



## Contents

### Steering Wheels

Steering Wheels . . . . .	.599 - 604
Steering Wheels - Non-Magnetic Stainless Steel . . . . .	.602
Steering Wheels - Stainless Steel . . . . .	.603 - 604
Steering Wheel Spares & Accessories . . . . .	.605

### Mechanical Steering System

Selection Guide . . . . .	.606
Mechanical Steering Kits . . . . .	.607 - 608
Mechanical Steering Helms . . . . .	.609 - 611

### Mechanical Steering Cables

Replacement Cable Guide . . . . .	.612
Steering Cables . . . . .	.613 - 614
Mechanical Steering Spares & Accessories . . . . .	.614 - 618

### Hydraulic Steering Systems

Introduction & Cross Reference . . . . .	.619
115HP Gotech Hydraulic Steering Kits . . . . .	.620
150HP Hyco Hydraulic Steering Kits . . . . .	.621 - 622
300HP Nautech 1 Hydraulic Steering Kits . . . . .	.623 - 624
300HP Nautech 3 Hydraulic Steering Kits . . . . .	.625
300HP Nautech Ordering Guide . . . . .	.626
Hydraulic Steering Kits . . . . .	.627

### Hydraulic Outboard Cylinders

Front Mount Cylinders . . . . .	.628 - 629
Single/Dual Nautech Ordering Guide . . . . .	.630
SilverSteer™ Front Mount Cylinders . . . . .	.631
SilverSteer™ Ordering Guide . . . . .	.632
Side Mount Cylinders . . . . .	.633 - 634

### Hydraulic Quickfit Hose Kits

Hydraulic Quickfit Hose Kits . . . . .	.635 - 637
SilverSteer™ Quickfit Hose Kits . . . . .	.637 - 638
Hydraulic Tubing, Hose & Connectors . . . . .	.639

### Tie Bars

Tie Bars . . . . .	.640 - 641
--------------------	------------

### Hydraulic Inboard Cylinders

Hydraulic Inboard Cylinders . . . . .	.642 - 646
---------------------------------------	------------

### Hydraulic Helm Pumps

UP20 Helm Pumps . . . . .	.647
Front Mount . . . . .	.648
Tilt Mount . . . . .	.649
Rear Mount . . . . .	.650
SilverSteer™ Front Mount . . . . .	.651
SilverSteer™ Tilt Mount . . . . .	.652

### Hydraulic Steering Accessories

Hose Fittings . . . . .	.653 - 655
Hydraulic Accessories . . . . .	.655 - 656
Hydraulic Cylinder Spares . . . . .	.657 - 658

### Steering System - Power Assisted

MasterDrive™ Systems Introduction . . . . .	.659
Single Cylinder Application . . . . .	.660
Dual Cylinder Application . . . . .	.661
Second Station Application . . . . .	.662
MasterDrive™ System . . . . .	.663 - 664

### Engine Controls

Side Mount Engine Controls . . . . .	.665 - 666
Top Mount Engine Controls . . . . .	.667 - 668
Two Lever - Single Function per Lever Engine Controls . . . . .	.669
Single & Two Lever - Single Function per Lever Engine Controls . . . . .	.670

### Engine Control Cables

Engine Control Cables . . . . .	.671 - 674
---------------------------------	------------

### Engine Control Spares & Accessories

Engine Control Spares & Accessories . . . . .	.675 - 678
---	------------

### Engine Electronic Control Systems

Power A Mark II Engine Controls . . . . .	.679 - 680
Electronic Control Parts . . . . .	.681 - 683
Network Terminators, Spare Parts . . . . .	.683
Electronic Control Parts . . . . .	.684 - 686

## Steering Wheels

### Steering Wheels - Pismo



Part No.	Model	Grip Colour	Spokes Colour	Diameter Ø	
				(mm)	(in)
<b>83767</b>	Pismo	Black	Black	350	13.8"

- Anti-shock material.
- Fits a standard ¾" tapered shaft.

### Steering Wheels - Italian 3 Spoke Riv Sports



Part No.	Description	Diameter Ø	
		(mm)	(in)
<b>83728</b>	3 Spoke Riv Sports Wheel Black & Knob	350	13.8"

- Fits a standard ¾" tapered shaft.
- Ideal for smaller boats with mechanical or hydraulic steering.
- Speed knob.

### Steering Wheel - Italian 3 Spoke Sports



Part No.	Description	Diameter Ø	
		(mm)	(in)
<b>83739</b>	3 Spoke Black S/Grip Wheel Black	350	13.8"

- Fits a standard ¾" tapered shaft.
- Ideal for all types and size boats from leisure to fishing.

### Steering Wheels - Thermoplastic Anti-Shock with Hard Grip



Part No.	Model	Colour	Depth (mm)	Diameter Ø	
				(mm)	(in)
<b>83720</b>	V32N	Black	92	335	13.2"
<b>83730</b>	V33N	Black	105	342	13.4"
<b>83721</b>	Spare Black Cap suits <b>83720</b> fits 79mm Bore, 3 Spade				

- Thermoplastic anti-shock material.
- Hard touch grip.
- Fits a standard ¾" tapered shaft.
- All steering wheels are CE marked in conformity with the EN 28848 - EN 29775 and ABYC P22 safety standards.





## Steering Wheels - Thermoplastic Anti-Shock with Soft Grip

Part No.	Model	Grip Colour	Spokes Colour	Depth (mm)	Diameter Ø	
					(mm)	(in)
<b>83735</b>	V38	Black	Black	85	350	13.8"
<b>83746</b>	V45	Black	Black	82	280	11"

- Thermoplastic anti-shock material.
- Soft touch grip.
- Fits a standard ¾" tapered shaft.
- All steering wheels are CE marked in conformity with the EN 28848 - EN 29775 and ABYC P22 safety standards.



## Steering Wheels - Santorini Soft Grip

Part No.	Model	Grip Colour	Spokes Colour	Diameter Ø	
				(mm)	(in)
<b>83803</b>	Santorini	Black	Silver	350	13.8"

- Polyurethane grip with inserts.
- Patented hub allows the steering wheel to be aligned when installed.
- Fits a standard ¾" tapered shaft.
- Supplied with a centre hub.
- All steering wheels are CE marked in conformity with the EN 28848 - EN 29775 and ABYC P22 safety standards.



Black/Silver



## Steering Wheels - Corsica Soft Grip

Part No.	Colour	Grip	Spokes Colour	Depth (mm)	Diameter Ø	
					(mm)	(in)
<b>83755</b>	Black	Soft Touch	Silver	88	350	13.8"
<b>83755BB</b>	Black	Soft Touch	Black	88	350	13.8"
<b>83755W</b>	White	Soft Touch	Silver	88	350	13.8"
<b>83755WS</b>	Burl Wood	Wood Grip	Silver	88	350	13.8"

- Patented hub allows the steering wheel to be aligned when installed.
- Fits a standard ¾" tapered shaft.
- Supplied with a centre hub.
- All steering wheels are CE marked in conformity with the EN 28848 - EN 29775 and ABYC P22 safety standards.



Black/Black



Black/Silver



White



Burl Wood



83755



83755BB



83755W



83755WS



## Steering Wheels

### Steering Wheels - Capri Wood Grip



Rosewood



Part No.	Grip Colour	Spokes Colour	Diameter Ø	
			(mm)	(in)
<b>83753</b>	Wood	Silver	320	12.6"

- Patented hub allows the steering wheel to be aligned when installed.
- Fits a standard ¾" tapered shaft.
- Supplied with a centre hub.
- All steering wheels are CE marked in conformity with the EN 28848 - EN 29775 and ABYC P22 safety standards.

### Steering Wheels - Non-Magnetic Stainless Steel



83700

Part No.	Grip Colour	Spokes	Depth (mm)	Diameter Ø	
				(mm)	(in)
<b>83700</b>	Black	Stainless Steel	67	350	13.8"

- Anti-shock polyurethane grip.
- Non-magnetic stainless steel wheel eliminates compass interference.
- Fits a standard tapered ¾" shaft.
- Symmetrical design is ideal for hydraulic steering applications.
- Supplied with a centre hub cap.
- Symmetrical design is ideal for hydraulic steering applications.

### Steering Wheel - Steering Wheel with Speed Knob



83698 / 83699



62125



Part No.	Grip Colour	Spokes	Depth (mm)	Diameter Ø	
				(mm)	(in)
<b>83698</b>	Black	Stainless Steel	67	294	11.6"
<b>83699</b>	Black	Stainless Steel	76	350	13.8"
<b>62125</b>	Replacement Speed Knob				

- Anti-shock polyurethane grip.
- Fits a standard tapered ¾" shaft.
- Symmetrical design is ideal for hydraulic steering applications.
- Stainless steel speed knob.
- Stylish polished stainless steel finish.
- Supplied with a centre hub cap.





## Steering Wheels - Non-Magnetic Stainless Steel

### Steering Wheels - V52 Non-Magnetic Stainless Steel

Part No.	Model	Grip Colour	Depth (mm)	Diameter Ø	
				(mm)	(in)
<b>83701B</b>	V52	Black	73	320	12.6"
<b>83701W</b>	V52	White	73	320	12.6"
<b>83701G</b>	V52	Grey	73	320	12.6"

- Polyurethane grip.
- Non-magnetic stainless steel wheel eliminates compass interference.
- Fits a standard 3/4" tapered shaft.
- Supplied with a centre hub cap.
- Symmetrical design is ideal for hydraulic steering applications.
- All steering wheels are CE marked in conformity with the EN 28848 - EN 29775 and ABYC P22 safety standards.



83701B



83701W



83701G



### Steering Wheels - V57 Non-Magnetic Stainless Steel

Part No.	Grip Colour	Spokes	Depth (mm)	Diameter Ø	
				(mm)	(in)
<b>83700W</b>	V57	White	76	350	13.8"
<b>83702</b>	V57	Grey	76	350	13.8"

- Polyurethane grip.
- Non-magnetic stainless steel wheel eliminates compass interference.
- Fits a standard 3/4" tapered shaft.
- Supplied with a centre hub cap.
- Symmetrical design is ideal for hydraulic steering applications.
- All steering wheels are CE marked in conformity with the EN 28848 - EN 29775 and ABYC P22 safety standards.



83700W



83702



### Steering Wheels - V62 & V67 - Mahogany Grip - Non-Magnetic S/S

Part No.	Description	Depth (mm)	Diameter Ø	
			(mm)	(in)
<b>83706</b>	Mahogany Grip with S/S spokes and Mahogany Centre Cap	108	350	13.8"

- Genuine mahogany.
- Non-magnetic stainless steel wheel eliminates compass interference.
- Fits a standard 3/4" tapered shaft.
- Supplied with a centre hub cap.
- All steering wheels are CE marked in conformity with the EN 28848 - EN 29775 and ABYC P22 safety standards.



83706





## Steering Wheels - Stainless Steel

### Steering Wheel - Mahogany Grip - Stainless Steel



Part No.	Description	Diameter Ø	
		(mm)	(in)
<b>83710</b>	Mahogany Wheel with Highly Polished 316G S/S Spokes	550	21.6"

- Genuine mahogany.
- Fits a standard 3/4" tapered shaft.
- Supplied with a centre hub cap.
- Highly polished 316G stainless steel spokes.
- Large diameter mahogany outer rim for comfortable grip.



### Steering Wheels - Teak Traditional Styled



Part No.	Description	Diameter Ø	
		(mm)	(in)
<b>62160</b>	Teak Steering Wheel With Cap	450	17.7"
<b>62162</b>	Teak Steering Wheel With Cap	500	19.7"
<b>62164</b>	Teak Steering Wheel With Cap	600	23.6"

- Genuine teak.
- Fits a standard 3/4" tapered shaft.
- Supplied with a brass centre hub.

### Steering Wheels - 3 Spoke - Polished Stainless Steel



62096 & 62098



62100 & 62102



Part No.	Description	Diameter Ø	
		(mm)	(in)
<b>62096</b>	304G S/S Wheel with Grip & Knob	390	16"
<b>62098</b>	304G S/S Wheel with Grip & Knob	340	13.2"
<b>62100</b>	304G S/S Wheel with Grip	390	16"
<b>62102</b>	304G S/S Wheel with Grip	340	13.2"

- Fits a standard 3/4" tapered shaft.
- Polished stainless steel with cap.
- Finger indents around stainless steel wheel for comfortable grip.
- Flat spoke steering wheel.
- 4mm spoke thickness.





## Steering Wheels - 5 Spoke - Stainless Steel

Part No.	Description	Diameter Ø	
		(mm)	(in)
62106	10° Dish, ¾" Tapered Shaft	390	16"
62109	10° Dish, ¾" Tapered Shaft	450	18"
62104	25° Dish, ¾" Tapered Shaft	330	13"
62112	20° Dish, ¾" Tapered Shaft	500	20"
62105	25° Dish, ¾" Tapered Shaft	390	16"
62107	Flat, No Dish, ¾" Tapered Shaft	390	16"
62110	Flat, No Dish, ¾" Tapered Shaft	450	18"
62114	Flat, No Dish, ¾" Tapered Shaft	500	20"
62117	Flat, No Dish, ¾" Tapered Shaft	600	24"

- High quality welds on polished stainless steel wheel, spokes and centre hub cap.
- Elliptical outer rim for comfortable grip.
- Ranging in diameter from 330mm to 600mm.
- All wheels come with centre hub and cap.



## Steering Wheels - 6 Spoke - Stainless Steel

Part No.	Description	Diameter Ø	
		(mm)	(in)
62115	Flat, No Dish, 1" Parallel Shaft	500	20"
62116	Flat, No Dish, 1" Parallel Shaft	600	24"
62118	Flat, No Dish, 1" Parallel Shaft	700	28"
62120	Flat, No Dish, 1" Parallel Shaft	750	30"
62128	Flat, No Dish, 1" Parallel Shaft	1010	40"

- Screwed and high quality welded polished stainless steel wheel.
- Elliptical outer rim for comfortable grip.
- Ranging in diameter from 500mm to 1060mm.

*NOTE: 316G stainless steel dome wheel nut to be ordered separately (P/N: 62060, 62061 and 62062). See Steering Wheel Spares and Accessories on page 605 for more information.*



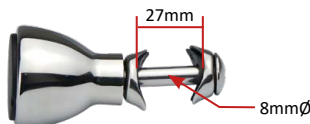
## Steering Wheels - Knob



62124



62125



**NEW ENTRY**

Part No.	Description	Fits Rim Size
62124	Stainless Steel Wheel Knob - Clamp on	¾" x 1"
62125	Stainless Steel Wheel Knob - Bolt Through	¾" x 1"

- Suits stainless steel wheels.
- Detachable.

NOTE: For hydraulic use only.

## Steering Wheel - Spares



83784



83784B



83786



83787



Part No.	Description	Fits
83784	Hub and Cap with Alloy Centre	¾" tapered shaft
83784B	Replacement Black Cap suits 83784	50mm Bore
83786	Black Screws (Set of 6)	
83787	Silver Screws (Set of 6)	

- Suits Ultraflex® steering wheels.

## Steering Wheel Cap - Plastic



Part No.	Description	Fits
83721	Black Cap suits 83720,	79mm Bore, 3 Spade

- Suits Ultraflex® steering wheels.

## Steering Wheel - Dome Nut



Part No.	Description	Thread	Suits
62060	Stainless Steel Dome Wheel Nut	½" UNF	62115 62116 62118 62120 62128
62061	Stainless Steel Dome Wheel Nut	M12	
62062	Stainless Steel Dome Wheel Nut	⅝" UNF	

- 316 Grade Stainless Steel.

## Steering Shaft Adapter



Part No.	Description
62150	Steering Wheel Adapter

- Made from high quality spun bronze.
- Used to convert a 1" parallel shaft steering wheel to a ¾" tapered shaft.



## Mechanical Steering System Selection Guide

### Steering System Selection Guide Recommended & Max HP Rating

Steering Helm Systems		OUTBOARD											INBOARD	STERNDRIVE*
		Engine Power HP up to 50mph											Boat Length up to 10.5m (35ft)	Power Assisted
		25	50	75	100	125	150	175	200	225	250	275		
T67	Boat Lengths up to 9m (30ft)	Optimal 55HP											-	-
T85		Optimal 75HP Max 115HP											-	✓
T81FC		Optimal 150HP					Max 225HP						✓	✓
T71FC		Optimal 150HP					Max 225HP						✓	✓
T72FC Twin Cable		Optimal 200HP					Max 275HP						✓	✓
T73NRFC		Optimal 150HP					Max 225HP						✓	✓
T74NRFC Twin Cable		Optimal 200HP					Max 275HP						✓	✓
T91 High Performance		Optimal 150HP					Max 225HP						✓	✓
T93ZT Anti-Feedback		Optimal 150HP					Max 225HP						✓	✓
G86		Optimal 180HP					Max 250HP						✓	✓
G88NR		Optimal 200HP					Max 275HP						✓	-
G96		Optimal 180HP					Max 250HP						✓	✓
G98NR		Optimal 200HP					Max 275HP						✓	-

Ultraflex hydraulic steering systems are recommended for boats that exceed 50 mph. Always follow engine manufacturer's instructions.

\*Ultraflex hydraulic steering systems are recommended for boats that exceed 50mph. Always follow engine manufacturer's instructions.

<sup>1</sup>NOTE: Sterndrive engines not equipped with power steering can create very high steering loads. Our hydraulic steering systems are recommended for these type of boats.

## Mechanical Steering Kits

### Selecting the Right Mechanical Steering System

Selection of the appropriate mechanical steering system is an important factor for the safety and functionality of your boat. The combination of engine power, hull type and boat speed influence the correct selection of the steering system. The load on the steering system increases with the boat speed and engine power; the torque generated by the propeller rotation in high power outboard applications can make it hard to steer.

Large boats with displacement hulls and inboard or non power assisted stern drive engines, can generate high rudder loads: in these cases a mechanical steering system will be inadequate and we suggest the use of an Ultraflex® Hydraulic steering system.

We recommend consulting qualified representatives when selecting, installing and maintaining a steering system for your boat.

### Ultraflex® Planetary Gear Helms

Ultraflex mechanical steering helms T71FC, T73NRFC, T91, T93ZT as well as dual cable versions and tilt wheel versions use a Planetary Gear Design. A Planetary Gear design has three satellite gears that rotate on their axis



and at the same time rotate around the central helm axis. This allows for equal distribution of engine torque over three points of the central gear, dividing and balancing the system loads. The benefits of this special design are increased system longevity, increased efficiency and less engine feedback compared to single pinion gear helms.

### Ultraflex® Non-Reversible Steering System

Engine torque usually generates a load on the steering system that must be continually compensated by the driver even when the boat is going straight. The additional effort by the driver to maintain a true course can often cause fatigue. With Ultraflex® Non-reversible steering helms the load applied to the steering system is no longer a problem.

A patented device allows the helm shaft to lock until turned by the driver, maintaining the boat direction and neutralising the feedback loads on the steering cable. This mechanism is engaged when the driver is not turning the wheel and is automatically disengaged as soon as the driver applies pressure on the wheel to change direction of the boat. The Ultraflex® Non-reversible mechanism designed for mechanical steering systems makes driving a boat safer and easier.



## Mechanical Steering Kits

### Mechanical Steering Kits - Rotary Helm - T85

2.5 Turns



Part No.	Description
83510B	10ft M66 Cable, T85 Helm and Bezel Kit
83511B	11ft M66 Cable, T85 Helm and Bezel Kit
83512B	12ft M66 Cable, T85 Helm and Bezel Kit
83513B	13ft M66 Cable, T85 Helm and Bezel Kit
83514B	14ft M66 Cable, T85 Helm and Bezel Kit
83515B	15ft M66 Cable, T85 Helm and Bezel Kit

- T85 Fast Connect Rotary Helm is recommended for use with engines up to 75HP.

#### Kits Contains:

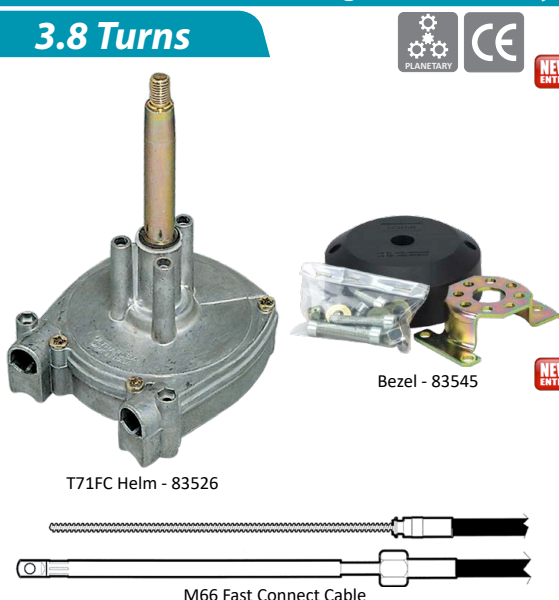
- 1 x **83525** - T85 Rotary Helm and Ø105mm Bezel. (Refer to "Mechanical Steering Helm - T85" on page 609).
- 1 x **M66** - Steering Cable. (Refer to "Steering Cables - Fast Connect - M66" on page 613).

NOTE: Steering wheel not included in kit.

Refer to "Measuring For Replacement Steering Cables" on page 612.

### Mechanical Steering Kits - Planetary Gear Helm - T71FC

3.8 Turns



NEW ENTRY

Part No.	Description
83511PB	11ft M66 Cable, T71FC Helm and Bezel Kit
83512PB	12ft M66 Cable, T71FC Helm and Bezel Kit
83513PB	13ft M66 Cable, T71FC Helm and Bezel Kit
83514PB	14ft M66 Cable, T71FC Helm and Bezel Kit
83515PB	15ft M66 Cable, T71FC Helm and Bezel Kit
83516PB	16ft M66 Cable, T71FC Helm and Bezel Kit
83517PB	17ft M66 Cable, T71FC Helm and Bezel Kit
83518PB	18ft M66 Cable, T71FC Helm and Bezel Kit
83520PB	20ft M66 Cable, T71FC Helm and Bezel Kit

- T71FC Fast Connect Planetary Helm is recommended for use with engines up to 150HP.

#### Kits Contains:

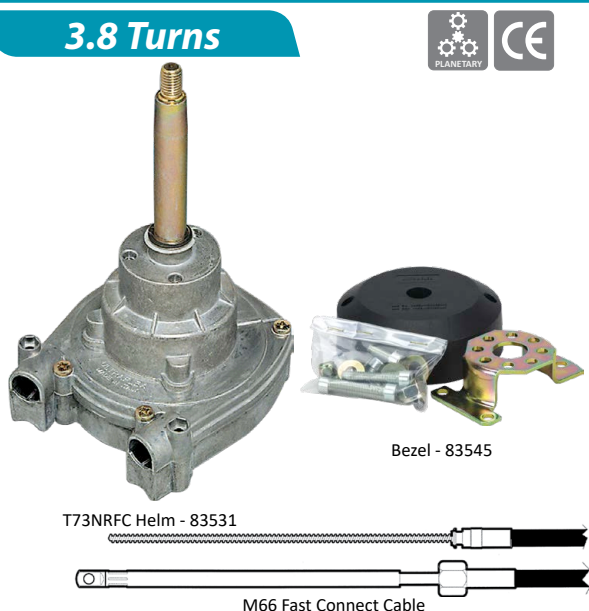
- 1 x **83526** - T71FC Planetary Helm (Refer to "Mechanical Steering Helms - Planetary Gear - T71FC / T72FC" on page 609).
- 1 x **83545** - X34 90° Bezel. (Refer to "Mounting Bezels" on page 614).
- 1 x **M66** - Steering Cable. (Refer to "Steering Cables - Fast Connect - M66" on page 613).

NOTE: Steering wheel not included in kit.

Refer to "Measuring For Replacement Steering Cables" on page 612.

### Mechanical Steering Kits - Anti-feedback Helm - T73NRFC

3.8 Turns



Part No.	Description
83512NFP	12ft M66 Cable, T73NRFC Helm and Bezel Kit
83513NFP	13ft M66 Cable, T73NRFC Helm and Bezel Kit
83514NFP	14ft M66 Cable, T73NRFC Helm and Bezel Kit
83515NFP	15ft M66 Cable, T73NRFC Helm and Bezel Kit
83516NFP	16ft M66 Cable, T73NRFC Helm and Bezel Kit
83517NFP	17ft M66 Cable, T73NRFC Helm and Bezel Kit
83518NFP	18ft M66 Cable, T73NRFC Helm and Bezel Kit

- The T73NRFC Fast Connect **Anti-feedback** Planetary Helm is recommended for use with engines up to 150HP.

#### Kits Contains:

- 1 x **83531** - T73NRFC Planetary Helm (Refer to "Mechanical Steering Helms - Planetary Gear - T73NRFC / T74NRFC" on page 610).
- 1 x **83545** - X34 90° Bezel. (Refer to "Mounting Bezels" on page 614).
- 1 x **M66** - Steering Cable. (Refer to "Steering Cables - Fast Connect - M66" on page 613).

NOTE: Steering wheel not included in kit.

Refer to "Measuring For Replacement Steering Cables" on page 612.

[www.samallen.com.au](http://www.samallen.com.au)





## Mechanical Steering Kits - Planetary Gear Helm - T91

Part No.	Description
<b>83482</b>	12ft M90 Cable, T91 Helm and Bezel Kit
<b>83483</b>	13ft M90 Cable, T91 Helm and Bezel Kit
<b>83484</b>	14ft M90 Cable, T91 Helm and Bezel Kit
<b>83485</b>	15ft M90 Cable, T91 Helm and Bezel Kit
<b>83486</b>	16ft M90 Cable, T91 Helm and Bezel Kit
<b>83487</b>	17ft M90 Cable, T91 Helm and Bezel Kit
<b>83488</b>	18ft M90 Cable, T91 Helm and Bezel Kit

- The T91 Planetary Helm Kit utilises high end material to increase performance, flexibility and durability.
- Centred on the main drive shaft, this helm requires less room behind the dash and is a direct "drop in" replacement for competing systems; requiring no new holes for installation.
- T91 single cable steering is recommended for use with engines up to 150HP.

### Kits Contains:

- 1 x **84600** - T91 Planetary Helm  
(Refer to "Mechanical Steering Helm - High Performance Planetary Gear - T91" on page 610).
- 1 x **83545** - X34 90° Bezel.  
(Refer to "Mounting Bezels" on page 614).
- 1 x **M90 Mach** - Steering Cable (Patented).  
(Refer to "Steering Cables - Fast Connect - M90 Mach" on page 613).

*NOTE: Steering wheel not included in kit.*

*Refer to "Measuring For Replacement Steering Cables" on page 612.*



**4.2 Turns**

**High Performance**



T91 - 84600

M90 Mach

**High Flexibility**  
**Stainless Steel Core**



## Mechanical Steering Kits - Zero Torque Planetary Helm - T93ZT

Part No.	Description
<b>83492</b>	12ft M90 Cable, T93ZT Helm and Bezel Kit
<b>83493</b>	13ft M90 Cable, T93ZT Helm and Bezel Kit
<b>83494</b>	14ft M90 Cable, T93ZT Helm and Bezel Kit
<b>83495</b>	15ft M90 Cable, T93ZT Helm and Bezel Kit
<b>83496</b>	16ft M90 Cable, T93ZT Helm and Bezel Kit
<b>83497</b>	17ft M90 Cable, T93ZT Helm and Bezel Kit
<b>83498</b>	18ft M90 Cable, T93ZT Helm and Bezel Kit

- The T93ZT Planetary Helm Kit utilises high end material to increase performance, flexibility and durability.
- Centred on the main drive shaft, this helm requires less room behind the dash and is a direct "drop in" replacement for competing systems; requiring no new holes for installation.
- T93ZT single cable steering is recommended for use with engines up to 150HP.

### Kits Contains:

- 1 x **83480** - T93ZT Planetary Helm  
(Refer to "Mechanical Steering Helm - Zero Torque Planetary Gear - T93ZT" on page 611).
- 1 x **83545** - X34 90° Bezel.  
(Refer to "Mounting Bezels" on page 614).
- 1 x **M90 Mach** - Steering Cable (Patented).  
(Refer to "Steering Cables - Fast Connect - M90 Mach" on page 613).

*NOTE: Steering wheel not included in kit.*

*Refer to "Measuring For Replacement Steering Cables" on page 612.*



**4.2 Turns**

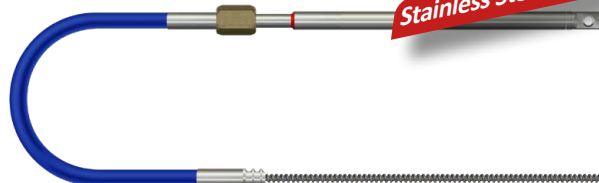
**High Performance**



T93ZT - 83480

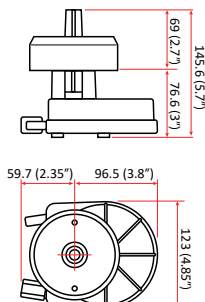
M90 Mach

**High Flexibility**  
**Stainless Steel Core**



## Mechanical Steering Helm - T67

2.5 Turns

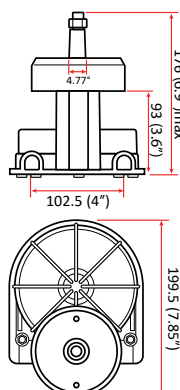


Part No.	Description	Model
83524	Helm and Bezel Steering System	T67

- Fast connect and simple installation.
- Corrosion resistant materials.
- Standard friction externally adjustable.
- Includes Black 90° Bezel mounting kit.
- Standard 3/4" tapered shaft.
- Four optional helm positions to facilitate steering cable installation.
- Steering wheel turns approximately 2.5 times lock to lock.
- Maximum allowable steering wheel diameter 380mm (15").
- Uses M58 steering cable.
- For use with outboard engines with a maximum of 55HP.
- Exceeds both EN 29775 and ABYC P17 safety standards.

## Mechanical Steering Helm - T85

3 Turns



Part No.	Description	Model
83525	Rotary Steering Single Cable Helm	T85

- Fast connect and simple installation.
- Corrosion resistant materials.
- Particularly suitable where clearance is limited.
- Steering wheel turns approximately 3 times lock to lock.
- Includes Black 90° Bezel mounting kit (105mm diameter).
- Standard 3/4" tapered shaft.
- Maximum allowable steering wheel diameter: 406 mm (16").
- Minimal feedback.
- Compact for mounting.
- Uses M66 Ultraflex® Cable or a Seastar SSC62 style cable.
- Exceeds both EN 28848 and ABYC P17 safety standards.

## Mechanical Steering Helms - Planetary Gear - T71FC / T72FC

3.8 Turns

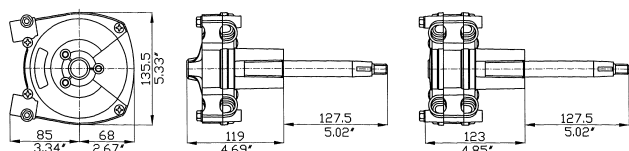


83526



83527

T71FC - T72FC



Part No.	Description	Model
83526	Single Cable Steering Helm (Requires Bezel Kit)	T71FC
83527	Dual Cable Steering Helm (Requires Bezel Kit)	T72FC

- Fast connect and simple installation.
- Corrosion resistant materials.
- Particularly suitable where clearance is limited.
- Standard 3/4" tapered shaft.
- Steering wheel turns approximately 3.8 times lock to lock.
- Maximum allowable steering wheel diameter 406mm (16").
- Minimal feedback.
- Compact for mounting.
- Uses M66 Ultraflex® cable or a Seastar SSC62 style cable (the T72FC helm require two cables).
- Mounting bezels required:
  - X34 - **83545** - black, 90° mounting
  - X34W - **83545W** - white, 90° mounting
  - X35 - **83540** - black, 20° mounting
- For boats exceeding 50mph the twin cable steering system T72FC is recommended.
- Exceeds both EN 28848 and ABYC P17 safety standards.





## Mechanical Steering Helms - Planetary Gear - T73NRFC / T74NRFC

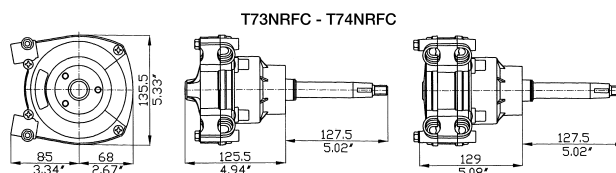
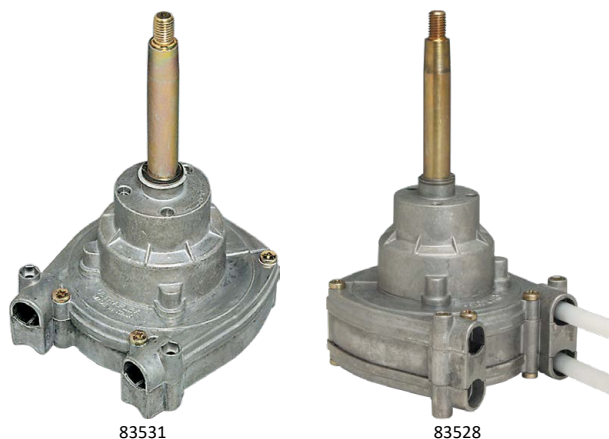
Part No.	Description	Model
<b>83531</b>	Single Cable Steering Helm	T73NRFC
<b>83528</b>	Dual Cable Steering Helm	T74NRFC



**3.8 Turns**

- Easy and safe steering: the no feedback design that incorporates a patented non-reversible mechanism, which eliminates continuous load on the operator caused by propeller torque.
- Fast connect and simple installation.
- Compact rotary helm unit: the central location of the steering shaft makes these systems the most compact in their class.
- Particularly suitable where clearance is limited.
- Ideal for outboards and surfacing propellers.
- Standard 3/4" tapered shaft.
- Made exclusively in corrosion resistant materials.
- Steering wheel turns approximately 3.8 times lock to lock.
- Maximum allowable steering wheel diameter 406mm (16").
- Minimal feedback.
- Compact for mounting.
- Uses M66 Ultraflex® cable or a Seastar® SSC62 style cable.
- Mounting bezels required:
  - X34 - **83545** - black, 90° mounting
  - X34W - **83545W** - white, 90° mounting
  - X35 - **83540** - black, 20° mounting
- For boats exceeding 50mph the twin cable steering system T74NRFC is recommended.
- Exceeds both EN 28848 and ABYC P17 safety standards.

*NOTE: Not suitable for power assisted steering, stern drives.*



## Mechanical Steering Helm - High Performance Planetary Gear - T91

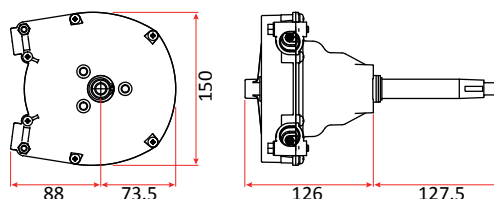
Part No.	Description	Model
<b>84600</b>	High Performance Single Cable Helm	T91



**4.2 Turns**

**High Performance**

- Specifically designed for high performance and high efficiency applications.
- Fast connect, simple installation, patented end fitting.
- Made exclusively in corrosion resistant materials.
- Particularly suitable where clearance is limited.
- Standard 3/4" tapered shaft.
- Steering wheel turns approximately 4.2 times lock to lock.
- Maximum allowable steering wheel diameter 406mm (16").
- Minimal feedback.
- Compact design for mounting.
- The **T91** is perfect for Outboard, Inboard and Power Assisted applications.
- Uses the Patented **M90 Mach** cable.
- Mounting bezels required:
  - X34 - **83545** - black, 90° mounting
  - X34W - **83545W** - white, 90° mounting
  - X35 - **83540** - black, 20° mounting
- For boats faster than 50mph hydraulic steering systems are recommended.
- Exceeds both EN 28848 and ABYC P17 safety standards.

