



ULTRAFLEX

HYDRAULIC STEERING SYSTEMS



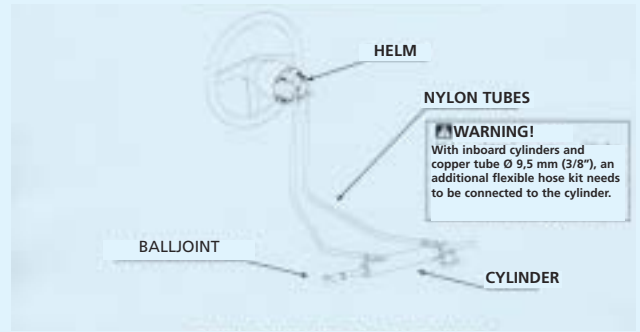
ULTRAFLEX HYDRAULIC STEERING SYSTEMS

All the components of Ultraflex hydraulic steering systems are made specifically for the marine environment, using materials and working process which offer long life and safety for the most extreme conditions.

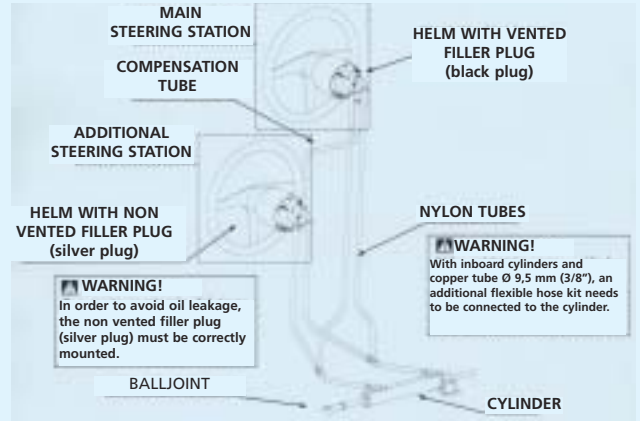


50

SINGLE STEERING STATION INSTALLATION DIAGRAM



DUAL STEERING STATION INSTALLATION DIAGRAM



HOW THE SYSTEM WORKS

A hydraulic steering system consists of a steering pump, a cylinder tied to the rudder or to the outboard or sterndrive engine and the connecting nylon or copper tubing. Under normal operating conditions, a turn of the steering wheel will send the oil from the helm unit into one of the two connecting hydraulic lines. The oil will be pumped into one of the chambers of the cylinder and either extend or retract the cylinder rod, depending on the steering wheel rotation. The fluid going out from the other chamber of the cylinder is returned to the helm via the other hydraulic line. There are two basic components in all the hydraulic steering systems: the helm unit and the cylinder, connected by nylon or copper tubing. The helm unit consists of both a hydraulic pump and a valve assembly. The valve assembly prevents outgoing fluid from returning along the same line, isolates each steering station, locks the rudder and eliminates rudder "feedback" to the helm. The cylinders are double acting and may be balanced or unbalanced, (in which case the rod extends through only one end of the cylinder).

SUGGESTIONS AND

WARNINGS WHEN

SELECTING AN HYDRAULIC STEERING SYSTEM

The strength required to drive a boat equipped with an hydraulic steering system is inversely proportional to the number of turns of the wheel lock-to-lock. The wheel turns are determined by the ratio between the cylinder volume, pump displacement and the free movement of the rudder. With the same type of cylinder installed on the engine, the less are the turns, the faster is the response but higher is the effort; more wheel turns, slower is the response and lower is the effort.

Other factors that can influence steering effort are:

- Vessel speed
- Rudder dimension, or engine power
- Propeller selection
- Hull type (displacement, planing, etc.)
- Sea conditions
- Oil viscosity

GUARANTEE CONDITIONS AND EXCLUSIONS

Ultraflex products are guaranteed against defects in material or workmanship for a period of two years following the date of manufacture.

Defective products should be returned freight prepaid to the facility and must be accompanied by an issued Returned Goods Authorization number.

Upon receipt, the product will be examined to determine the cause of defect. If the product is determined to have a defect in workmanship or material, it will be repaired or replaced at our discretion.

This guarantee does not cover labor. This guarantee does not cover products that have been misinstalled or misapplied. Furthermore, it does not cover claims for direct or indirect damage. We decline liability and exclude guarantee if products are improperly installed, misapplied, or misused.

Our products are not intended to be used in racing applications.

The descriptions and guidelines shown in this catalog should be used as general reference only. For any further information please contact our Technical Service.

ULTRAFLEX hydraulic steering systems components are all marked CE in compliance with the EEC Directive 94/25 and the rule ISO 10592. The CE Examination on the ULTRAFLEX steering systems has been carried out by an Institute certified by the European Commission.

We kindly remind you that on the boats marked CE it is compulsory to install steering systems with components marked CE (see art. 4 and 5 of Directive 94/25/CE).

We inform you the ULTRAFLEX guarantee is null and void if some ULTRAFLEX components are installed on a hydraulic steering system together with products of other brands, with the exception of those brands clearly specified on page 52 of this catalogue.



HELM PUMP

page 52 to 55



OUTBOARD STEERING

page 56 to 59



OUTBOARD STEERING SYSTEMS PACKAGED IN A BOX

page 60



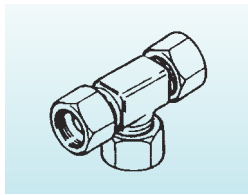
INBOARD STEERING

page 61 to 63



STERNDRIVE STEERING

page 64 to 65



ACCESSORIES AND SPARE PARTS

page 66



Ultraflex hydraulic steering systems meet the EN 10592 requirements about steering systems.



Ultraflex S.p.A. declines any liability for possible mistakes in this catalogue due to printing errors. Ultraflex S.p.A. reserves the right to make those modifications that are considered to be suitable for its products.

Publishing rights, trade marks, part numbers and photographs present on this catalogue are Ultraflex property and all rights are reserved.





CROSS REFERENCE

HELM PUMPS



52

ULTRAFLEX	MOUNTING	TELEFLEX® SEASTAR™	HYDRAFLEX®
UP28 F	F: front	Seastar™ 1.7 HH5271	LD25
UP28 R	R: rear mount	Seastar™ 1.7 HH5261	-
UP28 T	T: tilt	Seastar™ 1.7 HH5741	-
UP33 F	F: front	Seastar™ 2.0 HH5273	LD35
UP33 R	R: rear mount	-	-
UP33 T	T: tilt	Seastar PRO™ 1.7 HH5774	-
UP39 F	F: front	Seastar™ 2.4 HH5272	LD42
UP39 R	R: rear mount	Seastar™ 2.4 HH5262	-
UP39 T	T: tilt	Seastar™ 2.4 HH5742	-

CYLINDERS

	ULTRAFLEX	TELEFLEX® SEASTAR™	HYDRAFLEX®
OUTBOARD	UC128-OBF	HC5345	OB-BFM
	UC132-OBS	HC5370	OB-SM
INBOARD	UC116-I	BA125-7ATM	I-B116
	UC168-I	BA150-7ATM	I-B173
	UC215-I	BA150-9TM	I-B222
STERNDRIVE	UC133-IOB	BA125-8EMV	IO-B133
	UC133-IOS	125-8EM	IO-133S
	UC133-IOL	125-8EMV	IO-133L

NOTE:

The above Cross Reference charts have been drawn to facilitate a functional comparison among brands and should be used as general reference only. For any further information please contact our Technical Service

