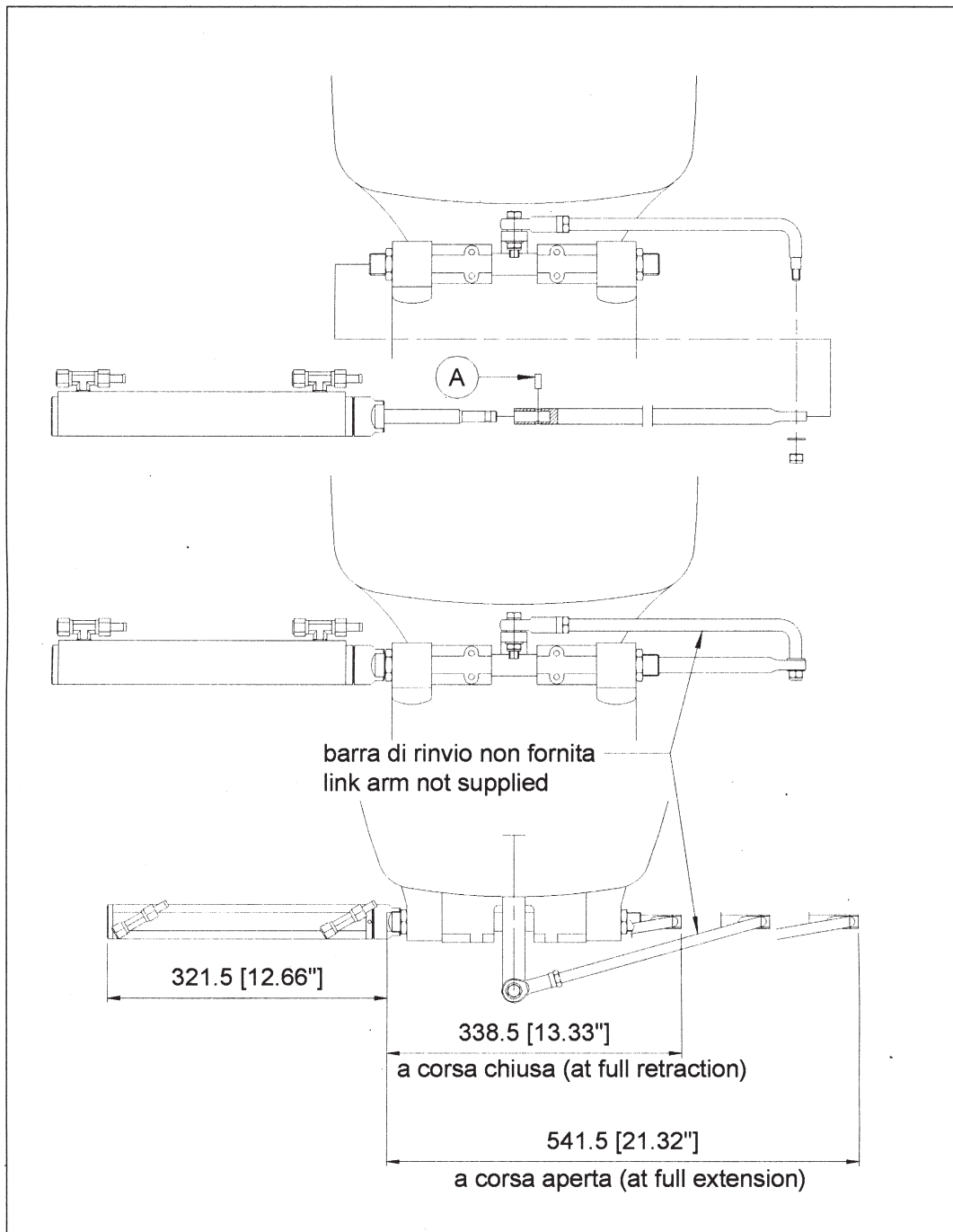


fig.13

⚠ WARNING!

Do not modify or change the pin and the piston rod and extension holes. Every modification may reduce strength and integrity of this link considerably. A failure may result causing loss of steering and serious property damage and / or personal injury

Insert the piston rod with the extension (first lubricated) in the brace hose (lubricated) and screw on this hose the cylinder ring nut with a 32[mm] (1-1/4") wrench, with a max torque wrench setting of 40[N·m] (350[inch·pounds]).

⚠ WARNING!

At the end the pipe setting may result on the upper side to allow the bleeding. In the opposite unscrew the ring nut for 1 turn, slew the cylinder until pipe setting are in the upper position, screw the ring nut hose completely, with a torque wrench setting of 40[N·m] (350[inch·pounds]).

⚠ NOTICE

The linkage to connect the piston rod extension to the engine trainig lever are supplied by the engine constructor and purchase by the installer.

MOUNTING THE HOSES

⚠ WARNING!

Be careful to mount hoses far from engine heat sources. Heat reduces bursting pressure or fuse the hoses.

⚠ NOTICE

Install hoses with minimal slope in order to allow bleeding during the filling.

Following recommendations regarding nylon hose with 9.5mm[3/8"] outside diameter, copper pipe with 9.5mm.[3/8"] outside diameter and hose with 14mm[0.55"] outside diameter. Pass hoses avoiding hatches and other equipments. Prevent hoses from kinking or shrinking in the vessel. Any shrunk hose part must be replaced or jointed by a pipe fitting. Fasten hoses with regular gaps using no-metallic brackets. Avoid hoses lean or rub abrasive or keen surfaces. Minimum banding radius for nylon hose is 40mm [1.58"].

MOUNTING SEQUENCE FOR 9,5mm. [3/8"] OUTSIDE DIAMETER HOSE FOR INBOARD CYLINDER (fig.15)

- Use a sharp razor knife to cut nylon hoses or pipe cutters for copper hoses (fig.14).

⚠ WARNING!

NEVER use serrate blades, chips and dust may causing system to fail.
Copper hoses need "fluxing".