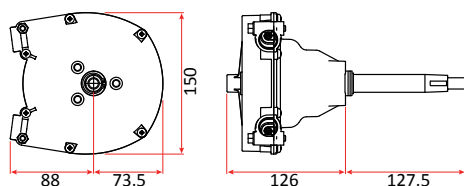




## Mechanical Steering Helm - Zero Torque Planetary Gear - T93ZT

4.2 Turns

High Performance  
Premium

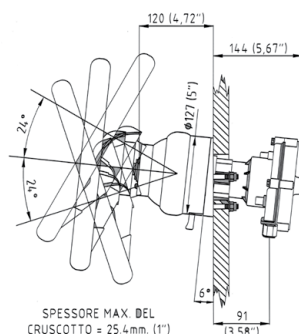


Part No.	Description	Model
83480	Zero Torque Single Cable Helm	T93ZT

- Specifically designed for high performance and high efficiency applications.
- Fast connect, simple installation, patented end fitting.
- Made exclusively in corrosion resistant materials.
- Particularly suitable where clearance is limited.
- Standard 3/4" tapered shaft.
- Steering wheel turns approximately 4.2 times lock to lock.
- Maximum allowable steering wheel diameter 406mm (16").
- Minimal feedback.
- Compact design for mounting.
- The **T93ZT** is perfect for outboard, inboard and power assisted applications.
- Uses the Patented **M90 Mach** cable.
- Mounting bezels required:
  - X34 - **83545** - black, 90° mounting
  - X34W - **83545W** - white, 90° mounting
  - X35 - **83540** - black, 20° mounting
- For boats faster than 50 mph hydraulic steering systems are recommended.
- Exceeds both EN 28848 and ABYC P17 safety standards.

## Mechanical Steering Helms - Tilt Planetary Gear - T81FC with X52

3.8 Turns

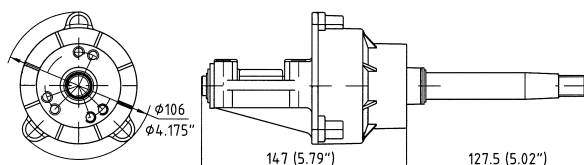
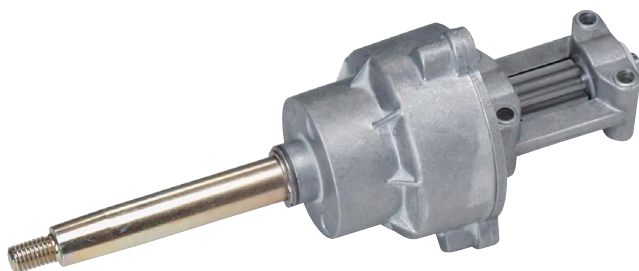


Part No.	Description	Model
83534	Single Cable Steering Helm (A)	T81FC
83533	Tilt Mechanism 5 Position (B)	X52

- Tilt range of 48° and five locking positions.
  - Fast connect, simple installation.
  - Tilt device eliminates under dash movement.
  - Standard 3/4" tapered shaft.
  - Corrosion resistant materials.
  - Lock to lock steering wheel turns approximately 3.8 times.
  - Maximum allowable steering wheel diameter 406 mm (16").
  - Uses **M66** Ultraflex® cable.
  - Uses **X52** Tilt Mechanism.
  - Exceeds both EN 28848 and ABYC P17 safety standards.
- NOTE T81FC Helm and X52 Tilt Mechanism sold separately.*

## Mechanical Steering Helms - Rack & Pinion

3.5 Turns



Part No.	Description	Model
82800	Standard Helm	G86
82801	Non-reversible Helm	G88NR
82802	Tilt Standard Helm	G96
82803	Tilt Non-reversible Helm	G98NR
83533	Tilt Mechanism 5 Position	X52

- Easy and safe steering: the no feedback design that incorporates the patented Non-reversible G88NR and G98NR helms eliminates the continuous load on to the operator caused by the propeller torque.
- Made exclusively in corrosion resistant materials.
- Standard 3/4" tapered shaft.
- Steering wheel turns 3.5 times lock to lock.
- Maximum allowable steering wheel diameter 420 mm (16.5").
- Uses **TM86** Ultraflex® cable.
- Mounting bezels required:
  - X34 - **83545** - black, 90° mounting
  - X34W - **83545W** - white, 90° mounting
  - X35 - **83540** - black, 20° mounting
- Exceeds both EN 28848 and ABYC P17 safety standards.
- See "Steering System Selection Guide Recommended & Max HP Rating" on page 606 for recommended and maximum horsepower rating.



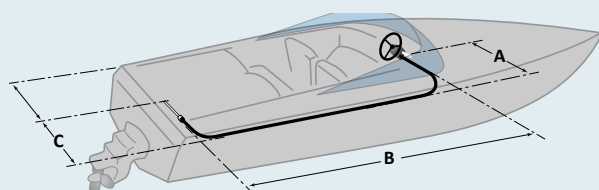
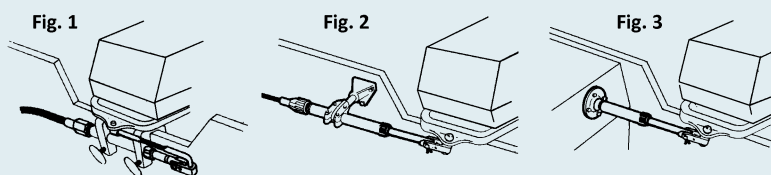


Cable	Brand	Helm Model	Adapter Required	Replacement Cable P/N
<b>M58</b>	Ultraflex®	T67	None	<b>83401 to 83407</b> M58
	Morse®	C230, C231		
	Teleflex®	Compac T®, 850 TX®		
<b>M66</b>	Ultraflex®	T85, T71FC, T72FC, T73NRFC, T74NRFC, T81FC, T83NRFC	None	<b>83408 to 83424</b> M66
		<u>Discontinued</u> T71, T72, T73NR, T74NR, T81, T83NR	83535 K66	
	Teleflex®	Safe TQC®, NFB Safe TII®, NFB 4.2®	None	
<b>M47</b> (Discontinued)	Ultraflex®	T85, T71FC, T72FC, T73NRFC, T74NRFC, T81FC, T83NRFC	None	Replace with M66 cable and K66 adapter
		<u>Discontinued</u> T71, T72, T73NR, T74NR, T81, T83NR	83536 K46	
	Teleflex®	Safe T®, Big T®	None	
<b>M90 Mach</b>	Ultraflex®	T91, T93ZT, T101, T103ZT T85, T71FC, T72FC, - T73NRFC - T74NRFC T81FC - T83NRFC	None	<b>84712 to 84718</b>
	Teleflex®	Safe TQC®, NFB Safe TII®, NFB 4.2®		
<b>TM86</b>	Ultraflex®	G86, G88NR, G96, G98NR	None	<b>82812 to 82819</b> TM86

## How To Measure For New Steering Cable Installation

One of the major factors in selecting a steering system is proper cable length. Due to specific routing in each boat, these approximate lengths will vary. Final selection should be made with the assistance of a qualified technician.

Add. A + B + C and subtract 10 cm (4") for each 90° bend in the cable. For installation through the engine tilt tube, add 30.5 cm (1 ft) to the measure calculated above. To order in feet, divide by 30.5 and round up to the next whole foot.



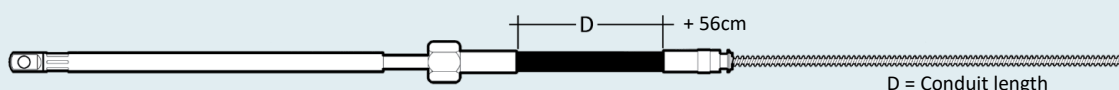
### Tilt Tube Mounting - Fig. 1

Example (dimensions in cm):  
 $A (50) + B (250) + C (80) = 380 - 20$   
 for two 90° bends =  $360 + 30.5$   
 For a thru-tube installation  $390.5 \text{ cm} : 30.5 = 12.8 \text{ ft}$ ; round off to 13ft.

### Transom Support or Splashwell Mounting - Fig. 2-3

Example (dimensions in cm):  
 $A (50) + B (250) + C (80) = 380 - 20$  for two 90° bends =  $360$ :  
 $30.5 = 11.8 \text{ ft}$ ; round off to 12ft.

## Measuring For Replacement Steering Cables

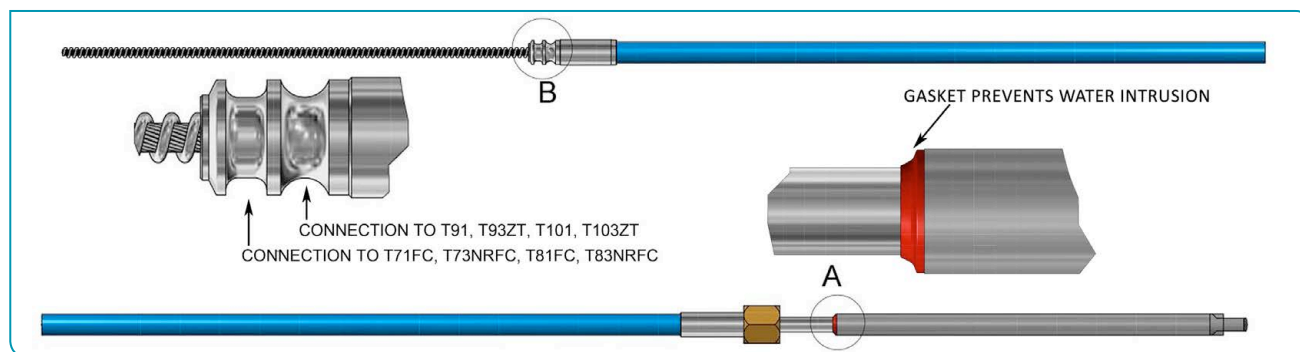


**Order Length:** "D" dimension + 56 cm

To order in foot length, divide for 30.5 and round up to the next whole foot

Example:  $D = 305 \text{ cm} + 56 \text{ cm} = 361 : 30.5 = 11'8"$ . Round up to 12 ft

## M90 Mach Patented Technology



## Steering Cables - Fast Connect - M90 Mach

High Flexibility  
Stainless Steel Core



M90 Mach



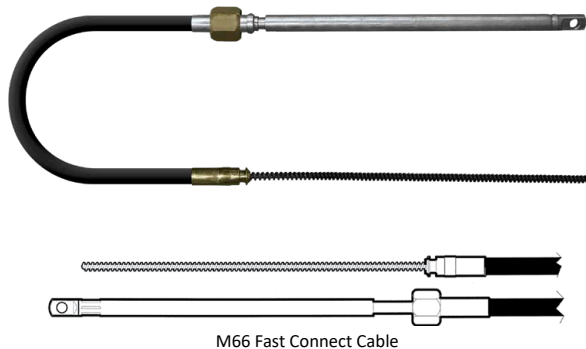
Part No.	Model	Length (ft)	Length (m)	Part No.	Model	Length (ft)	Length (m)
84712	M90	12	3.66	84716	M90	16	4.88
84713	M90	13	3.96	84717	M90	17	5.18
84714	M90	14	4.27	84718	M90	18	5.48
84715	M90	15	4.57				

- M90 Mach patented high performance cable combines top quality materials that increase durability and the life of the cable.
- Ideal for long cable runs and tight bend applications.
- Fast connect and simple installation.
- Suits both M90 and M66 installations
- Stainless steel core for ultra-long service life.
- Patented Gasket wiper seal protects against water intrusion extending the life of the cable.
- Stainless steel cable output ends as per ABYC P17 safety standards.
- Stroke length 228mm (9").
- Minimum steering cable bend radius 150mm (5.9").
- M90 Patented end fitting make it suitable for T85, T71FC, T72FC, T73NRFC, T74NRFC, T81FC, T83NRFC, T91, T93ZT, T101 and T103ZT Ultraflex steering helms.
- Also suits Teleflex NFB 4.2 and Morse D290.
- Exceeds both EN 28848 and ABYC P17 safety standards.

## Steering Cables - Fast Connect - M66



M66



M66 Fast Connect Cable



Part No.	Model	Length (ft)	Length (m)	Part No.	Model	Length (ft)	Length (m)
83408	M66	8	2.44	83416	M66	16	4.88
83409	M66	9	2.74	83417	M66	17	5.18
83410	M66	10	3.05	83418	M66	18	5.48
83411	M66	11	3.35	83419	M66	19	5.79
83412	M66	12	3.66	83420	M66	20	6.10
83413	M66	13	3.96	83421	M66	21	6.40
83414	M66	14	4.27	83423	M66	23	7.01
83415	M66	15	4.57	83424	M66	24	7.32

- Fast connect and simple installation.
- All stainless steel cable output ends as per ABYC P17 safety standards.
- Attaches directly to the tilt tube on all popular brands.
- Stroke length 228mm (9").
- Minimum steering cable bend radius 200mm (7.9").
- The M66 steering cable is also compatible with the Seastar Helms which use the SSC62 style of cable.
- Exceeds both EN 28848 and ABYC P17 safety standards.

NOTE: Refer to "Measuring For Replacement Steering Cables" on page 612

## Steering Cables - Fast connect - M58

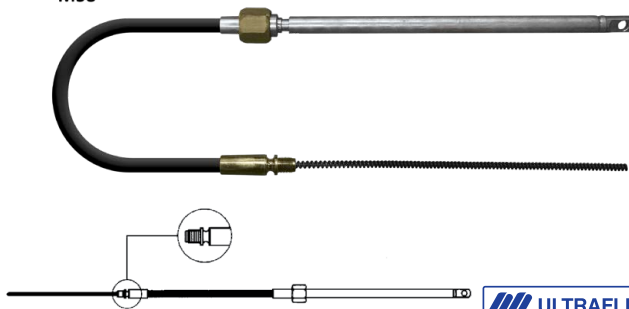
Part No.	Model	Length (ft)	Length (m)	Part No.	Model	Length (ft)	Length (m)
83401	M58	8	2.44	83404	M58	11	3.35
83402	M58	9	2.74	83405	M58	12	3.66
83403	M58	10	3.05	83407	M58	15	4.57

- Fast connect and simple installation.
- All stainless steel cable output ends as per ABYC P17 safety standards,
- Attaches directly to the tilt tube on all popular brands.
- Stroke length 230mm (9").
- Minimum steering cable bend radius 200mm (7.9").
- Exceeds both EN 29775 and ABYC P17 safety standards.

NOTE: Refer to "Measuring For Replacement Steering Cables" on page 612.



M58

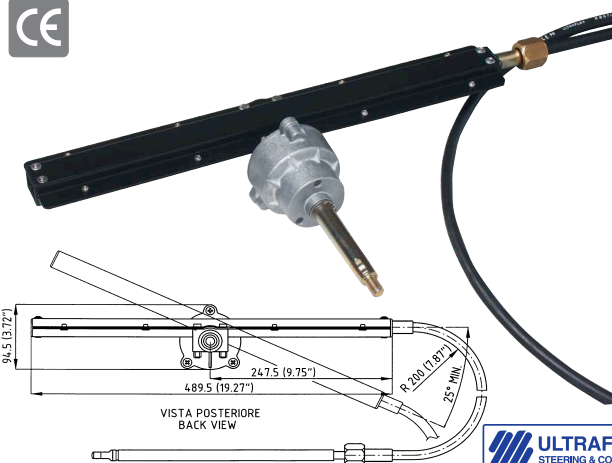


## Cables - Rack & Pinion - TM86

Part No.	Model	Length (ft)	Length (m)	Part No.	Model	Length (ft)	Length (m)
82812	TM86	12	3.66	82816	TM86	16	4.88
82813	TM86	13	3.96	82817	TM86	17	5.18
82814	TM86	14	4.27	82818	TM86	18	5.48
82815	TM86	15	4.57	82819	TM86	19	5.79

- Fast connect and simple installation.
- All stainless steel cable output ends as per ABYC P17 safety standards,
- Stroke length 210mm (8.2").
- Minimum steering cable bend radius 200mm (7.9").
- Exceeds both EN 28848 and ABYC P17 safety standards.

NOTE: Rack and Pinion Steering Systems are subject to forward orders only. Refer to "Measuring For Replacement Steering Cables" on page 612



## Mechanical Steering Spares & Accessories

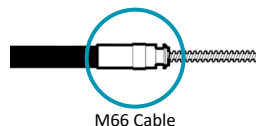
### Steering Cable Adapters

Part No.	Description
83535	K66 Steering Cable Adapter converts the M66 fast connect into a M47 cable, Nut to Nut Connection
83536	K46 Steering Cable Adapter converts the M47 Nut to Nut Connection into a M66 fast connect cable

- The K66 Steering Cable Adapter converts the M66 fast connect cable into a M47 nut to nut cable which accepts the old T71, T72, T73NR T74NR and T81.
- The K46 converts the old M47 nut to nut cable into a M66 fast connect which accepts the T85, T71FC, T72FC, T73NRFC, T74NRFC and T81FC.



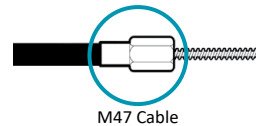
83535



M66 Cable



83536



M47 Cable



### Mounting Bezels

Part No.	Model	Mount Angle	Diameter (mm)	Height (mm)	Colour
83540	X35	20°	130	45	Black
83545	X34	90°	130	45	Black
83545W	X34W	90°	130	45	White

- Use with T71FC, T72FC, T73NRFC, T74NRFC, T91, T93ZT, G86 & G88NR Helms.



83540

83545

83545W



## Steering Grommets - Wire Type



Part No.	Model	Size	Height (mm)	Diameter Ø (mm)	Colour
83554	R1	Large	110	152	Black
83556	R2	Small	65	105	Black
83555	R4	Adjustable	68	105	Black
83558	-	Adjustable	90	155	Black

NEW ENTRY

## Steering Cable Bellow



Part No.	Description	External Ø (mm)	Hole Ø (mm)
500535K	CEF® Steering Cable Bellow	38	24

## Steering Grommets - Rapid



Part No.	Colour	Material	Diameter (mm)	Height (mm)
295092	Black	PVC	115	135

- Fit trim ring kit.
- It allows an easy replacement of a broken one, without detaching cables from the engines.
- You have to apply the clamps in the dedicated grooves, holding tightly the grommet on the rigid inner core, keeping its natural shape.
- Supplied with storage packaging.



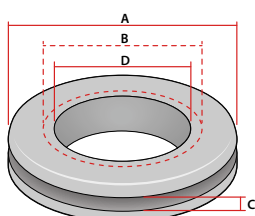
## Trim Rings and Slop Stoppers



NEW ENTRY

Part No.	Model	Shape	Outside Diameter	Cut Out	Cut Out Thickness	I.D		Colour
			A (mm)	B (mm)	C (mm)	D (mm)	D (mm)	
295082	Steering Grommet	Round	85	63	4	49		Black
295086	Panel Grommet / Trim Ring	Round	87	65	6.1	52		Black
295084	Panel Grommet / Trim Ring	Oval	135 x 83	120 x 60	4.5	100 x 46		Black
295087	Slop Stopper	Round	87	64.5	4.6	53		White
295088	Slop Stopper	Round	87	62.5	6.1	52		Black
295090	Slop Stopper	Oval	136 x 81	116 x 59	4.6	100 x 46		Black

- 295082 suits 50mm Rigging Hose (76266) for water tight fit.







## Rigging Hose - 32mm - Flange & End Cap

Part No.	Colour	Length (mm)	Hose I.D Ø (mm)	Flange Ø (mm)	Cut Out Ø (mm)
76252	Grey	100	32	60	50

- Protects outboard motor cables and wires against abrasion, dirt, salt corrosion and UV damage.
- This system makes the installation tidy and professional.
- Flange and End Cap included.



## Rigging Hose - 50mm & Flange

Part No.	Colour	Length (m)	Hose I.D Ø (mm)	Flange Ø (mm)	Cut Out Ø (mm)
76250	Black	1	50	102	71
76251	Black	1.5	50	102	71

- Protects outboard motor cables and wires against abrasion, dirt, salt corrosion and UV damage.
- This system makes the installation tidy and professional.
- UVS polyethylene conduit tubing.
- Heavy-duty hose is flexible and kink resistant.
- V2 rated UL 94A.
- Temperature range: -4°C to +66°C.
- Flange included.

NOTE: End Cap not included.



76250 & 76251

## Rigging Hose - 50mm

Part No.	Description	Colour	Length (m)	Hose I.D Ø (mm)
76266	50mm Rigging Hose	Black	15	50
76266-BULK	50mm Rigging Hose	Black	30	50

- Protects outboard motor cables and wires against abrasion, dirt, salt corrosion and UV damage.
- This system makes the installation tidy and professional.
- UVS polyethylene conduit tubing.
- Heavy-duty hose is flexible and kink resistant.
- V2 rated UL 94A.
- Temperature range: -4°C to +66°C.
- Suits 295082 Steering Gommel.

NOTE: 76266-BULK supplied in two 15 metre rolls.



## Rigging Hose - 50mm Accessories

Part No.	Description	Colour	Hose I.D Ø (mm)	Dimensions L x Ø (mm)
76253	Rigging Flange	Black	50	53 x 102
76272	Rigging Flange with 20mm Fuel Hose Port	Black	50	129 x 114
76270	Black Rigging Hose Union with 20mm Fuel Hose Port	Black	50	100 x 65
76254	50mm End Cap	Black	50	30 x 50

- Ideal for putting rigging hoses through the hull.
- Internal thread to hold Rigging Hose in position.
- 76272 & 76270 provides entry point for fuel hose into rigging tube.
- Flange has 3 holes suit 6 gauge mounting screws.



76253



76270



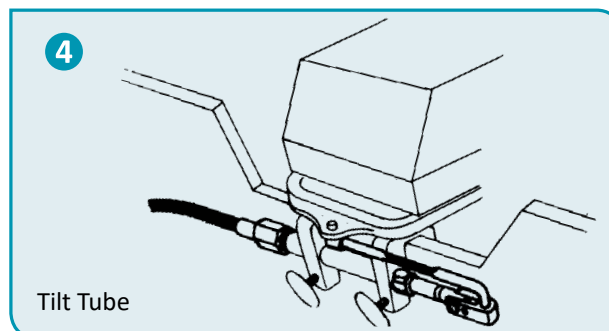
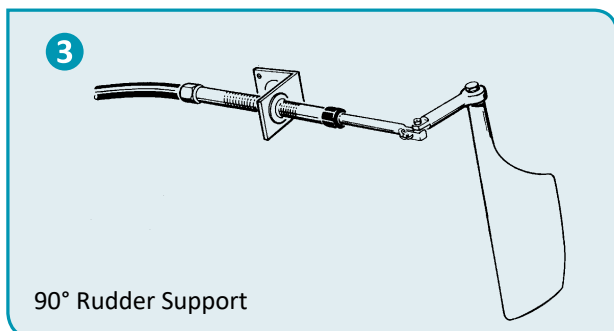
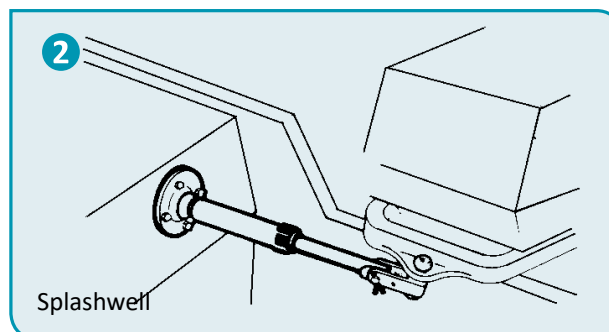
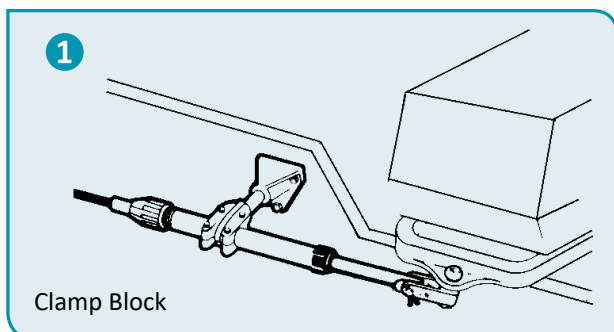
76272



76254

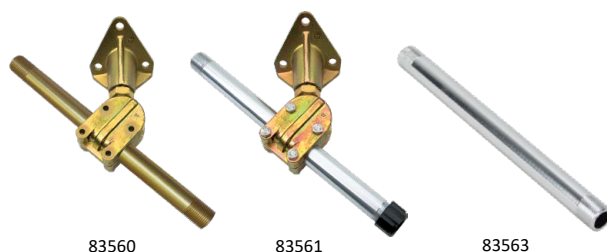


## Engine Connection Kit Guide



Type	Cable Support + Engine Connection Kit		
1	S39 83560	S61+ A75 83566 + 83580	S62 + A75 83564 + 83580
2	S40 + A75 83835 + 83580		
3	S55 + A75 83616 + 83580		
4	A73 83570	A74 83575	

## Steering Cable - Transom Mount - Clamp Block



Part No.	Description	Model
83560	Swivel Clamp Block & Tube	S39
83561	Swivel Clamp Block & S/S Tube	S39SS
83563	Tube Only suits 83560 & 83561	S39T

- S39 Swivel clamp block in marine aluminium with marine aluminium tube.
- S39SS Steering cable supports with stainless steel tube.
- S39T Marine aluminium tube suits 83560 and 83561.



## Steering Cable - Transom Mount



Part No.	Description	Model	Height (mm)
83566	Transom Mount Kit	S61	117
83564	Transom Mount Kit	S62	55

- Corrosion resistant painted steel clamp block.
- Stainless steel tube length is 283mm.
- S61 supplied with a stainless steel tube
- S62 supplied with a marine aluminium tube





2

## Steering Cable - Rudder Support

Part No.	Description	Model
<b>83835</b>	Splashwell Mounting	S40
<b>83837</b>	Tube Only suits 83835	S40T

- S40 Marine aluminium tube and 79mm stainless steel splashwell mounting.
- S40 Includes 6mm mounting bolts.
- S40T Marine aluminium tube suits **83835**.



83835



83837

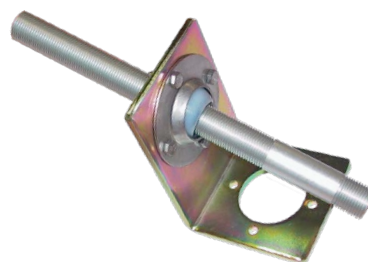


3

## Steering Cable - Rudder Support

Part No.	Description	Model
<b>83616</b>	90° Rudder Support	S55

- Corrosion resistant 90° rudder support, with marine aluminium tube.



1 2 3

## Steering Cable - Connectors

Part No.	Description	Model	Suits Cables
<b>83580</b>	Stainless Steel Clevis	A75	M66
<b>83591</b>	Stainless Steel Ball Joint Clevis	Quick Release	M66

- The Swivel Assembly suits transom mounted and splash well installation, allows the motor to be tilted without damaging the cable.



83580



83591



4

## Steering Cable - Drag Link Arm

Part No.	Description	Model	Suits Outboard Engine
<b>83570</b>	Stainless Steel Tiller Drag Link Arm	A73SS	Mercury®
<b>83575</b>	Stainless Steel Tiller Drag Link Arm	A74SS	Johnson® Evinrude®

- The A73SS and A74SS stainless steel drag link arm has an adjustable end to accommodate the centring of the motor.

**WARNING:** A73 and A74 tiller arms are recommended for mechanical steering systems only.



83570

83575



## Steering Cable Installation Kit - Mechanical Helm

Part No.	Description
<b>84100</b>	Nylon Bush to Connect Spent Tube to Fast Connect Helm





### Ultraflex® Hydraulic Steering Systems

#### Hydraulic Steering Systems

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

#### How The System Works

A hydraulic steering system consists of a steering pump, a cylinder attached to the rudder, outboard or sterndrive and the connecting nylon tubing. Under normal operating conditions, a turn of the steering wheel will send the oil from the helm into one of the two connecting hydraulic lines. The oil will be pumped into one of the cylinders and

either extend or retract the cylinder rod. The fluid going out from the other chamber of the cylinder is returned to the helm via the 2nd hydraulic line.

There are two basic components in all the hydraulic steering systems: the helm unit and the cylinder, connected by flexible nylon hose. 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 A Hydraulic Steering System

The strength required to drive a boat equipped with a hydraulic steering system is inversely proportional to the number of turns of the wheel lock-to-lock. This is determined by the ratio between the cylinder volume and the pump displacement. The larger the helm pump in relation to the hydraulic cylinder, the fewer turns lock to lock in your steering system.

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

#### Cross Reference

This Cross Reference chart has been drawn to facilitate a functional comparison among brands and should be used as general reference only. For further information please contact our Technical Service at Sam Allen Wholesale

HELM PUMPS		HELM PUMPS		CYLINDERS	
ULTRAFLEX®	TELEFLEX®	ULTRAFLEX®	TELEFLEX®	ULTRAFLEX®	TELEFLEX®
UP20 F	BayStar™ HH4314	UP39 F	Seastar™ 2.4 HH5272	UC94-OB	Seastar™ HC4645
UP20 T	BayStar™ HH4315	UP39 T	Seastar™ 2.4 HH5742	UC128-OB	Seastar™ HC5345
UP25 F	Seastar™ 1.7 HH5269	UP39 R	Seastar™ 2.4 HH5262	UC130-SVS	Seastar™ HC5345
UP25NV F	Seastar™ 1.7 HH5761	UP45 F	-	UC68-OBS	-
UP25 T	Seastar™ 1.7 HH5744	UP45 T	-	UC132-OBS	Seastar™ HC5370
UP28 F	Seastar™ 1.7 HH5271	UP45 R	-	UC69-I	-
UP28 T	Seastar™ 1.7 HH5741	UP28 F-SVS	Seastar™ PRO - HH5779	UC116-1	Seastar™ HC5312
UP28 R	Seastar™ 1.7 HH5261	UP28 T-SVS	Seastar™ PRO - HH5773	UC168-I	Seastar™ HC5318
UP33 F	Seastar™ 2.0 HH5273	UP33 F-SVS	Seastar™ PRO - HH5770	UC215-I	Seastar™ HC5319
UP33NV F	Seastar™ 2.0 HH5760	UP33 T-SVS	Seastar™ PRO - HH5774	UC293-I	-
UP33 T	Seastar™ 2.0 HH5743	UP39 F-SVS	Seastar™ PRO - HH5772	UC378-I	-
UP33 R	-	UP39 T-SVS	Seastar™ PRO - HH6189		

#### How To Measure Steering Wheel Turns

##### How To Measure Steering Wheel Turns when Selecting a helm pump for a cylinder\*

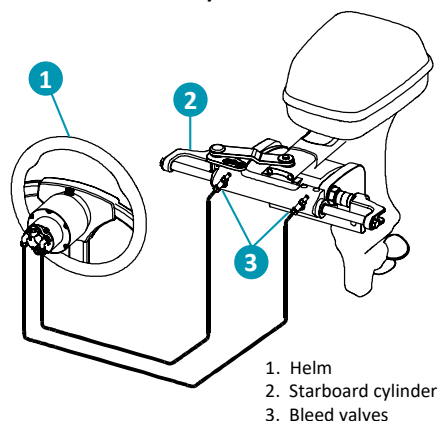
Divide the volume of the cylinder in cubic centimetres (cc) by the volume of the helm pump in cubic centimetres (cc) equals the number of turns lock to lock.

Example: Cylinder volume = 132cc      132 ÷ 25 = 5.28 turn  
Helm pump volume = 25cc      Round off to 5.3 turns

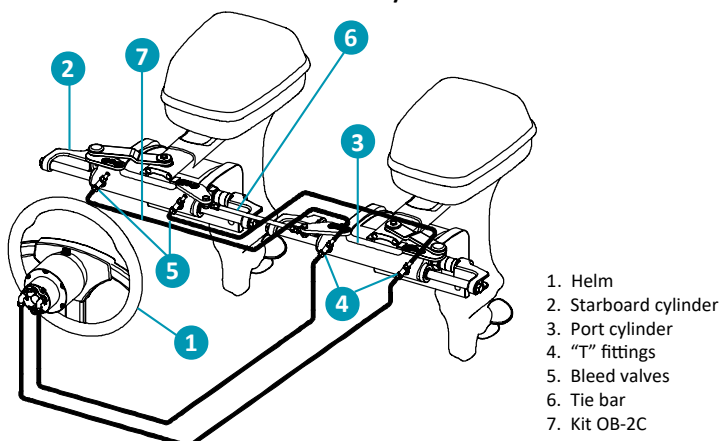
\*NOTE: When selecting the right helm pump for cylinder please consult our technical service department

#### Single Station - Single & Dual Cylinder Applications

##### SINGLE STATION / SINGLE CYLINDER:



##### SINGLE STATION / DUAL CYLINDER:





## 115HP Gotech Hydraulic Steering Kits

### Hydraulic Steering Kit - 115HP Gotech

**Up to 115HP**

The **UltraFlex® Gotech Steering Kit** is designed for outboard engines up to 115HP. The Gotech Steering Kit includes a Front Mount Cylinder, Helm Pump, hydraulic oil and premium heavy-duty HiFlex **QuickFit** hose, everything for a simple installation\*.

- For outboard engines rated up to 115HP.
- Zero feedback for super smooth steering.
- 4.5 turns lock to lock, balanced.
- Heavy-duty **QuickFit** HiFlex hose and fittings included.

**NOTE:** Steering wheels not included in kits.

Part No.	Description	Cylinder	Helm/Turns	Hose Type & Length (m)	Kit Ref.
<b>83918/1</b>	Gotech Hydraulic Steering Kit	<b>Front Mount UC81-OBF/1 83917</b>	<b>4.5 Turns UP18 83918</b>	<b>QuickFit 2 x 6 Metre 84163</b>	<b>1</b>
<b>83917</b>	UC81-OBF Front Mount Cylinder Only				
<b>83918</b>	UP18 Front Mount Helm Pump Only				
<b>84163</b>	QuickFit 2 x 6 Metre Gotech Hose				

#### Kit Contains:

- 1 x **83917** - UC81-OBF front mount cylinder (Refer to chart below).
- 1 x **83918** - UP18 front mount helm pump 18cc.
- 2 x **84115** - 1 litre hydraulic oil.
- 2 x **84163** - **QuickFit** 6m (19.7") x 1/4" I.D. hose, pre-assemble at one end and 2 x Brass Connectors.

**NOTE:** \*Suzuki® DF100-115 4T engines built from 1998 to 2008 installing UC81-OBF cylinder require **83919** kit page 657.