FRONT MOUNT HELM PUMPS

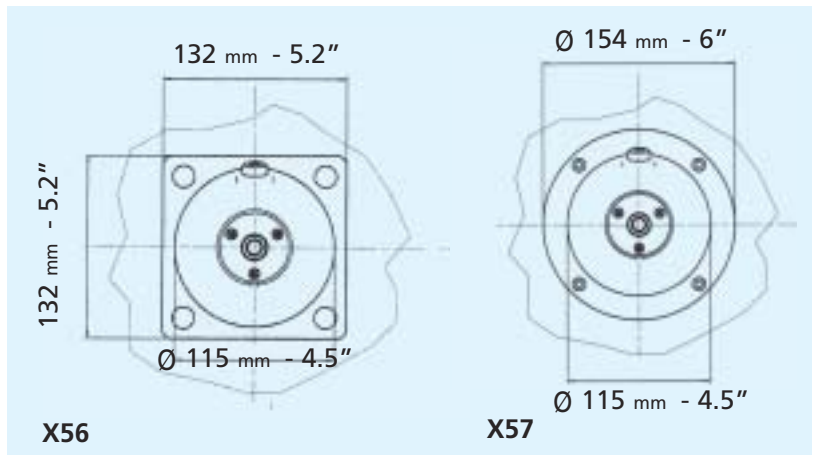
UP28 F, UP33 F, UP39 F

FEATURES

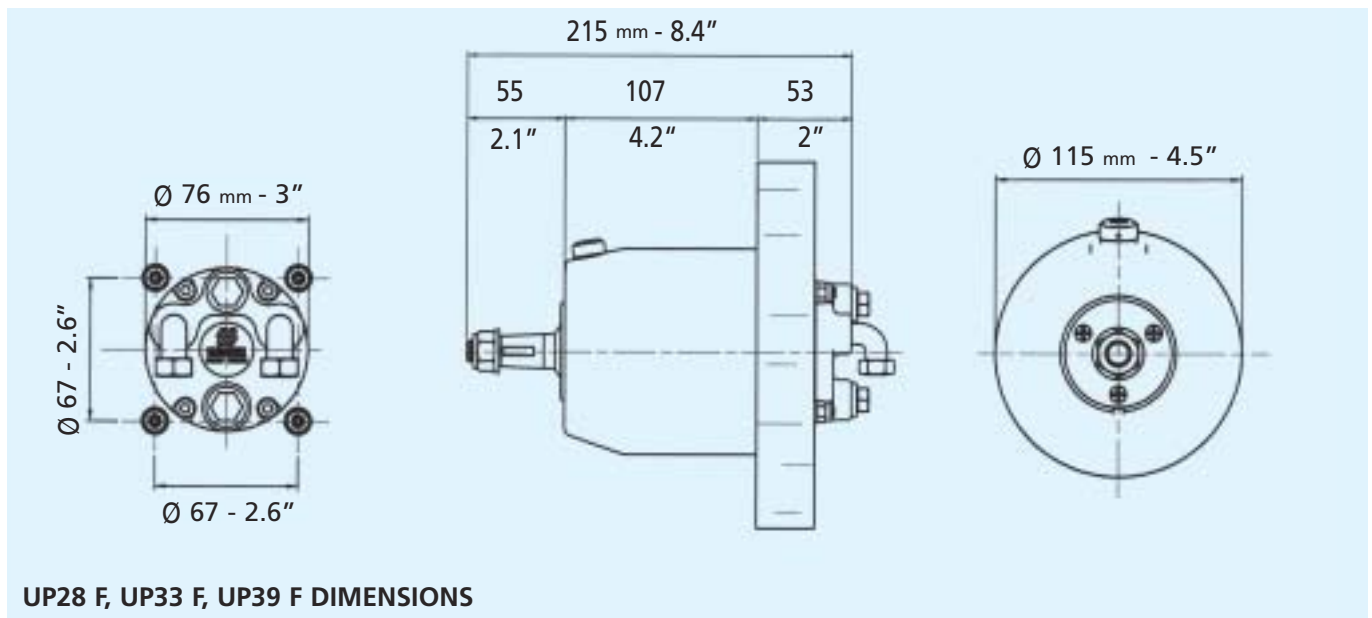
- Available in three different displacement sizes
- Compact design
- Ball bearing piston race
- Built-in lock valve for positive rudder lock
- Integral relief valve for over-pressure protection
- 3/4" tapered stainless steel shaft
- Easily accessible lock valve and shaft seal for replacement
- Cast iron rotor for greater durability and longer life
- Convenient front of dash fill
- 1/4" NPT fitting for 3/8" tube
- Complete with elbow fittings
- X56 - 39465 S square flange or X57 - 39464 P round flange permit to install the pumps in an intermediate dashboard position.



53



Mod.	Mounting	Displacement/revolution	No. of pistons	Relief valve setting	Maximum wheel dia.	Weight
UP28 F	Front mount	28 cc - 1.7 cu.in	5	70 Bar - 1000 PSI	710 mm - 28"	5 kg - 11 lbs
UP33 F	Front mount	33 cc - 2.0 cu.in	7	70 Bar - 1000 PSI	710 mm - 28"	5 kg - 11 lbs
UP39 F	Front mount	39 cc - 2.4 cu.in	7	70 Bar - 1000 PSI	710 mm - 28"	5 kg - 11 lbs