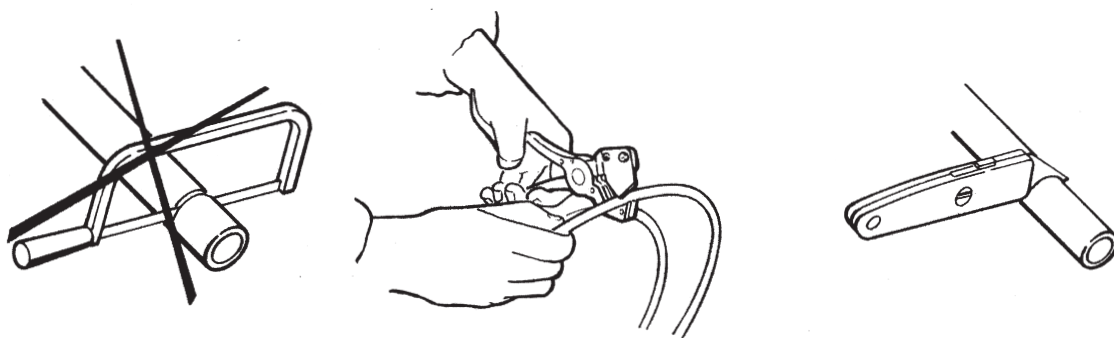


fig.14

- Unscrew the nut from the pipe fitting and remove the protective plug.
- Install the nut on the hose and mount the hose in the pipe fitting completely.
- Screw the nut on the pipe fitting using a 16mm [0.63"] wrench (no supplied).

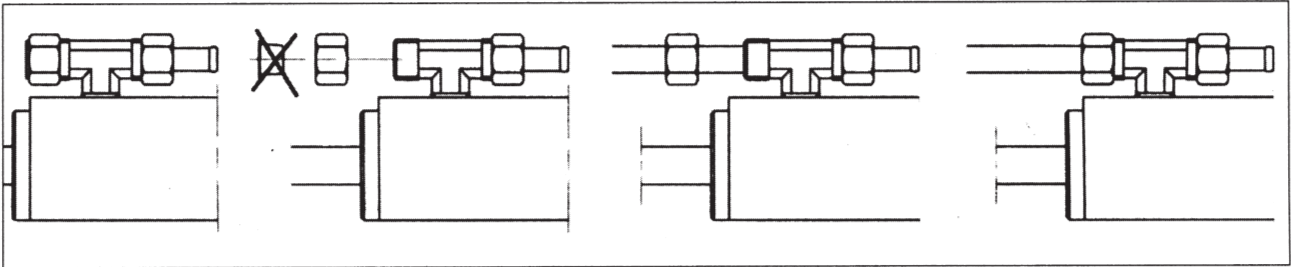


fig.15

- ⚠ WARNING!**
 For outboard cylinder use Ultraflex hoses with 14mm [0.55"] of outside diameter supplied pieces of 304.8mm [1'] with pre-installed pipe fitting.
- ⚠ WARNING!**
 ULTRAFLEX S.p.A. is not responsible for damages produced by other hoses.
- ⚠ WARNING!**
 Never connect pipes (copper or stiff others) through to the cylinder. Cylinder movement, during the strike, needs hoses to compensate its articulated joint.

MOUNTING SEQUENCE FOR 14mm [0,55"] OUTSIDE DIAMETER HOSE (WITH PIPE FITTINGS), FOR OUTBOARD CYLINDER (fig.16)

- Unscrew the nut from the pipe fitting and remove the protective plug.
- Remove the pipe fitting plug.
- Install the nut on the pipe fitting pipe and mount it on the pipe fitting completely.
- Screw the nut on the pipe fitting using a 16mm [0.63"] wrench (no supplied).

JOINTED PIPE Ø14mm [0,55"] FOR OUTBOARD CYLINDER

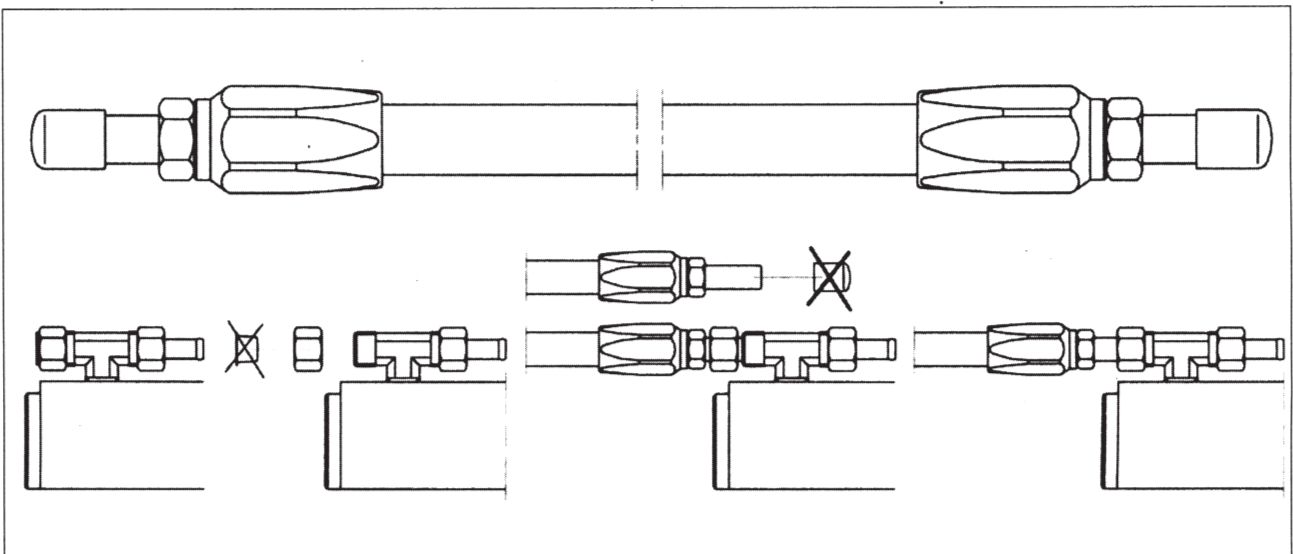


fig.16

PIPES CONNECTION TO HELM

Remove the plastic plugs and connect the pipe fittings to the helm (fig.17). Seal with sealing fittings.