**NEW ENTRY**

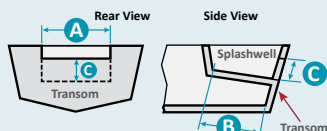


Heavy-duty hose and fittings



#### Splashwell Minimum Dimension Requirements

A	B	C
590 mm - 23.23"	152 mm - 5.98"	152 mm - 5.98"



Engine Guide for Gotech Hydraulic Steering Kit					
Engine	POWER	Year	Cylinder	Kit	Kit Ref
<b>Evinrude®</b>	E40 - E50 - E55 - E60 2S E75 - E90 2S E115 2S V4	2004 to date 2004 to date 1995 to date	UC81-OBF/1	83918/1	<b>1</b>
<b>Honda®</b>	BF40 - 50 - 60 - 75 - 90 4S BF115D BF115A BF90 V-TEC 4S	1995 to date 1998 - 2009 2009 to date 2008 to date	UC81-OBF/1	83918/1	<b>1</b>
<b>Johnson®</b>	BJ60 - 70 4S BJ90 - 115 4S J90 - 115 V4 2S	2001 - 2007 2001 - 2007 1995 - 2007	UC81-OBF/1	83918/1	<b>1</b>
<b>Mercury® Mariner®</b>	50 - 75 - 90 2S 115 EFI 2S 75 - 90 - 115 OPTIMAX 2S 40 - 50 - 60 EFI 4S 75 - 80 - 90 EFI 4S 100 - 115 EFI 4S	1990 - 2008 1990 - 2007 2004 to date 2004 to date 2000 to date 2007 to date	UC81-OBF/1	83918/1	<b>1</b>
<b>Tohatsu® Nissan®</b>	40 - 50 - 60 - 70 - 90 2S 75 - 115 2S 40 - 50TLDI 4S 70 - 90 - 115 TLDI 4S	2004 to date	UC81-OBF/1	83918/1	<b>1</b>

Engine Guide for Gotech Hydraulic Steering Kit					
Engine	POWER	Year	Cylinder	Kit	Kit Ref
<b>Selva®</b>	40XS - 50 MADEIRA 2S 40XS - 50 BULL SHARK 2S 40XS - 60 GREY SHARK 2S 40XS - 70 MAKO SHARK 2S 40XS - 60 STTROPEZ 2S 80 PORTOFINO/TIGERSHARK 2S 25 KINGFISH 4S 40 ARUANA 4S 40XS - 40XSR - 50 - 60 DORADO EFI 4S 40XSR EFI MURENA 4S 80XS - 100 - 100XSR EFI MARLIN 4S 115 - 115XSR EFI TARPON 4S 115 EFI NARWHAL 4S	1995 to date 2000 to date	UC81-OBF/1	83918/1	<b>1</b>
<b>Suzuki®</b>	DF40 - 50 - 60 - 70 - 80 - 90 4S* DF100 - 115 4S* DF100 - 115 4S NEW MODEL	1998 to date 1998 - 2008 2008 to date	UC81-OBF/1	83918/1	<b>1</b>
<b>Yamaha®</b>	60 - 70 2S 75C - 90 2S 115C 2S F40G - F70 4S F30 - F40 - F60 - F75 - F80 EFI 4S F70 4S F90 - F100 - F115 EFI 4S F80 - F100 4S F115 F40D - F50F - F60C EFI 4S	1984 - 2008 1998 - 2008 1990 - 2008 2010 to date 1999 - 2007 2010 to date 1999 - 2007 2000 to date 2004 to date	UC81-OBF/1	83918/1	<b>1</b>

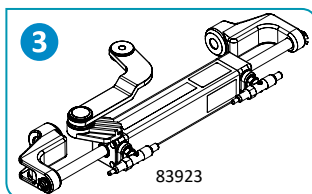
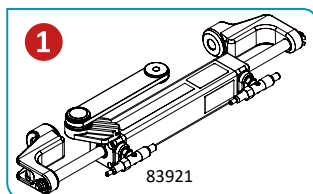
\*Suzuki® DF100-115 4T engines built from 1998 to 2008 installing UC81-OBF cylinder require **83919** kit.

# 150HP Hyco Hydraulic Steering Kits

## Hydraulic Steering Kits - 150HP Hyco

**Up to 150HP**

### Kit Reference



The **UltraFlex® Hyco Steering Kits** are designed for outboard engines rated up to 150HP. Constructed from high grade materials and featuring the Patented split pinned mounting rod for easy installation and bushings to prevent friction with the engine tilt tube.

All Hyco Steering Kits come standard with a Front Mount Cylinder, Helm pump and hydraulic oil.

- For outboard engines rated up to 150HP.
- Zero feedback for super smooth steering.
- 4.7 turns lock to lock, balanced.

*NOTE: Steering wheels not included in kits.*

**Available in 3 Hose Options:**

- A** Hydraulic Steering Kits without Hose.
- B** Hydraulic Steering Kits with standard Nylon Tubing.
- C** Hydraulic Steering Kits with Premium Heavy-duty QuickFit Hose.

### A Hydraulic Steering Hyco Kits without Hose

**Up to 150HP**



Kit No.	Description	Cylinder	Helm	Kit Ref.
83920/1	Hyco-OBF Hydraulic Steering Kit 1	Front Mount UC94-OBF/1 83921	4.7 Turns UP20F 83920	1
83920/3	Hyco-OBF Hydraulic Steering Kit 2	Front Mount UC94-OBF/3 83923	4.7 Turns UP20F 83920	3

#### Kits Contains:

- 1 x **83921** or **83923** - UC94-OBF Front Mount Cylinder (Refer to Outboard Engine Guide on page 622).
- 1 x **83920** - UP20F Front Mount 20cc Helm Pump.
- 2 x **84115** - 1 litre hydraulic oil.

*NOTE: Refer to "Hydraulic Tubing, Hose & Connectors" on page 639.*

### B Hydraulic Steering Hyco Kits - Nylon Tubing

**Up to 150HP**



Part No.	Description	Cylinder	Helm	Hose Type & Length (m)	Kit Ref.
83924	Hyco-OBF Hydraulic Steering Kit 1	Front Mount UC94-OBF/1 83921	4.7 Turns UP20F 83920	Nylon Tubing 12 Metre 84182	1
83926	Hyco-OBF Hydraulic Steering Kit 1	Front Mount UC94-OBF/1 83921	4.7 Turns UP20F 83920	Nylon Tubing 15 Metre 84184	1
83924/3	Hyco-OBF Hydraulic Steering Kit 2	Front Mount UC94-OBF/3 83923	4.7 Turns UP20F 83920	Nylon Tubing 12 Metre 84182	3

#### Kits Contains:

- 1 x **83921** or **83923**
  - UC94-OBF Front mount Cylinder (Refer to Outboard Engine Guide\*).
- 1 x **83920** - UP20F Front Mount 20cc Helm Pump.
- 2 x **84115** - 1 litre hydraulic oil.
- 1 x **84182** (12m) or **84184** (15m)
  - 3/8" O.D. (12m or 15) semi rigid hydraulic nylon tubing, includes four 3/8" brass connectors with olives.





## 150HP Hyco Hydraulic Steering Kits

### Hydraulic Steering Hyco Kit - QuickFit Hose Kit

**Up to 150HP**

Kit No.	Description	Cylinder	Helm Turns	Hose Type & Length (m)	Kit Ref.
<b>83980</b>	Hyco-OBF Hydraulic Steering Kit 1	<b>Front Mount</b> UC94-OBF/1 <b>83921</b>	<b>4.7 Turns</b> UP20F <b>83920</b>	<b>QuickFit</b> 2 x 6 Metre <b>84186</b>	<b>1</b>

#### Kits Contains:

1 x **83921** - UC94-OBF Front Mount Cylinder  
(Refer to Outboard Engine Guide\*).

1 x **83920** - UP20F Front Mount 20cc Helm Pump.

2 x **84115** - 1 litre hydraulic oil.

1 x **84186** - **QuickFit OB-M Hose Kit**

**Hose Kit Contains:** Two 5/16" I.D. 6 metre hose kits with pre-crimped Brass Fittings at one end. Supplied with two QuickFit Brass Connectors and two Bend Restrictors.



83921



84186



83920



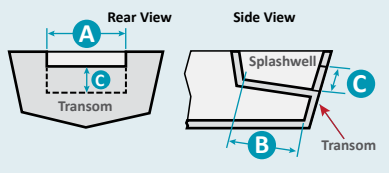
84115



### Engine Selection & Dimension Requirements

**Up to 150HP**

Splashwell Minimum Dimension Requirements			
No. of Engines	A	B	C
1	540mm - 21.25"	152mm - 5.98"	152mm - 5.98"
2*	1110mm - 43.70"	152mm - 5.98"	152mm - 5.98"



*Engine Guide for Hyco Hydraulic Steering Kit				
Engine	POWER	Year	Cylinder**	Kit Ref.
<b>Evinrude®</b>	E40 - E50 - E55 - E60 2S	2004 to date	83920/1	
	E75 - E90 2S	2004 to date	83920/1	
	E115 - E130 - E135 2S V4	1995 to date	83920/1	
	E150 2S V6	1995 to date	83920/1	
<b>Honda®</b>	BF75 - BF90 4S	1995 to date	83920/1	
	BF80 - 100 - 115DK - 130A 4S	1998 to date	83920/1	
	BF115A - 135 - BF150 4S	2005 to date	83920/1	
	BF90 - BF150 V - TEC 4S	2008 to date	83920/1	
<b>Johnson®</b>	BJ60 - 70 4S	2001 - 2007	83920/1	
	BJ90 - 115 - 140 4S	2001 - 2007	83920/1	
	J90 - 115 V4 2S	1995 - 2007	83920/1	
<b>Mercury® Mariner®</b>	50 - 75 - 90 2S	1990 - 2008	83920/1	
	115 - 125 - 150 EFI 2S	1990 - 2007	83920/1	
	75 - 90 - 115 - 125 OPTIMAX 2S	2004 to date	83920/3	
	135 - 150 OPTIMAX 2S	1999 to date	83920/1	
	40 - 50 - 60 EFI 4S	2004 to date	83920/1	
	75 - 80 - 90 EFI 4S	2000 to date	83920/1	
	100 - 115 EFI 4S	2007 to date	83920/1	

*Engine Guide for Hyco Hydraulic Steering Kit				
Engine	POWER	Year	Cylinder**	Kit Ref.
<b>Selva®</b>	50 MADEIRA/BULL SHARK - 60 GREY SHARK/ STITROPEZ 70 MAKO SHARK 2S	—	83920/1	
	80 PORTOFINO/TIGERSHARK 2S	1995 - 2008	83920/1	
	150 WHITE SHARK 2S	2001 - 2007	83920/1	
	50 - 60 DORADO EFI 4S	—	83920/1	
	100 EFI MARLIN - 115 EFI NARWHAL - 150EFI KILLER WHALE 4S	—	83920/1	
		2000 to date	83920/1	
<b>Suzuki®</b>	DF70 - 80 - 90 4S	1998 to date	83920/1	
	DF100 - 115 - 140 4S*	1998 to date	83920/1	
	DF150 4S	2006 to date	83920/1	
<b>Tohatsu® Nissan®</b>	50 - 60 - 70 - 90 2S	2004 to date	83920/1	
	115 - 120 - 140 2S	2004 to date	83920/1	
	40 - 50TLDI 4S	2004 to date	83920/1	
	70 - 90 - 115 TLDI 4S	2004 to date	83920/1	
<b>Yamaha®</b>	60 - 70 2S	1984 - 2008	83920/1	
	75C - 90 2S	1998 - 2008	83920/1	
	115C - 130B 2S	1990 - 2008	83920/1	
	150F	1996 - 2007	83920/1	
	150 HPDI VMAX 2S	2000 - 2008	83920/1	
	F60 - F75 - F80 EFI 4S	1999 - 2007	83920/1	
	F90 - F100 - F115 - F150 EFI 4S	1999 - 2007	83920/1	
	F80 - F100 4S	2000 to date	83920/1	
	F115 - F150	2004 to date	83920/1	

\*NOTE: Suzuki® engines built from 1998 to 2008 installing 83920/1 cylinder require optional KIT SU - **83919**

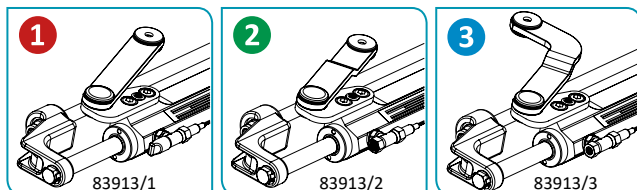
# 300HP Nautech 1 Hydraulic Steering Kits

## Hydraulic Steering Kits - 300HP Nautech 1

**Up to 300HP**

**Improved Design**

### Kit Reference



The **UltraFlex® Nautech Steering Kits** are designed for outboard engines rated up to 300HP. Constructed from high grade materials and features the Patented split pinned mounting rod for easy installation and bushings to prevent friction with the engine tilt tube.

All Nautech 1 Steering Kits come standard with a Front Mount Cylinder, Helm and hydraulic oil.

- Rated for outboard engines rated up to 300HP.
- Zero feedback for super smooth steering.
- **4.3** turns lock to lock balanced.

*NOTE: Steering wheels not included in kits.*

**Available in 2 Hose Options:**

- A** Hydraulic Steering Kits without Hose.
- C** Hydraulic Steering Kits with Premium Heavy-duty QuickFit Hose.

### A Hydraulic Steering Kits - Nautech 1 without Hose

**Up to 300HP**



Kit No.	Description	Cylinder	Helm	Kit Ref.
83915/1	Nautech 1 Hydraulic Steering Kit 1	Front Mount UC128-OBF/1 83913/1	4.3 Turns UP28F 83928	1
83915/2	Nautech 1 Hydraulic Steering Kit 2	Front Mount UC128-OBF/2 83913/2	4.3 Turns UP28F 83928	2
83915/3	Nautech 1 Hydraulic Steering Kit 3	Front Mount UC128-OBF/3 83913/3	4.3 Turns UP28F 83928	3

#### Kits Contains:

- 1 x UC128-OBF Front Mount Cylinder (See "Engine Guide" on facing page).
- 83913/1 - UC128-OBF/1
- 83913/2 - UC128-OBF/2
- 83913/3 - UC128-OBF/3
- 1 x 83928 - UP28F Front Mount 28cc Helm Pump.
- 2 x 84115 - 1 litre hydraulic oil.

*NOTE: \*Refer to "Hydraulic Quickfit Hose Kits" on page 635.*

### C Hydraulic Steering Kits - Nautech 1 QuickFit Hose Kits

**Up to 300HP**



Kit No.	Description	Cylinder	Helm	Hose Type & Length (m)	Kit Ref.
83983	Nautech 1 Hydraulic Steering Kit 1	Front Mount UC128-OBF/1 83913/1	4.3 Turns UP28F 83928	QuickFit 2 x 6 Metre 84186	1
83982	Nautech 1 Hydraulic Steering Kit 1	Front Mount UC128-OBF/1 83913/1	4.3 Turns UP28F 83928	QuickFit 2 x 9 Metre 84187	1

#### Kits Contains:

- 1 x 83913/1 - UC128-OBF/1 Front Mount Cylinder (See "Engine Guide" on facing page).
  - 1 x 83928 - UP28F Front Mount 28cc Helm Pump.
  - 2 x 84115 - 1 litre hydraulic oil.
  - 1 x 84186 - QuickFit 6 metre Hose Kit
- Hose Kit Contains:** Two 3/8" I.D. 6 metre hose kits with pre-crimped Brass Fittings at one end. Supplied with two QuickFit Brass Connectors and two Bend Restrictors.
- or
- 1 x 84187 - QuickFit 9 metre Hose Kit
- Hose Kit Contains:** Two 3/8" I.D. 9 metre hose kits with pre-crimped Brass Fittings at one end. Supplied with two QuickFit Brass Connectors and two Bend Restrictors.



## 300HP Nautech 1 Hydraulic Steering Kits

### Hydraulic Steering Kits - Nautech 1 QuickFit Hose Kits

Kit No.	Description	Cylinder	Helm	Hose Type & Length (m)	Kit Ref.
83986	Nautech 1 Hydraulic Steering Kit 2	Front Mount UC128-OBF/2 83913/2	4.3 Turns UP28F 83928	QuickFit 2 x 6 Metre 84186	2
83984	Nautech 1 Hydraulic Steering Kit 2	Front Mount UC128-OBF/2 83913/2	4.3 Turns UP28F 83928	QuickFit 2 x 9 Metre 84187	2

**Up to 300HP**

#### Kits Contains:

- 1 x **83913/2** - UC128-OBF/2 Front Mount Cylinder (See "Engine Guide" below).
  - 1 x **83928** - UP28F Front Mount 28cc Helm Pump.
  - 2 x **84115** - 1 litre hydraulic oil.
  - 1 x **84186** - **QuickFit 6 metre Hose Kit**
- Hose Kit Contains:** Two 3/8" I.D. 6 metre hose kits with pre-crimped Brass Fittings at one end. Supplied with two QuickFit Brass Connectors and two Bend Restrictors.

or

- 1 x **84187** - **QuickFit 9 metre Hose Kit**
- Hose Kit Contains:** Two 3/8" I.D. 9 metre hose kits with pre-crimped Brass Fittings at one end. Supplied with two QuickFit Brass Connectors and two Bend Restrictors.



### Engine Selection & Dimension Requirements

**Up to 300HP**

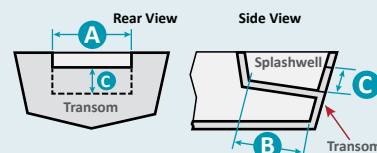
#### For Additional Station Add:

- 1 x **83928** - Helm Pump.
- 1 x **84120** - Fitting kit.
- 1 x **84115** - 1 litre hydraulic oil.

#### Splashwell Dimension Requirements

No. of Engines	A	B	C
1	560 mm - 22.05"	152mm - 5.98"	152mm - 5.98"
2*	1110mm - 43.70"	152mm - 5.98"	152mm - 5.98"

\*NOTE: For twin engine applications, the minimum distance between the two engine centres is 550 mm (21.6")



Engine Guide for Nautech Hydraulic Steering Kit				
Engine	POWER	Year	Cylinder	Kit Type
Evinrude®	E75 - E90 2S	2004 to date	83913/2	2
	E115 - E130 - E135 2S V4	1995 to date	83913/2	2
	E150 - E175 - E200 - E225 - E250 - E300 2S V6	1995 to date	83913/2	2
Honda®	BF75 - BF90 4S	1995 to date	83913/1	1
	BF115 - BF130 4S	1998 to date	83913/3	3
	BF135 - BF150 4S	2005 to date	83913/1	1
	BF150 V - TEC 4S	2008 to date	83913/1	1
	BF175 - BF200 - BF225 - BF250 4S	2001 to date	83913/1	1
Johnson®	BJ90 - 115 - 140 4S	2001 - 2007	83913/1	1
	J90 - 115 V4 2S	1995 - 2007	83913/2	2
	J150 - 175 V6 2S	1995 - 2007	83913/2	2
	J200 - 225 V6 4S	2004 - 2007	83913/2	2
Mercury® Mariner®	115 - 125 - 150 EFI 2S	1990 - 2007	83913/1	1
	225 - 250 EFI 2S	2000 - 2007	83913/1	1
	75 - 90 - 115 - 125 OPTIMAX 2S	2004 to date	83913/3	3
	135 - 150 - 175 OPTIMAX 2S	1999 to date	83913/1	1
	200 - 225 - 250 OPTIMAX 2S	1999 to date	83913/1	1
	RACING 300 OPTIMAX 2S	1999 - 2011	83913/1	1
	100 - 115 EFI 4S	2007 to date	83913/1	1
	250 SALTWATER EFI 4S	2007 - 2011	83913/1	1
	135 - 150 - 175 - 200 VERADO L4 4S	2004 to date	83913/1	1
	FOURSTROKE 175 - 200 V6	2018 to date	83913/1	1
	FOURSTROKE 225 - 300 V8	2018 to date	83913/1	1

Engine Guide for Nautech Hydraulic Steering Kit				
Engine	POWER	Year	Cylinder	Kit Type
Selva®	80 PORTOFINO/TIGERSHARK 2S	1995 - 2008	83913/1	1
	150 WHITE SHARK 2S	2001 - 2007	83913/2	2
	100EFI MARLIN - 115 EFI NARWHAL - 150EFI KILLER WHALE 4S	2000 to date	83913/1	1
Suzuki®	DF70 - 80 - 90 4S	1998 to date	83913/2	2
	DF100 - 115 - 140 4S	1998 - 2008	83913/1*	1
	DF100 - 115 - 140 4S (NEW MODEL)	1998 to date	83913/1	1
	DF150 - 175 - DF200 L4 4S	2008 to date	83913/1	1
	DF200 - DF225 - DF250 - DF300 - DF350 V6 4S	2006 to date	83913/2	2
Tohatsu® Nissan®	115 - 120 - 140 2S	2004 to date	83913/2	2
	70 - 90 - 115 TLDI 4S	2004 to date	83913/1	1
	BFT60 - 75 - 90 4S	2015-to date	83913/1	1
	BFT80 - 100 - 115 4S	2015-to date	83913/3	3
Yamaha®	BFT150 - 200 - 225 - 250 4S	2015-to date	83913/1	1
	115C - 130B 2S	1990 - 2008	83913/2	2
	75C - 90 2S	1998 - 2008	83913/2	2
	115C - 130B 2S	1990 - 2008	83913/2	2
	150F - 200F - 250G 2S	1996 - 2007	83913/2	2
	150 HPDI VMAX 2S	2000 - 2008	83913/2	2
	175 - 200 - 225 - 250 - 300 HPDI VMAX 2S	2000 - 2008	83913/2	2
	F115 - F150 EFI 4S	1999 - 2007	83913/1	1
	F200 - F225 - F250 4S	2002 - 2007	83913/2	2
	F70 4S	2010 to date	83913/1P	1P
	F115 - F150 - F175 - F200 L4 4S	2004 to date	83913/1	1
	F200 - F225 - F250 - F300 V6 4S	2004 to date	83913/2	2

\*NOTE: Suzuki® engines built from 1998 to 2008 installing UC128 - OBF/1 cylinder require optional KIT SU - 83919





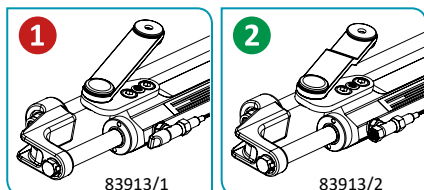
## 300HP Nautech 3 Hydraulic Steering Kits

### Hydraulic Steering Kit - 300HP Nautech 3

**Up to 300HP**

**Improved Design**

#### Kit Reference



The **UltraFlex® Nautech Steering Kits** are designed for outboard engines rated up to 300HP. Constructed from high grade materials and features the Patented split pinned mounting rod for easy installation and bushings to prevent friction with the engine tilt tube.

All Nautech Steering Kits come standard with a Front Mount Cylinder, Helm and hydraulic oil.

- For outboard engines rated up to 300HP.
- Zero feedback for super smooth steering.
- **4.8** turns lock to lock balanced.

*NOTE: Steering wheels are not included in kits.*

Kit No.	Description	Cylinder	Helm	Kit Ref.
<b>83910/1</b>	<b>Nautech 3 Hydraulic Steering Kit 1</b>	<b>Front Mount UC128-OBF/1 83913/1</b>	<b>4.8 UP25F 83925</b>	<b>1</b>
<b>83910/2</b>	<b>Nautech 3 Hydraulic Steering Kit 2</b>	<b>Front Mount UC128-OBF/2 83913/2</b>	<b>4.8 UP25F 83925</b>	<b>2</b>

#### Kits Contains:

1 x UC128-OBF Front Mount Cylinder (See "Engine Guide" below).

**83913/1** - UC128-OBF/1

**83913/2** - UC128-OBF/2

1 x **83925** - UP25F Front Mount 25cc Helm Pump..

2 x **84115** - 1 litre hydraulic oil.

*NOTE: \*Refer to "Hydraulic Quickfit Hose Kits" on page 635.*

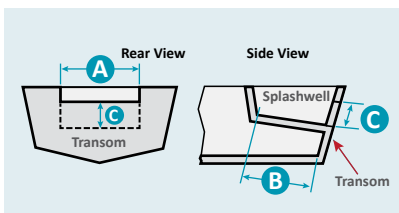
#### For Additional Station Add:

- 1 x **83925** - Helm Pump.
- 1 x **84120** - Fitting kit.
- 1 x **84115** - 1 litre hydraulic oil.

#### Splashwell Dimension Requirements

No. of Engines	A	B	C
1	560 mm - 22.05"	152mm - 5.98"	152mm - 5.98"
2*	1110mm - 43.70"	152mm - 5.98"	152mm - 5.98"

*\*NOTE: For twin engine applications, the minimum distance between the two engine centres is 550 mm (21.6")*



#### Engine Guide for Nautech Hydraulic Steering Kit

Engine	POWER	Year	Cylinder	Kit Type
<b>Evinrude®</b>	E75 - E90 2S	2004 to date	<b>83913/2</b>	<b>2</b>
	E115 - E130 - E135 2S V4	1995 to date	<b>83913/2</b>	<b>2</b>
	E150 - E175 - E200 - E225 - E250 - E300 2S V6	1995 to date	<b>83913/2</b>	<b>2</b>
<b>Honda®</b>	BF75 - BF90 4S	1995 to date	<b>83913/1</b>	<b>1</b>
	BF115 - BF130 4S	1998 to date	<b>83913/3</b>	<b>3</b>
	BF135 - BF150 4S	2005 to date	<b>83913/1</b>	<b>1</b>
	BF150 V-TEC 4S	2008 to date	<b>83913/1</b>	<b>1</b>
	BF175 - BF200 - BF225 - BF250 4S	2001 to date	<b>83913/1</b>	<b>1</b>
<b>Johnson®</b>	BJ90 - 115 - 140 4S	2001 - 2007	<b>83913/1</b>	<b>1</b>
	J90 - 115 V4 2S	1995 - 2007	<b>83913/2</b>	<b>2</b>
	J150 - 175 V6 2S	1995 - 2007	<b>83913/2</b>	<b>2</b>
	J200 - 225 V6 4S	2004 - 2007	<b>83913/2</b>	<b>2</b>
<b>Mercury® Mariner®</b>	115 - 125 - 150 EFI 2S	1990 - 2007	<b>83913/1</b>	<b>1</b>
	225 - 250 EFI 2S	2000 - 2007	<b>83913/1</b>	<b>1</b>
	75 - 90 - 115 - 125 OPTIMAX 2S	2004 to date	<b>83913/3</b>	<b>3</b>
	135 - 150 - 175 OPTIMAX 2S	1999 to date	<b>83913/1</b>	<b>1</b>
	200 - 225 - 250 OPTIMAX 2S	1999 to date	<b>83913/1</b>	<b>1</b>
	RACING 300 OPTIMAX 2S	1999 - 2011	<b>83913/1</b>	<b>1</b>
	100 - 115 EFI 4S	2007 to date	<b>83913/1</b>	<b>1</b>
	250 SALTWATER EFI 4S	2007 - 2011	<b>83913/1</b>	<b>1</b>
	135 - 150 - 175 - 200 VERADO L4 4S	2004 to date	<b>83913/1</b>	<b>1</b>
	FOURSTROKE 175 - 200 V6	2018 to date	<b>83913/1</b>	<b>1</b>
	FOURSTROKE 225 - 300 V8	2018 to date	<b>83913/1</b>	<b>1</b>

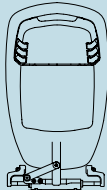
#### Engine Guide for Nautech Hydraulic Steering Kit

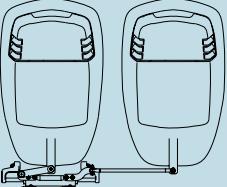
Engine	POWER	Year	Cylinder	Kit Type
<b>Selva®</b>	80 PORTOFINO/TIGERSHARK 2S	1995 - 2008	<b>83913/1</b>	<b>1</b>
	150 WHITE SHARK 2S	2001 - 2007	<b>83913/2</b>	<b>2</b>
	100EFI MARLIN - 115 EFI NARWHAL - 150EFI KILLER WHALE 4S	2000 to date	<b>83913/1</b>	<b>1</b>
<b>Suzuki®</b>	DF70 - 80 - 90 4S	1998 to date	<b>83913/2</b>	<b>2</b>
	DF100 - 115 - 140 4S	1998 - 2008	<b>83913/1*</b>	<b>1</b>
	DF100 - 115 - 140 4S (NEW MODEL)	1998 to date	<b>83913/1</b>	<b>1</b>
	DF150 - 175 - DF200 L4 4S	2008 to date	<b>83913/1</b>	<b>1</b>
	DF200 - DF225 - DF250 - DF300 - DF350 V6 4S	2006 to date	<b>83913/2</b>	<b>2</b>
<b>Tohatsu® Nissan®</b>	115 - 120 - 140 2S	2004 to date	<b>83913/2</b>	<b>2</b>
	70 - 90 - 115 TLDI 4S	2004 to date	<b>83913/1</b>	<b>1</b>
	BFT60 - 75 - 90 4S	2015 to date	<b>83913/1</b>	<b>1</b>
	BFT80 - 100 - 115 4S	2015 to date	<b>83913/3</b>	<b>3</b>
	BFT150 - 200 - 225 - 250 4S	2015 to date	<b>83913/1</b>	<b>1</b>
<b>Yamaha®</b>	115C - 130B 2S	1990 - 2008	<b>83913/2</b>	<b>2</b>
	75C - 90 2S	1998 - 2008	<b>83913/2</b>	<b>2</b>
	115C - 130B 2S	1990 - 2008	<b>83913/2</b>	<b>2</b>
	150F - 200F - 250G 2S	1996 - 2007	<b>83913/2</b>	<b>2</b>
	150 HPDI VMAX 2S	2000 - 2008	<b>83913/2</b>	<b>2</b>
	175 - 200 - 225 - 250 - 300 HPDI VMAX 2S	2000 - 2008	<b>83913/2</b>	<b>2</b>
	F115 - F150 EFI 4S	1999 - 2007	<b>83913/1</b>	<b>1</b>
	F200 - F225 - F250 4S	2002 - 2007	<b>83913/2</b>	<b>2</b>
	F70 4S	2010 to date	<b>83913/1P</b>	<b>1P</b>
	F115 - F150 - F175 - F200 L4 4S	2004 to date	<b>83913/1</b>	<b>1</b>
	F200 - F225 - F250 - F300 V6 4S	2004 to date	<b>83913/2</b>	<b>2</b>

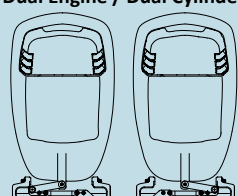
*\*NOTE: Suzuki® engines built from 1998 to 2008 installing UC128 - OBF/1 cylinder require optional KIT SU - 83919*



## Hydraulic Steering Kit - UC128-OBF Nautech Ordering Guide

System	Application	Wheel Turns	Components	Model	Part No.	Qty
<div>Outboard Single Engine / Single Cylinder</div> <div></div>	<div>Up to 300HP Maximum</div>	<div>4.8 (UP25) 4.3 (UP28)</div>	Cylinder	UC128-OBF	83913/1	1
			Helm pump*	UP25* or UP28*	83925* or 83928*	1
			Hose	See hose options	See hose options	1
			Oil	OL 150	84115	2
			Steering wheel	See wheel options	See wheel options	1
For a second station add: 1 x UP25 or UP28, 1 x KIT OB-2S fitting kit, 1 x Hose, 1 x OL 150, 1 x steering wheel						

<div>Outboard Dual Engine / Single Cylinder</div> 	<div>Up to 300HP Maximum</div> <div>(non-counter rotating engine)</div>	<div>4.8 (UP25)</div> <div>4.3 (UP28)</div> <div>3.6 (UP33)</div>	Cylinder	UC128-OBF	83913/1	1
	<div>Up to 500HP Maximum</div> <div>(counter rotating engine)</div>		Helm pump*	UP25* / UP28* / UP33*	83925* / 83928* / 83933*	1
			Hose	See hose options	See hose options	1
			Oil	OL 150	84115	2
			Tie bar	A94 or A88	84194 or 84188	1
			Steering wheel	See wheel options	See wheel options	1
<div>For a second station add:</div> <div>1 x UP25, UP28 or UP33, 1 x KIT OB-2S fitting kit, 1 x Hose, 1 x OL 150, 1 x steering wheel</div>						

<div>Outboard Dual Engine / Dual Cylinder</div> <div></div>	<div>Up to 500HP Maximum</div> <div>(non-counter rotating engines)</div>	6.1 (UP39)	Cylinder	UC128-OBF	83913/1	1
			Cylinder port	UC128P-OBF	83913/1P	1
			Helm pump*	UP39*	83939*	1
			Tie bar	A90	84190	1
			Oil	OL 150	84115	2
			Hose	See hose options	See hose options	1
			Connection kit	KIT OB-2C	See hose options	1
			Steering wheel	See wheel options	See wheel options	1
	<div>Up to 600HP Maximum</div> <div>(counter rotating engines)</div>					

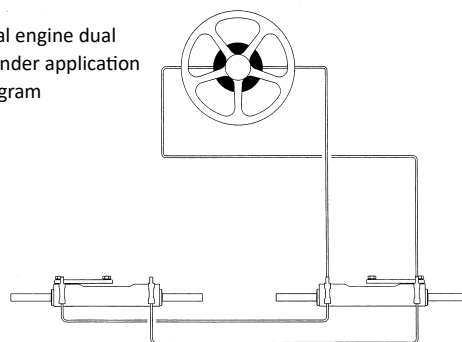
\*NOTE Helm pumps are available in tilt, front and rear options, refer to "Hydraulic Helm Pumps" on page 647

NOTE: For high performance applications SilverSteer™ systems are recommended.

**WARNING:** The UC128-OBF front mount cylinder is not recommended for use in installations where the boat speed exceeds 50 mph (43 knots) (60 mph (52 knots) in dual engine, dual cylinder and counter rotating engines application). Not intended for use in racing application.



Dual engine dual cylinder application diagram



Three outboard engine applications are available with UC128-OBF cylinder. For further information, contact a sales representative at Sam Allen Wholesale.

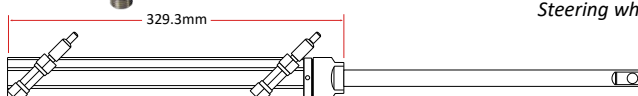
## Hydraulic Steering Kits

### Hydraulic Steering Kit - Outboard Side Mount Cylinder - UC68-OBS

**Up to 150HP - 3.4 - 5 Wheel Turns**



84115



Kit Part No.	Description	Model
<b>83908</b>	Outboard Side Mount Cylinder Kit*	UC68-OBS

- For outboard engines up to 150 HP.
- 3.4 or 5 turns lock to lock, unbalanced - the number of turns lock to lock is not equal port to starboard and vice-versa.
- UC68-OBS side mount cylinder features a Patented turning nut for a fast and easy installation to the engine tube.
- Clearance required at the engine tube side is 340mm.
- Recommended for use where maximum boat speed not exceed 40mph (34 knots).

NOTE: Hose not included\*.

**Kits Contains:**

- **83908C** - UC68-OBS side mount cylinder.
- **83920** - UP20F front mount helm pump.
- **84115** - 1 litre hydraulic oil x 2.

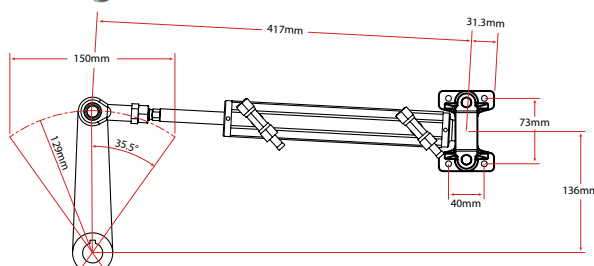
NOTE: Refer to "Hydraulic Tubing, Hose & Connectors" on page 639.  
Steering wheel not included in kit.