UP28 F, UP33 F, UP39 F DIMENSIONS



REAR MOUNT HELM PUMPS

UP28 R - UP33 R - UP39 R



54

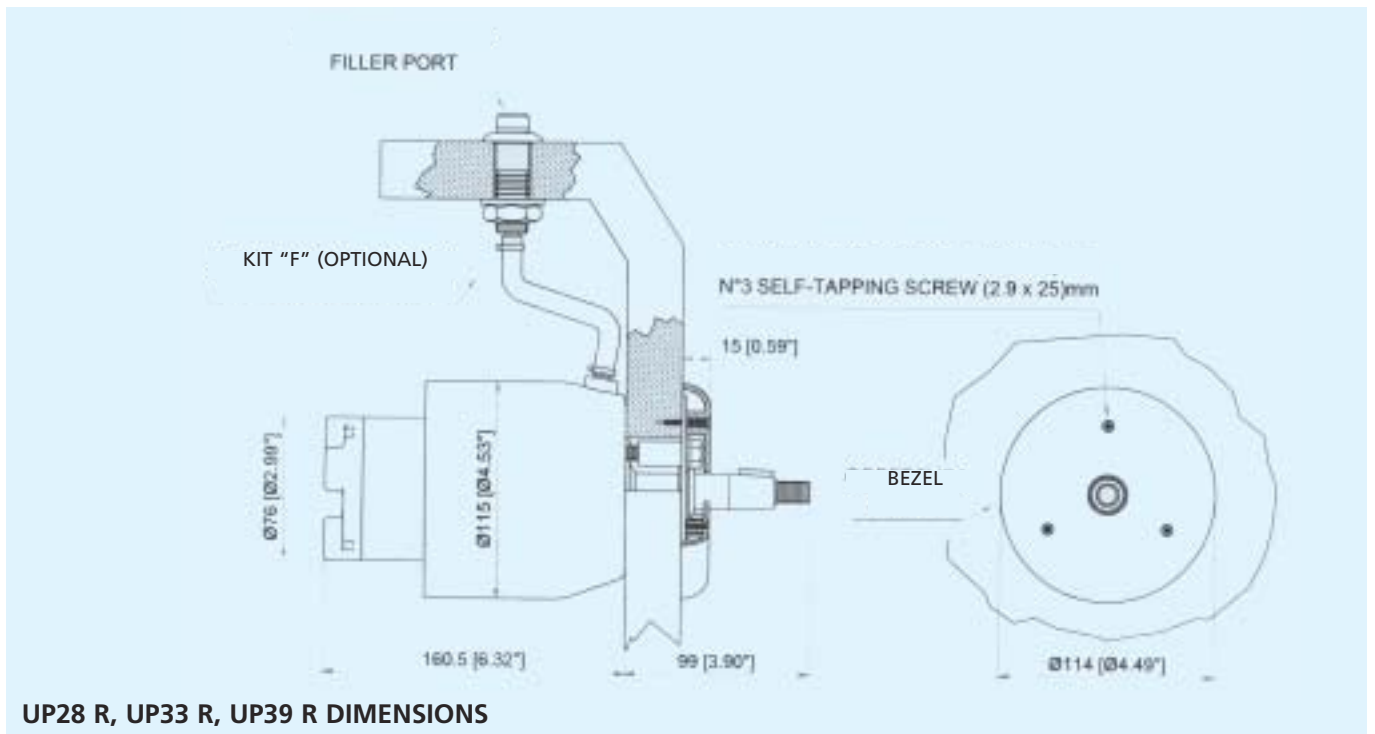
FEATURES

- Available in 39 cc/rev (2.4 cu.in/rev) displacement size
- Compact design
- Ball bearing piston race
- Built-in lock valve for positive rudder lock
- Integral relief valve for over-pressure protection
- 3/4" tapered stainless steel shaft
- Easily accessible lock valve and shaft seal for replacement
- Cast iron cylinder rotor for greater durability and longer life
- 1/4" NPT fitting for 3/8" tube
- Complete with elbow fittings

- **KIT F** (optional) - 39664 Y Remote fill adapter (page 66)



Mod.	Mounting	Displacement/revolution	No. of pistons	Relief valve setting	Maximum wheel dia.	Weight
UP28 R	Rear-mount	28 cc - 1.7 cu.in	5	70 Bar - 1000 PSI	710 mm - 28"	5 kg - 11 lbs
UP33 R	Rear-mount	33 cc - 2.0 cu.in	7	70 Bar - 1000 PSI	710 mm - 28"	5 kg - 11 lbs
UP39 R	Rear-mount	39 cc - 2.4 cu.in	7	70 Bar - 1000 PSI	710 mm - 28"	5 kg - 11 lbs



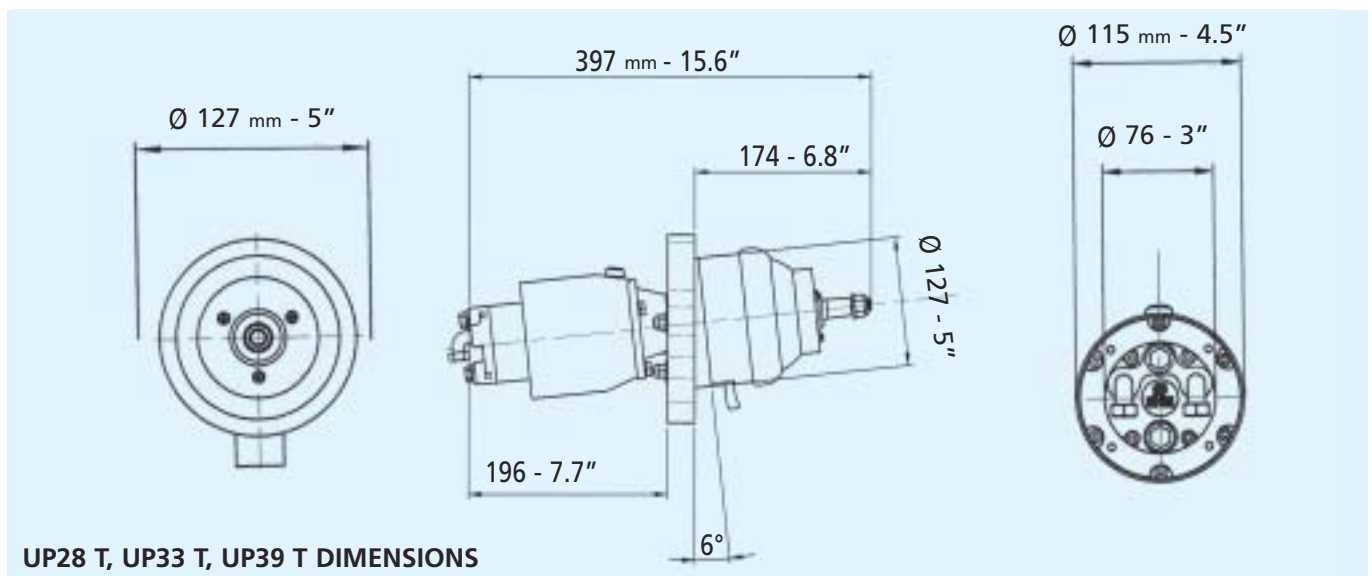
TILT MOUNT HELM PUMPS UP28 T, UP33 T, UP39 T

FEATURES

- Available in three different displacement sizes
- Compact design
- Ball bearing piston race
- Built-in lock valve for positive rudder lock
- Integral relief valve for over-pressure protection
- Stainless steel shaft
- Easily accessible lock valve and shaft seal for replacement
- Cast iron rotor for greater durability and longer life
- 1/4" NPT fitting for 3/8" tube
- Complete with elbow fittings
- Tilt mechanism:
X52 - 39250 U
NOTE: X52 tilt mechanism can be used with the Ultraflex mechanical rotary and rack and pinion steering helms also.
- **KIT F** (optional) - 39664 Y Remote fill adapter (see page 66)



Mod.	Mounting	Displacement/revolution	No. of pistons	Relief valve setting	Maximum wheel dia.	Weight
UP28 T	With X52 tilt	28 cc - 1.7 cu.in	5	70 Bar - 1000 PSI	710 mm - 28"	5 kg - 11 lbs
UP33 T	With X52 tilt	33 cc - 2.0 cu.in	7	70 Bar - 1000 PSI	710 mm - 28"	5 kg - 11 lbs
UP39 T	With X52 tilt	39 cc - 2.4 cu.in	7	70 Bar - 1000 PSI	710 mm - 28"	5 kg - 11 lbs



UP28 T, UP33 T, UP39 T DIMENSIONS

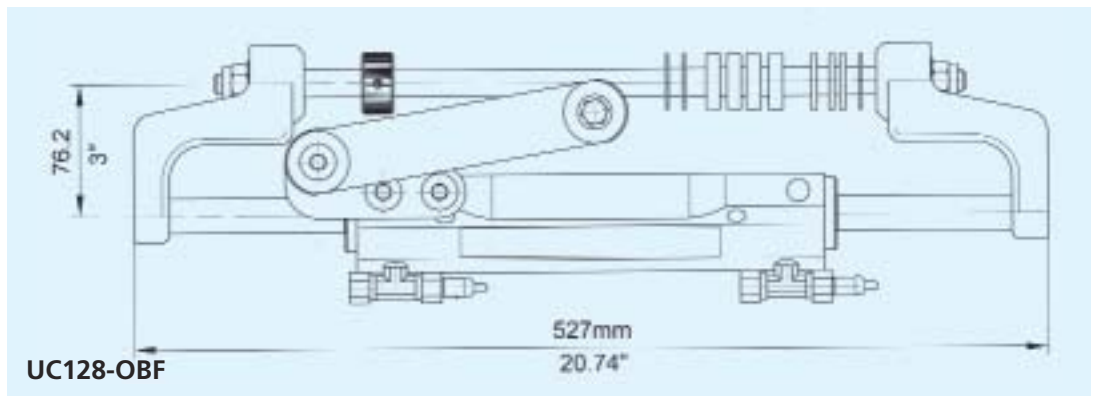




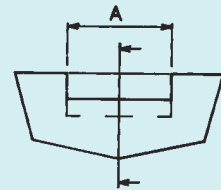
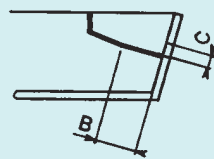
UC128-OBF - Balanced: the number of turns lock-to-lock is equal port to starboard or vice-versa