⚠ WARNING!

In single station use, do not remove plastic plugs from the 1/4" NPT threaded ports for supplemental helms.

Use a pipe sealant such as Loctite 542 (P. S. T.) or equivalent to tighten issued connections.

⚠ WARNING!

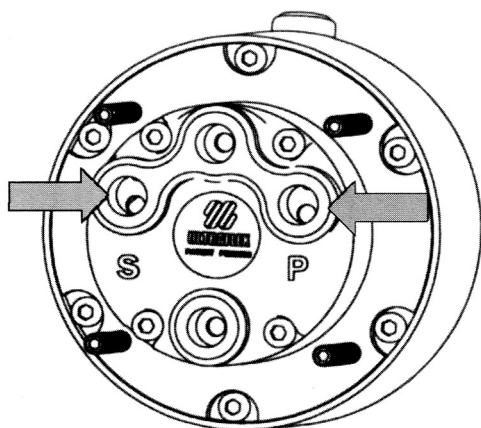
Use carefully sealing fluid (such as Loctite) . If it arrives in the hydraulic system it may cause damage and failure.

⚠ WARNING!

Use only Loctite 542 or Loctite 545 to tighten 1/4" conical pipe fitting to the helm. Never use Teflon tape or sealant on any connections. Use carefully sealing fluid. If it arrives in the hydraulic system it may cause damage and failure.

Fit and screw manually pipe fittings completely. Than tighten with the proper wrench (not supplied) for 1 and 1/2 - 2 and 1/2 turns until correct position for hoses connections. However do not exceed a torque wrench setting of 17.6 [N·m] (156 [in·lbs]).

**THREADED PORTS (1/4" NPT)
FOR ONE OR MORE CYLINDER
CONNECTIONS**



**THREADED PORTS (1/4" NPT)
FOR ONE OR MORE HELM CONNECTIONS**

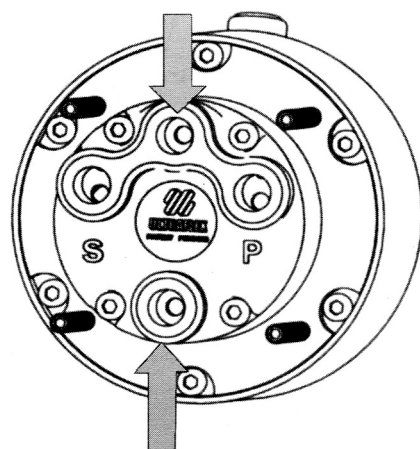


fig.17

FILLING AND PURGING THE SYSTEM.

Start the filling of the system from the steering gear. Use the kit included in the cylinder box. If more than one steering station are installed, fill from the downmost to the uppermost.

1. Remove the cap from the helm tank..

! WARNING!

If more than one steering station are installed, after the filling mount the vent plug (black) on the uppermost and a non-vent plug (silver)-which is included in a dual station fitting kit- on the others

2. Mount the pipe union (included in the cylinder kit) instead of the plug.
3. Mount the transparent hose on the pipe union.
4. Open the oil bottle and mount the proper thread funnel.
5. Link the transparent hose to the oil bottle and the hole in the bottle with the pin supplied.

A standard single system needs 2 l of oil. Each further station need $\frac{1}{2}$ l of oil and each further cylindr needs $\frac{1}{2}$ l of oil.

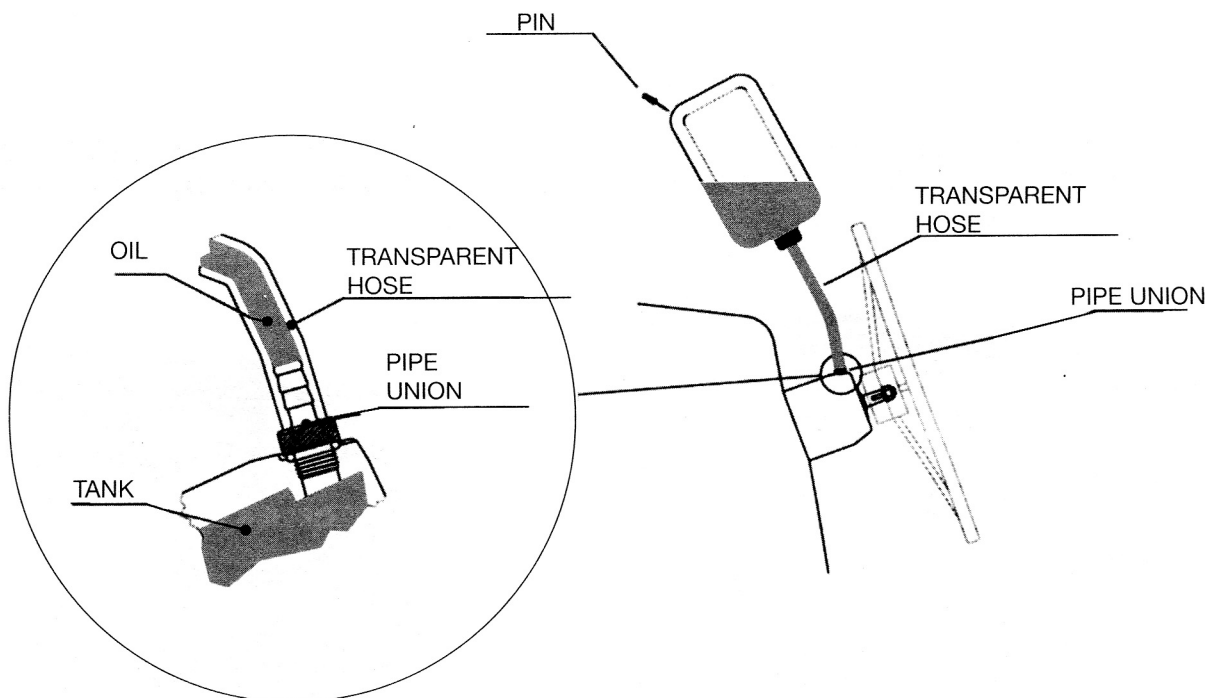


fig.18

SINGLE STEERING SYSTEM AND ONE CYLINDER.