Hydraulic Steering System Ordering Guide							
System	Application	Wheel Turns	Components	Model	Part No.	Qty	Kits
Outboard Single engine single cylinder	Up to 150HP maximum	3.4 or 5 turns lock to lock	Cylinder Helm pump Hydraulic Oil	UC68-OBS UP20F OL 150	<b>83908C</b> <b>83920</b> <b>84115</b>	1 1 2	<b>83908</b>
			Hose Steering Wheel	Refer to "Hydraulic Tubing, Hose & Connectors" on page 639 Refer to wheel selection starting from page 599	Hose options Wheel options	1 1	Not Included

### Hydraulic Steering Kit - Inboard HYCO-I



84115



Kit Part No.	Description	Model
<b>83940</b>	Hydraulic Inboard Steering Kit*	HYCO-I

- For inboard engines.
- 3.5 turns lock to lock, balanced.
- HYCO-I steering system is suitable for inboard boats up to 8m (26ft) length and 25knots maximum speed.
- Hose not included\*.

**Kits Contains:**

- **83959** - UC69-I Inboard cylinder.
- **83920** - UP20F front mount helm pump.
- **84115** - 1 litre hydraulic oil x 2.

NOTE: Refer to "Hydraulic Tubing, Hose & Connectors" on page 639.  
Steering wheel not included in kit.

Hydraulic Steering System Ordering Guide							
System	Application	Wheel Turns	Components	Model	Part No.	Qty	Kits
Inboard	Inboards up to 8m (26ft) length and 25mph maximum speed.	3.5 turns	Cylinder Helm pump Hydraulic Oil	UC69-I UP20F OL 150	<b>83959</b> <b>83920</b> <b>84115</b>	1 1 2	<b>83940</b>
			Hose Steering Wheel	Refer to "Hydraulic Tubing, Hose & Connectors" on page 639. Refer to wheel selection starting from page 599	Hose options Wheel options	1 1	Not Included





# Hydraulic Outboard Cylinders Front Mount Cylinders

## Hydraulic Outboard Cylinder - Front Mount - UC94-OBF

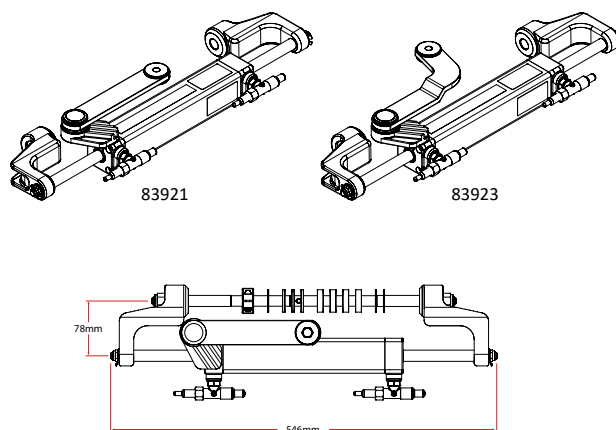
Up to 150HP

Part No.	Description	Model
<b>83921</b>	Hydraulic Outboard Front Mount Cylinder Only	UC94-OBF/1
<b>83923</b>	Hydraulic Outboard Front Mount Cylinder Only	UC94-OBF/3

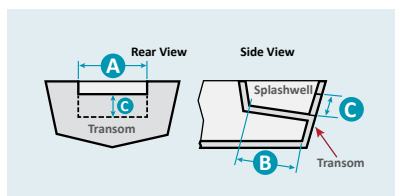
- For outboard engines up to 150 HP.
- Balanced: the number of turns lock-to-lock is equal.
- Adjustable boss style fittings for easy installation.
- High resistance stainless steel connection bolt (Ultrabolt).
- Patented innovative design: split and pinned cylinder mounting rod for easy installation and bushings to prevent friction with engine tilt tube.
- Available in two versions:
  - **83921** - UC94-OBF/1: Evinrude®, Honda®, Johnson®, Mercury®, Mariner®, Suzuki®, Selva® Tohatsu®, Nissan® and Yamaha®
  - **83923** - UC94-OBF/3: Honda® and Mercury® Mariner®



Specifications	UC94-OBF
Volume	94 cc - 5.7 cu. in
Output force	278 kg - 613 lbs
Inside diameter	30 mm - 1.18"
Stroke	186 mm - 7.3"
3/8" (9.5mm) Fittings	For high pressure flex hose
Bleed fittings	DN5 Quick connect



Splashwell Dimension Requirements			
No. 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"



## Engine Application Guide for Hydraulic Cylinder - UC94-OBF

Engine	POWER	Year	Cylinder	P/N
Evinrude®	E40 - E50 - E55 - E60 2S	2004 to date	UC94-OBF/1	<b>83920/1</b>
	E75 - E90 2S	2004 to date	UC94-OBF/1	<b>83920/1</b>
	E115 - E130 - E135 2S V4	1995 to date	UC94-OBF/1	<b>83920/1</b>
	E150 2S V6	1995 to date	UC94-OBF/1	<b>83920/1</b>
Honda®	BF75 - BF90 4S	1995 to date	UC94-OBF/1	<b>83920/1</b>
	BF80 - 100 - 115DK - 130A 4S	1998 to date	UC94-OBF/1	<b>83920/1</b>
	BF115A - 135 - BF150 4S	2005 to date	UC94-OBF/1	<b>83920/1</b>
	BF90 - BF150 V-TEC 4S	2008 to date	UC94-OBF/1	<b>83920/1</b>
Johnson®	BJ60 - 70 4S	2001 - 2007	UC94-OBF/1	<b>83920/1</b>
	BJ90 - 115 - 140 4S	2001 - 2007	UC94-OBF/1	<b>83920/1</b>
	J90 - 115 V4 2S	1995 - 2007	UC94-OBF/1	<b>83920/1</b>
Mercury® Mariner®	50 - 75 - 90 2S	1990 - 2008	UC94-OBF/1	<b>83920/1</b>
	115 - 125 - 150 EFI 2S	1990 - 2007	UC94-OBF/1	<b>83920/1</b>
	75 - 90 - 115 - 125 OPTIMAX 2S	2004 to date	UC94-OBF/3	<b>83920/3</b>
	135 - 150 OPTIMAX 2S	1999 to date	UC94-OBF/1	<b>83920/1</b>
	40 - 50 - 60 EFI 4S	2004 to date	UC94-OBF/1	<b>83920/1</b>
	75 - 80 - 90 EFI 4S	2000 to date	UC94-OBF/1	<b>83920/1</b>
	100 - 115 EFI 4S	2007 to date	UC94-OBF/1	<b>83920/1</b>

Engine	POWER	Year	Cylinder	P/N
Selva®	50 MADEIRA/BULL SHARK - 60 GREY SHARK/STTROPEZ 70 MAKO SHARK 2S	—	UC94-OBF/1	<b>83920/1</b>
	80 PORTOFINO/TIGERSHARK 2S	1995 - 2008	UC94-OBF/1	<b>83920/1</b>
	150 WHITE SHARK 2S	2001 - 2007	UC94-OBF/1	<b>83920/1</b>
	50 - 60 DORADO EFI 4S	—	UC94-OBF/1	<b>83920/1</b>
	100 EFI MARLIN - 115 EFI NARWHAL - 150EFI KILLER WHALE 4S	—	UC94-OBF/1	<b>83920/1</b>
		2000 to date	UC94-OBF/1	<b>83920/1</b>
Suzuki®	DF70 - 80 - 90 4S	1998 to date	UC94-OBF/1	<b>83920/1</b>
	DF100 - 115 - 140 4S*	1998 to date	UC94-OBF/1	<b>83920/1</b>
	DF150 4S	2006 to date	UC94-OBF/1	<b>83920/1</b>
Tohatsu® Nissan®	50 - 60 - 70 - 90 2S	2004 to date	UC94-OBF/1	<b>83920/1</b>
	115 - 120 - 140 2S	2004 to date	UC94-OBF/1	<b>83920/1</b>
	40 - 50TLDI 4S	2004 to date	UC94-OBF/1	<b>83920/1</b>
	70 - 90 - 115 TLDI 4S	2004 to date	UC94-OBF/1	<b>83920/1</b>
Yamaha®	60 - 70 2S	1984 - 2008	UC94-OBF/1	<b>83920/1</b>
	75C - 90 2S	1998 - 2008	UC94-OBF/1	<b>83920/1</b>
	115C - 130B 2S	1990 - 2008	UC94-OBF/1	<b>83920/1</b>
	150F	1996 - 2007	UC94-OBF/1	<b>83920/1</b>
	150 HPDI VMAX 2S	2000 - 2008	UC94-OBF/1	<b>83920/1</b>
	F60 - F75 - F80 EFI 4S	1999 - 2007	UC94-OBF/1	<b>83920/1</b>
	F90 - F100 - F115 - F150 EFI 4S	1999 - 2007	UC94-OBF/1	<b>83920/1</b>
	F80 - F100 4S	2000 to date	UC94-OBF/1	<b>83920/1</b>
	F115 - F150	2004 to date	UC94-OBF/1	<b>83920/1</b>

\*NOTE: Suzuki® engines built from 1998 to 2008 installing 83920/1 cylinder require optional KIT SU - 83919





## Front Mount Cylinders

### Hydraulic Outboard Cylinder - Front Mount - UC128-OBF

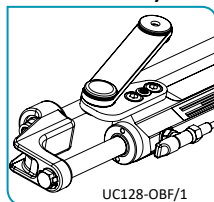
Up to 300HP

Improved Design

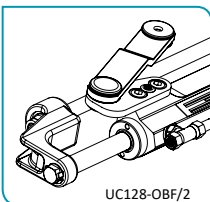


83913/1

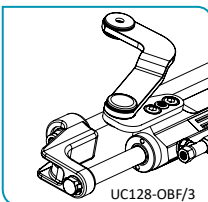
#### Starboard Side Cylinders



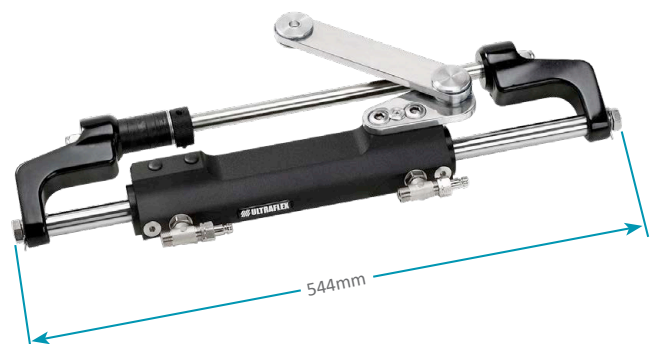
83913/1



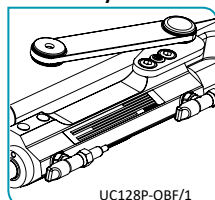
83913/2



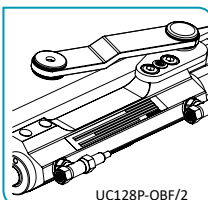
83913/3



#### Port Side Cylinders



83913/1P



83913/2P



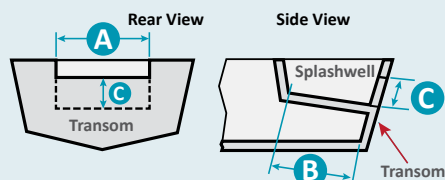
Part No.	Description	Model
83913/1	Starboard Side Cylinder Only	UC128-OBF/1
83913/1P	Port Side Cylinder Only	UC128P-OBF/1
83913/2	Starboard Side Cylinder Only	UC128-OBF/2
83913/2P	Port Side Cylinder Only	UC128P-OBF/2
83913/3	Starboard Side Cylinder Only	UC128-OBF/3

- For outboard engines up to 300 HP.
- Balanced: the number of turns lock-to-lock is equal port to starboard or vice-versa.
- Adjustable boss style fittings for easy installation.
- High resistance stainless steel connection bolt (Ultrabolt).
- The UC128 cylinder is built to last with heavy duty stainless steel cylinder rod, seals and link assemblies.
- Constructed of top grade materials, this cylinder is simple to install and fits almost every 2 and 4 stroke outboard engine in the market.
- The UC128 cylinders are recommended for use with UP25, UP28, UP33 and UP39 series helms and pre-assembled hoses (Kit OB and Kit OB/R5).

Specifications	UC128-OBF
Volume	120 cc - 7.3 cu. in
Output force	450 kg - 992 lbs
Inside diameter	35 mm - 1.37"
Stroke	185 mm - 7.28"
3/8" (9.5mm) Fittings	For high pressure flex hose
Bleed fittings	DN5 Quick connect

Splashwell Dimension Requirements			
No. of Engines	A	B	C
1	560 mm - 22.05"	152 mm - 5.98"	152 mm - 5.98"
2*	1110 mm - 43.70"	152 mm - 5.98"	152 mm - 5.98"

\*NOTE: For twin engine applications, the minimum distance between the two engine centres is 550 mm (21.6")



### Engine Application Guide for Hydraulic Cylinder - UC128-OBF

Engine	POWER	Year	Cylinder	P/N
Evinrude®	E75 - E90 2S	2004 to date	UC128-OBF/2	83913/2
	E115 - E130 - E135 2S V4	1995 to date	UC128-OBF/2	83913/2
	E150 - E175 - E200 2S V6	1995 to date	UC128-OBF/2	83913/2
	E225 - E250 - E300 2S V6	1995 to date	UC128-OBF/2	83913/2
Honda®	BF75 - BF90 4S	1995 to date	UC128-OBF/1	83913/1
	BF115 - BF130 4S	1998 to date	UC128-OBF/3	83913/3
	BF135 - BF150 4S	2005 to date	UC128-OBF/1	83913/1
	BF150 V-TEC 4S	2008 to date	UC128-OBF/1	83913/1
	BF175 - BF200 - BF225 - BF250 4S	2001 to date	UC128-OBF/1	83913/1
Johnson®	BJ90 - 115 - 140 4S	2001 - 2007	UC128-OBF/1	83913/1
	J90 - 115 V4 2S	1995 - 2007	UC128-OBF/2	83913/2
	J150 - 175 V6 2S	1995 - 2007	UC128-OBF/2	83913/2
	J200 - 225 V6 4S	2004 - 2007	UC128-OBF/2	83913/2
Mercury® Mariner®	115 - 125 - 150 EFI 2S	1990 - 2007	UC128-OBF/1	83913/1
	225 - 250 EFI 2S	2000 - 2007	UC128-OBF/1	83913/1
	75 - 90 - 115 OPTIMAX	2004 to date	UC128-OBF/3	83913/3
	135 - 150 - 175 OPTIMAX	1999 to date	UC128-OBF/1	83913/1
	200 - 225 - 250 OPTIMAX	1999 to date	UC128-OBF/1	83913/1
	RACING 300 OPTIMAX	1999 - 2011	UC128-OBF/1	83913/1
	100 - 115 EFI 4T	2007 to date	UC128-OBF/1	83913/1
	250 SALTWATER EFI 4S	2007 - 2011	UC128-OBF/1	83913/1
	135 - 150 - 175 - 200 VERADO L4	2004 to date	UC128-OBF/1	83913/1
	FOURSTROKE 175 - 200 V6	2018 to date	UC128-OBF/1	83913/1
	FOURSTROKE 225 - 300 V8	2018 to date	UC128-OBF/1	83913/1

Engine	POWER	Year	Cylinder	P/N
Selva®	80 PORTOFINO/TIGERSHARK 2S	1995 - 2008	UC128-OBF/1	83913/1
	150 WHITE SHARK 2S	2001 - 2007	UC128-OBF/2	83913/2
	100EFI MARLIN - 115 EFI NARWHAL - 150EFI KILLER WHALE 4S	2000 to date	UC128-OBF/1	83913/1
Suzuki®	DF70 - 80 - 90 4T	1998 to date	UC128-OBF/2	83913/2
	DF100 - 115 - 140 4S	1998 - 2008	UC128-OBF/1*	83913/1*
	DF100 - 115 - 140 4S	1998 to date	UC128-OBF/1	83913/1
	DF150 - 175 - DF200 L4 4S	2006 to date	UC128-OBF/1	83913/1
	DF200 - DF225 - DF250 - DF300 - DF350 V6 4S	2004 to date	UC128-OBF/2	83913/2
Tohatsu® Nissan®	115 - 120 - 140 2S	2004 to date	UC128-OBF/2	83913/2
	70 - 90 - 115 TLDI 4S	2004 to date	UC128-OBF/1	83913/1
	BFT60 - 75 - 90 4S	2015 to date	UC128-OBF/1	83913/1
	BFT80 - 100 - 115 4S	2015 to date	UC128-OBF/3	83913/3
	BFT150 - 200 - 225 - 250 4S	2015 to date	UC128-OBF/1	83913/1
Yamaha®	115C - 130B 2S	1990 - 2008	UC128-OBF/2	83913/2
	75C - 90 2S	1998 - 2008	UC128-OBF/2	83913/2
	115C - 130B 2S	1990 - 2008	UC128-OBF/2	83913/2
	150F - 200F - 250G 2S	1996 - 2007	UC128-OBF/2	83913/2
	150 HPDI VMAX 2S	2000 - 2008	UC128-OBF/2	83913/2
	175 - 200 - 225 - 250 - 300 HPDI VMAX 2S	2000 - 2008	UC128P-OBF/2	83913/2
	F115 - F150 EFI 4S	1999 - 2007	UC128P-OBF/1	83913/1
	F200 - F225 - F250 4S	2002 - 2007	UC128-OBF/2	83913/2
	F70 4S	2010 to date	UC128P-OBF/1	83913/1P
	F115 - F150 - F175 - F200 L4 4S	2004 to date	UC128-OBF/1	83913/1
	F200 - F225 - F250 - F300 V6 4S	2004 to date	UC128-OBF/2	83913/2

\*NOTE: Suzuki® engines built from 1998 to 2008 installing UC128-OBF/1 cylinder require optional KIT SU - 83919

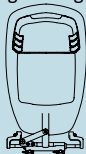
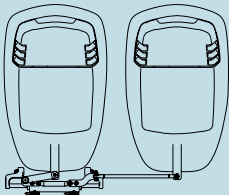
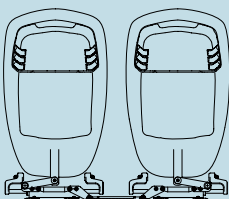
**Single Cylinder Applications:**

- The UC128-OBF Starboard cylinder is available in three versions:
  - **83913/1** - UC128-OBF/1: Honda®, Johnson®, Mercury®Mariner®, Suzuki®, Selva® Tohatsu®Nissan®and Yamaha®.
  - **83913/2** - UC128-OBF/2: Evinrude®, Johnson®, Suzuki®, Selva® Tohatsu®Nissan®and Yamaha®.
  - **83913/3** - UC128-OBF/3: Honda® and Mercury®Mariner®.

**Dual Cylinder Applications:**

- In dual cylinder applications it is necessary to order both Starboard and Port Side Cylinders:
  - **83913/1** Starboard Cylinder with **83913/1P** Port Cylinder
  - **83913/2** Starboard Cylinder with **83913/2P** Port Cylinder
- See appropriate section for A90 tie bar, required for dual engine/dual cylinder applications.
- The UC128P-OBF port cylinder is available in two versions:
  - **83913/1P** - UC128P-OBF/1: Honda®, Johnson®, Mercury®Mariner®, Suzuki®, Selva® Tohatsu®Nissan®and Yamaha®
  - **83913/2P** - UC128P-OBF/2: Evinrude®, Johnson®, Suzuki®, Selva® Tohatsu®Nissan®and Yamaha®.

**Hydraulic Cylinder Ordering Guide - UC128-OBF**

System	Application	Wheel Turns	Components	Model	Part No.	Qty
Single engine single cylinder 	<div>Up to 300HP Maximum</div>	4.8 (UP25)  4.3 (UP28)	Cylinder	UC128-OBF	<b>83913/1</b>	1
Helm pump*			UP25* or UP28*	<b>83925* or 83928*</b>	1	
Hose			See hose options	See hose options	1	
Oil			OL 150	<b>84115</b>	2	
Steering wheel			See wheel options	See wheel options	1	
For a second station add: 1 x UP25 or UP28, 1 x KIT OB-2S fitting kit, 1 x Hose, 1 x OL 150, 1 x steering wheel						
Dual engine Single cylinder 	<div>Up to 300HP Maximum</div> <div>Non-counter rotating engine</div>	4.8 (UP25)  4.3 (UP28)  3.6 (UP33)	Cylinder	UC128-OBF	<b>83913/1</b>	1
<div>Up to 500HP Maximum</div> <div>Counter rotating engine</div>	Helm pump*		UP25* / UP28* / UP33*	<b>83925* / 83928* / 83933*</b>	1	
	Hose		See hose options	See hose options	1	
	Oil		OL 150	<b>84115</b>	2	
	Tie bar		A94 or A88	<b>84194 or 84188</b>	1	
Steering wheel	See wheel options	See wheel options	1			
For a second station add: 1 x UP25, UP28 or UP33, 1 x Hose, 1 x OL 150, 1 x steering wheel and 1 x 84120 - KIT OB-2S fitting kit.						
Dual engine Dual cylinder 	<div>Up to 500HP Maximum</div> <div>Non-counter rotating engines)</div>	6.1 (UP39)	Cylinder	UC128-OBF	<b>83913/1</b>	1
<div>Up to 600HP Maximum</div> <div>Counter rotating engines</div>	Cylinder port		UC128P-OBF	<b>83913/1P</b>	1	
	Helm pump*		UP39*	<b>83939*</b>	1	
	Tie bar		A90	<b>84190</b>	1	
	Oil		OL 150	<b>84115</b>	3	
	Hose		See hose options	See hose options	1	
	Connection kit		KIT OB-2C	See hose options	1	
	Steering wheel		See wheel options	See wheel options	1	
For a second station add: 1 x UP39, 1 x hose, 1 x OL 150, 1 x steering wheel, 1 x <b>84120</b> - KIT OB-2S fitting kit and 2 x <b>84118</b> - TF38 fittings.						
*NOTE: Helm pumps are available in tilt, front and rear mount options, refer to "Hydraulic Helm Pumps" on page 647						

NOTE: For high performance applications SilverSteer™ systems are recommended.

**WARNING:** The UC128-OBF front mount cylinder is not recommended for use in installations where the boat speed exceeds 50 mph (43 knots) (60 mph (52 knots) in dual engine, dual cylinder and counter rotating engines application). Not intended for use in racing application.



## SilverSteer™ Front Mount Cylinders

### Hydraulic Outboard Cylinder - Front Mount - SilverSteer™ UC130-SVS

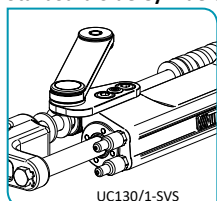
Up to 350HP

Improved Design  
High Performance

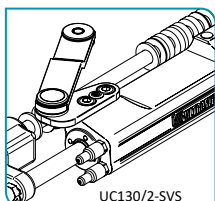


84010/1

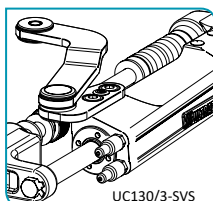
#### Starboard Side Cylinders



84010/1



84010/2

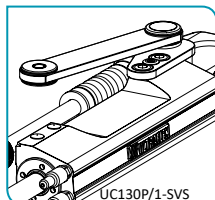


84010/3

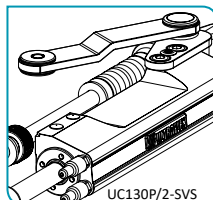


84010/1P

#### Port Side Cylinders



84010/1P



84010/2P



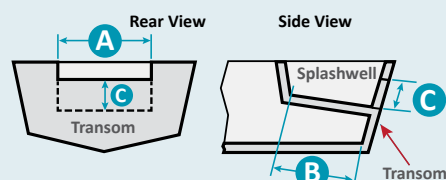
Part No.	Description	Model
<b>84010/1</b>	Starboard Side Cylinder Only	UC130/1-SVS
<b>84010/1P</b>	Port Side Cylinder Only	UC130P/1-SVS
<b>84010/2</b>	Starboard Side Cylinder Only	UC130/2-SVS
<b>84010/2P</b>	Port Side Cylinder Only	UC130P/2-SVS
<b>84010/3</b>	Starboard Side Cylinder Only	UC130/3-SVS

- For outboard engines up to **350 HP**.
- Balanced: the number of turns lock-to-lock is equal port to starboard or vice-versa.
- Adjustable boss style fittings for easy installation.
- High resistance stainless steel connection bolt (Ultrabolt).
- The UC130 cylinder is built to last with heavy duty stainless steel cylinder rod, seals and link assemblies.
- Constructed of top grade materials, this cylinder is simple to install and fits almost every 2 and 4 stroke outboard engine in the market.
- The UC130 cylinders are recommended for use with UP25-SVS, UP28-SVS, UP33-SVS and UP39-SVS series helms and pre-assembled hoses (Kit OB and Kit OB/R5).

Specifications	UC130-SVS & UC130P-SVS Range
Volume	130 cc - 7.93 cu. in
Output force	492 kg - 1085 lbs
Inside diameter	36 mm - 1.42"
Stroke	185 mm - 7.28"
3/8" (9.5mm) Fittings	For high pressure flex hose
Bleed fittings	DN5 Quick connect

Splashwell Dimension Requirements			
No. of Engines	A	B	C
1	560 mm - 22.05"	152 mm - 5.98"	152 mm - 5.98"
2*	1110 mm - 43.70"	152 mm - 5.98"	152 mm - 5.98"

\*NOTE: For twin engine applications, the minimum distance between the two engine centres is 550 mm (21.6")



### Engine Application Guide for Hydraulic Cylinder - SilverSteer™ UC130-SVS

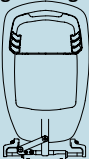
Engine	Power	Year	Cylinder	P/N	Engine	Power	Year	Cylinder	P/N
Evinrude®	E115 - E130 - E135 2S V4	1995 to date	UC130/2-SVS	84010/2	Selva®	80 PORTOFINO/TIGERSHARK 2S	1995 - 2008	UC130/1-SVS	84010/1
	E150 - E175 - E200 2S V6	1995 to date	UC130/2-SVS	84010/2		150 WHITE SHARK 2S	2001 - 2007	UC130/2-SVS	84010/2
	E225 - E250 - E300 2S V6	1995 to date	UC130/2-SVS	84010/2		100EFI MARLIN - 115 EFI NARWHAL - 150EFI - KILLER WHALE 4S	2000 to date	UC130/1-SVS	84010/1
Honda®	BF135 - BF150 4S	2005 to date	UC130/1-SVS	84010/1	Suzuki®	DF100 - 115 - 140 4S	2008 to date	UC130/1-SVS	84010/1
	BF150 V-TEC 4S	2008 to date	UC130/1-SVS	84010/1		DF150 - 175 - DF200 L4 4S	2006 to date	UC130/1-SVS	84010/1
	BF175 - BF200 - BF225 - BF250 4S	2001 to date	UC130/1-SVS	84010/1		DF200 - DF225 - DF250 - DF300 - DF350 V6 4S	2004 to date	UC130/2-SVS	84010/2
Johnson®	BJ90 - 115 - 140 4S	2001 - 2007	UC130/1-SVS	84010/1	Tohatsu®	115 - 120 - 140 2S	2004 to date	UC130/2-SVS	84010/2
	J90 - 115 V4 2S	1995 - 2007	UC130/2-SVS	84010/2		70 - 90 - 115 TLDI 4S	2004 to date	UC130/1-SVS	84010/1
	J150 - 175 V6 2S	1995 - 2007	UC130/2-SVS	84010/2		BFT60 - 75 - 90	2015 to date	UC130/1-SVS	84010/1
Mercury®	J200 - 225 V6 4S	2004 - 2007	UC130/2-SVS	84010/2	Yamaha®	115C - 130B 2S	1990 - 2008	UC130/2-SVS	84010/2
	115 - 125 - 150 EFI 2S	1990 - 2007	UC130/1-SVS	84010/1		150F - 200F - 250G 2S	1996 - 2007	UC130/2-SVS	84010/2
	225 - 250 EFI 2S	2000 - 2007	UC130/1-SVS	84010/1		150 HPDI VMAX 2S	200 - 2008	UC130/2-SVS	84010/2
Mercury®	135 - 150 - 175 OPTIMAX	1999 to date	UC130/1-SVS	84010/1		175 - 200 - 225 - 250 - 300 HPDI VMAX 2S	2000 - 2008	UC130/2-SVS	84010/2
	200 - 225 - 250 OPTIMAX	1999 to date	UC130/1-SVS	84010/1		F115 - F150 EFI 4S	1999 - 2007	UC130/1-SVS	84010/1
	RACING 300 OPTIMAX	1999 - 2011	UC130/1-SVS	84010/1		F200 - F225 - F250 4S	2002 - 2007	UC130/2-SVS	84010/2
	250 SALTWATER EFI 4S	2007 - 2011	UC130/1-SVS	84010/1		F115 - F150 - F175 - F200 L4	2004 to date	UC130/1-SVS	84010/1
	135 - 150 - 175 - 200 VERADO L4	2004 to date	UC130/1-SVS	84010/1		F200 - F225 - F250 - F300 V6 4S	2004 to date	UC130/2-SVS	84010/2
	FOURSTROKE 175 - 200 V6	2018 to date	UC130/1-SVS	84010/1		F350 4S V8	2006 to date	UC130/1-SVS	84010/1
	FOURSTROKE 225 - 300 V8	2018 to date	UC130/1-SVS	84010/1					

\*NOTE: Suzuki® engines built from 1998 to 2008 installing UC130/1-SVS cylinder require optional KIT SU - 83919

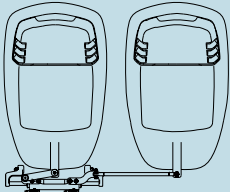




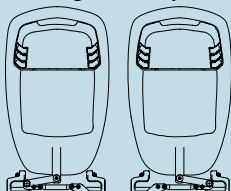
## Hydraulic Cylinder Ordering Guide - SilverSteer™ UC130-SVS

System	Application	Wheel Turns	Components	Model	Part No.	Qty
<b>Single engine single cylinder</b> 	<b>Up to 350HP Maximum</b>	4.6 (UP28-SVS)  3.9 (UP33-SVS)	Cylinder	UC130-SVS	<b>84010/1/2/3</b>	1
			Helm pump*	UP28-SVS* / UP33-SVS*	<b>84028* / 84033*</b>	1
			Hose	See hose options	See hose options	1
			Oil	OL 150	<b>84115</b>	2
			Steering wheel	See wheel options	See wheel options	1

**For a second station add:**  
 1 x UP28-SVS or UP33-SVS 1 x KIT OB-2S fitting kit, 1 x Hose, 1 x OL 150, 1 x steering wheel

<b>Dual engine Single cylinder</b> 	<b>Up to 350HP Maximum</b> Non-counter rotating engine	4.6 (UP28-SVS)	Cylinder	UC130-SVS	<b>84010/1/2/3</b>	1
			Helm pump*	UP28-SVS* / UP33-SVS*	<b>84028* / 84033*</b>	1
			Hose	See hose options	See hose options	1
	<b>Up to 600HP Maximum</b> Counter rotating engine	3.9 (UP33-SVS)	Oil	OL 150	<b>84115</b>	2
			Tie bar	A94	<b>84194</b>	1
			Steering wheel	See wheel options	See wheel options	1

**For a second station add:**  
 1 x UP28-SVS or UP33-SVS 1 x Hose, 1 x OL 150, 1 x steering wheel and 1 x **84120** - KIT OB-2S fitting kit.

<div>Dual engine Dual cylinder</div> <div></div>	<div>Up to 600HP Maximum</div> <div>Non-counter rotating engines)</div>	6.6 (UP39-SVS)	Cylinder	UC130-SVS	84010/1/2	1	
			Cylinder port	UC130P-SVS	84010/1P/2P	1	
			Helm pump*	UP39-SVS*	84039*	1	
			Tie bar	A90	84190	1	
	<div>Up to 700HP Maximum</div> <div>Counter rotating engines</div>		Oil	OL 150	84115	3	
			Hose	See hose options	See hose options	1	
			Connection kit	KIT OB-2C	See hose options	1	
			Steering wheel	See wheel options	See wheel options	1	

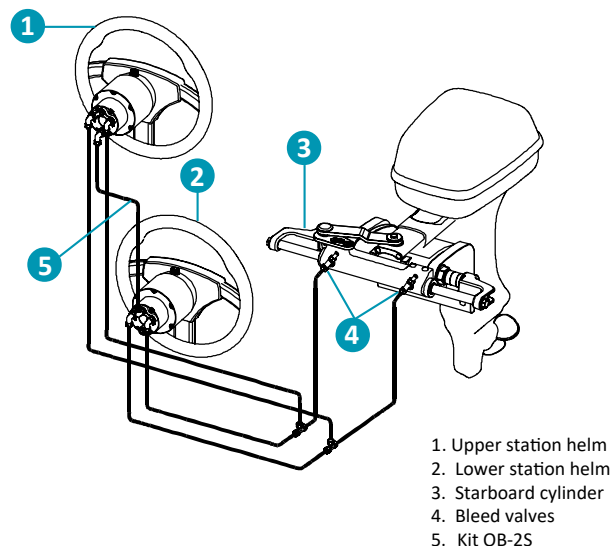
**For a second station add:**  
 1 x UP39-SVS, 1 x hose, 1 x OL 150, 1 x steering wheel, 1 x **84120** - KIT OB-2S fitting kit and 2 x **84118** - TF38 fittings.

\*NOTE: Helm pumps are available in tilt, front and rear mount options, Refer to "Hydraulic Helm Pumps" on page 647

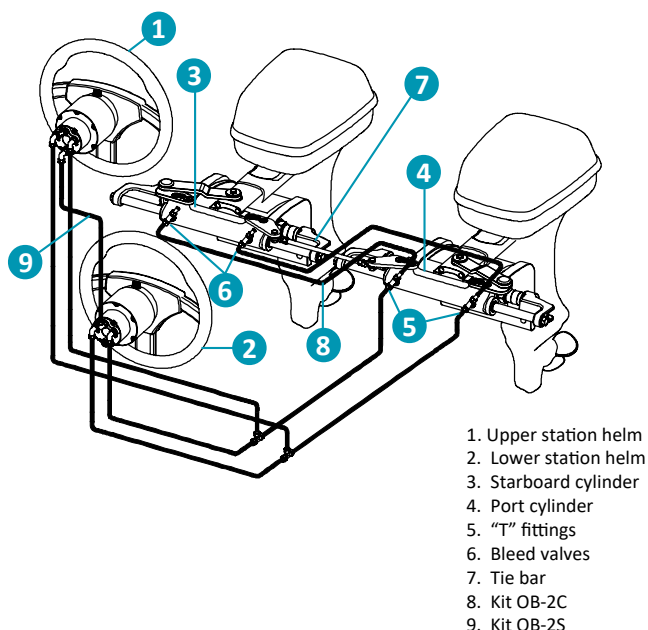
NOTE: The SilverSteer™ helm pumps should always be installed in conjunction with the UC130-SVS cylinder and the Kevlar reinforced hose kit KIT OB-SVS.

## Dual Station / Single & Dual Cylinder Applications

### DUAL STATION / SINGLE CYLINDER:



### DUAL STATION / DUAL CYLINDER:

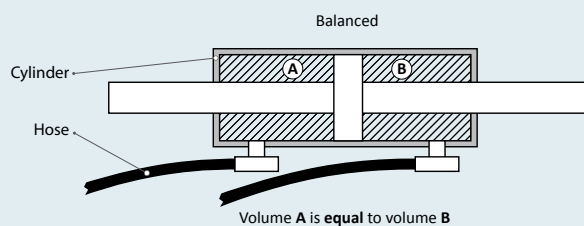




## Balanced versus Unbalanced Side Mount Outboard Cylinders

### Balanced vs Unbalanced

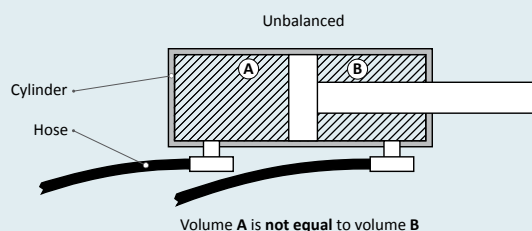
The advantage of having a balanced cylinder is the number of turns at the helm pump required to fill each chamber is even port to starboard or vice-versa. However they require a larger area to install. Unbalanced cylinders have uneven size chambers so the number of turns at the helm pump required to fill each chamber is uneven port to starboard or vice-versa. They are more compact and requires a smaller area to install.