**UC128-OBF
FRONT
MOUNT
CYLINDER**

SPECIFICATIONS	UC128-OBF
Volume	128 cc - 7.8 cu. in
Output force	450 kg - 992 lbs
Inside diameter	35 mm - 1.37"
Stroke	198 mm - 7.79"
Fittings	For 3/8" high pressure flex hose

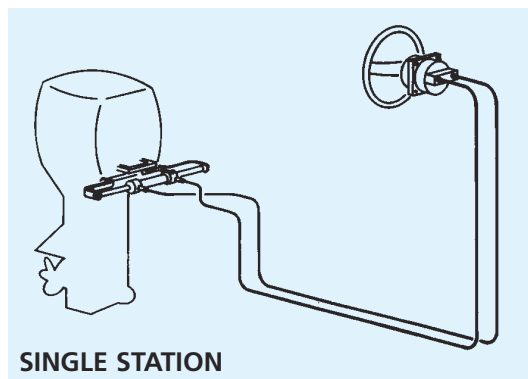


SPLASHWELL DIMENSION REQUIREMENTS



NUMBER OF ENGINES	A	B	C
1	540 mm - 21.25"	152 mm - 5.98"	152 mm - 5.98"
2	1110 mm - 43.70"	152 mm - 5.98"	152 mm - 5.98"

For twin engine applications minimum engine center distance is 550 mm (21.6")



UC128-OBF FRONT MOUNT CYLINDER

APPLICATIONS

NOTE:
Multiple OMC Seadrive® installation requires the OMC® synchronization valve (rif. OMC® P. No. 983430)

WARNING:

These recommendations should be used as a general reference only. Final selection should be made with the assistance of a qualified installation technician. For any further information please contact our Technical Service

ENGINE	POWER	YEAR	CYLINDER	PART No.
Mercury®	115 hp 2 strokes Saltwater	2003	UC128-OBF/1	39423 Z
	225 HP 4 strokes Saltwater	2003	UC128-OBF/1	39423 Z
	250 hp 2 strokes Saltwater EFI	2003	UC128-OBF/1	39423 Z
Yamaha®	70 hp 2 strokes	2003	UC128-OBF/2	39966 R
	115 - 130 hp V4 2 strokes	2003	UC128-OBF/2	39966 R
	150 - 200 hp V6 2 strokes	2003	UC128-OBF/2	39966 R
	250 hp V6 2 strokes	2003	UC128-OBF/2	39966 R
	150 - 175 hp V6 HPDI 2 strokes	2003	UC128-OBF/2	39966 R
	200 hp V6 HPDI 2 strokes	2003	UC128-OBF/2	39966 R
	250 hp V6 HPDI 2 strokes	2003	UC128-OBF/2	39966 R
	80 - 100 hp 4 strokes	2003	UC128-OBF/1	39423 Z
	115 hp 4 strokes	2003	UC128-OBF/2	39966 R
200 - 225 hp 4 strokes	2003	UC128-OBF/2	39966 R	
Honda®	BF 75 - 90 hp 4 strokes	2003	UC128-OBF/1	39423 Z
	BF 115 - 130 hp 4 strokes	2003	UC128-OBF/3	39967 T
	BF175 - 200 - 225 hp 4 strokes	2003	UC128-OBF/1	39423 Z
Johnson®	J 90 - 115 hp V4 2 strokes	2003	UC128-OBF/2	39966 R
	J 150 - 175 hp V6 2 strokes	2003	UC128-OBF/2	39966 R
	BJ 90 - 115 - 140 hp 4 strokes	2003	UC128-OBF/2	39966 R
Evinrude®	E 75 hp V4 2 strokes	2003	UC128-OBF/2	39966 R
	E 90 - 115 hp V4 2 strokes	2003	UC128-OBF/2	39966 R
	E 135 - 150 - 175 hp V6 2 strokes	2003	UC128-OBF/2	39966 R
	E 200 - 225 - 250 hp V6 2 strokes	2003	UC128-OBF/2	39966 R
Suzuki®	DF 90 - 115 hp 4 strokes	2003	UC128-OBF/2	39966 R
	DF 140 hp EFI 4 strokes	2003	UC128-OBF/2	39966 R

ORDER GUIDE:

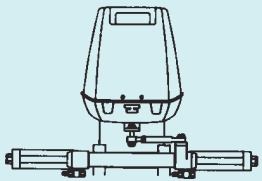
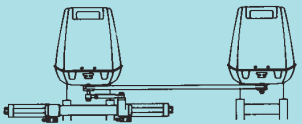
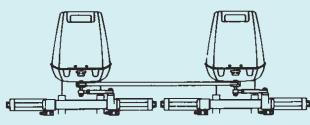


WARNING

This steering system can only be used when the engine is in compliance with the approved U.S. Coast Guard vessel horsepower rating. When installing this cylinder in conjunction with an **ENGINE JACK PLATE** trim system, a manual clearance check must be made in all moveable positions. Failure to comply with the installation manual for engine application, cylinder/hose clearance, and approved hydraulic fluids, may result in loss of steering, causing serious property damage and / or personal injury.

Not intended for use in racing applications.

NOTE:
KIT OB and KIT OB-2S see page 60

SYSTEM DESCRIPTION	COMPONENTS	MODEL	QTY
Single Engine Single Cylinder  Wheel turns: 4,5 Application up to 300 hp max	Front mount cylinder Helm pump Hose kit Oil Steering wheel for additional station add: Helm pump Fitting kit Hose kit Oil Steering wheel	UC128-OBF UP28 KIT OB OIL 15 UP28 KIT OB - 2S KIT OB OIL 15	1 1 1 3 1 1 1 1 1
Dual engine Single cylinder  Wheel turns: 3,8 Application: up to 300 hp max (non-counter rotating engine) Application: up to 450 hp max (counter rotating engine)	Front mount cylinder Helm pump Hose kit Oil Tie bar Steering wheel for additional station add: Helm pump Fitting kit Hose kit Oil Steering wheel	UC128-OBF UP33 KIT OB OIL 15 Supplied by engine manufacturer UP33 KIT OB - 2S KIT OB OIL 15	1 1 1 3 1 1 1 1 1
Dual engine Dual cylinder  Wheel turns: 6,5 Application: up to 600 hp max (non-counter rotating engine) Application: all counter rotating engine	Front mount cylinder Helm pump Hose kit Tee fitting kit Oil Tie bar Steering wheel for additional station add: Helm pump Fitting kit Hose kit Oil Steering wheel	UC128-OBF UP39 KIT OB STANDARD OIL 15 Supplied by engine manufacturer UP39 KIT OB - 2S KIT OB OIL 15	2 1 2 1 3 1 1 1 1 1