If the system has a stationary shaft cylinder follow draft “A” diagrams bleeding procedure according to fig. 19.

If the system has a mobile shaft cylinder follow draft “B” diagrams bleeding procedure according to fig. 20.

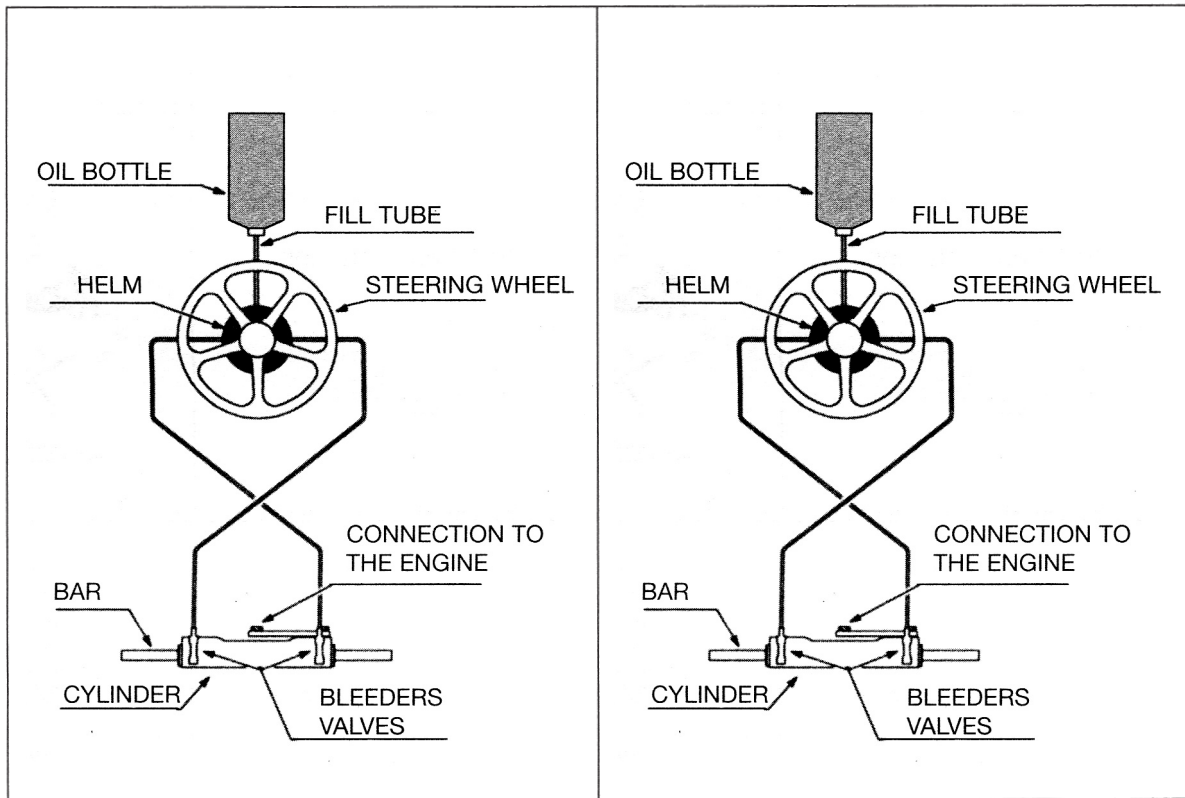


fig.19

fig. 20

⚠ WARNING!
Fill the tank full before filling the system. When you fill the tank full, you can see oil in the hose between steering gear and oil bottle. Keep full the tank during the filling, replace the bottle when it is empty. Always keep oil in the pipe hose! (FIG. 18)

DIAGRAM "A" (FIXED BAR CYLINDER)

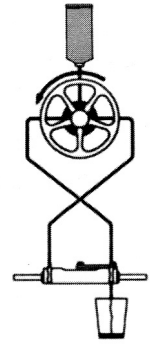
STEP 1

After the linking of the oil bottle to the helm as indicated and the filling of the tank,

- open the bleed valve indicated.
- put an oil recover tank.
- turn the steering wheel as indicated until a steady stream of air free oil comes out of the bleeder

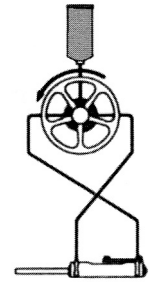
⚠ WARNING!

Replace the bottle beforehand it is empty and use recover oil only after 24 hours.



STEP 2

- Close the bleed valve and continue to turn the steering direction until stop.

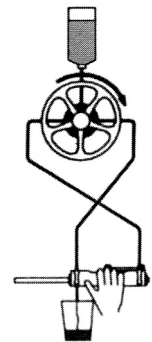


STEP 3

- open the other bleed valve as indicated.
- put an oil recover tank.
- lock the system and turn slowly the steering wheel as indicated until a steady stream of air free oil comes out of the bleeder.

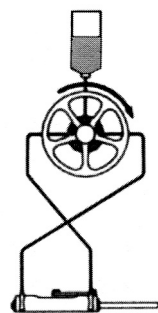
⚠ WARNING!

Replace the bottle beforehand it is empty and use recover oil only after 24 hours.



STEP 4

- Close the bleed valve and continue to turn the steering wheel until stop.



STEP 5

- open the other bleed valve as indicated.
- put an oil recover tank.
- lock the system and turn slowly the steering wheel as indicated until a steady stream of air free oil comes out of the bleeder.
- Repeat step 2 until a steady stream of air free oil comes out of the system.

⚠ WARNING!

If foam grows in the oil continue the bleeding after 24 hours.