### How To Measure Steering Wheel Turns when Selecting a helm pump for a cylinder\*

The volume of the cylinder in cubic centimetres (cc) divided by the volume of the helm pump in cubic centimetres (cc).

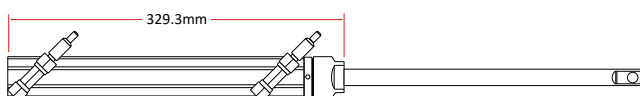
Example: Cylinder volume = 132cc  
 Helm pump volume = 25cc  
 $132 \div 25 = 5.28$  turn  
 Round off to 5.3 turns



*\*NOTE: When selecting the right cylinder for your application please consult our technical service department*

## Outboard Cylinder - Side Mount - UC68-OBS

Up to 150HP

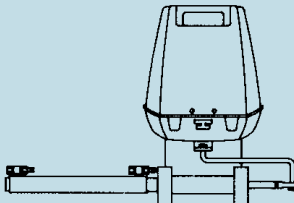


Part No.	Description	Model
<b>83908C</b>	Outboard Side Mount Cylinder Only	UC68-OBS

- For outboard engines up to 150HP.
- Unbalanced: the number of turns lock-to-lock is not equal port to starboard and vice-versa.
- UC68-OBS side mount cylinder features a patented turning nut for a fast and easy installation to the engine tube.
- Clearance required at the engine tube side is 340mm (13.3").
- Recommended for use where maximum boat speed do not exceed 40mph (40knots).

Specifications	83908C - UC68-OBS
Volume	68/100 cc - 4.1/6.1 cu. in
Output force	185/270 kg - 408/595 lbs
Inside diameter	25 mm - 0.98"
Stroke	203 mm - 8"
3/8" (9.5mm) Fittings	For high pressure flex hose

### Hydraulic Steering System Ordering Guide

System	Application	Wheel Turns	Components	Model	Part No.	Qty	Kit No.
Single engine single cylinder 	Up to 150HP Maximum	3.4 or 5	Cylinder Helm pump Hydraulic Oil	UC68-OBS UP20 OL 150	<b>83908C</b> <b>83920</b> <b>84115</b>	1 1 2	<b>83908</b>
			Hose Steering wheel	Hose options Wheel options	Hose options Wheel options	1 1	



## Outboard Cylinder - Side Mount - UC132-OBS

Up to 300HP

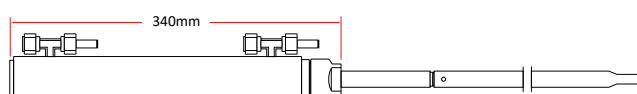
Part No.	Description	Model
83914	Outboard Side Mount Cylinder Only	UC132-OBS

- For outboard engines up to 300 HP.
- Unbalanced: the number of turns lock-to-lock is not equal.
- UC132-OBS side mount cylinder features a patented turning nut for a fast and easy installation to the engine tube.
- Clearance required at the engine tube side is 375 mm (14.76").
- Recommended for use where maximum boat speed does not exceed 40mph (40knots).
- The UC132 cylinders are recommended for use with UP25, UP28, UP33 and UP39 series helms and pre-assembled hoses (Kit OB and Kit OB/R5).

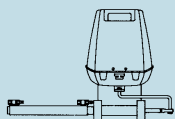
NOTE: UC132-OBS cylinder is not intended for use with 105 Bar (1500psi) SilverSteer Series Helms.



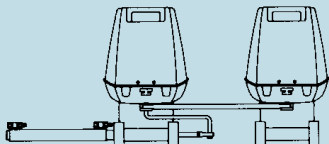
Specifications	83914 - UC132-OBS
Volume	132 / 163 cc - 8 / 9.95 cu. in
Output force	464 / 574 kg - 1023 / 1265 lbs
Inside diameter	32 mm - 1.25"
Stroke	203 mm - 8"
3/8" (9.5mm) Fittings	For high pressure flex hose



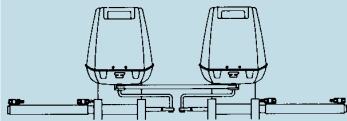
## Outboard Side Mount Cylinder Ordering Guide - UC132-OBS

System	Application	Wheel Turns	Components	Model	Part No.	Qty
<b>Single engine single cylinder</b> 	<b>Up to 300HP Maximum</b>	5.3/6.5 (UP25) 4.7/5.8 (UP28)	Cylinder	UC132-OBS	83914	1
			Helm pump*	UP25* or UP28*	83925* or 83928*	1
			Hose	Hose options	Hose options	1
			Oil	OL 150	84115	2
			Steering wheel	Wheel options	Wheel options	1

**For a second station add:**  
1 x UP25 or UP28, 1 x KIT OB-2S fitting kit, 1 x Hose, 1 x OL 150, 1 x steering wheel

<b>Dual engine Single cylinder</b> 	<b>Up to 300HP Maximum</b> Non-counter rotating engines	5.3/6.5 (UP25) 4.7/5.8 (UP28)	Cylinder	UC132-OBS	83914	1
			Helm pump*	UP25* / UP28* / UP33*	83925* / 83928* / 83933*	1
			Hose	See hose options	See hose options	1
			Oil	OL 150	84115	2
			Tie bar	A94 or A88	84194 or 84188	1
	<b>Up to 450HP Maximum</b> Counter rotating engines	4 or 4.9 (UP33)	Steering wheel	See wheel options	See wheel options	1

**For a second station add:**  
1 x UP25, UP28 or UP33, 1 x Hose, 1 x OL 150, 1 x steering wheel and 1 x 84120 - KIT OB-2S fitting kit.

<b>Dual engine Dual cylinder</b> 	<b>Up to 500HP Maximum</b> Non-counter rotating engines	6.1 (UP39)	Cylinder	UC132-OBS	83914	2
			Helm pump*	UP39*	83939*	1
			Tie bar	A94 or A88	84194 or 84188	1
			Oil	OL 150	84115	3
			Hose	Hose options	Hose options	1
			Connection kit	KIT OB-2C	Hose options	1
			Steering wheel	Wheel options	Wheel options	1

**For a second station add:**  
1 x UP39, 1 x hose, 1 x OL 150, 1 x steering wheel, 1 x 84120 - KIT OB-2S fitting kit and 2 x 84118 - TF38 fittings.

\*NOTE: Helm pumps are available in tilt, front and rear mount options, Refer to "Hydraulic Helm Pumps" on page 647  
**WARNING:** This application requires that the threads on the tilt tube extend at least 15mm (0.6") from both sides.

### The Hydraulic Hose QuickFit Solution

The Hydraulic Hose **QuickFit** Solution is unparalleled in quality and versatility while cutting down on installation time. Ultraflex® have simplified Hydraulic Steering systems with the **QuickFit** hose range. Whatever, the type of hydraulic steering set-up Ultraflex has a **QuickFit** Hose solution to suit.

The same unparalleled performance has been applied to the **SilverSteer QuickFit** Hydraulic Hose range, featuring Kevlar™ reinforced hose rated up to 1500psi. Recommended for use with all Ultraflex® SilverSteer and Master Drive helms with 1500psi relief valves. The SilverSteer Hose is not available in the **QuickFit OB-M** Series.

### QuickFit Hose

- HiFlex, HiFlow hose.
- Simple and quick to install
- Heavy-duty for long lasting reliability
- Rated to 1000psi (70bar)

### QuickFit SilverSteer Hose

- Kevlar™ reinforced
- Rated to 1500psi (103bar)

QuickFit

## QuickFit Solutions

### 1 QuickFit OB Hose Series



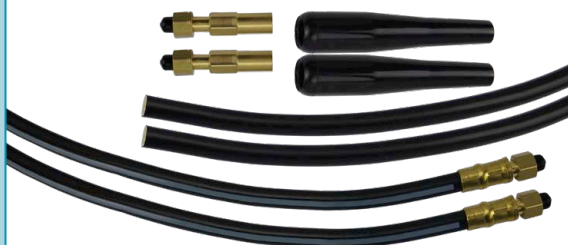
The **QuickFit OB** Series has **pre-assembled** brass fittings at both ends and bend restrictors at cylinder end. Perfect for a standard hose installation. See **QuickFit OB** Hoses Series for set lengths.

### 2 QuickFit OB-R5 Hose Series



The **QuickFit OB-R5** Series is **pre-assembled** brass fittings on both ends, 2 x Bend Restrictors and 2 x R5 Strain Relief fittings at cylinder end. Perfect if you need to pass through a bulk head or transom.

### 3 QuickFit OB-M Hose Series\*



The **QuickFit OB-M\*** Series has **pre-assembled** brass fittings at one end and unassembled at the other end. A pair of **QuickFit** Brass Connectors and pair of Bend Restrictors supplied unassembled for customised fit. Simply cut hose to desired length and assemble restrictors and brass fittings.

### 4 QuickFit OB-C2 Hose Series



The **QuickFit OB-C2** Series is **pre-assembled** at both ends for transom to cylinder connection or twin outboard engine and cylinder setup. Available in lengths from 0.7m (2.3ft), 0.9m (2.95ft) and 1.2m (3.95ft).





## Bulkhead Connection Panel - R9

The QuickFit R9 Bulkhead Kit provides a neat solution when installing a hydraulic hose through a bulkhead or transom. Available in black, white and chrome finish. Refer to "Hydraulic Hose Bulkhead Connection Panel - R9" on page 638



1

## Hydraulic Hose - QuickFit OB Hydraulic High Flex Hose Kits

Part No.	Model	Length		I.D. (in)	Sold As
		(m)	(ft)		
84140	OB	4	13.2	5/16"	Pair
84145	OB	4.5	14.8	5/16"	Pair
84146	OB	5	16.4	5/16"	Pair
84147	OB	5.5	18	5/16"	Pair
84160	OB	6	19.7	5/16"	Pair
84165	OB	6.5	21.3	5/16"	Pair
84170	OB	7	22.9	5/16"	Pair
84175	OB	7.5	24.6	5/16"	Pair
84180	OB	8	26.3	5/16"	Pair



- Two 5/16" I.D. hose kits with pre-crimped Brass fittings on both ends and Bend Restrictors at one end.
- Simple and quick to install.
- Recommended for use with all Ultraflex® standard helms with 1000 psi (70 Bar) relief valves.
- Highly flexible, high flow hose.
- Available lengths from: 4m to 8m in 0.5m increments.

NOTE: Not recommended for use with SilverSteer™ Series cylinders.



R9 - Bulkhead Kit for Dual Hose



2

## Hydraulic Hose - QuickFit OB-R5 Thru-Bulkhead Hose Kits

Part No.	Model	Length		I.D. (in)	Sold As
		(m)	(ft)		
84240	OB/R5	3	9.8	5/16"	Pair
84244	OB/R5	5	16.4	5/16"	Pair
84245	OB/R5	5.5	18	5/16"	Pair
84246	OB/R5	6	19.7	5/16"	Pair
84247	OB/R5	6.5	21.3	5/16"	Pair
84248	OB/R5	7	22.9	5/16"	Pair
84249	OB/R5	7.5	24.6	5/16"	Pair



- Two 5/16" I.D. hose kits with pre-crimped Brass fittings on both ends and 2 Bend Restrictors and 2 R5 Strain Relief fittings.
- Simple and quick to install.
- Recommended for use with all Ultraflex® standard helms with 1000 psi (70 Bar) relief valves.
- Highly flexible, high flow hose.
- Available lengths from: 3m (9.8ft) to 7m (22.9ft).

NOTE: Not recommended for use with SilverSteer™ Series cylinders.



## Hydraulic Quickfit Hose Kits

### Hydraulic Hose Kit - QuickFit OB-M for Custom Installations

**3**

QuickFit  
Custom Installation



Part No.	Model	Length		Hose I.D. (in)	Sold As
		(m)	(ft)		
84186	OB/M	6	19.7	5/16"	Pair
84187	OB/M	9	29.5	5/16"	Pair

- Two 5/16" I.D. hose kits with pre-crimped Brass fittings at one end.
- Supplied with 2 **QuickFit** Brass Connectors and 2 Bend Restrictors.
- Simple and quick to install.
- Recommended for use with all Ultraflex® standard helms with 1000 psi (70 Bar) relief valves.
- Available on 6m (19.7ft) and 9m (29.5ft) standard lengths that can be cut to fit the desired application.

NOTE: Not recommended for use with SilverSteer™ Series cylinders.

### Hydraulic Hose Kits - QuickFit OB-2C Dual Engine/Dual Cylinder

**4**

QuickFit



R9 - Bulkhead Kit for Dual Hose



NEW ENTRY  
NEW ENTRY  
NEW ENTRY

Part No.	Model	Length		Sold As
		(m)	(ft)	
84256	OB-2C	0.7m	2.29	Single
84257	OB-2C	0.9m	2.95	Single
84258	OB-2C	1.2m	3.93	Single
84259	OB-2C	0.7m	2.29	Pair
84260	OB-2C	0.9m	2.95	Pair
84261	OB-2C	1.2m	3.93	Pair

- Designed to fit from the splashwell/bulkhead adapter to the cylinder or link two or more cylinders in two or more outboards applications.
- Simple and quick to install.
- High pressure flexible hoses with brass fittings and bend restrictors on both ends.
- **Recommended for use with the QuickFit R9 - bulkhead kit for dual hose applications, available in black - 84278, white - 84279 or chrome - 84280 finish.**

NOTE: Not recommended for use with SilverSteer™ Series cylinders.

## SilverSteer™ Quickfit Hose Kits

### Hydraulic Hose Kit - Silver Steer™ Kevlar™ OB-SVS

**1**

QuickFit

High Performance



NEW ENTRY  
NEW ENTRY  
NEW ENTRY  
NEW ENTRY  
NEW ENTRY  
NEW ENTRY

Part No.	Model	Length		Sold As
		(m)	(ft)	
84294	OB-SVS	2	6.6	Pairs
84295	OB-SVS	2.5	8.2	Pairs
84296	OB-SVS	3	9.8	Pairs
84297	OB-SVS	3.5	11.5	Pairs
84298	OB-SVS	4	13.1	Pairs
84299	OB-SVS	4.5	14.8	Pairs
84300	OB-SVS	5	16.4	Pairs
84302	OB-SVS	5.5	18	Pairs
84304	OB-SVS	6	19.7	Pairs
84306	OB-SVS	6.5	21.3	Pairs
84308	OB-SVS	7	22.9	Pairs
84310	OB-SVS	7.5	24.6	Pairs
84312	OB-SVS	8	26.3	Pairs
84314	OB-SVS	9	29.5	Pairs

- Two high pressure Kevlar™ stranded flexible hoses with pre-crimped fittings and bend restrictors on both ends.
- Recommended for use with all Ultraflex® SilverSteer™ helms with 1500psi relief valves.
- Lengths available from 5m (16.4ft) to 9m (29.5ft) in 0.5m (1.6ft) increments.



2

## Hydraulic Hose Kit - Silver Steer™ Kevlar™ OB/R5-SVS

Part No.	Model	Length		Sold As
		(m)	(ft)	
84320	OB/R5-SVS	5	16.4	Pair
84322	OB/R5-SVS	5.5	18	Pair
84324	OB/R5-SVS	6	17.7	Pair
84326	OB/R5-SVS	6.5	21.3	Pair
84328	OB/R5-SVS	7	22.9	Pair
84330	OB/R5-SVS	7.5	24.6	Pair
84332	OB/R5-SVS	8	26.3	Pair
84334	OB/R5-SVS	9	29.5	Pair

- Two high pressure Kevlar™ stranded flexible hoses with pre-crimped fittings, R5 bulkhead fittings and bend restrictors on both ends.
- Recommended for use with all Ultraflex® SilverSteer™ helms with 1500psi relief valves.
- Lengths available from 5m (16.4ft) to 9m (29.5ft) in 0.5m (1.6ft) increments.



4

## Hydraulic Hose Kits - Kevlar™ OB-2C-SVS - Dual Engine / Dual Cylinder

Part No.	Model	Length		Sold As
		(m)	(ft)	
84340	OB-2C-SVS	0.7	2.29	Pair
84342	OB-2C-SVS	0.9	2.95	Pair
84344	OB-2C-SVS	1.2	3.93	Pair

- Two high pressure Kevlar™ stranded flexible hoses with pre-crimped fittings and bend restrictors on both ends.
- Recommended for use with all Ultraflex® SilverSteer™ helms with 1500psi relief valves.
- Available in 0.7m (2.3ft), 0.9m (2.95ft) and 1.2m (3.95ft).
- **Recommended for use with the QuickFit R9 - bulkhead kit for dual hose applications, available in black - 84278, white - 84279 or chrome - 84280 finish.** Refer to "Hydraulic Hose Connection - R9" on page 653.



## Hydraulic Hose Bulkhead Connection Panel - R9

Part No.	Description	Model	Colour
84278	Bulkhead Kit for Dual Hose	R9B	Black
84279	Bulkhead Kit for Dual Hose	R9W	White
84280	Bulkhead Kit for Dual Hose	R9CH	Chrome

- Available in black, white or chrome finish.
- Suitable for fibreglass, polyethylene and aluminium boats.
- Reduces risk of corrosion on aluminium boats caused from chrome fittings touching aluminium and paintwork.
- Reduces installation time for bulkhead fittings.
- Suits all standard hydraulic hoses.
- Chrome plated brass threaded fittings, ABS plastic flange supplied with 4 x stainless steel counter sunk self tapping screws.



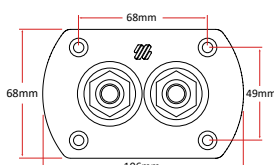
84278



84279



84280





## Hydraulic Tubing, Hose & Connectors

### Hydraulic Tubing

#### Per Meter

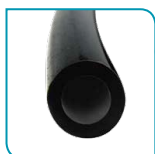


Part No.	Description	O.D. (in)	Working Pressure (PSI)
<b>84101</b>	Semi Rigid Hydraulic Nylon Tubing	3/8"	625

- Nylon.
- Sold per meter.
- Not recommended in application where total tubing run exceeds 30m (100ft).
- Each hose requires brass connectors - **84137** x 2 or chrome plated connectors **84138** x 2.

### Hydraulic Tubing Kits

#### Pre-Cut



Part No.	Description	Length (m)	O.D. (in)	Working Pressure (PSI)
<b>84182</b>	Semi Rigid Hydraulic Nylon Tubing Kits	12	3/8"	625
<b>84184</b>	Semi Rigid Hydraulic Nylon Tubing Kits	15	3/8"	625

- Nylon.
- Each hose includes 3/8" brass connectors - **84137** x 4

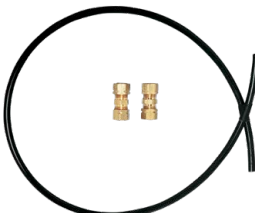
### Additional Station Kit - OB-2S



Part No.	Description	Model
<b>84113</b>	Additional Station Kit - Fitting	OB-2S
<b>84120</b>	Additional Station Kit - Fitting & Hose	OB-2S (With Hose)

- **84113** Fitting kit for a second steering station or an autopilot installation.
- **84120** includes all fittings and 8 m (26.3ft) of 3/8" dia. nylon tube.

### Copper Tube Fitting Kit



Part No.	Description	O.D.
<b>84110</b>	Copper Tube Fitting Kit	3/8"
<b>84111</b>	Copper Tube Fitting Kit	10mm

- Included two 0.5m (1.6ft) nylon tubes and all necessary fittings for a single station.

### Hydraulic Hose Gotech Kit - OB-GT/M



Heavy-duty hose and fittings



Part No.	Description	O.D. (in)
<b>84163</b>	QuickFit 2 x 6 Metre Gotech Hose	1/4"

- Kit consists of a pair of high pressure flexible hose dia. 1/4" with fittings, featuring turning nuts, pre-assembled at one end only and supplied with 2 non-assembled fittings for the other end.
- Recommended for use with GOTECH™ steering systems ONLY.
- Available in 6 m (19.7') standard length that can be cut to fit the desired application.

### Steering - Hydraulic - Connectors suit 3/8" O.D. Hose



Part No.	Description	Hose O.D. (in)
<b>84112</b>	3/8" O.D. Additional Station Fitting Kit	3/8"
<b>84116</b>	Straight connector fitting suits helm and tube, includes olive.	3/8"
<b>84117</b>	Elbow connector fitting suits helm and 3/8" O.D. tube, includes olive	3/8"
<b>84118</b>	Tee fitting suits 3/8" O.D. tube, includes olive	3/8"
<b>83952</b>	Bleed Tee suits cylinders and 3/8" O.D. tube includes olive	3/8"
<b>84137</b>	Nut & Olive Assembly suits Steering Kits	3/8"
<b>84138</b>	Nut & Olive Assembly suits Hydraulic Cylinders	3/8"

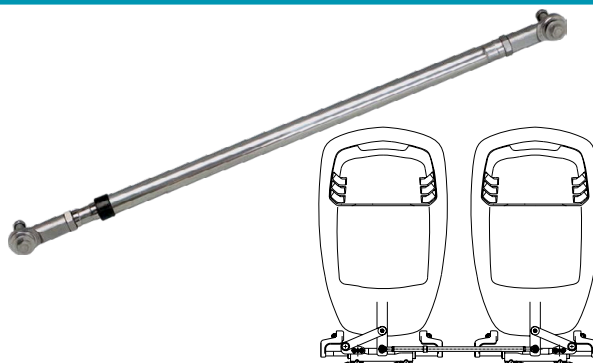


## Tie Bars - A88

Part No.	Description	Engine Centre Distance (mm)
<b>84188</b>	Adjustable Tie Bar for Twin Engine	650 to 950

- Universal tie bars suitable for all outboard applications (racing application excepted) with single or dual cylinder.
- Electropolished stainless steel ball joint.
- All stainless steel components.
- Applicable to twin outboard engines using mechanical steering.
- Adjustable from 650mm (25.6") to 950mm (37.4") engine centres.

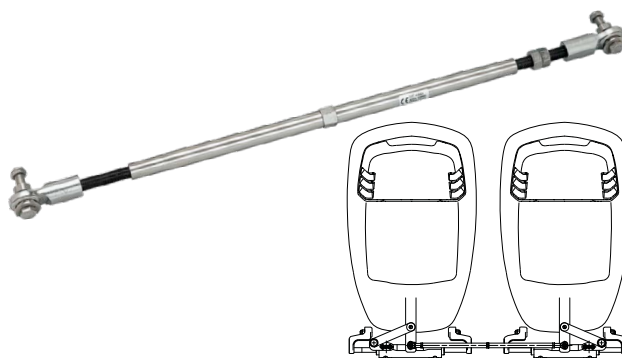
**WARNING:** On those applications where the clearance between engine tiller arms and cowling is not sufficient for the use of the **A88**, the **A92** tie bar is recommended.



## Tie Bars - A92

Part No.	Description	Engine Centre Distance (mm)
<b>84192</b>	Adjustable Tie Bar for Twin Engine	550 to 700

- Easily adjustable before or after installation.
- All stainless steel components.
- Adjustable from 550 mm (21.6") to 700 mm (27.5") engine centres.

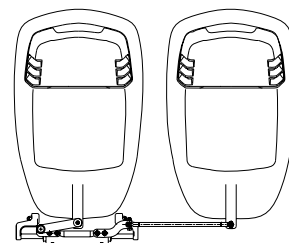


## Tie Bars - A94

Part No.	Description	Suits Cylinders	Engine Centre Distance (mm)
<b>84194</b>	Twin Engine / Single Cylinder Tie Bar	UC128-OBF or UC130-SVS	660 to 950

- Heavy duty twin engine/single cylinder tie bar kit for use with UC128-OBF or UC130-SVS outboard cylinders, in the applications with dual cylinder use A90 tie bar.
- Allows the engines to tilt independently.
- Stainless steel components.
- Electropolished stainless steel ball joints.
- Not recommended for applications exceeding 500HP.
- Adjustable from 660mm (26") to 950mm (37.4") engine centres.

**NOTE:** As the tiller arm position varies from engine to engine and the distance between two engines is unpredictable, interferences may occur while tilting.



A94 Tie Bar Applications	
Engine	Power
Mercury®	135-150-175 Optimax 2 Stroke 200-225 Optimax 2 Stroke 250 PRO XS 135-150-175 Verado 4 Stroke 200 Verado 4 Stroke
Honda®	115-135-150 OHC BF 200 SOHC BF 225 A6
Yamaha®	F115-150-200-225-250 4 Stroke
Evinrude®	E115-130-150-175-200 V6 E200-225-250-300
Suzuki®	DF70-80-90 4 Stroke DF100-115-140-150-175 4 Stroke DF200-250-300 DOHC 4 Stroke

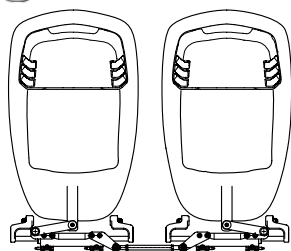
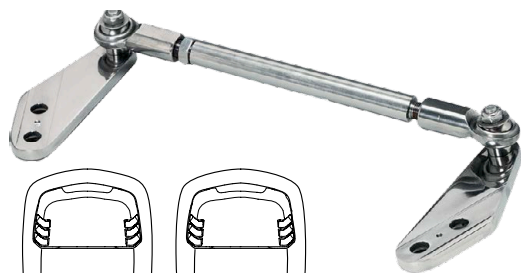


UC128 + 84194



## Tie Bars

### Tie Bars - A90



UC128 + 84190

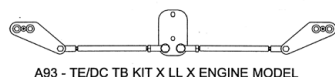
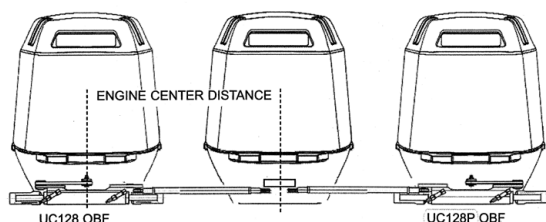


Part No.	Description	Suits Cylinders	Engine Centre Distance (mm)
84190	Twin Engine Cylinder Tie Bar	UC128-OBF or UC130-SVS	660mm to 950mm

- Suitable for applications with dual UC128-OBF or UC130-SVS front mount cylinder. In applications with single cylinder use A94 tie bar.
- All stainless steel
- Electropolished stainless steel ball joints.
- Allows to tilt the engines independently.
- Applicable to engine centres variable from 660mm (26") to 950mm (37.4").

**NOTE:** In the applications with dual UC128-OBF (or UC130-SVS) cylinder it is necessary to order a standard UC128-OBF (or UC130-SVS) cylinder (link arm attached to the starboard side of the cylinder) and a UC128P-OBF (or UC130P-SVS) port cylinder (link arm attached to the port side of the cylinder).

### Tie Bars - A93



A93 - TE/DC TB KIT X LL X ENGINE MODEL

LL = ENGINE CENTER DISTANCE  
EXAMPLE:  
A93 - TE/DC TB KIT X 26 X MERC 225 OPTI

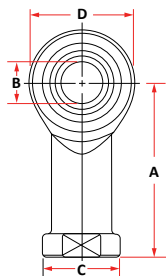


Part No.	Description	Suits Cylinders	Engine Centre Distance (mm)
84191	Triple Engine / Twin Cylinder Tie Bar	UC128-OBF or UC130-SVS	660
84191A	Triple Engine / Twin Cylinder Tie Bar	UC128-OBF or UC130-SVS	685
84189	Triple Engine / Twin Cylinder Tie Bar	UC128-OBF or UC130-SVS	711
84195	Triple Engine / Twin Cylinder Tie Bar	UC128-OBF or UC130-SVS	762

- Heavy duty triple engine/twin cylinder tie bar kit for use with UC128-OBF or UC130-SVS outboard cylinders, in the applications with dual cylinder use A93 tie bar.
- Allows independent trimming of engines with minimal effect on engine alignment.
- AISI 304 Electropolished and passivated stainless steel tie bars.
- Easy to install, allows independent trimming of engines with minimal effect on engine alignment.

**NOTE:** As the tiller arm position varies from engine to engine and the distance between two engines is unpredictable, interferences may occur while tilting.

### Tie Bar Rod Ends



Part No.	Thread (in)	A (mm)	B Ø (in)	C (mm)	D (mm)
83970	3/8" UNF	41.28	3/8"	17.45	25.4
83971	1/2" UNF	53.98	1/2"	22.22	33.32
83972	5/8" UNF	63.5	5/8"	25.4	38.1
83973	3/4" UNF	73.03	3/4"	28.58	44.45

- Ball - 440C Stainless steel head treated.
- Body - Type 304 Stainless steel.

### Hydraulic Fluid Link Valve



Part No.	Description	Hose Size O.D. (in)
84220	Hydraulic Fluid Link Valve	3/8"

- Fluid link valve for twin engine / twin cylinder applications where a mechanical tie bar is not feasible.
- Engine centres must be at least 38" wide as engine can periodically miss align.
- Connect using standard KIT-OB or KIT-OB/R5 hoses.

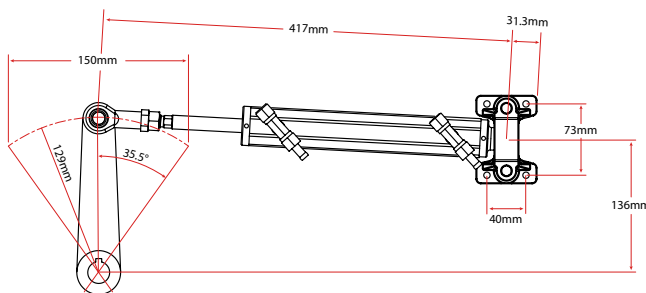


## Hydraulic Inboard Cylinders

### Hydraulic Inboard Cylinder - UC69-I

Part No.	Description	Model
<b>83959</b>	Hydraulic Inboard Cylinder Only	UC69-I

- For inboard engines.
- Balanced: the number of turns lock-to-lock is equal.
- Recommended for inboards up to 8m (26ft) where maximum boat speed does not exceed 25knots.
- The UC69-I cylinders are recommended for use with UP20 series helms and pre-assembled hoses (Kit OB and Kit OB/R5).

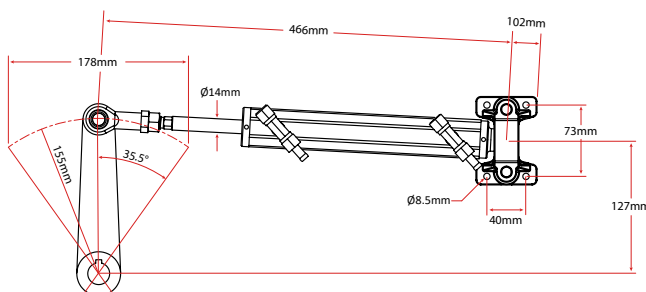


Hydraulic Steering System Ordering Guide							
System	Application	Wheel Turns	Components	Model	Part No.	Qty	Kits
Inboard	Inboards up to 8m (26ft) length and 25knots maximum speed.	3.5 turns	Cylinder	UC69-I	<b>83959</b>	1	<b>83940</b>
			Helm pump	UP20	<b>83920</b>	1	
			Hydraulic Oil	OL 150	<b>84115</b>	2	
			Hose	Hose options	Hose options	1	Not included
			Steering wheel	Wheel options	Wheel options	1	

### Hydraulic Inboard Cylinder - UC116-I

Part No.	Description	Model
<b>83960</b>	Hydraulic Inboard Cylinder Only	UC116-I

- For inboard engines.
- Balanced: the number of turns lock-to-lock is equal.
- Maximum rudder torque 58kgm (5043 lbs. in).
- The UC116-I cylinders are recommended for use with UP25 or UP28 series helms and pre-assembled hoses (Kit OB and Kit OB/R5).
- Nylon tubing 3/8" **84101** can be used as an alternative to the standard KIT-OB hose kit for plumbing the system. For these applications the fitting kit for the additional station is **84112** - KIT95-2S.

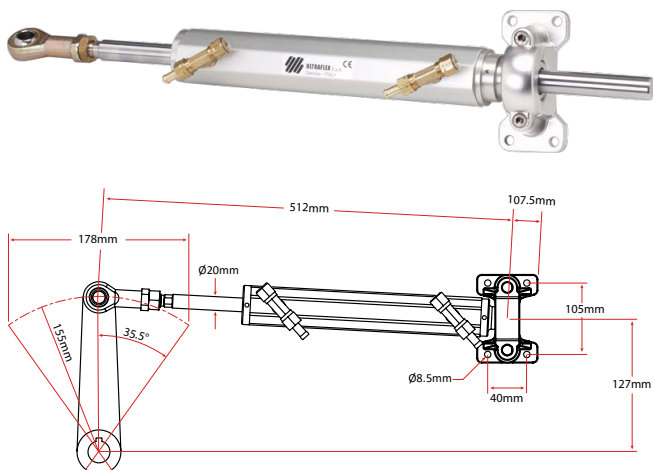


Hydraulic Steering System Ordering Guide							
System	Application	Wheel Turns	Components	Model	Part No.	Qty	Additional Station
Inboard	Max rudder torque: 58kgm (5043 lbs. in)	4.6 (UP25) or 4.1 (UP28)	Cylinder	UC69-I	<b>83960</b>	1	1 UP25 or UP28 helm pump, 1 KIT OB-2S fitting kit, 1 KIT OB hose kit, Extra OL 150, 1 steering wheel
			Helm pump	UP25 or UP28	<b>83925 or 83928</b>	1	
			Hydraulic Oil	OL 150	<b>84115</b>	3	
			Hose	Hose options	Hose options	1	
			Steering wheel	Wheel options	Wheel options	1	



## Hydraulic Inboard Cylinders

### Hydraulic Inboard Cylinder - UC168-I



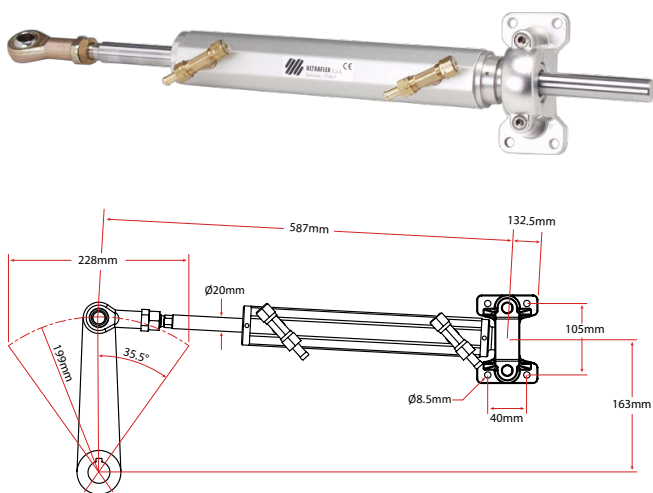
Part No.	Description	Model
<b>83961</b>	Hydraulic Inboard Cylinder Only	UC168-I

- For inboard engines.
- Balanced: the number of turns lock-to-lock is equal.
- Maximum rudder torque 87 kgm (7565 lbs. in).
- The UC168-I cylinders are recommended for use with UP28 or UP33 series helms and pre-assembled hoses (Kit OB and Kit OB/R5).
- Nylon tubing 3/8" **84101** can be used as an alternative to the standard KIT-OB hose kit for plumbing the system. For these applications the fitting kit for the additional station is **84112** - KIT95-2S.