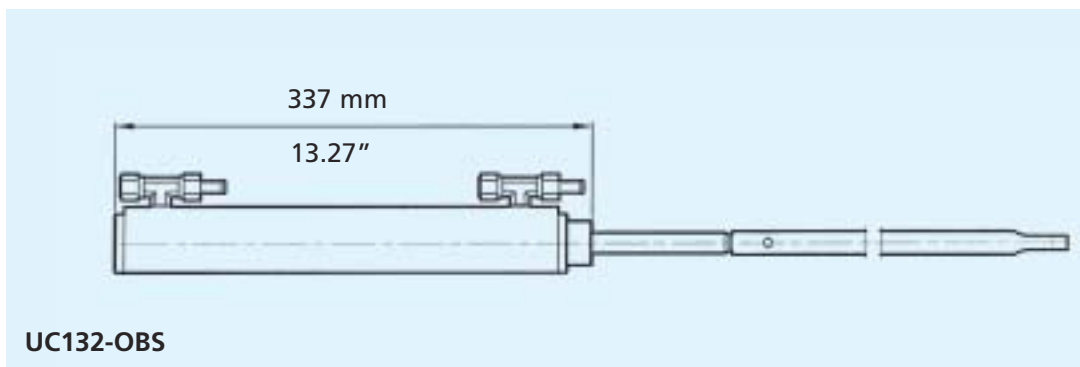
58



UC132-OBS - Unbalanced: the number of turns lock-to-lock is not equal port to starboard and vice-versa

**UC132-OBS
SIDE MOUNT
CYLINDER**

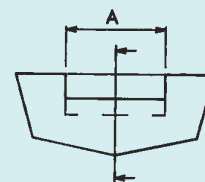
SPECIFICATIONS	UC132-OBS
Volume	132 / 163 cc - 8 / 9.95 cu. in
Output force	455 / 563 kg - 1003 / 1240 lbs
Inside diameter	32 mm - 1.25"
Stroke	203 mm - 8"
Fittings	For 3/8" high pressure flex hose



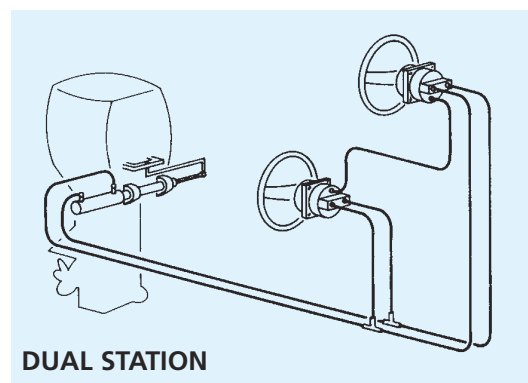
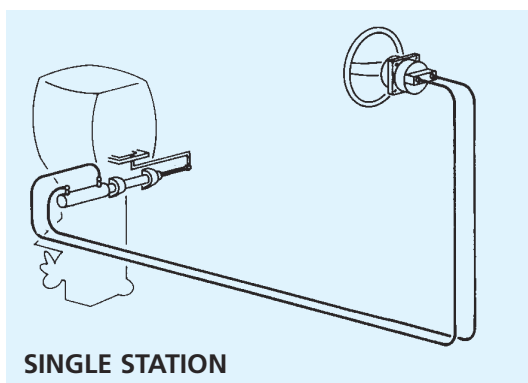
INSTALLATION:

UC132-OBS side mount cylinder features a turning nut for a fast and easy installation to the engine tube (Patent pending)

SPLASHWELL DIMENSION REQUIREMENTS



A= 530 mm - 20.8"



UC132-OBS SIDE MOUNT CYLINDER

APPLICATIONS

NOTE 1

If the OMC® input cylinder (ref. OMC® P. No. 985519) is fitted, an adaptor fitting is required (ref. Parker P. No. F6X-S 10-3/8")

NOTE 2

Multiple OMC Seadrive® installation requires the OMC® synchronization valve (rif. OMC® P. No. 983430)

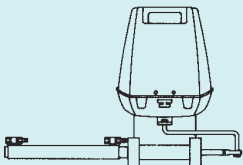
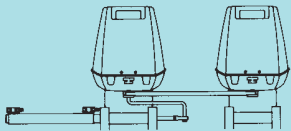
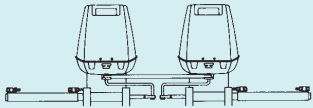
ENGINE	POWER	YEAR	ENGINE	POWER	YEAR
Johnson® & Evinrude® (see Note 1)	90 - 300 hp	1977 - 1990	Mercury® & Mariner®	150 - 200 hp	1984 only
	90 - 225 hp	1991 to date		90 - 115 hp	1984 only
	150 - 175 hp	1991 to date		115 - 220 hp	1985 - 1988
	250 - 300 hp	1991 to date		100 - 115 hp	1989 only
	65 - 155 hp	1977 - 1990		135 - 250 hp	1989 only
	100 - 155 hp	1991 to date		75 - 250 hp	1990 only
	80 - 105 hp	1991 to date	75 - 275 hp	1991 to date	
Suzuki®	150 - 220 hp 100 hp	1986 to date 1990 to date	Yamaha®	115 - 220 hp	1984 - 1985
Tohatsu®	120 - 140 hp	1990 to date		115 - 220 hp	1986 only
OMC - Seadrive® (see Note 2)	1,6 liters	1984 to date		115 - 220 hp	1987 to date
				250 hp	1990 to date
			70 - 90 hp	1989 to date	
			80 - 140 hp	1990 to date	
			Force®	90 - 150 hp	1985 to date

WARNING:

These recommendations should be used as a general reference only. Final selection should be made with the assistance of a qualified installation technician.

For any further information please contact our Technical Service

ORDER GUIDE:

SYSTEM DESCRIPTION	COMPONENTS	MODEL	QTY
Single engine Single cylinder  Wheel turns: 4,7/5,8 Application up to 300 hp max	Front mount cylinder Helm pump Hose kit Oil Steering wheel for additional station add: Helm pump Fitting kit Hose kit Oil Steering wheel	UC132-OBS UP28 KIT OB OIL 15 UP28 KIT OB - 2S KIT OB OIL 15	1 1 1 3 1 1 1 1 1 1
Dual engine Single cylinder  Wheel turns: 4/5 Application up to 300 hp max (non-counter rotating engine) Application up to 600 hp max (counter engine)	Side mount cylinder Helm pump Hose kit Oil Tie bar Steering wheel for additional station add: Helm pump Fitting kit Hose kit Oil Steering wheel	UC132-OBS UP33 KIT OB OIL 15 Supplied by engine manufacturer UP33 KIT OB - 2S KIT OB OIL 15	1 1 1 3 1 1 1 1 1 1
Dual engine Dual cylinder  Wheel turns: 6,7/8,3 Application up to 600 hp max (non counter rotating engine) Application all counter rotating engine	Side mount cylinder Helm pump Hose kit Tee fitting kit Oil Tie bar Steering wheel for additional station add: Helm pump Fitting kit Hose kit Oil Steering wheel	UC132-OBS UP39 KIT OB STANDARD OIL 15 Supplied by engine manufacturer UP39 KIT OB - 2S KIT OB OIL 15	2 1 2 1 3 1 1 1 1 1

WARNING:
the UC132-OBS side mount cylinder is not recommended for use in installations where the boat speed exceeds 60 mph (60 knots) and the power exceeds max Coast Guard recommendation for the boat.

NOTE:
KIT OB and KIT OB-2S see technical details of Outboard hydraulic steering systems packaged in a box.



59



OUTBOARD HYDRAULIC STEERING SYSTEMS PACKAGED IN A BOX

PROTECH

PROTECH package kit contains:

- UP28 F** Front mount helm pump.
- UC128-OBF** Front mount outboard cylinder.
- OIL 15** Hydraulic oil - 2 quarts .
- KIT OB** Hose kit with preassembled fittings - Specify length required when ordering.

The wheel is not included.



KIT OB: HOSE KIT FOR SINGLE STATION INSTALLATION

It consists of a pair of high pressure flexible hoses supplied with preassembled fittings on both ends.

KIT OB-25: FITTING FOR A SECOND STEERING STATION OR AUTOPILOT INSTALLATION

It includes all necessary fittings and 26.3 ft (8 m) of 3/8" dia. nylon tube for the compensating line.