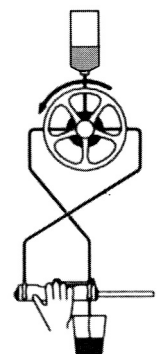


DIAGRAM "B" (MOVING BAR CYLINDER)

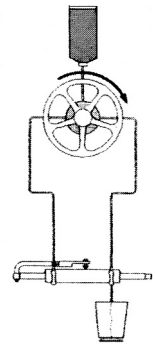
STEP 1

After the linking of the oil bottle to the helm as indicated and the filling of the tank,

- Open the bleed valve indicated.
- put an oil recover tank.
- turn the steering wheel as indicated until a steady stream of air free oil comes out of the bleeder

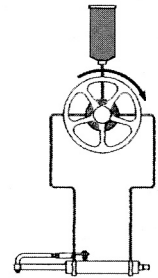
⚠ WARNING!

Replace the bottle beforehand it is empty and use recover oil only after 24 hours.



STEP 2

- Close the bleed valve and continue to turn the steering direction until stop.

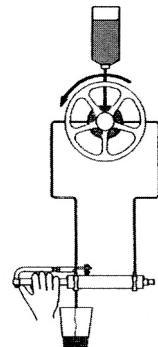


STEP 3

- open the other bleed valve as indicated.
- put an oil recover tank.
- lock the system and turn slowly the steering wheel as indicated until a steady stream of air free oil comes out of the bleeder.

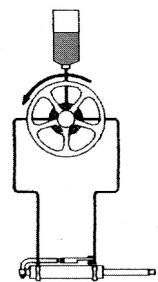
⚠ WARNING!

Replace the bottle beforehand it is empty and use recover oil only after 24 hours.



STEP 4

- Close the bleed valve and continue to turn the steering wheel until stop.

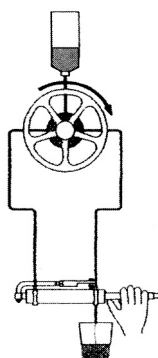


STEP 5

- open the other bleed valve as indicated.
- put an oil recover tank.
- lock the system and turn slowly the steering wheel as indicated until a steady stream of air free oil comes out of the bleeder.
- Repeat step 2 until a steady stream of air free oil comes out of the system.

⚠ WARNING!

If foam grows in the oil continue the bleeding after 24 hours.



MULTIPLE STEERING SYSTEM WITH FIXED BAR CYLINDER/S

TWIN STEERING GEAR SINGLE FIXED BAR CYLINDER.

Connect additional helm "S" to the steering system and to the first helm "1", as indicated in the diagram and in fig. 17.

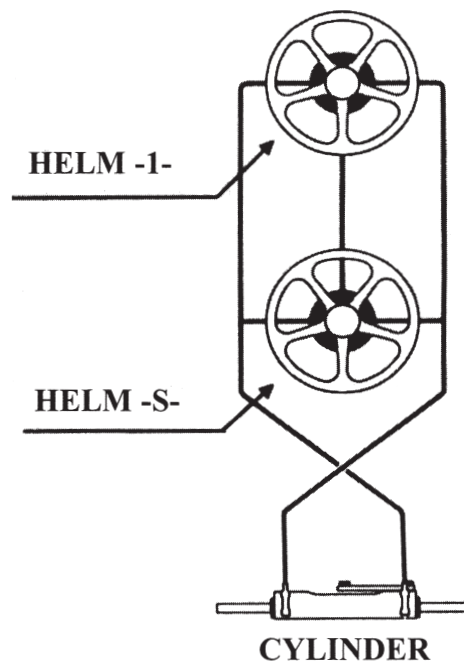
⚠ WARNING!
Place the additional helm "S" downmost than the first "1" with vent plug.

Fill the additional helm tank "S" and bleed the system as indicated in draft "A" diagrams, according with fig 19 parts and fig. 18 procedure.

Plug the tank of the additional helm "S" using **only the silver non-vent plug** supplied with *the multiple steering system kit*.

Repeat the procedure on the first helm "1" until the bleeding of the system.

Plug the tank of the first helm "1" using **only the black vent plug.**



TWIN HELM TWIN FIXED BAR CYLINDER.

Connect additional helm "S" to the steering system and to the first helm "1", as indicated in the diagram and in fig. 17.

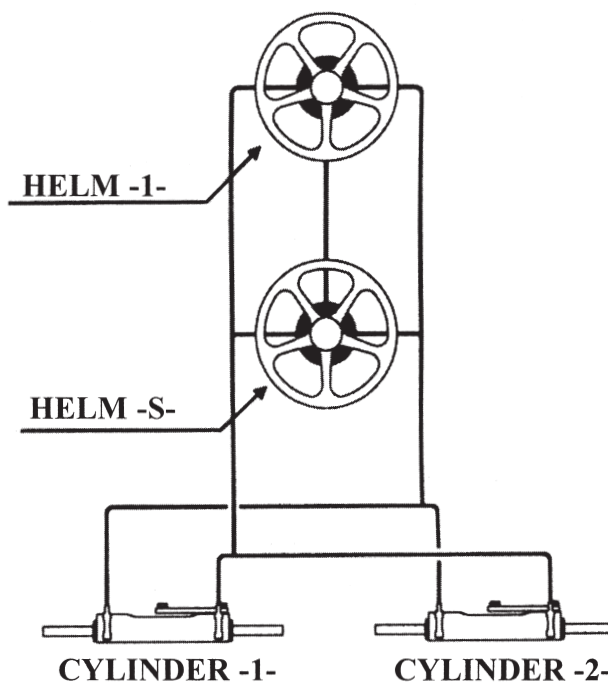
⚠ WARNING!
Place the additional helm "S" downmost than the first "1" with vent plug.

Fill the additional helm tank "S" and bleed the system as indicated in draft "A" diagrams first on cylinder 1 and then on cylinder 2, according with fig 19 parts and fig. 18 procedure.

Plug the tank of the additional helm "S" using **only the silver non-vent plug** supplied with *the multiple steering system kit*.

Repeat the procedure on the first helm "1" until the bleeding of the system.