Specifications	83961 - UC168-I
Volume	168 cc - 10.25 cu.in
Torque	87 kgm - 7565 lbs. in
Output force	673 kg - 1483 lbs
Inside diameter	40 mm - 1.57"
Stroke	178 mm - 7"
3/8" (9.5mm) Fittings	For high pressure flex hose

Hydraulic Steering System Ordering Guide							
System	Application	Wheel Turns	Components	Model	Part No.	Qty	Additional Station
Inboard	Max rudder torque: 87kgm (7565 lbs. in)	6 (UP28) or 5.1 (UP33)	Cylinder	UC168-I	<b>83961</b>	1	1 UP28 or UP33 helm pump, 1 KIT OB-2S fitting kit, 1 KIT OB hose Kit, Extra OL 150, 1 steering wheel
			Helm pump	UP28 or UP33	<b>83928 or 83933</b>	1	
			Hydraulic Oil	OL 150	<b>84115</b>	3	
			Hose	Hose options	Hose options	1	
			Steering wheel	Wheel options	Wheel options	1	

### Hydraulic Inboard Cylinder - UC215-I



Part No.	Description	Model
<b>83962</b>	Hydraulic Inboard Cylinder Only	UC215-I

- For inboard engines.
- Balanced: the number of turns lock-to-lock is equal.
- Maximum rudder torque 111 kgm (9652 lbs. in).
- The UC215-I cylinders are recommended for use with UP33 or UP39 series helms and pre-assembled hoses (Kit OB and Kit OB/R5).
- Nylon tubing 3/8" **84101** can be used as an alternative to the standard KIT-OB hose kit for plumbing the system. For these applications the fitting kit for the additional station is **84112** - KIT95-2S.

Specifications	83962 - UC215-I
Volume	215 cc - 13.12 cu. in
Torque	111 kgm - 9652 lbs. in
Output force	673 kg - 1483 lbs
Inside diameter	40 mm - 1.57"
Stroke	228 mm - 9"
3/8" (9.5mm) Fittings	For high pressure flex hose

Hydraulic Steering System Ordering Guide							
System	Application	Wheel Turns	Components	Model	Part No.	Qty	Additional Station
Inboard	Max rudder torque: 111kgm (9652 lbs. in)	6.5 (UP33) or 5.5 (UP39)	Cylinder	UC215-I	<b>83962</b>	1	1 UP33 or UP39 helm pump, 1 KIT OB-2S fitting kit, 1 KIT OB hose Kit, Extra OL 150, 1 steering wheel
			Helm pump	UP33 or UP39	<b>83933 or 83939</b>	1	
			Hydraulic Oil	OL 150	<b>84115</b>	3	
			Hose	Hose options	Hose options	1	
			Steering wheel	Wheel options	Wheel options	1	

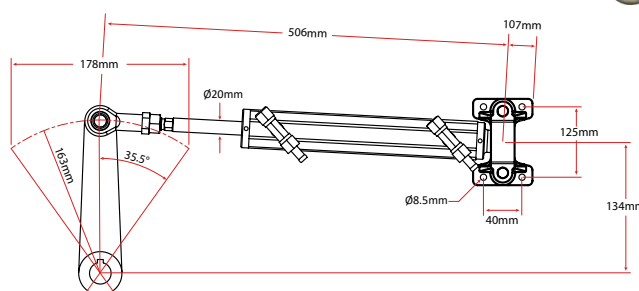


## Hydraulic Inboard Cylinder - Brass UC293-I

Part No.	Description	Model
<b>83964</b>	Hydraulic Inboard Brass Cylinder Only	UC293-I

- For inboard engines.
- Balanced: the number of turns lock-to-lock is equal.
- Maximum rudder torque 146.5 kgm (12816 lbs. in).
- The UC293-I cylinders are recommended for use with UP39 series helms and pre-assembled hoses (Kit OB and Kit OB/R5).
- Nylon tubing  $\frac{3}{8}$ " **84101** can be used as an alternative to the standard KIT-OB hose kit for plumbing the system. For these applications the fitting kit for the additional station is **84112** - KIT95-2S.

Specifications	83964 - UC293-I
Volume	293 cc - 17.8 cu. in
Torque	146.5 kgm - 12816 lbs. in
Output force	1155 kg - 2545 lbs
Inside diameter	50 mm - 1.97"
Stroke	178 mm - 7"
$\frac{3}{8}$ " (9.5mm) Fittings	For high pressure flex hose



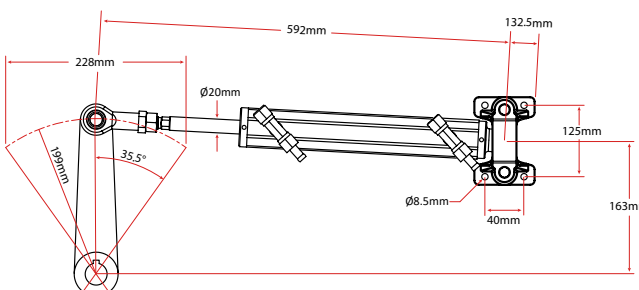
Hydraulic Steering System Ordering Guide							
System	Application	Wheel Turns	Components	Model	Part No.	Qty	Additional Station
Inboard	Max rudder torque: 146.5kgm (12816lbs. in)	7.5 (UP39)	Cylinder	UC293-I	<b>83964</b>	1	1 UP39 helm pump, 1 KIT OB-2S fitting kit, 1 KIT OB hose kit, Extra OL 150, 1 steering wheel
			Helm pump	UP39	<b>83939</b>	1	
			Hydraulic Oil	OL 150	<b>84115</b>	3	
			Hose	Hose options	Hose options	1	
			Steering wheel	Wheel options	Wheel options	1	

## Hydraulic Inboard Cylinder - Brass UC378-I

Part No.	Description	Model
<b>83963</b>	Hydraulic Inboard Brass Cylinder Only	UC378-I

- For inboard engines.
- Balanced: the number of turns lock-to-lock is equal.
- Maximum rudder torque 187.6 kgm(16347lbs. in).
- The UC378-I cylinders are recommended for use with UP39 series helms and 0.5" (12 mm) copper tube.

Specifications	83963 - UC378-I
Volume	376 cc - 22.94 cu. in
Torque	187.6 kgm - 16347 lbs. in
Output force	1155 kg - 2545 lbs
Inside diameter	50 mm - 1.97"
Stroke	228 mm - 9"
Fittings	0.5" (12 mm) copper tube



Hydraulic Steering System Ordering Guide							
System	Application	Wheel Turns	Components	Model	Part No.	Qty	Additional Station
Inboard	Max rudder torque: 187.6 kgm (16347lbs. in)	9.6 (UP39)	Cylinder	UC293-I	<b>83963</b>	1	1 UP39 helm pump, 0.5" (12 mm) copper tube, Extra OL 150, 1 steering wheel
			Helm pump	UP39	<b>83939</b>	1	
			Hydraulic Oil	OL 150	<b>84115</b>	3	
			Hose	Hose options	Hose options	1	
			Steering wheel	Wheel options	Wheel options	1	

## Hydraulic Inboard Cylinder - Sterndrive UC133-IOB

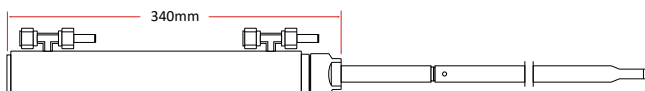


Part No.	Description	Model
<b>83965</b>	Hydraulic Inboard Sterndrive Cylinder Only	UC133-IOB

- For sterndrive engines.
- Balanced: the number of turns lock-to-lock is equal.
- Maximum rudder torque 66 kgm (5738 lbs. in).
- The UC215-I cylinders are recommended for use with UP28 or UP33 series helms and pre-assembled hoses (Kit OB and Kit OB/R5).
- 3/8" or 10mm diameter copper tubing can be used as an alternative tubing for plumbing the systems. For these applications a fitting kit **84110** - KIT 95 or **84111** KIT 100 - is required.

Specifications	83962 - UC215-I
Volume	132 cc - 8 cu. in
Torque	66 kgm - 5738 lbs. in
Output force	464 kg -1023 lbs
Inside diameter	32 mm - 1.25"
Stroke	203 mm - 8"
3/8" (9.5mm) Fittings	For high pressure flex hose

## Hydraulic Inboard Cylinder - Sterndrive UC132-OBS



Part No.	Description	Model
<b>83914</b>	Hydraulic Inboard Sterndrive Cylinder Only	UC132-OBS

- For sterndrive engines.
- Unbalanced: the number of turns lock-to-lock is not equal.
- UC132-OBS side mount cylinder features a patented turning nut for a fast and easy installation to the engine tube.
- Clearance required at the engine tube side is 375 mm (14.76").
- Recommended for use where maximum boat speed does not exceed 40knots.
- The UC132 cylinders are recommended for use with UP25, UP28, UP33 and UP39 series helms and pre-assembled hoses (Kit OB and Kit OB/R5).
- 3/8" or 10mm diameter copper tubing can be used as an alternative tubing for plumbing the systems. For these applications a fitting kit **84110** - KIT 95 or **84111** KIT 100 - is required.

*NOTE: UC132-OBS cylinder is not intended for use with 105 Bar (1500psi) SilverSteer Series Helms.*

Specifications	83914 - UC132-OBS
Volume	132 / 163 cc - 8 / 9.95 cu. in
Output force	464 / 574 kg - 1023 / 1265 lbs
Inside diameter	32 mm - 1.25"
Stroke	203 mm - 8"
3/8" (9.5mm) Fittings	For high pressure flex hose





## Engine Application Guide for Hydraulic Inboard Cylinder - Sterndrive

Engine	Year	Model	Sterndrive Cylinder			
			Non Power Assist Engine	Non Power Assist Features and Requirements	Power Assist Engine	Power Assist Features and Requirements
MerCruiser®	To date	Alpha Bravo One Bravo Two Bravo Three	UC133-IOB UC133-IOB UC133-IOB UC133-IOB	Balanced cylinder Clearance required at the engine tube side: 21.2" (540 mm)	UC132-OBS UC132-OBS UC132-OBS UC132-OBS	Unbalanced cylinder
Volvo®	To date	275	UC168-I	Balanced cylinder	N/A UC132-OBS UC132-OBS N/A N/A UC132-OBS	Unbalanced cylinder
		280 290 DP-E DP-G DP-S	UC133-IOB <sup>1</sup> UC133-IOB <sup>1</sup> UC133-IOB <sup>2</sup> N/A N/A	Balanced cylinder Clearance required at the engine tube side: 21.2" (540 mm)		

These Sterndrive Cylinder Applications should be used as general reference only and they apply to factory stock sterndrives only. For applications with sterndrive engines not listed above, please contact our Technical Service.

<sup>1</sup> Ultraflex® hydraulic cylinder can be installed as an alternative to a mechanical steering system only.

<sup>2</sup> The Volvo P. No. 872388 adapter fitting is required for the installation.

### Hydraulic Steering System Ordering Guide

System A	Wheel Turns	Components	Model	Part No.	Qty	Additional Station
Sterndrive	Balanced 4.7 Unbalanced 4.7 / 5.8	Cylinder	See above Cylinder Applications		1	1 UP33 or UP39 helm pump, 1 KIT OB-2S fitting kit, 1 KIT OB hose Kit, Extra OL 150, 1 steering wheel
		Helm pump	UP28	83928	1	
		Hydraulic Oil	OL 150	84115	3	
		Hose	Hose options	Hose options	1	
		Steering wheel	Wheel options	Wheel options	1	

### Hydraulic Steering System Ordering Guide

System B	Wheel Turns	Components	Model	Part No.	Qty	Additional Station
Sterndrive	Balanced 4 Unbalanced 4 / 5	Cylinder	See above Cylinder Applications		1	1 UP33 or UP39 helm pump, 1 KIT OB-2S fitting kit, 1 KIT OB hose Kit, Extra OL 150, 1 steering wheel
		Helm pump	UP33	83933	1	
		Hydraulic Oil	OL 150	84115	3	
		Hose	Hose options	Hose options	1	
		Steering wheel	Wheel options	Wheel options	1	





# Hydraulic Helm Pumps

## UP20 Helm Pumps



### Hydraulic Helm Pumps - Front & Tilt Mount - UP20

Part No.	Model	Mounting	Displacement/ Revolution	No. of Pistons	Relief Valve Setting	Max Wheel Dia	Weight (kg)
<b>83920</b>	UP20F	Front Mount	20cc - 1.2cu.in	5	70Bar - 1000psi	508mm - 20"	3.9kg
<b>83920T</b>	UP20T	With X52 Tilt	20cc - 1.2cu.in	5	70Bar - 1000psi	406mm - 16"	3.9kg
<b>83533</b>	X52 Tilt Mechanism suits <b>83920T</b>						
<b>83941</b>	X74 Square Adapter Flange suits New Style <b>83920</b>						
<b>83949</b>	X64 Square Adapter Flange suits Old Style <b>83920</b>						



NEW - 83920



A 83920T with  
B 83533 X52 Tilt Mechanism

- Built-in lock valve for positive rudder lock.
- Integral relief valve for over-pressure protection.
- Corrosion proof composite housing.
- Easy accessible shaft seal for replacement.
- Includes **adjustable** elbow fittings for 3/8" tube.
- For use with UC94-OBF, UC68-OBS and UC69-I cylinders only.

#### 83920 - Front Mount Helm Pump

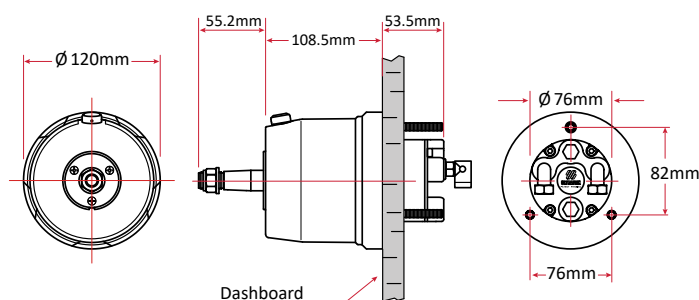
- 3/4" tapered stainless steel shaft.
- Shaft nut M12 - for 19mm wrench.
- Corrosion proof composite housing.
- Frontal oil distribution system extremely reliable and efficient.

**NOTE:** The New **83920** footprint is fully compatible with previous UP20 model and fully interchangeable, M6 stud bolts are used instead of M8 from previous model. Suitable for single, double stations or auto pilot installations the new M8 fittings are needed for the connection of the compensation line (not compatible with old compensation lines and fitting 1/4" NPT)

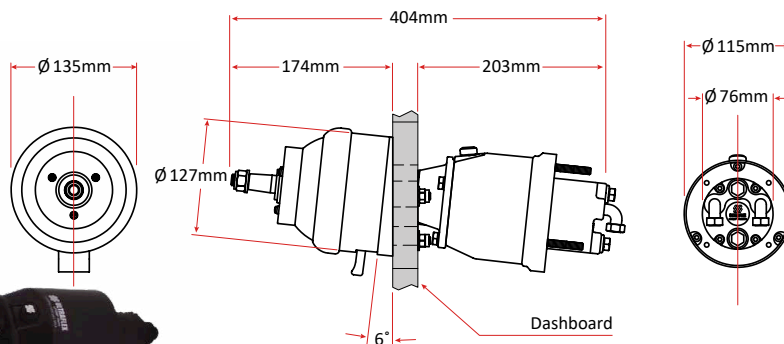
#### 83920T - UP20T with X52 Tilt

- 3/4" tapered anodized aluminium shaft.
- Tilt mechanism X52 - **83533** for UP20 T helm pump which has a tilt range of 48° and five locking positions.

**NOTE:** X52 tilt mechanism fits standard Ultraflex® tilt mount rotary and rack and pinion steering helms as well as standard Ultraflex® tilt mount hydraulic pumps. On high performance systems use X70-SVS tilt mechanism. The NEW **83920** is NOT compatible with the previous X64 - **83949** square flange or X57 - **83954** round flange.



NEW - 83920 Dimensions in mm



83920T with 83533  
Tilt Mechanism Dimensions in mm



X52 has a tilt range of 48° and five locking positions



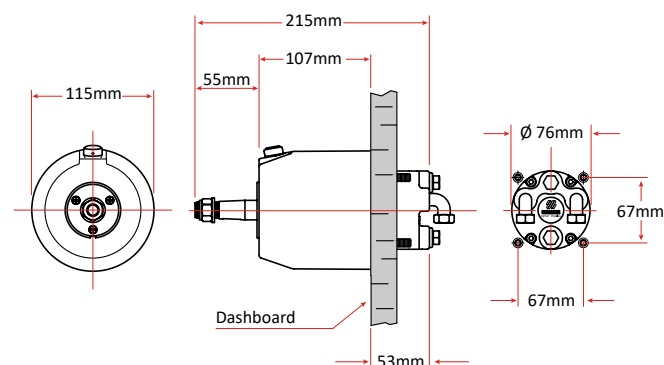
## Hydraulic Helm Pumps - Front Mount

Part No.	Model	Mounting	Displacement/ Revolution	No. of Pistons	Relief Valve Setting	Max Wheel Dia	Weight (kg)
<b>83925</b>	UP25F	Front Mount	25cc - 1.5cu.in	5	70Bar - 1000psi	710mm - 28"	5kg
<b>83928</b>	UP28F	Front Mount	28cc - 1.7cu.in	5	70Bar - 1000psi	710mm - 28"	5kg
<b>83933</b>	UP33F	Front Mount	33cc - 2.0cu.in	7	70Bar - 1000psi	710mm - 28"	5kg
<b>83939</b>	UP39F	Front Mount	39cc - 2.4cu.in	7	70Bar - 1000psi	710mm - 28"	5kg
<b>83954</b>	X57 Round Adapter Flange suits <b>83925, 83928, 83933</b> and <b>83939</b>						
<b>83949</b>	X64 Square Adapter Flange suits <b>83925, 83928, 83933</b> and <b>83939</b>						
<b>84108</b>	Kit F - Remote Filler Kit Adapter						

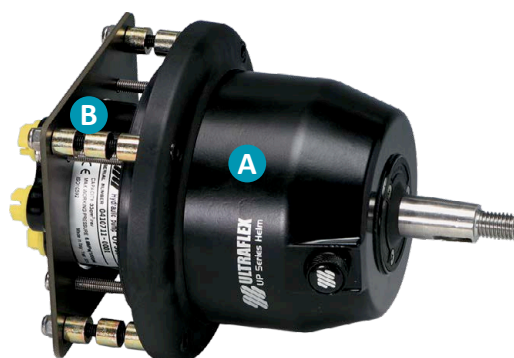
- Available in four different displacement sizes.
- Compact design.
- Ball bearing piston race.
- Built-in lock valve for positive rudder lock.
- Integral relief valve for over-pressure protection.
- 3/4" tapered stainless steel shaft.
- Easily accessible shaft seal for replacement.
- Cast iron rotor for greater durability and longer life.
- Includes **adjustable** elbow fittings for 3/8" tube.
- Includes elbow fittings.



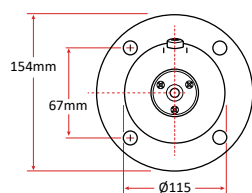
83925, 83928,  
83933 & 83939



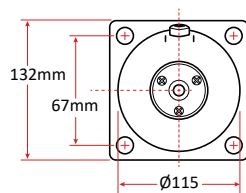
83925, 83928, 83933 &  
83939 Dimensions in mm



**A** 83933 with **B** 83954  
Round Adapter Flange



83954 Round Adapter Flange



83949 Square Adapter Flange



**A** 83933 with **B** 83949  
Square Adapter Flange

## Hydraulic Helm Pumps - Tilt Mount



A 83925T, 83928T, 83933T, 83939T, with  
B 83533 X52 Tilt Mechanism

Part No.	Model	Mounting	Displacement/ Revolution	No. of Pistons	Relief Valve Setting	Max Wheel Dia	Weight (kg)
83925T	UP25T	Suits X52 Tilt	25cc - 1.5cu.in	5	70Bar - 1000psi	406mm - 16"	5
83928T	UP28T	Suits X52 Tilt	28cc - 1.7cu.in	5	70Bar - 1000psi	406mm - 16"	5
83933T	UP33T	Suits X52 Tilt	33cc - 2.0cu.in	7	70Bar - 1000psi	406mm - 16"	5
83939T	UP39T	Suits X52 Tilt	39cc - 2.4cu.in	7	70Bar - 1000psi	406mm - 16"	5
83533	X52 Tilt Mechanism						
84108	Kit F - Remote Filler Kit Adapter						

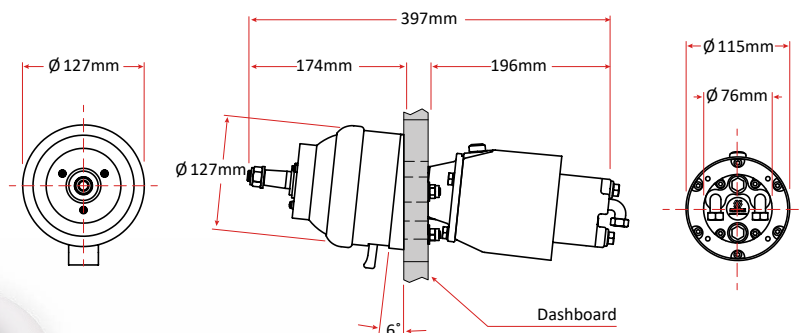
- Available in four different displacement sizes.
- Compact design.
- Ball bearing piston race.
- Built-in lock valve for positive rudder lock.
- Integral relief valve for over-pressure protection.
- Stainless steel shaft.
- Easily accessible shaft seal for replacement.
- Cast iron rotor for greater durability and longer life.
- UP39 T helm pumps are ideal for dual cylinder, dual engine applications.
- Tilt mechanism X52 - **83533** for UP20 T helm pump which has a tilt range of 48° and five locking positions.

*NOTE: X52 tilt mechanism fits standard Ultraflex® tilt mount rotary and rack and pinion steering helms as well as standard Ultraflex® tilt mount hydraulic pumps. On high performance Silver Steer systems use X70-SVS tilt mechanism.*

*Kit F - **84108** (optional but recommended) Remote Filler Kit Adapter not included.*



84108 Remote Filler Kit not included.  
Optional but recommended extra.



83925T, 83928T, 83933T, 83939T, with  
83533 Tilt Mechanism Dimensions in mm



X52 has a tilt range of 48°  
and five locking positions

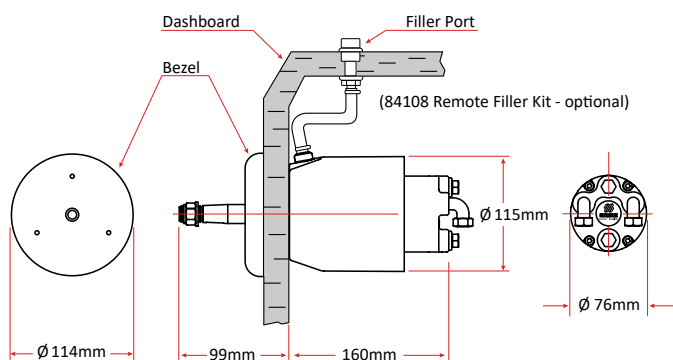


## Hydraulic Helm Pumps - Rear Mount

Part No.	Model	Mounting	Displacement/ Revolution	No. of Pistons	Relief Valve Setting	Max Wheel Dia	Weight (kg)
<b>83928R</b>	UP28R	Rear Mount	28cc - 1.7cu.in	5	70Bar - 1000psi	710mm - 28"	5
<b>83933R</b>	UP33R	Rear Mount	33cc - 2.0cu.in	7	70Bar - 1000psi	710mm - 28"	5
<b>83955</b>	UP39R	Rear Mount	39cc - 2.4cu.in	7	70Bar - 1000psi	710mm - 28"	5
<b>84108</b>	Kit F - Remote Filler Kit Adapter						

- 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 and shaft seal for replacement.
- Cast iron cylinder rotor for greater durability and longer life.
- Includes adjustable elbow fittings for 3/8" tube.
- Complete with elbow fittings and white bezel.

**NOTE:** Kit F - **84108** (optional but recommended) Remote Filler Kit Adapter not included.



83928R, 83933R & 83955  
Dimensions in mm



84108 Remote Filler Kit not included.  
Optional but recommended extra.





## Hydraulic Helm Pumps - Front Mount SilverSteer™

High Performance



84028, 84033 &amp; 84039

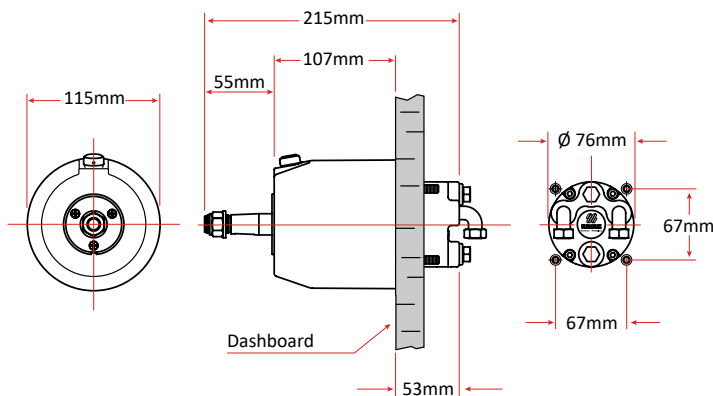
Part No.	Model	Mounting	Displacement/ Revolution	No. of Pistons	Relief Valve Setting	Max Wheel Dia	Weight (kg)
84028	UP28F-SVS	Front Mount	28cc - 1.7cu.in	5	105Bar - 1500psi	710mm - 28"	5
84033	UP33F-SVS	Front Mount	33cc - 2.0cu.in	7	105Bar - 1500psi	710mm - 28"	5
84039	UP39F-SVS	Front Mount	39cc - 2.4cu.in	7	105Bar - 1500psi	710mm - 28"	5
83954	X57 Round Adapter Flange suits <b>84028, 84033</b> and <b>84039</b>						
83949	X64 Square Adapter Flange suits <b>84028, 84033</b> and <b>84039</b>						
84108	Remote Filler Kit Adapter						

- SilverSteer™ have been specifically designed for high torque applications such as bass boats and boats with shallow dead rise and high horsepower.
- Featuring a 1500 psi check valve and a patented pressure valve that enhances responsiveness, the SilverSteer™ helms will deliver very precise steering at all torque loads.
- 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 105Bar - 1500psi.
- 3/4" tapered stainless steel shaft.
- Easily accessible shaft seal for replacement.
- Cast iron rotor for greater durability and longer life.
- Includes stainless steel fittings adjustable at 45° for 3/8" tube.

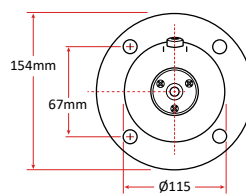
NOTE: Only use SilverSteer™ cylinders and SilverSteer™ hoses, which are also specifically designed for high torque applications.



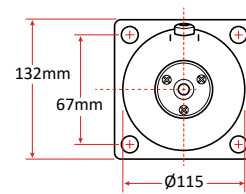
83954 - Round Adapter Flange


84028, 84033 & 84039  
Dimensions in mm


83949 - Square Adapter Flange



83954 Round Adapter Flange



83949 Square Adapter Flange



## Hydraulic Helm Pumps - Tilt Mount SilverSteer™

Part No.	Model	Mounting	Displacement/ Revolution	No. of Pistons	Relief Valve Setting	Max Wheel Dia	Weight (kg)
<b>84028T</b>	UP28T-SVS	Suits X70 Tilt	28cc - 1.7cu.in	5	105Bar - 1500PSI	406mm - 16"	5
<b>84033T</b>	UP33T-SVS	Suits X70 Tilt	33cc - 2.0cu.in	7	105Bar - 1500PSI	406mm - 16"	5
<b>84039T</b>	UP39T-SVS	Suits X70 Tilt	39cc - 2.4cu.in	7	105Bar - 1500PSI	406mm - 16"	5
<b>84027</b>	Spare X70 Tilt Mechanism						
<b>84108</b>	Remote Filler Kit Adapter						

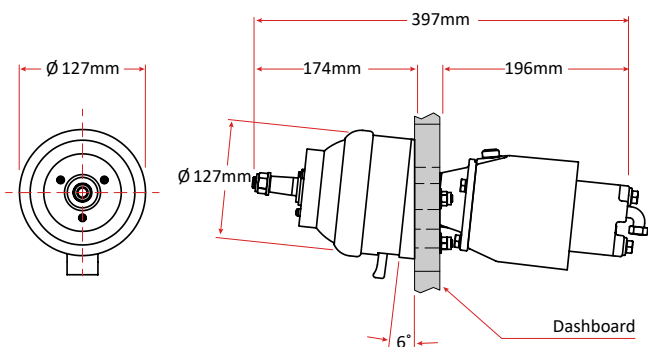
- SilverSteer™ have been specifically designed for high torque applications such as bass boats and boats with shallow dead rise and high horsepower.
- Featuring a 1500 psi check valve and a patented pressure valve that enhances responsiveness, the SilverSteer™ helms will deliver very precise steering at all torque loads.
- 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 shaft seal for replacement.
- Cast iron rotor for greater durability and longer life.
- Includes elbow fittings.
- UP39T-SVS helm pumps are ideal for dual cylinder, dual engine applications.
- Tilt mechanism X70 - 84027 has a tilt range of 48° and five locking positions.

**NOTE:** On high performance SilverSteer™ systems use X70-SVS - **84027** tilt mechanism only.

**84108** (optional but recommended) Remote Filler Kit Adapter not included.



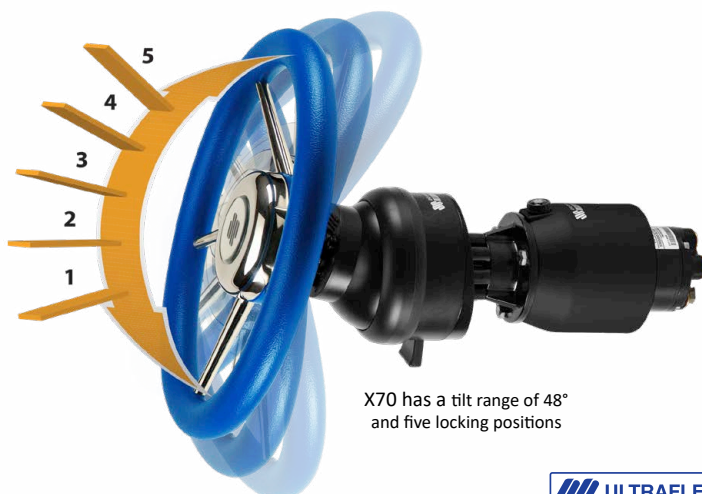
A 84028T, 84033T, 84039T, with  
B 84027 X70 Tilt Mechanism



84028T, 84033T, 84039T, with 84027 Tilt  
Mechanism Dimensions in mm



84108 Remote Filler Kit not included.  
Optional but recommended extra.



X70 has a tilt range of 48°  
and five locking positions

### Hydraulic Hose Connection - R8

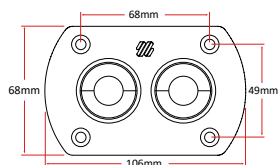
Premium



84270



84271



Part No.	Description	Model	Colour
84270	Through Outboard Well Bulkhead Hose Kit for Dual Hose	R8B	Black
84271	Through Outboard Well Bulkhead Hose Kit for Dual Hose	R8CH	Chrome

- Connection flange available with a chrome or black finish.
- Suitable for fibreglass, polyethylene and aluminium boats.
- Reduces hose kinking.

### Hydraulic Hose Connection - R9

Premium



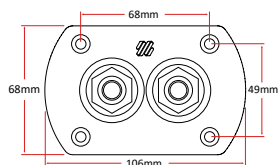
84278



84279



84280

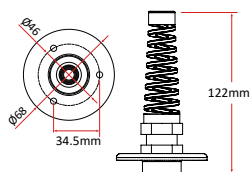


Part No.	Description	Model	Colour
84278	Bulkhead Kit for Dual Hose	R9B	Black
84279	Bulkhead Kit for Dual Hose	R9W	White
84280	Bulkhead Kit for Dual Hose	R9CH	Chrome

- Available in black, white or chrome finish.
- Suitable for fibreglass, polyethylene and aluminium boats.
- Reduces risk of corrosion on aluminium boats caused from chrome fittings touching aluminium and paintwork.
- Reduces installation time for bulkhead fittings.
- Suit all standard hydraulic hoses.
- Chrome plated brass threaded fittings, ABS plastic flange supplied with 4 x stainless steel counter sunk self tapping screws.



### Hydraulic Hose - Strain Relief



Part No.	Description	Model
84119	Strain Relief Hose Kit	R5

- R5 kit distributes strain from bends in hose.
- It features a water tight gripper fitting and a bulkhead fitting flange for hose protection.
- Sold individually.



## Hydraulic Hose Slip-nut Connector

Part No.	Description	Sold As
84276	Hydraulic 90° 3/8" Male - 3/8" Slip-nut	Pair

- Suits 3/8" compression fittings and all Ultraflex QuickFit hoses.
- Ideally used to fit hose at 90 degrees to bulkhead fittings.
- Slip nut allows alignment to various angles.
- Nickel Plated Brass.



84276



## Hydraulic Hose Connector

Part No.	Description
83958	Adjustable Elbow Connector Fitting suit Helm New Style

- 90° adjustable fitting, nickel plated brass, for standard and SilverSteer™ pumps.



## Hydraulic Hose Connectors - 3/8" Hose

Part No.	Description
84112	3/8" O.D. Additional Station Fitting Kit
84116	Straight Connector Fitting suits helm & 3/8" O.D. tube, includes olive.
84117	Elbow Connector Fitting suits helm and 3/8" O.D. tube, includes olive
84118	Tee fitting suits 3/8" O.D. tube, includes olive
83952	Bleed Tee suits cylinders & 3/8" O.D. tube Includes olive



## Hydraulic Fluid Link Valve

Part No.	Description	Hose Size O.D. (in)
84220	Hydraulic Fluid Link Valve	3/8"

- Fluid link valve for twin engine / twin cylinder applications where a mechanical tie bar is not feasible.
- Engine centres must be at least 38" wide as engine can periodically miss align.
- Valve can be used to realign engines.
- Connect using standard KIT-OB or KIT-OB/R5 hoses.



## Hydraulic Hose Connectors - HiFlex Hose

Part No.	Description	Sold As
84103	Brass Fittings	Pair
84104	Hose Bend Restrictors Kit for Use with 84102A	Pair
84099	Brass Fitting Use for Gotech™ Only	Pair

- 84103 suits 3/8" I.D. hydraulic hose (end output size = 3/8" O.D.) in outboard applications (2 required for each hose).
- 84104 suits 3/8" I.D. High Flex Hose (2 per Kit).
- 84099 suits Two fittings use with 1/4" hydraulic hose for Gotech™ only.





## Hydraulic Cylinder - Adjustable Bleed T



Part No.	Description	Size
<b>83957</b>	Adjustable Bleed T for Cylinder	3/8" (9.5 mm)

- Nickel plated, for all cylinders except UC94-0BF with serial number prior to 30 1156 000001.