P. No.	Length
KIT OB-05	0,50 m - 1.6 ft
KIT OB-10	1,00 m - 3.3 ft
KIT OB-15	1,50 m - 4.9 ft
KIT OB-20	2,00 m - 6.6 ft
KIT OB-25	2,50 m - 8.2 ft
KIT OB-30	3,00 m - 9.8 ft
KIT OB-35	3,50 m - 11.5 ft
KIT OB-40	4,00 m - 13.2 ft
KIT OB-45	4,50 m - 14.8 ft
KIT OB-50	5,00 m - 16.4 ft
KIT OB-55	5,50 m - 18.0 ft
KIT OB-60	6,00 m - 19.7 ft
KIT OB-65	6,50 m - 21.3 ft
KIT OB-70	7,00 m - 22.9 ft
KIT OB-75	7,50 m - 24.6 ft
KIT OB-80	8,00 m - 26.3 ft
KIT OB-85	8,50 m - 27.8 ft
KIT OB-90	9,00 m - 29.5 ft



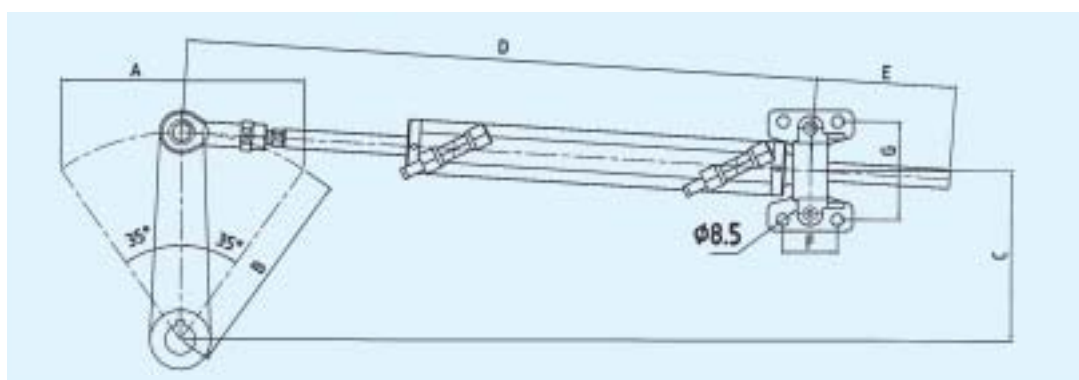
All balanced cylinders: the number of turns lock-to-lock is equal port to starboard and vice-versa



61

INBOARD CYLINDERS

SPECIFICATIONS	UC116-I ALUMINUM	UC168-I ALUMINUM	UC215-I ALUMINUM
Volume	116 cc - 7 cu. in	168 cc - 10.25 cu.in	215 cc - 13.12 cu. in
Torque	58 kgm - 5043 lbs. in	87 kgm - 7565 lbs. in	111 kgm - 9652 lbs. in
Output force	455 kg - 1003 lbs	682 kg - 1503 lbs	682 kg - 1503 lbs
Inside diameter	32 mm - 1.25"	40 mm - 1.57"	40 mm - 1.57"
Stroke	178 mm - 7"	178 mm - 7"	228 mm - 9"
Fittings compression style	for 3/8" nylon tube	for 3/8" nylon tube	for 3/8" nylon tube



	UC116-I	UC168-I	UC215-I
A	178 mm - 7"	178 mm - 7"	228 mm - 9"
B	155 mm - 6.1"	155 mm - 6.1"	199 mm - 7.8"
C	127 mm - 5"	127 mm - 5"	163 mm - 6.4"
D	464 mm - 18.3"	506 mm - 20"	582 mm - 22.9"
E	102 mm - 4."	106 mm - 4.2"	131 mm - 5.2"
F	40 mm - 1.6"	40 mm - 1.6"	40 mm - 1.6"
G	73 mm - 2.9"	105 mm - 4.1"	105 mm - 4.1"



INBOARD CYLINDERS

APPLICATIONS

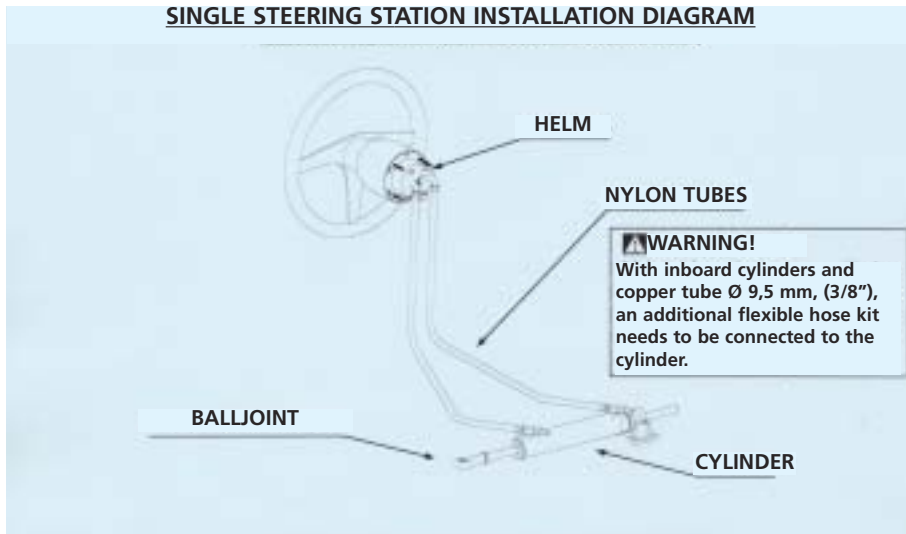
CYLINDER	MAX BOAT LENGTH:	HUL TYPE	No. OF ENGINES	MAX TORQUE	HOW TO ORDER
UC116-I	8,50 m - 28 ft	Planing/ Displacement	1	Up to 58 kgm 5043 lbs. in	System 1
	9,50 m - 31 ft		2		System 1
UC168-I	11,60 m - 38 ft	Planing	1	Up to 87 kgm 7565 lbs. in	System 2 or 3
	13,40 m - 44 ft		2		System 3
	9,70 m - 32 ft	Displacement	1	Up to 87 kgm 7565 lbs. in	System 2 or 3
	11,60 m - 38 ft		2		System 3
UC215-I	13,40 m - 44 ft	Planing	1	Up to 111 kgm 9652 lbs. in	System 4 or 5
	15,20 m - 50 ft		2		System 5
	11,60 m - 38 ft	Displacement	2	Up to 111 kgm 9652 lbs. in	System 4 or 5
	13,40 m - 44 ft		2		System 5

WARNING:

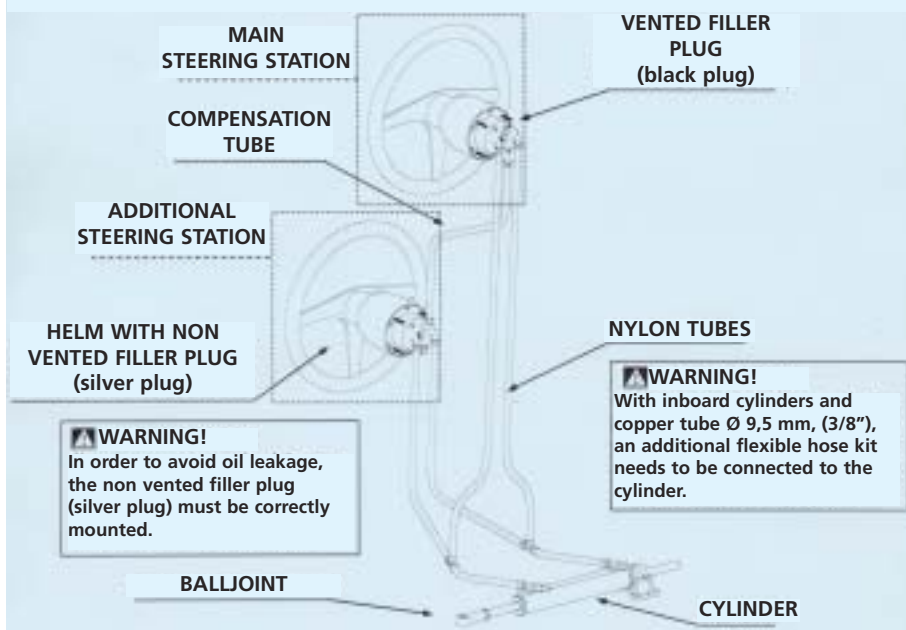
These recommendations should be used as a general reference only. Final selection should be made with the assistance of a qualified installation technician.