Plug the tank of the first helm "1" using **only the black vent plug.**



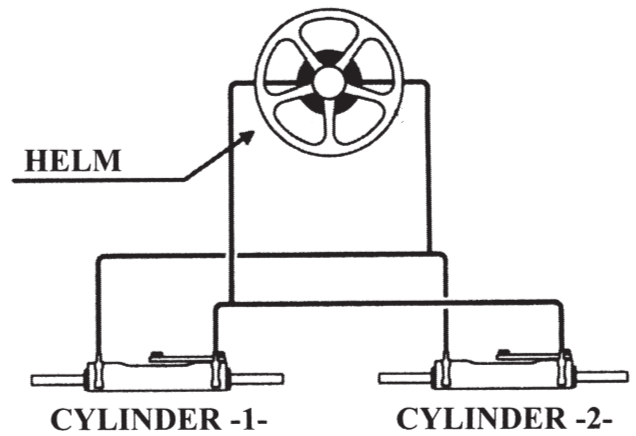
SINGEL HELM

TWIN FIXED BAR CYLINDER.

Connect the cylinders to the helm as indicated in the diagram and in fig. 17.

Fill the additional helm tank "S" and bleed the system as indicated in draft "A" diagrams first on cylinder 1 and then on cylinder 2, according with fig 19 parts and fig. 18 procedure.

Plug the tank of the helm using **only the black vent plug.**



MULTIPLE STEERING SYSTEM WITH MOVING BAR CYLINDER/S

TWIN HELM

SINGLE MOVING BAR CYLINDER.

Connect additional helm "S" to the steering system and to the first helm "1", as indicated in the diagram and in fig. 17.

⚠ WARNING!

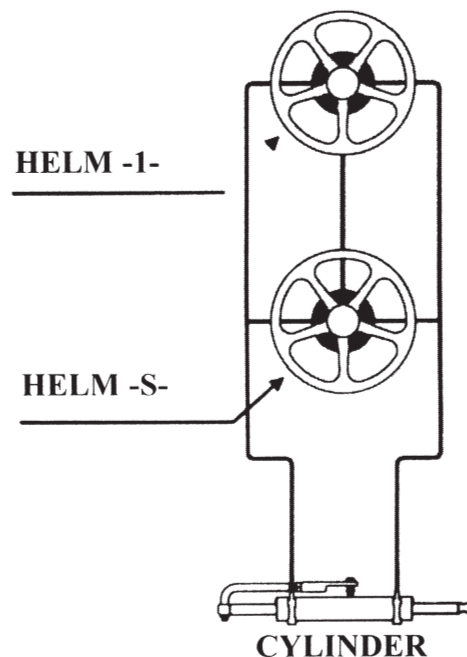
Place the additional helm "S" downmost than the first "1" with vent plug.

Fill the additional helm tank "S" and bleed the system as indicated in draft "B" diagrams according with fig 20 parts and fig. 18 procedure.

Plug the tank of the additional helm "S" using **only the silver non-vent plug** supplied with *the multiple steering system kit*.

Repeat the procedure on the fist helm "1" until the bleeding of the system.

Plug the tank of the first helm "1" using **only the black vent plug.**



TWIN HELM

TWIN MOVING BAR CYLINDER.

Connect additional helm "S" to the steering system and to the first helm "1", as indicated in the diagram and in fig. 17.

⚠ WARNING!

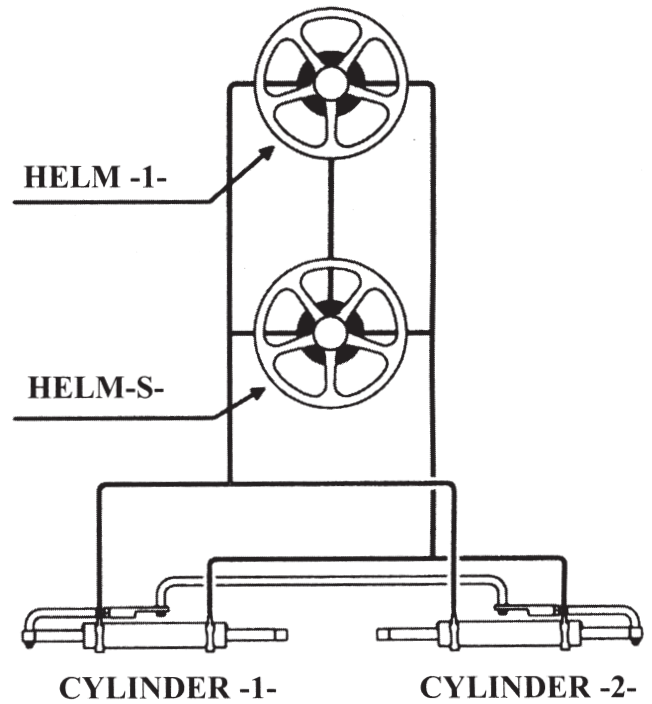
Place the additional helm "S" downmost than the first "1" with vent plug.

Fill the additional helm tank "S" and bleed the system as indicated in draft "B" diagrams first on cylinder 1 and then on cylinder 2, according with fig 20 parts and fig. 18 procedure.

Plug the tank of the additional helm "S" using **only the silver non-vent plug** supplied with *the multiple steering system kit*.

Repeat the procedure on the first helm "1" until the bleeding of the system.

Plug the tank of the first helm "1" using **only the black vent plug**.



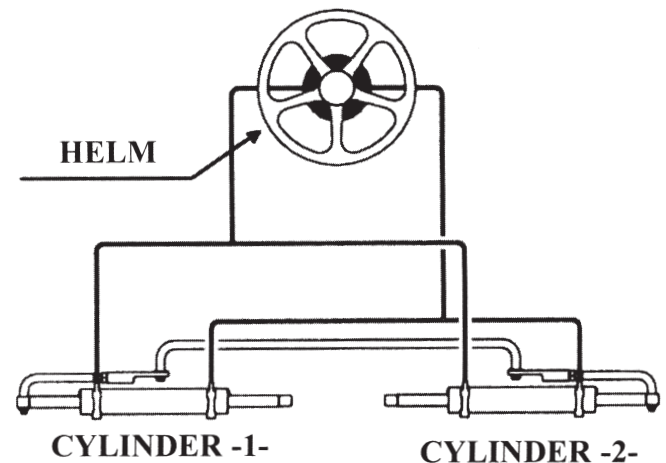
SINGLE HELM

TWIN MOVING BAR CYLINDER.