## Hydraulic Hose - Nut & Olive Assembly



84137



84138



Part No.	Description	Suits Tube O.D. Ø (in)
<b>84137</b>	Nut & Olive Assembly suits Steering Kits	3/8"
<b>84138</b>	Nut & Olive Assembly suits Hydraulic Cylinders	3/8"

- Suits **84101**, **84182** and **84184** refer to "Hydraulic Tubing, Hose & Connectors" on page 639.

## BubbleBuster™



Part No.	Description
<b>84200</b>	BubbleBuster™ Complete Set
<b>84201</b>	Extension Kit to suit BubbleBuster™

- Reduce time and simplify purging hydraulic steering systems with the self contained and portable BubbleBuster™ purging unit.
- Attach the hoses using the quick connect fittings to the helm and cylinder and with the push of a button the BubbleBuster™ begins cycling oil throughout the entire systems.
- The system features a Zero Emulsion pump, a 3.8 litre capacity reservoir and is compatible with competing helms and cylinders.

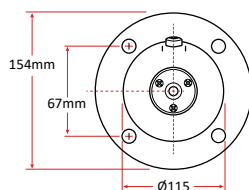


## Hydraulic Accessories

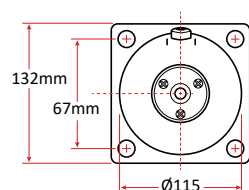
### Recess Adapter / Dress Flange



83954



83949



Part No.	Description	Model	Shape
<b>83954</b>	Recess Adapter / Dress Flange	X57	Round
<b>83949</b>	Recess Adapter / Dress Flange	X64	Square

- Suits the **83925**, **83928**, **83933** and **83939** hydraulic helm pumps.
- Used for recessing helm into dash or dress flange.





## Filler Plug

Part No.	Description
<b>84106</b>	Vented Filler Plug
<b>84107</b>	Non-Vented Filler Plug*

\*NOTE: For use with second station helm.



84106



84107



## Remote Filler Kit

Part No.	Description	Model
<b>84108</b>	Remote Filler Kit	Kit F

- Remote filler adapter for rear mount and tilt mount helm pumps.



## Hydraulic Oil

Part No.	Description	Model	Size
<b>84115</b>	Hydraulic Oil	OL 150	1Ltr

- High quality hydraulic oil sold in 1 litre containers.
- Hydraulic oil: 150 VG 15.
- Solidification point: < -30°C.
- Contamination according to NAS1638≤8.
- Genuine Ultraflex products.
- Made in Italy.



## Hydraulic Oil - Premium

Part No.	Description	Size
<b>84115A</b>	Hydraulic Oil Bottle	1Ltr
<b>84115B</b>	Hydraulic Oil Bottle with Tap	20Ltr

- Contains a balanced elastomer conditioning additive to prolong life of hoses and seals.
- Fortified with anti-wear zinc additives.
- Protection from corrosion, rust and oxidation.
- Anti foaming.
- Ideal for UltraFlex® hydraulic steering systems.
- Made in Australia.

NOTE: Oils must never be reused, once it has been used it becomes contaminated



## Hydraulic Spares - UC128-OBF End Cap



84131



Part No.	Description	Suits
<b>84131</b>	End Cap	UC128-OBF Cylinder

## Bull Horn Mounting Bracket - UC128-OBF / UC94-OBF



Part No.	Description	Suits
<b>84133</b>	Bull Horn Mounting Bracket	UC128-OBF / UC94-OBF Cylinder

## Suzuki Kit 1998-2008



Part No.	Description	Suits
<b>83919</b>	Suzuki Kit 1998-2008	<b>83918/1</b>

- Suzuki® engines DF100, DF115 built from 1998 to 2008 installing UC81-OBF/1, UC94-OBF/1, UC128-OBF/1, UC130/1-SVS cylinder require this optional kit.

## Hydraulic Cylinder - Link Arms



84122



84121



84123



84123P



84124



Part No.	Model	Type	Suits
<b>84122</b>	LA1	Standard Link Arm	UC128-OBF/1 Cylinder
<b>84121</b>	LA1P	Port Link Arm	UC128P-OBF/1 Cylinder
<b>84123</b>	LA2	Standard Link Arm	UC128-OBF/2 Cylinder
<b>84123P</b>	LA2P	Port Link Arm	UC128P-OBF/2 Cylinder
<b>84124</b>	LA3	Standard Link Arm	UC128-OBF/3 Cylinder

- **Warning:** LA1, LA2, LA3, LA1P and LA2P link arm kits are recommended for use on the first installation only and not as a retrofit. Installation has to be made by qualified technicians only.
- Refer to tightening load described in the Installation Manual and mounting instructions supplied with the products.





## Hydraulic Side Mount Seal Kit - UC132-OBS

Part No.	Description	Suits
84126	Side Mount Seal Kit	UC132-OBS Cylinder



## Hydraulic Cylinder Spares - UC94-OBF

Part No.	Description	Suits
84125	Seal Kit	UC94-OBF Cylinder
84125KIT	Seal Kit includes Bolts	UC94-OBF Cylinder
84206	Rod Seal	UC94-OBF Cylinder



84125



84125KIT



84206

## Hydraulic Cylinder Spares - UC128-OBF

Part No.	Description	Suits
84129	Seal Kit	UC128-OBF Cylinder
84130	Rod seal	UC128-OBF Cylinder



84129



84130

## Hydraulic Helm - Shaft Seal

Part No.	Description	Suits Helm Pumps
84135	Shaft Seal Kit	UP25, UP28, UP33, UP39
84135/20	Shaft Seal Kit	UP20
84135S	Front Shaft Seal	UP25, UP28, UP33, UP39

NEW ENTRY



## Hydraulic Helm - Seal and 'O' Ring

Part No.	Description
84136	Seal and 'O' Ring Kit suits UP20 Helm Pumps



# Steering System - Power Assisted MasterDrive™ Systems Introduction



## MasterDrive™ Power Assisted Outboard Steering System

Effortless steering for the most demanding applications! For the ultimate in steering performance, look no further than the MasterDrive™ power assisted outboard steering system which delivers fingertip control regardless of speed or torque conditions. With installation similar to conventional manual hydraulic systems, the MasterDrive™ eliminates torque at the steering wheel. The system remains functional with manual hydraulic steering override in the event of a loss of power.

### MasterDrive™ System Features:

- Three different selectable levels of power give the boater the desired feeling on the wheel (Patented).
- Automatically reverts to manual mode in case of power loss.
- High efficiency, low Amp draw.
- Immediate control in any sea conditions.
- Equipped with safety switch ON/OFF (Smart Button).
- Can be used on dual station installations.
- Suitable for use with autopilot.
- Low noise.
- Voltage: 12VDC.
- CE marked in conformity with ABYC P21, ISO 10592 safety standards.
- Ignition protected (SAE J-1171 and UNI EN 28846).



When selecting a MasterDrive™ System please consult a sales representative at Sam Allen Wholesale or use the application selection guide below to select the most appropriate MasterDrive™ System for your application. Due to the vast number of options we have not created any kits.

### System Components for Single Cylinder application:

- 1 x Front or Tilt Mount MasterDrive™ Helm UH - **84032** to **84032T** refer to "Power Assisted Helm Pumps - MasterDrive™ UH" on page 663.
- 1 x Power Unit UPMD - **84045**, 15ft wiring harness included refer to "Power Assisted Helm Pump Unit - MasterDrive™ UPMD" on page 663.
- 1 x User Interface UCMD - **84046** refer to "Switch Panel - Master Drive™ UCMD" on page 664.
- 1 x SilverSteer™ Steering Cylinder UC130-SVS - **84010/1** to **84010/3** refer to "SilverSteer™ Front Mount Cylinders" on page 631.
- 1 x KIT OBMD - **84360** to **84370** high pressure anti-vibration hose kit complete with pre-assembled fittings refer to "Anti Vibration Hose Kits - OBMD" on page 664.
- 1 x KIT OB-SVS SilverSteer™ - **84300** to **84314** high pressure hose kit complete with pre-assembled fittings refer to "Hydraulic Hose Kit - Silver Steer™ Kevlar™ OB-SVS" on page 637.
- 4 x Hydraulic Oil.

### System Components for Dual Cylinder application:

- 1 x Front or Tilt Mount MasterDrive™ Helm UH - **84040** to **84042T** refer to "Power Assisted Helm Pumps - MasterDrive™ UH" on page 663.
- 1 x Power Unit UPMD - **84045**, 15ft wiring harness included refer to "Power Assisted Helm Pump Unit - MasterDrive™ UPMD" on page 663.
- 1 x User Interface UCMD - **84046** refer to "Switch Panel - Master Drive™ UCMD" on page 664.
- 2 x SilverSteer™ Steering Cylinders UC130-SVS - **84010/1** to **84010/3** refer to "SilverSteer™ Front Mount Cylinders" on page 631.
- 1 x KIT OBMD - **84360** to **84370** high pressure anti-vibration hose kit complete with pre-assembled fittings refer to "Anti Vibration Hose Kits - OBMD" on page 664.
- 1 x KIT OB-SVS SilverSteer™ - **84300** to **84314** high pressure hose kit complete with pre-assembled fittings refer to "Hydraulic Hose Kit - Silver Steer™ Kevlar™ OB-SVS" on page 637.
- 1 x KIT OB-2C-SVS SilverSteer™ - **84340** to **84344** high pressure hose kit complete with pre-assembled fittings for cylinder connection (dual cylinder applications only) refer to "Hydraulic Hose Kits - Kevlar™ OB-2C-SVS - Dual Engine / Dual Cylinder" on page 638.
- 4 x Hydraulic Oil.



## MasterDrive™ Single Station - Single Cylinder Kit

Part No.	Description	Helm
84050	Master Drive™ Single Station Kit - Single Cylinder Kit	UH32-F

NEW ENTRY

## Master Drive™ UH32-F Kit Includes:

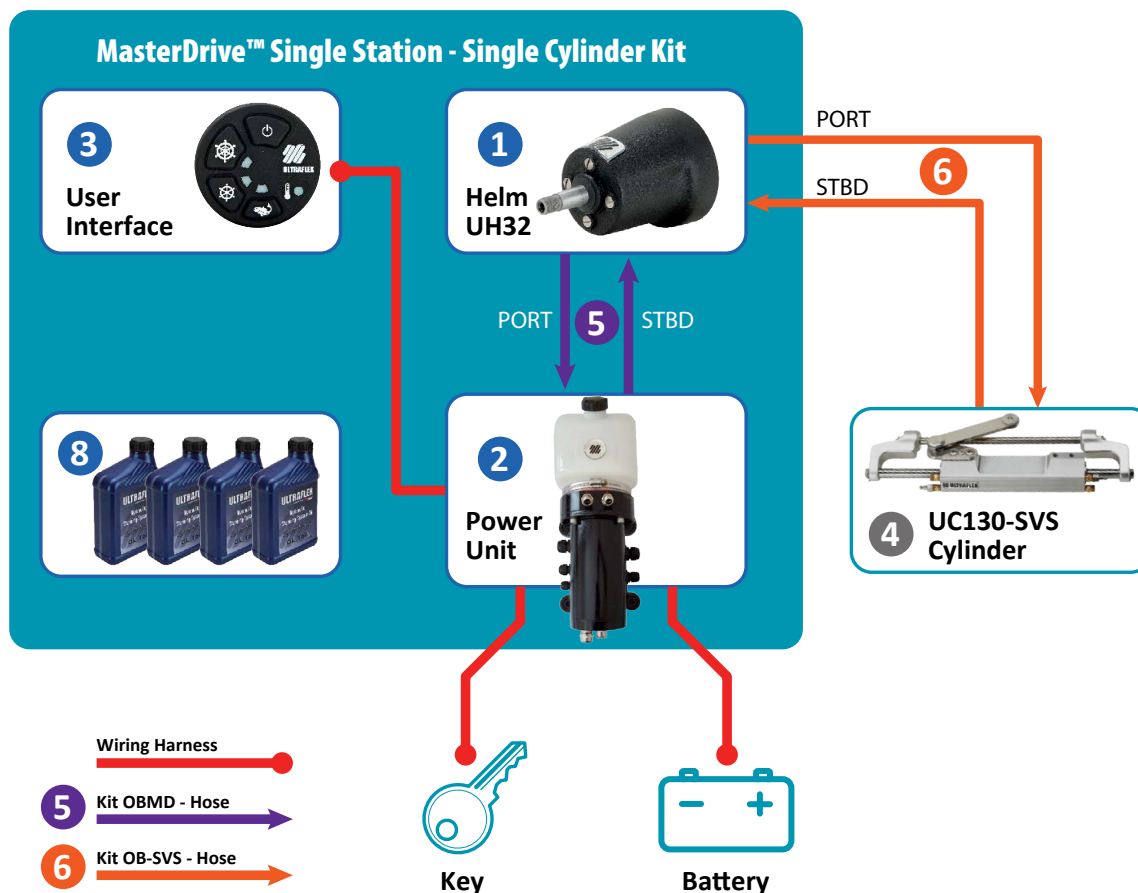
- 1 84032 - UH32-F x 1 Master Helm Pump.
- 2 84045 - UPMD x 1 Power Unit, 4.5 m (15') Wiring Harness.
- 3 84046 - UCMD x 1 User Interface Switch Panel.
- 8 84115 - OL 150 x 4 Litres Hydraulic Oil.  
Installation Manual x 1.

## Components Ordered Separately:

1. SilverSteer™ hydraulic cylinders (see page 631).
- 4 UC130-SVS - Match the cylinder to your engine model.
2. Hydraulic hose kits (see page 664 for hose lengths).
- 5 OBMD - Select the desired length.
- 6 OB-SVS - Select the desired length.

## Optional Components:

1. 84060 - Second Station (see Second Station kits on page 662).
2. Steering wheel (see page 599 - 604).



## MasterDrive™ Single Station - Dual Cylinder Kit

Part No.	Description	Helm
<b>NEW ENTRY</b> 84051	Master Drive™ Single Station Kit - Dual Cylinder Kit	UH40-F

## Master Drive™ UH40-F Kit Includes:

- 1 84040 - UH40-F x 1 Master Helm Pump.
  - 2 84045 - UPMD x 1 Power Unit, 4.5 m (15') Wiring Harness.
  - 3 84046 - UCMD x 1 User Interface Switch Panel.
  - 8 84115 - OL 150 x 4 Litres Hydraulic Oil.
- Installation Manual x 1.

## Components Ordered Separately:

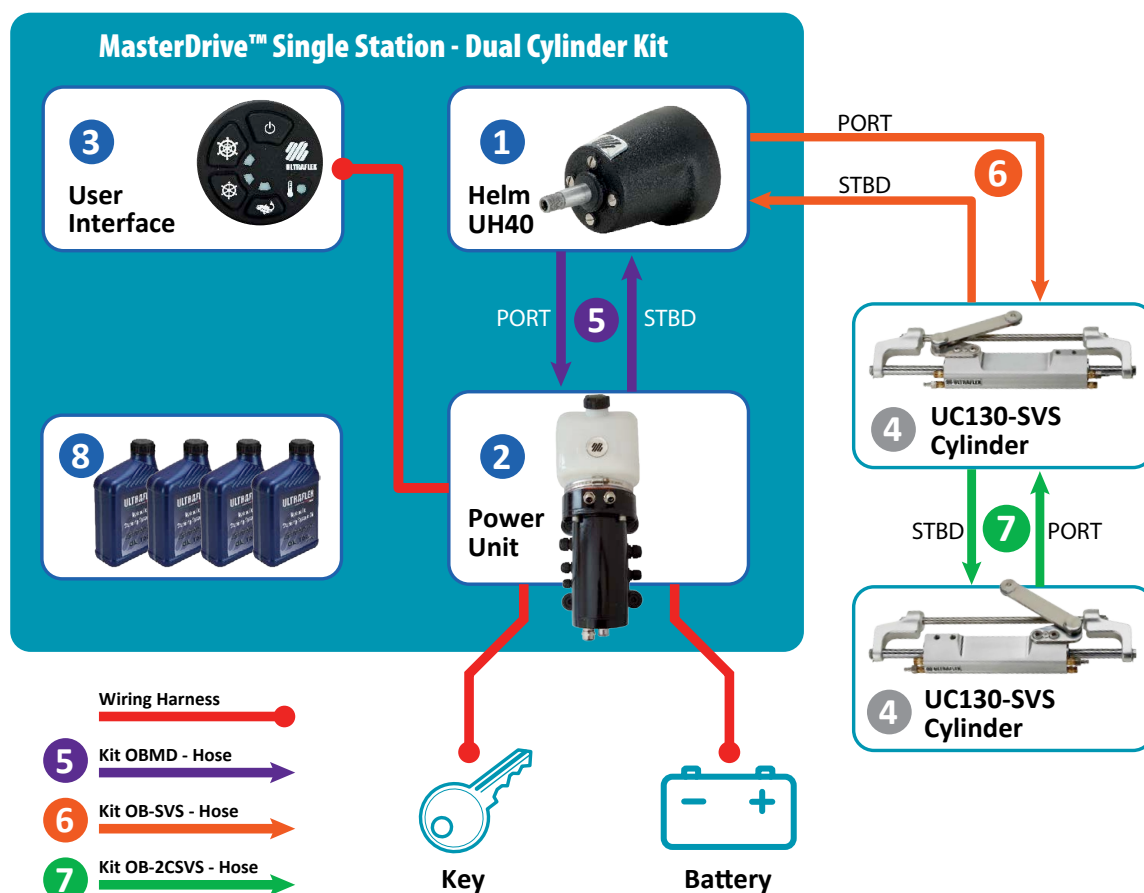
1. SilverSteer™ hydraulic cylinders (see page 631).
- 4 UC130-SVS - Match the cylinder to your engine model.
2. Hydraulic hose kits (see page 664 for hose lengths).
- 5 OBMD - Select the desired length.
- 6 OB-SVS - Select the desired length.
- 7 OB-2C-SVS - Select the desired length.

## Optional Extras:

1. 84061 - UH40-F Second Station (see page 662)
2. Tie Bar for dual cylinder application (see page 640 - 641).
3. Steering Wheel (see page 599 - 604)



84156







## MasterDrive™ Second Station Kits

Part No.	Description	Application	Model	
84060	Master Drive™ Second Station Kits	Single Cylinder	UH32-F	NEW ENTRY
84061	Master Drive™ Second Station Kits	Dual Cylinder	UH40-F	NEW ENTRY

### Master Drive™ Second Station Kit contains:

- 1 UH32-F/UH40-F - 1 x Slave helm pump.
- 3 84046 - UCMD x 1 User Interface Switch Panel.  
7 metre electric cable for second station communications x 1.  
3/8" straight fitting x 1.  
3/8" T fittings x 2.
- 8 84115 - OL 150 x 1 Litres Hydraulic Oil.  
Installation Manual x 1.

### Depending on the helm type, 2 versions are available:

- 84060 - UH32-F - 32cc Front Mount Helm included.
- 84061 - UH40-F - 40cc Front Mount Helm included.

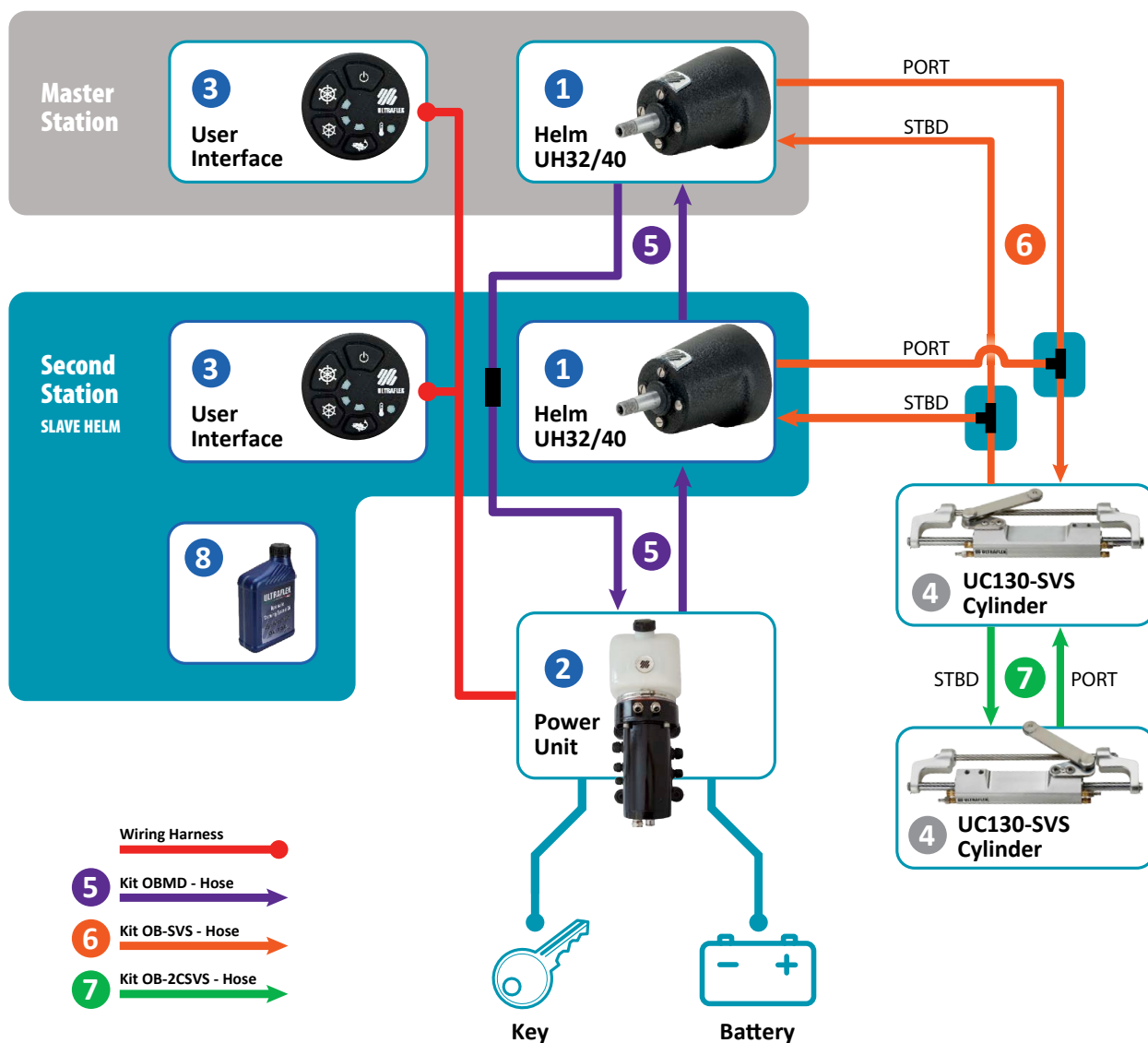
### Components Ordered Separately:

Hydraulic hose kits (see page 664 for hose lengths).

- 5 OBMD select desired length to match distance from master helm pump to the slave helm pump.
- 6 OB-SVS - select the desired length.

### For dual cylinder applications, order:

- 7 KIT OB-2C-SVS - select the desired length.



## Power Assisted Helm Pumps - MasterDrive™ UH

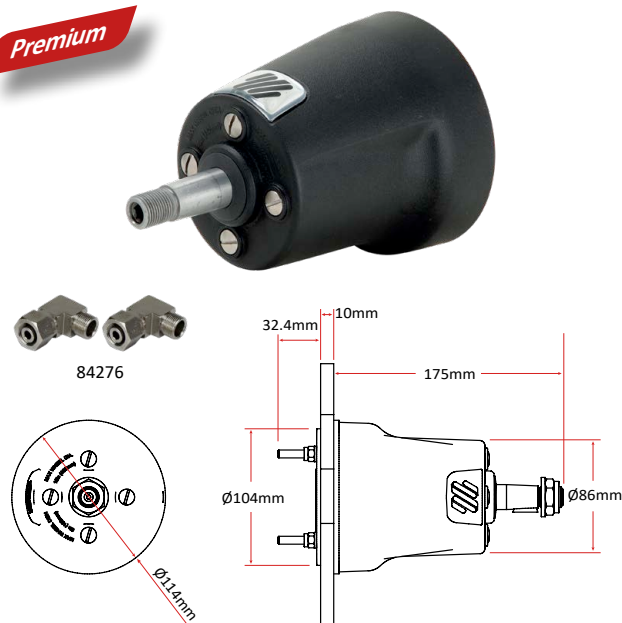
1



Part No.	Description	Model	Mounting	Displacement/ Revolution	No. of Turns Lock to Lock	Max Wheel Dia	No. of Stations
84032	UH32-F Helm Pump	UH32-F	Front Mount	32cc - 1.95cu.in	3.75 turns single cylinder	406mm - 16"	1
84032T	UH32-T Helm Pump	UH32-T	With X66 Tilt	32cc - 1.95cu.in	3.75 turns single cylinder	406mm - 16"	1
84040	UH40-T Helm Pump	UH40-F	Front Mount	40cc - 2.44cu.in	6 turns dual cylinder	406mm - 16"	1
84040T	UH40-T Helm Pump	UH40-T	With X66 Tilt	40cc - 2.44cu.in	6 turns dual cylinder	406mm - 16"	1
84042	Spare X66 Tilt Mechanism for MasterDrive™						
84276	90° Two Fitting Kit - 3/8" Male to 3/8" Slip Nut for MasterDrive™ Helms (Optional)						

NEW ENTRY

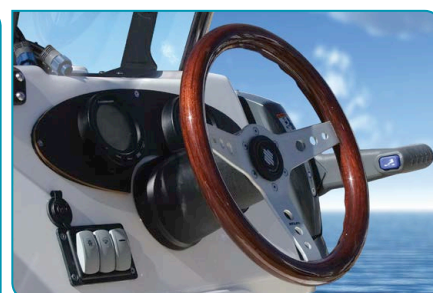
Premium


84032, 84032T 84040 & 84040T  
Dimensions in mm

- Available in two different displacement sizes: 32cc (1.95 cu.in) and 40cc (2.44 cu.in).
- Front Mount and Tilt Mount versions.
- Dual station installation version (front mount, 40cc displacement only).
- Built-in relief valve.
- 3/8" tapered shaft.
- Corrosion resistant painted body.
- Waterproof.
- The X66 tilt range of 48° with five locking positions
- Tilt Mount version is suitable for use with X66 - 84042 tilt mechanism.



84042 - X66 Tilt Mechanism



## Power Assisted Helm Pump Unit - MasterDrive™ UPMD

2

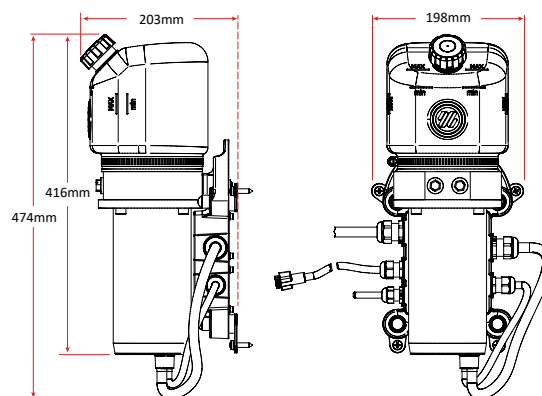


Premium



Part No.	Description	Model
84045	Power Assisted Helm Pump Unit	UPMD

- 12VDC Motor.
- 45° swivelling fittings for easy installation.
- Semitransparent 0.5 litre (0.11gal) tank gives immediate level vision.
- Vented filler plug.
- Wall or floor mount.
- Black galvanized motor case, salt water resistant.
- 4.5 m (15') Wiring Harness included.
- IP67 waterproof.
- Ignition protected (SAE J-1171 and UNI EN 28846 ).



84045 - Dimensions in mm

3

## Switch Panel - Master Drive™ UCMD

Part No.	Description	Model
84046	Switch Panel for Power Assist	UCMD

- Safety switch ON/OFF (smart button).
- Three different power levels with light indicator (Patented).
- Motor temperature visual indicator.
- Twin engine key selection included.
- Lighted panel for stand-by position.
- Plug-in wiring harness.
- Suitable for a second station installation.



Premium



5

## Anti Vibration Hose Kits - OBMD

Part No.	Model	Length		Sold As
		(m)	(ft)	
84358	OBMD	1.5	4.9'	Pairs
84359	OBMD	3.0	9.8'	Pairs
84360	OBMD	3.5	11.5'	Pairs
84362	OBMD	4	13.1'	Pairs
84364	OBMD	4.5	14.8'	Pairs
84366	OBMD	5	16.4'	Pairs
84368	OBMD	5.5	18'	Pairs
84370	OBMD	6	19.7'	Pairs

- Two high pressure stranded flexible hoses with pre-crimped fittings and bend restrictors on both ends.



Premium

QuickFit



6

## Hydraulic Hose Kit - Silver Steer™ Kevlar™ OB-SVS

Part No.	Model	Length		Sold As
		(m)	(ft)	
84294	OB-SVS	2	6.6'	Pairs
84295	OB-SVS	2.5	8.2'	Pairs
84296	OB-SVS	3	9.8'	Pairs
84297	OB-SVS	3.5	11.5'	Pairs
84298	OB-SVS	4	13.1'	Pairs
84299	OB-SVS	4.5	14.8'	Pairs
84300	OB-SVS	5	16.4'	Pairs
84302	OB-SVS	5.5	18'	Pairs
84304	OB-SVS	6	19.7'	Pairs
84306	OB-SVS	6.5	21.3'	Pairs
84308	OB-SVS	7	22.9'	Pairs
84310	OB-SVS	7.5	24.6'	Pairs
84312	OB-SVS	8	26.3'	Pairs
84314	OB-SVS	9	29.5'	Pairs

- Two high pressure Kevlar™ stranded flexible hoses with pre-crimped fittings and bend restrictors on both ends.



High Performance

QuickFit



7

## Hose Connection Kits - Dual Engine / Dual Cylinder - OB-2C-SVS

Part No.	Model	Length		Sold As
		(m)	(ft)	
84340	OB-2C-SVS	0.7	2.29'	Pair
84342	OB-2C-SVS	0.9	2.95'	Pair
84344	OB-2C-SVS	1.2	3.93'	Pair

- Two high pressure Kevlar™ stranded flexible hoses with pre-crimped fittings and bend restrictors on both ends.
- Recommended for use with all Ultraflex® SilverSteer™ helms with 1500psi relief valves.
- Available in 0.7m (2.3ft), 0.9m (2.95ft) and 1.2m (3.95ft).
- Recommended for use with the R9 - bulkhead kit for dual hose applications, available in black - 84278, white - 84279 or chrome - 84280 finish refer to "Hydraulic Hose Connection - R9" on page 653.



High Performance

QuickFit





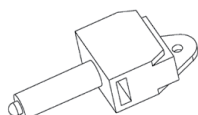
### Engine Control - Side Mount - Stainless Steel



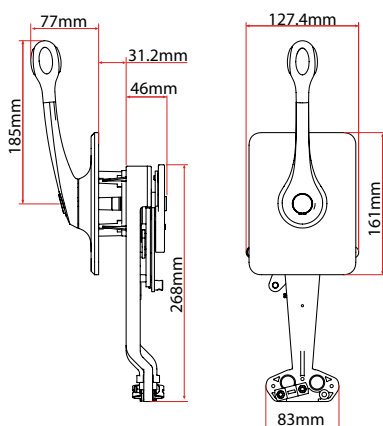
83838



83839



83673



Part No.	Description	Model
83838	Stainless Steel Side Mount Control - Full Mechanical Version	B400
83839	Stainless Steel Side Mount Control - Patented Hybrid Version	B401ETC
83673	Neutral Safety Switch (Optional)	X41

- The B400 has an universal control mechanism that allows for both "push" or "pull" for throttle and shift, push button warm up.
- The patented B401-ETC hybrid version can control the shift with a mechanical cable and the throttle via 0-5V electric signal. The output signal is set by the installer; which is operated through dip-switches placed under the control box.
- Sleek modern design is ideal for sailboats.
- 316G stainless steel lever and flange for better resistance in the marine environment.
- Enables easy and safe shifting by preventing accidental gear engagement unless engine is idling.
- Can be installed horizontally or vertically, on the starboard or port side of the boat.
- Provided with an adjustable brake tension release system.
- Push-in button for throttle operation in neutral for engine warm up.
- Neutral safety switch X41 (optional) prevents in-gear starting.
- Exceeds EN ISO 11547 standards when X41 safety switch is installed.

#### For use with engine control cables:

- Universal C33, C8 and MACH Zero cables require no connection kit.
- C14, MACH 14 cables require K71 - **83631** connection kit.
- C5, C16. MACH 5 cables require K72 - **83633** connection kit.

### Engine Control - Side Mount - Trim - Chrome



83848



83849



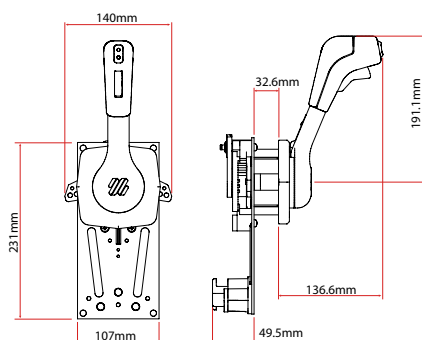
83851

NEW ENTRY

NEW ENTRY



83670



Part No.	Description	Model
83851	Chrome Side Mount Control with Positive Lock-In Neutral and Trim Switch	B310CH
83848	Burl Wood Side Mount Control with Positive Lock-In Neutral and Trim Switch	B310BR
83849	Black Side Mount Control with Positive Lock-In Neutral and Trim Switch	B310B
83670	Neutral Safety Switch (Optional)	X12
83672	Trim Switch Assembly to suits 83851	

- **Dual Function Engine Controls:** single lever operates both throttle and shift.
- Suitable for any type of boats with outboard, inboard or I/O power plants.
- Enables easy and safe shifting by preventing accidental gear engagement unless engine is idling.
- Can be installed horizontally or vertically, on the starboard or port side of the boat.
- Provided with an adjustable brake tension release system.
- Pull-out handle disengages shift for engine warm up.
- All models are provided with a power trim switch conveniently located in the handle grip that enables an easy tilting of the engine.
- Provided with positive lock-in neutral to prevent accidental gear engagement.
- Neutral safety switch X12 (optional) prevents in-gear starting.
- Exceeds EN ISO 11547 standards when X12 safety switch is installed.

#### For use with engine control cables:

- Universal C33, C8, MACH Zero, C14 and MACH 14 cables require no connection kit.
- C5, C16 and MACH 5 cables require K35 - **83637** connection kit.





## Engine Control Box - Side Mount - Aluminium

Part No.	Description	Model	Colour
83855	Painted Aluminium Side Mount Control with Positive Lock-In Neutral	B89	Ivory Finish
83858	Painted Aluminium Side Mount Control with Positive Lock-In Neutral	B90	Black Finish
83670	Neutral Safety Switch (Optional)	X12	Black

- **Dual Function Engine Controls:** single lever operates both throttle and shift.
- Suitable for any type of boats with outboard, inboard or I/O power plants.
- Enables easy and safe shifting by preventing accidental gear engagement unless engine is idling.
- Can be installed horizontally or vertically, on the starboard or port side of the boat. Made of painted marine aluminium.
- Pull-out handle disengages shift for warm-up.
- Neutral safety switch X12 (optional) prevents in-gear starting.
- Exceeds EN ISO 11547 standards when X12 safety switch is installed.
- Provided with a positive lock-in neutral to prevent accidental gear engagement.

## For use with engine control cables:

- Universal C33, C8, MACH Zero, C14 and MACH 14 cables requires no connection kit.
- C5, C16 and MACH 5 cables require K35 - 83637 connection kit.