For any further information please contact our Technical Service

SINGLE STEERING STATION INSTALLATION DIAGRAM



DUAL STEERING STATION INSTALLATION DIAGRAM





**INBOARD
CYLINDERS**

ORDER GUIDE:

SYSTEM 1	Max rudder torque 58 kgm 5043 lbs. in	Turns lock to lock 4,1
Comp.	Model	Qty
Helm pump	UP28	1
Cylinder	UC116-I	1
3/8" nylon tube	TU95	on request
Oil	OIL15	3
Steering wheel	-	1
<i>for additional station add:</i>		
Helm pump	UP28	1
Fitting Kit	KIT95-2S	1 (pag. 66)
Oil	OIL15	1
Extra tube	TU95	on request
Steering wheel	-	1

SYSTEM 2	Max rudder torque 87 kgm 7565 lbs. in	Turns lock to lock 6
Comp.	Model	Qty
Helm pump	UP28	1
Cylinder	UC168-I	1
3/8" nylon tube	TU95	on request
Oil	OIL15	3
Steering wheel	-	1
<i>for additional station add:</i>		
Helm pump	UP28	1
Fitting Kit	KIT95-2S	1 (pag. 66)
Oil	OIL15	1
Extra tube	TU95	on request
Steering wheel	-	1

SYSTEM 3	Max rudder torque 87 kgm 7565 lbs. in	Turns lock to lock 5
Comp.	Model	Qty
Helm pump	UP33	1
Cylinder	UC168-I	1
3/8" nylon tube	TU95	on request
Oil	OIL15	3
Steering wheel	-	1
<i>for additional station add:</i>		
Helm pump	UP33	1
Fitting Kit	KIT95-2S	1 (pag. 66)
Oil	OIL15	1
Extra tube	TU95	on request
Steering wheel	-	1

SYSTEM 4	Max rudder torque 111 kgm 9652 lbs. in	Turns lock to lock 6,5
Comp.	Model	Qty
Helm pump	UP33	1
Cylinder	UC215-I	1
3/8" nylon tube	TU95	on request
Oil	OIL15	3
Steering wheel	-	1
<i>for additional station add:</i>		
Helm pump	UP33	1
Fitting Kit	KIT95-2S	1 (pag. 66)
Oil	OIL15	1
Extra tube	TU95	on request
Steering wheel	-	1

SYSTEM 5	Max rudder torque 111 kgm 9652 lbs. in	Turns lock to lock 5,5
Comp.	Model	Qty
Helm pump	UP39	1
Cylinder	UC215-I	1
3/8" nylon tube	TU95	on request
Oil	OIL 15	3
Steering wheel	-	1
<i>for additional station add:</i>		
Helm pump	UP39	1
Fitting Kit	KIT95-2S	1 (pag. 66)
Oil	OIL15	1
Extra tube	TU95	on request
Steering wheel	-	1

NOTE

1) For systems 3, 4 and 5, 5/16" nylon tubing can be used as an alternative to the standard 3/8" tubing for plumbing the system. These applications must be specified when ordering.

2) For systems 1, 2, 3, 4 and 5 copper tubing (3/8" dia. or 10 mm dia.) can be used as an alternative tubing for plumbing the system. For these applications a fitting kit, KIT95 or KIT100 - is required (ref. tubing and fitting kits).

For applications on work boats, the use of copper tubing is recommended.



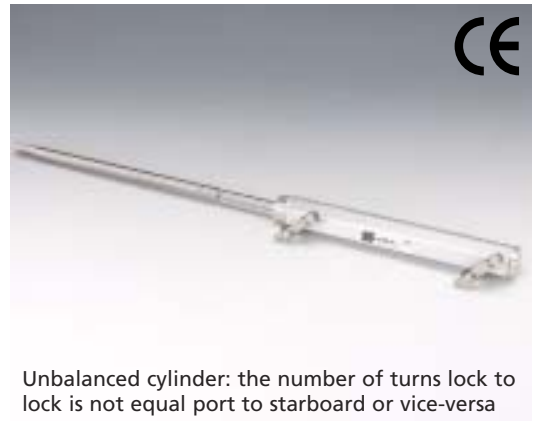
STERNDRIVE CYLINDERS



64



Balanced cylinder: the number of turns lock to lock is equal port to starboard or vice-versa



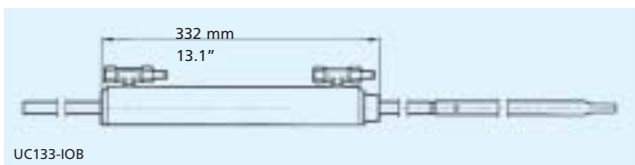
Unbalanced cylinder: the number of turns lock to lock is not equal port to starboard or vice-versa

CYLINDER FOR VOLVO DP-E POWER ASSISTED STERNDRIVES

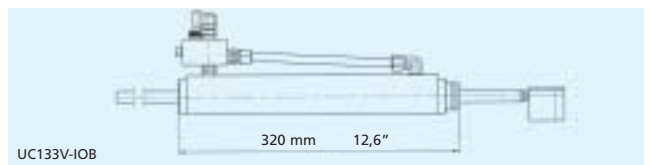


UC133V-IOB

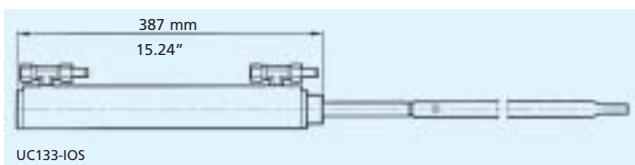
SPECIFICATIONS	UC133-IOB balanced	UC133V-IOB balanced	UC133-IOS non balanced	UC133-IOL non balanced
Volume	132 cc - - 8 cu. in	132 cc - - 8 cu. in	132 / 164 cc - - 8 / 10 cu.in	132 / 164 cc - - 8 / 10 cu.in
Torque	66 kgm - - 5738 lbs. in	66 kgm - - 5738 lbs. in	66 / 81,6 kgm - - 5738 / 7091 lbs. in	66 / 81,6 kgm - - 5738 / 7091 lbs. in
Output force	455 kg - -1003 lbs	455 kg - -1003 lbs	455 / 562 kg - - 1003 / 1239 lbs	455 / 562 kg - - 1003 / 1239 lbs
Inside diameter	32 mm - 1.25"	32 mm - 1.25"	32 mm - 1.25"	32 mm - 1.25"
Stroke	203 mm - 8"	203 mm - 8"	203 mm - 8"	203 mm - 8"
Fittings	for 3/8" nylon tube		for 3/8" nylon tube	for 3/8" nylon tube