Connect the cylinders to the helm as indicated in the diagram and in fig. 17.

Fill the additional helm tank "S" and bleed the system as indicated in draft "B" diagrams first on cylinder 1 and then on cylinder 2, according with fig 20 parts and fig. 18 procedure.

Plug the tank of the helm using **only the black vent plug**.



NOTE:

Refer to the diagrams above for multiple applications with more than two helms and cylinders. Remember to start the filling and the bleeding from the downmost helm, repeat for each cylinder and on each helm. Remember to plug the tank of the helm bled with the non vent plug every time first to bleed the upper helm. Use the black vent plug only on the uppermost helm tank.

For example:

with three helms and three cylinders the bleeding will be executed for every cylinder on each helm, so 9 bleedings, each one as indicated in "STEP1" in "A" or "B" diagrams.

WARNING, CAUTION AND SERVICING

⚠ WARNING!

**CHEK THE SYSTEM AFTER THE INSTALLATION AND THE BLEEDING BUT FIRST OF THE SEALING.
TURNING THE STEERING WHEEL UNTIL CYLINDER/S RACE STOP TO EACH SIDE.
REPEAT ON EACH HELM INSTALLED TO VERIFY CORRECT INSTALLATION AND SYSTEM OPERATION.**

⚠ WARNING!

Use carefully sealing fluid (such as Loctite) . If it arrives in the hydraulic system may causing damage and failure.

⚠ WARNING!

Never use Telfon tape or sealant on any connections. This material may be intaked, causing system to fail.

⚠ WARNING!

During installation clean-up to avoid foreign matters enter in the system. Even a little object may causing lasting damages not pointed out at the moment.

⚠ WARNING!

First of movable parts installation (cylinders, helms, etc.) get off: wathes, armllets, necklaces. rings or everything may be caught moving parts causing personal injury.

⚠ WARNING!

Filling and bleeding operation need slow steering wheel turn. Rapid turn may causing oil-air mix (foam) that needs 24 hours of quite to permit oil return usable again.

⚠ WARNING!

TO KEEP SUITABLE OIL LEVEL IN THE TANK:

- perform filling and purging the system as illustrated above
- fill the tank since threaded port avoiding oil outlet from the tank
- open the bleed valve on the cylinder attending care to place an oil collection tank.
- turn the steering wheel for half rev and let oil go out from the bleed
- close the bleed valve and check the system as indicated in manual instructions.

⚠ WARNING!

Use only hydraulic oil consistent, indicated in “technical features”. Never use brake fluid.

Servicing requirements are different for climate and use. Biennial inspections by an expert nautical fitter. are indispensable

Check pipe fittings, cylinder oil seal and helm gasket to prevent leaks. Replace if it is necessary.

⚠ NOTICE

Check hoses wear in the system, nuts and bolts tightening every six month.

⚠ NOTICE

Clean the system using water and not-agent and not abrasive soap.

⚠ WARNING!

BAD SERVICING MAY RESULT IN LOSS OF STEERING, CAUSING SERIOUS PROPERTY DAMAGE AND / OR PERSONAL INJURY.

TECNICAL FEATURES

OIL:	COMPATIBILITY conforming to ISO VG 15
AGIP OSO 15 conforme a ISO VG 15 viscosity a 40°C 14.3cSt viscosity a 100°C 3.3cSt viscosity index 96°C sliding point -30°C.	<ul style="list-style-type: none"> • MOBIL DTE 11 • SHELL TELLUS T15 • ESSO NUTO H15 • Q8 HAYDN 15

⚠ NOTICE

The oil supplied by ULTRAFLEX has been tested to obtain best performances of your hydraulic steering system. Use Ultraflex AGIP OSO 15 hydraulic oil complying with ISO VG 15, or equivalent..

STEERING WHEEL FEATURES : ⚠ WARNING! <u>Dates for helmes: UP28F – UP33F</u> <u>UP39F – UP33R – UP39R.</u>	Max steering wheel diameter: Max high cone:	711mm [28"] 152mm [6"]
STEERING WHEEL FEATURES: ⚠ WARNING! <u>Dates for helmes: UP28T – UP33T</u> <u>UP39T.</u>	Max steering wheel diameter: Max high cone:	406mm [16"] 152mm [6"]

STEERING	MOUNTING	CAPACITY LOAD for WHEEL TURN	MAX PRESSURE AND OPERATIVE TEMPERATURE	FITTING
UP28F	Front	28 cm ³ [1.7 cu.in.]	6,9 MPa [69 bar] [1000psi] min -20°C max +60°C min +22°F max +166°F	1/4" NPT
UP33F		33 cm ³ [2.0 cu.in.]		
UP39F		39 cm ³ [2.4 cu.in.]		
UP28T	With Tilt X52	28 cm ³ [1.7 cu.in.]		
UP33T		33 cm ³ [2.0 cu.in.]		
UP39T		39 cm ³ [2.4 cu.in.]		
UP33R	Rear	33 cm ³ [2.0 cu.in.]		
UP39R		39 cm ³ [2.4 cu.in.]		
FITTING SEALS				

CYLINDER	VOLUME	THRUST	STROKE	FITTING
(*) UC132-OBS side mounting not balanced	132 cm ³ - 163 cm ³ [8 cu.in. - 9,95 cu.in.]	455 kg – 563 kg [1003 lbs - 1240 lbs]	203 mm [8"]	3/8"
UC133-IOB in-out board Balanced	132 cm ³ [8cu.in]	455 kg [1003 lbs]	203 mm [8"]	3/8"

CYLINDER	VOLUME	THRUST	STROKE	FITTING
UC116-I Inboard Balanced	116 cm ³ [7 cu.in]	455 kg [1003 lbs]	178 mm [7"]	3/8"
UC168-I Inboard Balanced	168 cm ³ [10.25 cu.in]	682 kg [1503 lbs]	178 mm [7"]	3/8"
UC215-I Inboard Balanced	215 cm ³ [13.12 cu.in]	682 kg [1503 lbs]	228 mm [9"]	3/8"
UC293-I Inboard Balanced	293 cm ³ [17.88 cu.in]	1153 kg [2541 lbs]	178 mm [7"]	3/8"

USE ONLY PARKER NBR-6-075 (Ø3/8") OR ULTRAFLEX R7 - 5/16 (Ø9/16") HOSES OR COPPER HOSE (Ø3/8").

(*)



WARNING!

The not balanced UC132-OBS cylinder, may be mounted on every ULTRAFLEX steering gear. If you use others steering gears, make sure that they *can use not balanced cylinder*. Otherwise your steering gear may stop causing property damage and / or personal




NOTE:

Not balanced cylinder as UC132-OBS, has different wheel turns to move cylinder in his stroke.

TROUBLESHOOTING

WARNING!

If one of follow check needs removal or disassembly of the steering system parts requires the expert knowledge of a service mechanic. Follow information are only some indications and Ultraflex is not responsible for bad disassembly damages.

PROBLEM	CASE	REMEDY
During the filling the steering gear is locked	<ul style="list-style-type: none"> • Hoses locking between steering gear and cylinder. 	<ul style="list-style-type: none"> • An hose part is damaged. Replace it with a new hose part and pipe fittings. Check the fittings hoses are free..
It is difficult to fill the system. Air gurgles in the upper side of the helm tank also if the system is filled.	<ul style="list-style-type: none"> • Air in the system 	<ul style="list-style-type: none"> • Repeat filling and bleeding of the system. • Install hoses horizontal, or with a 3 cm per meter tilt.
	<ul style="list-style-type: none"> • Blow-by from the cylinder fitting bleeder. 	<ul style="list-style-type: none"> • Close the cylinder fitting bleeder.
	<ul style="list-style-type: none"> • Hose kinks 	<ul style="list-style-type: none"> • Unwind and straighten the hose.
	<ul style="list-style-type: none"> • Steering mounted with the filling hole down 	<ul style="list-style-type: none"> • Mount the steering gear with the filling hole in the uppermost position.
The steering gear is stiff and not handle able also with stop vessel.	<ul style="list-style-type: none"> • Shrinking in hoses or pipe fittings. 	<ul style="list-style-type: none"> • Find the shrinking. <p> WARNING! The damaged hose have to be replaced, otherwise may causing property damage and/or personal</p>
	<ul style="list-style-type: none"> • Air in the oil 	<ul style="list-style-type: none"> • Repeat filling and bleeding operation
	<ul style="list-style-type: none"> • Wrong oil. 	<ul style="list-style-type: none"> • Drain the system and fill with recommended oil. <p> WARNING! Ultraflex declines liability for damages causing by oil not recommended in this manual and exclude guarantee.</p>
	<ul style="list-style-type: none"> • The steering tank has not the vent plug (black). 	<ul style="list-style-type: none"> • Replace the plug and put on the vent one (black).
...and if use balanced cylinders	<ul style="list-style-type: none"> • Dust and dirty in the valve. 	<p> WARNING!</p> <ul style="list-style-type: none"> • Do not use the vessel and refer to an expert service mechanic to clean the valve.

PROBLEM	CASE	REMEDY
The steering gear is easy handled in the dock, but is stiff in movement.	<ul style="list-style-type: none"> • The steering wheel is too little 	<ul style="list-style-type: none"> • Replace the steering wheel with one more big.
	<ul style="list-style-type: none"> • The adjustment of the trimming tab is wrong. 	<ul style="list-style-type: none"> • Adjust the trimming tab.
	<ul style="list-style-type: none"> • Air in the oil. 	<ul style="list-style-type: none"> • Check oil level and repeat the bleeding as indicated in this manual.
Turning the steering wheel the piston rod (moving bar cylinder) or the body (fixed bar cylinder) of the cylinder does not move.	<ul style="list-style-type: none"> • Air in the system. • Oil leak. 	<ul style="list-style-type: none"> • Repeat the filling and the bleeding on the system... • Find the leak and refer to an expert service mechanic.
	<ul style="list-style-type: none"> • Steering mounted with the filling hole down 	<ul style="list-style-type: none"> • Mount the steering gear with the filling hole in upper position.
Oil leaks from pipe fittings helm.	<ul style="list-style-type: none"> • Pipe fittings badly screw or torque wrench setting inadequate. 	<ul style="list-style-type: none"> • Tighten the fittings. <u>Apply a max torque wrench setting of 17.6 [N·m] (156 [in.·lbs]).</u>
	<ul style="list-style-type: none"> • No fittings seal. 	<ul style="list-style-type: none"> • Drain and disassembly the steering gear. Remove the fittings and clean oil from the screw threads. Put the fitting seal and screw the fittings, install the steering gear. <p>⚠ WARNING! <u>After this operation bleeding the system.</u></p>
Oil leak from the tank plug.	<ul style="list-style-type: none"> • Plug badly screw. 	<ul style="list-style-type: none"> • Screw the plug
	<ul style="list-style-type: none"> • Vent plug (black) on the additional downmost steering gear. 	<ul style="list-style-type: none"> • Replace the vent plug (black) with the plug for <i>additional helm kit (silver)</i>.
	<ul style="list-style-type: none"> • Gasket damaged or worn 	<ul style="list-style-type: none"> • Replace the gasket
	<ul style="list-style-type: none"> • Too oil level. 	<ul style="list-style-type: none"> • Apply the <i>level oil maintenance</i> operation of this manual.

MANUFACTURED BY



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A.B.Y.C. project P21



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