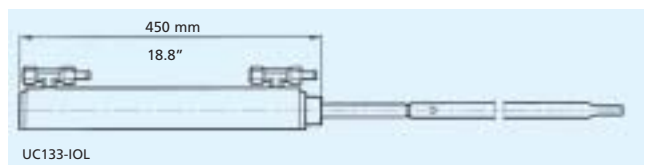
UC133-IOB



UC133V-IOB



UC133-IOS



UC133-IOL

STERNDRIVE CYLINDERS

ENGINE MANUFACTURER	YEAR	MODEL	ULTRAFLEX IO CYLINDER	
			non power assist engine	power assist engine
BMW®	To date	All	UC133-IOL	UC133-IOL
MERCUISER®	1983 and prior 1984 to date 1984 to date 1984 to date 1984 to date	MERCUISER I ALPHA BRAVO I BRAVO II BRAVO III	UC133-IOL UC133-IOB* UC133-IOB* UC133-IOB* UC133-IOB* <small>*Requires the Quicksilver® clevis (P. No. B98735A1)</small>	UC133-IOL UC133-IOL UC133-IOL UC133-IOL UC133-IOL
OMC®	1985 and prior 1986 to date 1986 to date	400/800 Series COBRA KING COBRA	N/D UC133-IOB* UC133-IOB* <small>*Requires an adapter supplied by engine manufacturer</small>	N/D IC133-IOS IC133-IOS
VOLVO®	to date to date to date to date 1992	275 280 290 DIESEL All DP-E	UC133-IOB UC133-IOL UC133-IOL UC215-I	UC133-IOL UC133-IOL UC133-IOL UC133-IOL UC133-IOL UC133V-IOB
YAMAHA®	1989 to date	All	N/D	UC133-IOL

APPLICATION

NOTE: these recommendations should be used as general reference only and they apply to factory stock sterndrives only. In doubt, contact a qualified installation technician.

ORDER GUIDE

Maximum rudder torque 66 kgm 5739 lbs. in			Turns lock to lock balanced 4.7 unbalanced 4.7/5.8			Maximum rudder torque 66 kgm 5739 lbs. in			Turns lock to lock balanced 4 unbalanced 4/5		
Comp.	Model	Qty	Comp.	Model	Qty	Comp.	Model	Qty	Comp.	Model	Qty
Helm pump	UP28	1	Helm pump	UP33	1	Helm pump	UP33	1	Helm pump	UP33	1
Cylinder	see applications	1	Cylinder	see applications	1	Cylinder	see applications	1	Cylinder	see applications	1
3/8" nylon tube	TU95	on request	3/8" nylon tube	TU95	on request	3/8" nylon tube	TU95	on request	3/8" nylon tube	TU95	on request
Oil	OIL15	3	Oil	OIL15	3	Oil	OIL15	3	Oil	OIL15	3
Steering wheel	-	1	Steering wheel	-	1	Steering wheel	-	1	Steering wheel	-	1
<i>for additional station add:</i>						<i>for additional station add:</i>					
Helm pump	UP28	1	Helm pump	UP33	1	Helm pump	UP33	1	Helm pump	UP33	1
Fitting kit	KIT95-2S	1 (pag. 66)	Fitting kit	KIT95-2S	1 (pag. 66)	Fitting kit	KIT95-2S	1 (pag. 66)	Fitting kit	KIT95-2S	1 (pag. 66)
Oil	OIL15	1	Oil	OIL15	1	Oil	OIL15	1	Oil	OIL15	1
Extra tube	TU95	on request	Extra tube	TU95	on request	Extra tube	TU95	on request	Extra tube	TU95	on request
Steering wheel	-	1	Steering wheel	-	1	Steering wheel	-	1	Steering wheel	-	1

NOTE: 3/8" or 10 mm dia. copper tubing can be used as an alternative tubing for plumbing the system. For these applications a fitting kit - KIT95 or KIT100 - is required (ref. tubing and fitting kits)



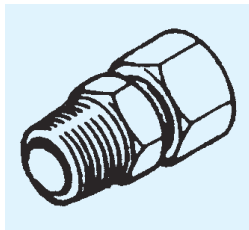
65



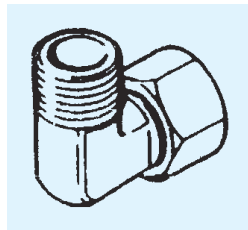
ACCESSORIES

TUBING AND FITTING KITS

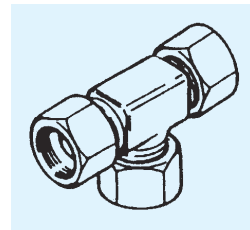
- TU 95:** 3/8" nylon tubing. It is sold in coils by required lengths. It is not recommended in the applications where the total tubing run exceeds 100 ft. (30 m).
- KIT 95:** 3/8" copper tube fitting kit. It includes two 1.6 ft (0,5 m) nylon tubes and all necessary fittings for a single station.
- KIT 100:** 10 mm copper tube fitting kit. It includes 1.6 ft (0,5 m) nylon tubes and all necessary fittings for a single station.
- KIT 95-2S:** Fitting kit for a second steering station or for an autopilot installation. It includes all necessary fittings for 3/8" nylon or copper tube.
- KIT 100-2S:** Fitting kit for a second steering station or for an autopilot installation. It includes all necessary fittings for 10 mm copper tube.
- BP 95:** By-pass for 3/8" nylon tube.
- KIT F:** Remote fill adapter (39664 Y) for rear mount and tilt mount pumps.



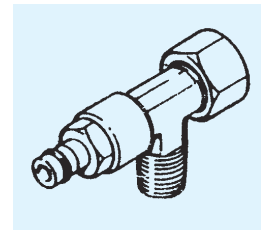
Connector fitting:
helm and 3/8" tube
39471 L



Elbow fitting:
helm and 3/8" tube
39472 N



Tee fitting:
3/8" tube
39502 V



Bleed tee:
cylinders and 3/8" tube
39503 X

OIL 15: HYDRAULIC OIL

Sold in quarts: OIL15, or in gallons: OIL15G
 Hydraulic oil ISO VG 15
 Viscosity 15 cst at 40 °C
 Viscosity index <100
 Solidification point <- 30 °C

SPARE PARTS:

HELM PUMPS :

Vented filler plug kit	39469 A	Installation kit for front mount pumps	39476 X
Non vented filler plug kit	39470 J	Installation kit for rear mount pump	39500 R
Lock valve kit	39473 R	Installation kit for tilt mount pumps	39501 T
Shaft seals kit	39474 T		

UC128-OBF FRONT MOUNT OUTBOARD CYLINDER

Spacer kit	39492 V	End cap	39493 X
Black side bracket	39490 R	Through tube stainless steel rod	39491 T
Rod seal	39494 Z		

UC132-OBS SIDE MOUNT OUTBOARD CYLINDER

Extension rod	39495 B	Rod seal	39506 D
Front end cap	39496 D		

INBOARD CYLINDERS

Balljoint for UC116-I	39477 Z
Balljoint for UC168-I and UC215-I	39478 B
Balljoint and shim for UC116-I	39479 D
Balljoint and shim for UC168-I and UC215-I	39480 M
Rear end cap for UC116-I	39481 P
Front end cap for UC116-I	39482 S
Rear end cap for UC168-I and UC215-I	39483 U
Front end cap for UC168-I and UC215-I	39484 W
Rod seal for UC116-I	39504 Z
Rod seal for UC168-I and UC215-I	39505 B

STERNDRIVE CYLINDERS

Rear end cap for UC133-IOB	39497 F
Front end cap for UC133-IOB	39507 F
Rod seal for UC133-IOB	39508 H