ULTRAFLEX  
STEERING & CONTROLS

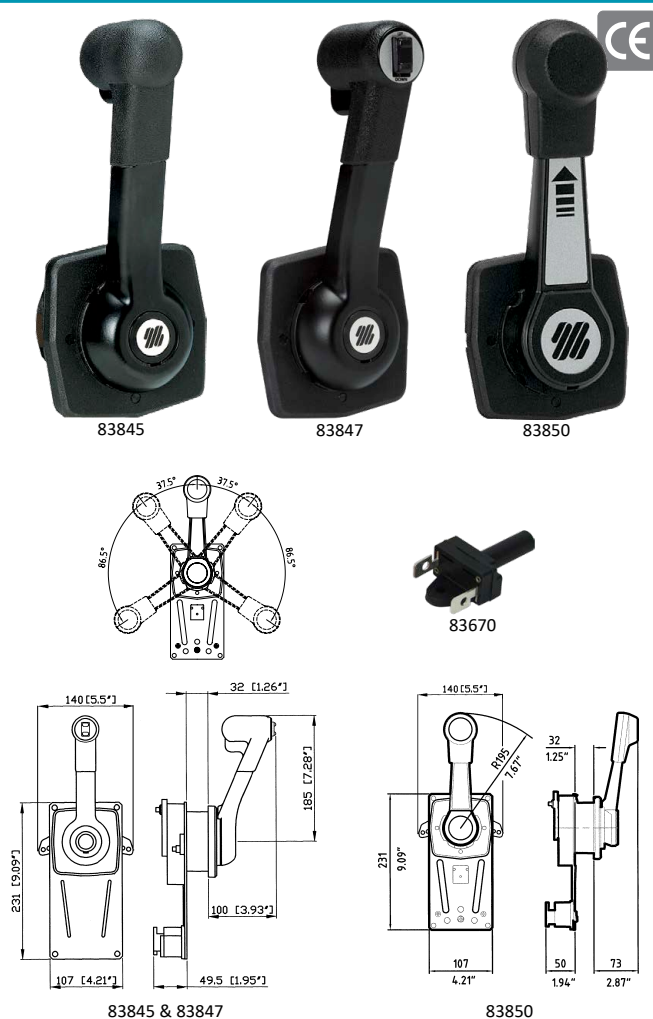
## Engine Control - Side Mount - Aluminium

Part No.	Description	Model
83845	Aluminium Side Mount Control, Positive Lock-In Neutral - with Installation Kit	B183
83847	Aluminium Side Mount Control, Positive Lock-In Neutral and Trim Switch - with Installation Kit	B184
83850	Aluminium Side Mount Control, smooth design for use on sailboats Positive Lock-In Neutral - with Installation Kit	B85
83670	X12 Neutral Safety Switch (Optional)	X12

- **Dual Function Engine Controls:** single lever operates both throttle and shift.
- Suitable for any type of boats with outboard, inboard or I/O power plants.
- Enables easy and safe shifting by preventing accidental gear engagement unless engine is idling.
- Can be installed horizontally or vertically, on the starboard or port side of the boat.
- The lever assembly is made of painted marine aluminium.
- Provided with an adjustable brake tension release system.
- Pull-out handle disengages shift for warm-up.
- Neutral safety switch X12 (optional) prevents in-gear starting.
- Exceeds EN ISO 11547 standards when X12 safety switch is installed.
- All models are provided with positive lock-in neutral to prevent accidental gear engagement.
- B184 model is provided with a power trim switch conveniently located in the handle grip that enables an easy tilting of the engine.

## For use with engine control cables:

- Universal C33, C8, MACH Zero, C14 and MACH 14 cables requires no connection kit.
- C5, C16 and MACH 5 cables require K35 - 83637 connection kit.



ULTRAFLEX  
STEERING & CONTROLS

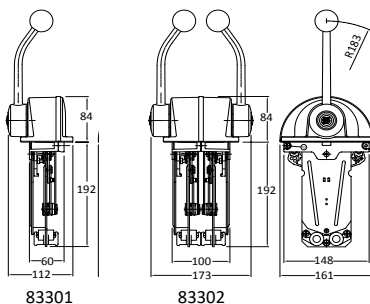
## Engine Control - Top Mount - Dual Function - Low Profile



Exclusive push button design



83670



83301

83302

Part No.	Description	Model
<b>83301C</b>	Single Lever Control for One Engine, Chrome Plated	B301CR
<b>83302C</b>	Dual Lever Control for Two Engines, Chrome Plated	B302CR
<b>83301B</b>	Single Lever Control for One Engine, Black Dome, Chrome Plated Lever	B301B
<b>83302B</b>	Dual Lever Control for Two Engines, Black Dome, Chrome Plated Lever	B302B
<b>83670</b>	Neutral Safety Switch (Optional) 1 per Engine	X12
<b>83301K</b>	Connection Kit	K59



- **Dual Function Engine Controls:** available in single or dual lever, operates both throttle and shift (dual lever for two engines).
- Suitable for any type of boats with outboard, inboard or I/O power plants.
- Compact single lever controls offering a unique low profile style compared to other controls available on the market.
- Enables easy and safe shifting by preventing accidental gear engagement unless engine is idling.
- Marine aluminium, chrome plated or powder coat finish.
- Push in button disengages shift for warm-up.
- Neutral safety switch X12 (optional) prevents in-gear starting.
- Exceeds EN ISO 11547 standards when X12 safety switch is installed.
- K59 connection kit is supplied with B301CR, B302CR, B301B and B301B.

### For use with engine control cables:

- Universal C33, C8 and MACH Zero cables require K59 connection kit (supplied).
- C14 and MACH 14 cables require no connection kit.
- C5, C16 and MACH 5 cables require a K60 connection kit.
- C22 cables require K61 connection kit.
- C36 cables require K62 connection kit.

## Engine Control - Top Mount - Dual Function

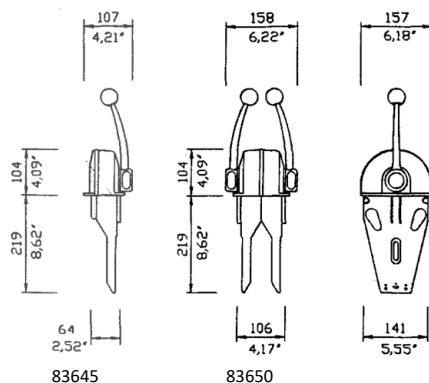


83645

83650



83675



83645

83650

Part No.	Description	Model
<b>83645</b>	B103 Single Lever / Dual Function for One Engine.	B103
<b>83650</b>	B104 Dual Lever / Dual Function for Two Engines.	B104
<b>83675</b>	Replacement Neutral Safety Switch 1 per Engine	X43

- **Dual Function Engine Controls:** available in single or dual lever, operates both throttle and shift (dual lever for two engines).
- Suitable for any type of boats with outboard, inboard or I/O power plants.
- Enables easy and safe shifting by preventing accidental gear engagement unless engine is idling.
- Chrome plated marine aluminium.
- Pull-out handle disengages shift for warm-up.
- Neutral safety switch X43 prevents in-gear starting.
- Exceeds EN ISO 11547 standards.

### For use with engine control cables:

- Universal C33, C8 and MACH Zero cables require no connection kit.
- C22 cables require K33 connection kit.



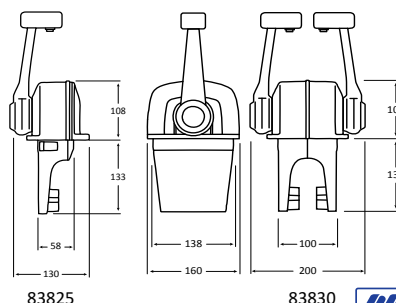
## Engine Control - Top Mount - Dual Function - Powder Coated

Part No.	Description	Model
<b>83825</b>	Single Lever Control for One Engine, Powder Coated Dome, Chrome Plated Lever	B73
<b>83830</b>	Twin Lever Control for Two Engines, Powder Coated Dome, Chrome Plated Lever	B74
<b>83670</b>	Neutral Safety Switch (Optional) 1 per Engine	X12

- **Dual Function Engine Controls:** available in single or dual lever, operates both throttle and shift (dual lever for two engines).
- Suitable for any type of boats with outboard, inboard or I/O power plants.
- Enables easy and safe shifting by preventing accidental gear engagement unless engine is idling.
- Marine aluminium, chrome plated or powder coat finish.
- Pull-out handle disengages shift for warm up.
- Neutral safety switch X12 (optional) prevents in-gear starting.
- Exceeds EN ISO 11547 standards when X12 safety switch is installed.

### For use with engine control cables:

- Universal C33, C8, C14, MACH Zero and MACH 14 cables require no connection kit.
- C5, C16 and MACH 5 cables require a K35 - 83637 connection kit.



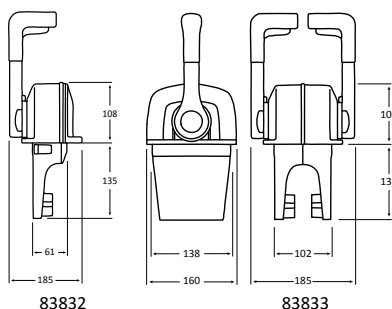
## Engine Control - Top Mount - Dual Function - Chrome

Part No.	Description	Model
<b>83832</b>	Single Lever Control for One Engine, Chrome Plated	B665
<b>83833</b>	Twin Lever Control for Two Engines, Chrome Plated	B666
<b>83670</b>	Neutral Safety Switch (Optional) 1 per Engine	X12

- **Dual Function Engine Controls:** available in single or dual lever, operates both throttle and shift (dual lever for two engines).
- Suitable for any type of boats with outboard, inboard or I/O power plants.
- Enables easy and safe shifting by preventing accidental gear engagement unless engine is idling.
- Marine aluminium, chrome plated or powder coat finish.
- Pull-out handle disengages shift for warm up.
- Neutral safety switch X12 (optional) prevents in-gear starting.
- Exceeds EN ISO 11547 standards when X12 safety switch is installed
- Provided with a positive lock-in neutral to prevent accidental gear engagement.

### For use with engine control cables:

- Universal C33, C8, C14, MACH Zero and MACH 14 cables require no connection kit.
- C5, C16 and MACH 5 cables require a K35 - 83637 connection kit.



Lock-in neutral





## Two Lever - Single Function per Lever Engine Controls

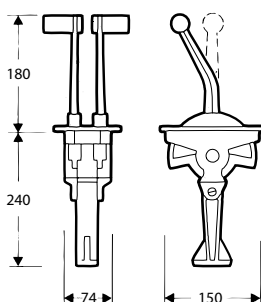
### Engine Control - Top Mount - Slimline



83651



83648



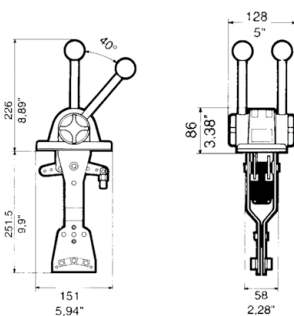
Part No.	Description	Model
83651	Two Lever Top Mount Control, Throttle and Shift	B46
83648	Two Lever Top Mount Control, Shift Only	B46S
83670	Neutral Safety Switch (Optional)	X12

- **Single Function Engine Controls:** Two lever / single function per lever engine control: each lever operates separately, either the throttle or the shift.
- Suitable for use with outboard, inboard or I/O power plants.
- Flush mount suitable for exposed positions such as a flybridge.
- Marine aluminium with chrome plated lever.
- Throttle lever is provided with adjustable brake tension release system and shift lever with forward, reverse and neutral detents.
- Both the brake tension release and detents can be installed and adjusted from the outside.
- Neutral safety switch X12 (optional) prevents in-gear starting.
- Exceeds EN ISO 11547 standards when X12 safety switch is installed.

#### For use with engine control cables:

- Universal C33, C8 and MACH Zero engine control cables.
- C22 cables require K22 connection kit.

### Engine Control - Top Mount



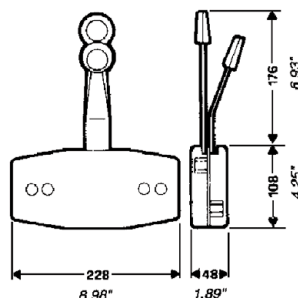
Part No.	Description	Model
83654	Two Lever Top Mount Control, Throttle and Shift	B101
83670	Neutral Safety Switch (Optional)	X12

- **Single Function Engine Controls:** Two lever / single function per lever engine control: each lever operates separately either the throttle or the shift.
- Suitable for use with outboard, inboard or I/O power plants.
- Suitable for exposed positions such as flybridge.
- The B101 is provided with the shift lever detents and with a brake tension release system adjustable from the outside of the throttle lever.
- Neutral safety switch X12 (optional) prevents in-gear starting.
- Exceeds EN ISO 11547 standards when X12 safety switch is installed.

#### For use with engine control cables:

- Universal C33, C8 and MACH Zero engine control cables.
- C22 cables require K32 connection kit.

### Engine Control Box - Side Mount



Part No.	Description	Model
83860	Control Box, Light Grey Finish	B47
83865	Kit to Connect B47 Controls to cables C8 & MACH Zero.	K25

- **Single Function Engine Controls:** Two lever / single function per lever engine control: each lever operates separately either the throttle or the shift.
- Reinforced nylon fibreglass with anodized aluminium levers.
- Left or right side mount installation.

#### For use with engine control cables:

- C5 and MACH 5 engine control cables require no connection kit.
- Universal C33, C8 and MACH Zero cable require K25 - 83865 connection kit.
- C14 and MACH 14 cables require K23 connection kit.





## Single & Two Lever - Single Function per Lever Engine Controls

### Engine Control - Top Mount - Stainless Steel

Part No.	Description
<b>83656</b>	Two Lever Single Function Engine Controls - Straight Arms

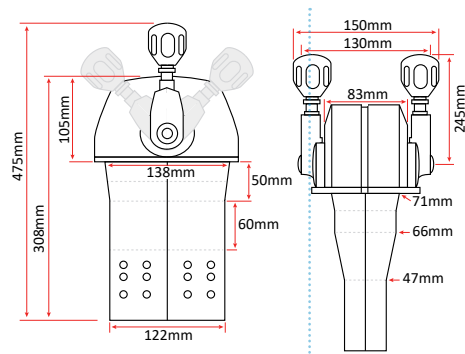
NEW  
ITEM

Great Value

- **Single Function Engine Controls:** Two lever / single function per lever engine control, each lever operates separately, either the throttle or the shift.
- Suitable for use with outboard, inboard or I/O power plants.
- 316G stainless steel engine controls, cast control arms and housing for a longer life.

#### For use with engine control cables:

- Universal C33, C8 and MACH Zero engine control cables.



83656

### Engine Control - Top Mount

Part No.	Description
<b>83840</b>	Single Lever Top Mount Control, Red Lever - Throttle
<b>83842</b>	Single Lever Top Mount Control, Black Lever - Shift
<b>83844</b>	Two Lever Top Mount Control, Throttle and Shift

- **Single Function Engine Controls:** Single or two lever / single function per lever engine control, each lever operates separately, either the throttle or the shift.
- These are heavy duty units with a positive brake and shut off position for heavy throttle. The throttle lever (red) is activated by turning in a clockwise direction. The clutch lever (black) has a detent so that the operator can feel the positions of neutral, forward and reverse.
- **83840** control is suitable for single throttle application.
- **83842** control is suitable for single shift application.
- **83844** one engine single function control with red and black levers for shift and throttle.

#### For use with engine control cables:

- Universal C33, C8 and MACH Zero engine control cables.



83840

83842

83844

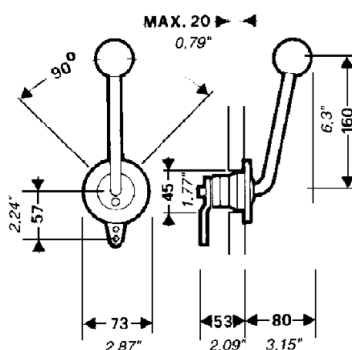
### Engine Control - Flush Side Mount

Part No.	Description	Model
<b>83660</b>	Single Lever Control Box	B35

- **Single Function Engine Controls:** lever operates separately, either the throttle or the shift.
- Suitable for throttle control or hydraulic shift operation.
- Provided with adjustable brake tension release and detents.
- Flush side mount installation.
- Lever and flange all stainless steel.

#### For use with engine control cables:

- Universal C33, C8 and MACH Zero engine control cables.



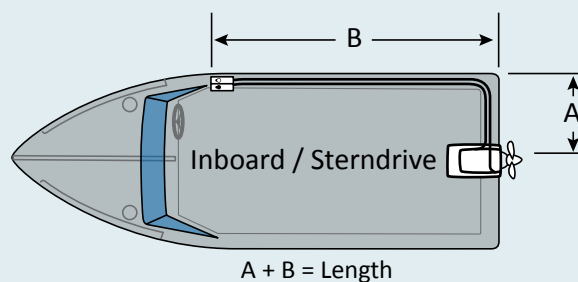
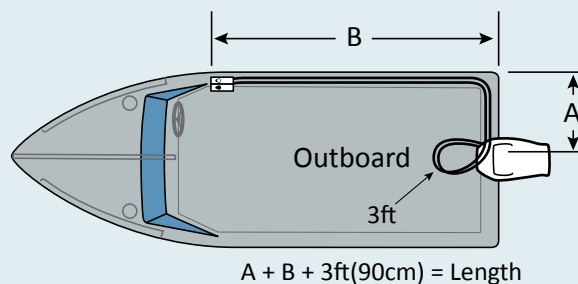
ULTRAFLEX  
STEERING & CONTROLS

### Control Cable Installation:

For new installations, measure **A** and **B** distance from the control along an unobstructed cable routing to clutch and/or throttle connection. Round this dimension up to the next whole foot (304.8mm): you will have your cable length.

We recommend that the cable bends have a minimum radius of about 200mm. For outboard engine installations, it is necessary to add three feet to the obtained length, in order to allow for the engine movement.

**To determine the required length of the REPLACEMENT CABLE, measure from tip to tip.** When ordering, specify the cable length in feet, rounding the dimension up to the whole foot (304.8mm). If any kit is required to complete cable connection, consult accessories section.



### Selection Of Engine Control Cables

#### Engines

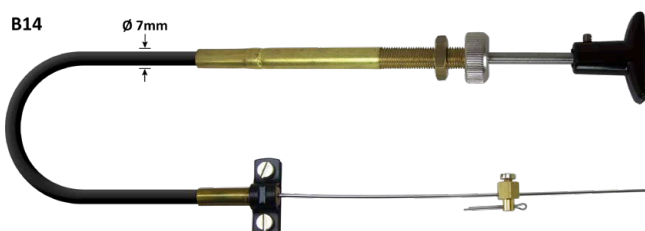
Mercury® Outboard  
Mariner® Outboard over 50HP  
Force® Outboard  
Selva® Outboard  
Yamaha® Outboard  
Suzuki® Outboard  
Tohatsu® Outboard  
Honda® Outboard  
Johnson-Evinrude® Outboard  
Sterndrive MerCruiser®  
Sterndrive OMC®  
Sterndrive Volvo® Penta  
Inboard

#### Engine Control Cables

C5, MACH 5  
C5, MACH 5  
C8, MACH Zero  
C8, MACH Zero  
C8, MACH Zero  
C8, MACH Zero  
C8, MACH Zero  
C8, MACH Zero  
1979 to Date C14, MACH 14  
C5, MACH 5  
1979 to Date C14, MACH 14  
C8, MACH Zero  
C8, MACH Zero

(ft)

### Engine Control Cables - Shut Off B14



Part No.	Model	(ft)	Part No.	Model	(ft)	Part No.	Model	(ft)
83805	B14	5'	83814	B14	14'	83820	B14	20'
83808	B14	8'	83815	B14	15'	83823	B14	23'
83810	B14	10'	83816	B14	16'	83824	B14	24'
83812	B14	12'	83818	B14	18'			

- Stroke: 70mm.
- Designed for throttle, fuel shut off and other applications.
- Supplied with L13 (83605) stop collar & L14 (83610) cable clamp block.



## Engine Control Cables - C5

Part No.	Model	(ft)	Part No.	Model	(ft)	Part No.	Model	(ft)
83309	C5	9'	83314	C5	14'	83320	C5	20'
83310	C5	10'	83315	C5	15'	83322	C5	22'
83311	C5	11'	83316	C5	16'	83324	C5	24'
83312	C5	12'	83317	C5	17'			
83313	C5	13'	83318	C5	18'			

- Stroke: 95mm.
- For Mercury® and MerCruiser® Engines.



## Engine Control Cables - C8

Part No.	Model	(ft)	Part No.	Model	(ft)	Part No.	Model	(ft)
83006	C8	6'	83014	C8	14'	83023	C8	23'
83007	C8	7'	83015	C8	15'	83024	C8	24'
83008	C8	8'	83016	C8	16'	83026	C8	26'
83009	C8	9'	83017	C8	17'	83028	C8	28'
83010	C8	10'	83018	C8	18'	83030	C8	30'
83011	C8	11'	83019	C8	19'	83033	C8	33'
83012	C8	12'	83020	C8	20'			
83013	C8	13'	83022	C8	22'			

- Stroke: 87mm.
- Suitable for outboard, inboard and sterndrive engines.
- High efficiency for smooth operation.
- High flexibility for reduced bend radius.
- Ideal for long complex cable routing.
- Maintenance free.
- Stainless steel cable and end fittings.
- High resistance black outer jacket.
- Solid stainless steel wire core.



## Engine Control Cables - C14

Part No.	Model	(ft)	Part No.	Model	(ft)	Part No.	Model	(ft)
83209	C14	9'	83214	C14	14'	83220	C14	20'
83210	C14	10'	83215	C14	15'	83222	C14	22'
83211	C14	11'	83216	C14	16'			
83212	C14	12'	83217	C14	17'			
83213	C14	13'	83218	C14	18'			

- Stroke: 75mm.
- For Johnson, Evinrude, OMC® engines manufactured after 1979.



## Engine Control Cables - C16

Part No.	Model	(ft)	Part No.	Model	(ft)
83252	C16	12'	83256	C16	16'
83253	C16	13'	83257	C16	17'
83254	C16	14'	83258	C16	18'
83255	C16	15'			

- Stroke: 80mm.
- C16 Mariner Engines up to 40HP.



## Engine Control Cables - C36

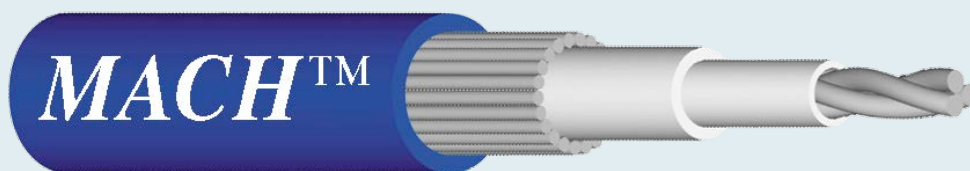
Part No.	Model	(ft)	Part No.	Model	(ft)	Part No.	Model	(ft)
83350	C36	10'	83354	C36	14'	83358	C36	18'
83351	C36	11'	83355	C36	15'	83359	C36	19'
83352	C36	12'	83356	C36	16'	83360	C36	20'
83353	C36	13'	83357	C36	17'			

- Stroke: 87mm.
- For Mercury® and MerCruiser® engines and Mercury® Generation II™ series controls.



## MACH™ SERIES HIGH EFFICIENCY & FLEXIBILITY ENGINE CONTROL CABLES

For the ultimate in efficiency and response, the Mach™ Series cables deliver unmatched results. They have been specifically designed to make even the most complex of cable installations result in smooth, easy and precise shift and throttle movement.



### High Performance

The PATENTED “high performance” MACH™ Cables are the result of decades of experience in producing high quality, long lasting, flexible cables.

The innovative core design maximizes efficiency and minimizes lost motion, while the exclusive design of the conduit provides extremely high level of flexibility.

### Available in the following configurations:

- **MACHZero** - Universal style (like C8)
  - **MACH5** - Mercury® style (like C5)
  - **MACH14** - Current OMC® - BRP® style (like C14)
- Suitable for outboard – inboard and sterndrive engines.
  - High efficiency for smooth operation.
  - High flexibility for reduced bend radius. Ideal for long complex cable routings.
  - Maintenance free.
  - Stainless steel cables and end fittings.
  - High resistance blue outer jacket protects against abrasion, UV and chemicals.
  - Braided core increases strength and flexibility.





## Engine Control Cables - MACH Zero

Part No.	Model	(ft)	Part No.	Model	(ft)
83107M	MACH Zero	7'	83125M	MACH Zero	25'
83108M	MACH Zero	8'	83126M	MACH Zero	26'
83109M	MACH Zero	9'	83127M	MACH Zero	27'
83110M	MACH Zero	10'	83128M	MACH Zero	28'
83111M	MACH Zero	11'	83130M	MACH Zero	30'
83112M	MACH Zero	12'	83132M	MACH Zero	32'
83113M	MACH Zero	13'	83134M	MACH Zero	34'
83114M	MACH Zero	14'	83136M	MACH Zero	36'
83115M	MACH Zero	15'	83140M	MACH Zero	40'
83116M	MACH Zero	16'	83145M	MACH Zero	45'
83117M	MACH Zero	17'	83146M	MACH Zero	46'
83118M	MACH Zero	18'	83150M	MACH Zero	50'
83119M	MACH Zero	19'	83154M	MACH Zero	54'
83120M	MACH Zero	20'	83160M	MACH Zero	60'
83121M	MACH Zero	21'	83170M	MACH Zero	70'
83122M	MACH Zero	22'	83185M	MACH Zero	85'
83123M	MACH Zero	23'			
83124M	MACH Zero	24'			

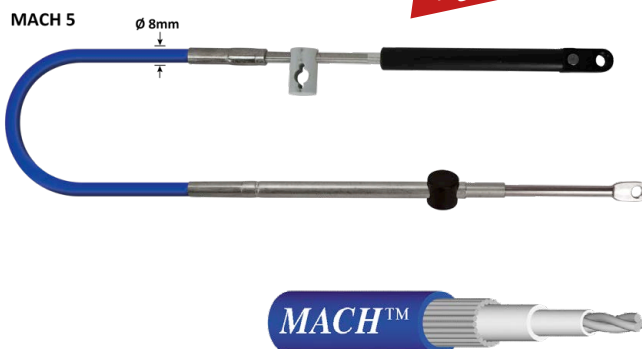
- Stroke 87mm.
- MACH Zero for Universal Style engines.
- For use with inboard, sterndrive and outboard engines.
- Ideal for high performance applications, long cable runs and complex routing.
- Blue colour jacket.
- Braided stainless steel inner core.



## Engine Control Cables - MACH 5

Part No.	Model	(ft)	Part No.	Model	(ft)
833510	MACH 5	10'	833518	MACH 5	18'
833511	MACH 5	11'	833519	MACH 5	19'
833512	MACH 5	12'	833520	MACH 5	20'
833513	MACH 5	13'	833522	MACH 5	22'
833514	MACH 5	14'	833524	MACH 5	24'
833515	MACH 5	15'	833526	MACH 5	26'
833516	MACH 5	16'			
833517	MACH 5	17'			

- Stroke 95mm.
- Ideal for high performance applications, blue colour jacket.
- MACH 5 for Mercury® & MerCruiser® engines.
- Blue colour jacket.
- Braided stainless steel inner core.



## Engine Control Cables - MACH 14

Part No.	Model	(ft)	Part No.	Model	(ft)
833710	MACH 14	10'	833718	MACH 14	18'
833711	MACH 14	11'	833719	MACH 14	19'
833712	MACH 14	12'	833720	MACH 14	20'
833713	MACH 14	13'	833722	MACH 14	22'
833714	MACH 14	14'	833724	MACH 14	24'
833715	MACH 14	15'	833726	MACH 14	26'
833716	MACH 14	16'			
833717	MACH 14	17'			

- Stroke 75mm.
- Ideal for high performance applications.
- MACH 14 for Johnson, Evinrude & OMC® engines manufactured after 1979.
- Blue colour jacket.
- Braided stainless steel inner core.



## Engine Control - Spare Handle

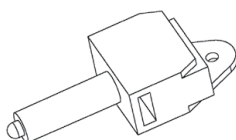


Part No.	Description	Spline Shaft (mm)	Suits
84150	Spare Handle & Knob	18	83645 83650

## Engine Control - Neutral Safety Switch



83670



83673



83675

Part No.	Description	Model	Suits
83670	Neutral Safety Switch	X12	83301B - 83302C 83648 83651 83654 83825 83830 83832 83833 83845 83847 83850 83851 83855 83858
83673	Neutral Safety Switch	X41	83838 83839
83675	Neutral Safety Switch	X43	83645 83650



## Engine Control - Installation Kits

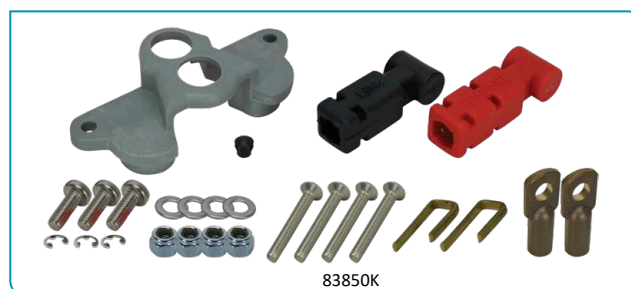


83845K



83847K

Part No.	Description	Suits
83845K	Spare Installation Kit	83845
83847K	Spare Installation Kit	83847
83850K	Spare Installation Kit	83850



83850K

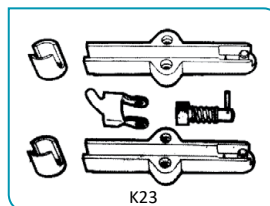




## Engine Control - Connection Kits

Part No.	Model	Suits Cables	Suits Control Box	Suits Engine
83864	K23	C14 MACH 14	B47	-
83865	K25	C8 MACH Zero	B47	-
83632	K32	C22	Top Mount Two Lever B101	-
83647	K33	C22	B103	-
83637	K35	C5 C16 MACH 5	Single Lever B183 B184 B85 B310CH B73 B74 B89 B90 B665 B666	-
83635	K51	C14 MACH 14	B89 B90	-
83636	K56	C8 MACH Zero	-	Mercury®
83638	K57	C2 C8 MACH Zero	BRP® Evinrude®	BRP® Evinrude®
83643	K60	C5 C16 MACH 5	B301CR B302CR B301B	-
83644	K61	C22	B301CR B302CR B301B	-
83642	K62	C36 MACH 36	B301C B302CR B301B	-
83631	K71	C14 MACH 14	B400 B400- ETC	-
83633	K72	C5 C16 MACH 5	B400 B400- ETC	-
83639	Control Adapter	C8 Mach Zero	Mercury® MerCruiser®	-
83640	Control Adapter	C8 Mach Zero	OMC®	OMC®

NOTE: 83632, 83639 and 83640 sold in pairs.



K23  
83864



K25  
83865



K32  
83632



K33  
83647



K35  
83637



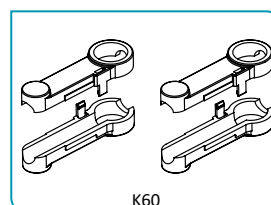
K51  
83635



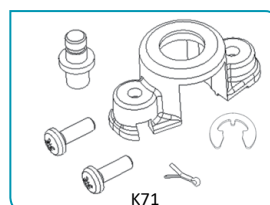
K56  
83636



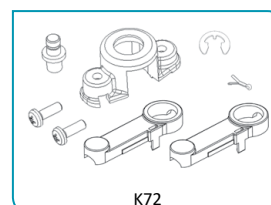
K57  
83638



K60  
83643



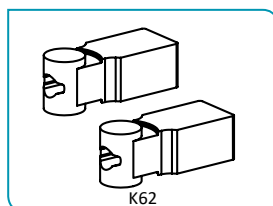
K71  
83631



K72  
83633



K61  
83644



K62  
83642



K57  
83639



K57  
83640

## Engine Control - Cable Clamp Block



Part No.	Description	Model
83585	Cable Clamp Block	L2

## Engine Control - Shim & Clamp Block



Part No.	Description	Model	Suits Cables
83590	Shim & Clamp Block	L3	C8 MACH Zero C33

## Engine Control - Ball Joint - Stainless Steel



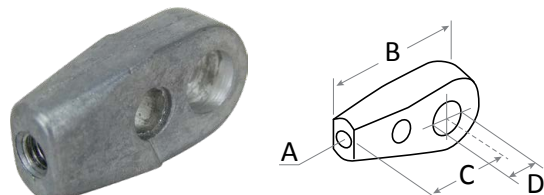
83592, 83595 & 83596

83593, 83594 & 83599

Part No.	Description	Internal Thread	Ball Post
83593	Stainless Steel Ball Joint	½" UNF	½"
83599	Stainless Steel Ball Joint	½" UNF	¾"
83592	Stainless Steel Ball Joint	¼" UNF	¼"
83594	Stainless Steel Ball Joint	¾" UNF	¾"
83595	L7 Stainless Steel Ball Joint	10-32 UNF	M6
83596	Stainless Steel Ball Joint	M6	M6

- 83595-Fits C8, MACH Zero & C33 Cables.

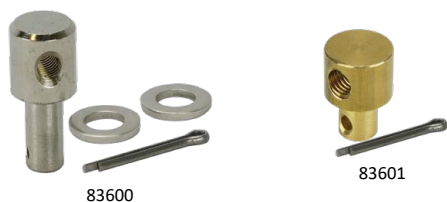
## Engine Control - Alloy Terminal Eye



Part No.	A	B (mm)	C (mm)	D (mm)	Suits Cables
83598	10-32 UNF	25	32.4	7.5	C8 C33 MACH Zero

- Replaces standard plastic eye terminal in kits.

## Engine Control - Cable End Fitting



83600

83601



Part No.	Description	Model	Outer Dimensions H x Ø (mm)	Inner Ø (mm)	Suits Cables
83600	Cable End Pivot	L12	26 x 11	6.3	C8 MACH Zero C33
83601	Cable End Pivot	L12	15.9 x 11	6.3	C8 MACH Zero C33

## Engine Control - Stop Collar



Part No.	Description	Model	Suits Cables
83605	Stop Collar	L13	B14

## Engine Control - Cable Clamp Block



Part No.	Description	Model	Suits Cables
83610	Cable Clamp Block	L14	C8 MACH Zero C33

- Stainless Steel.



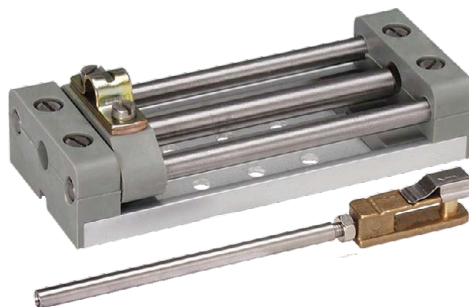


## Engine Control - Dual Station - Selector Unit

Part No.	Description	Model
83615	Selector Unit	L23

- Selector unit for use with single lever controls in dual station applications. It enables independent control over throttle or shift from either the main station or the flybridge station.

*NOTE: Before changing station, throttle must be on idling position and shift in neutral.*



## Engine Control - Clevis Attachment

Part No.	Internal Thread	Model	Suits Cables
83620	10-32 UNF	L25	C8 C33 MACH Zero
83626	1/4" x 28 thread	L26	C22



## Engine Control - Fork Ends

Part No.	Description	Internal Thread	
83622	Bronze Plated Steel Fork End	10-32 UNF	NEW ENTRY
83624	Bronze Plated Steel Fork End	1/4" x 28 thread	NEW ENTRY



## Engine Control - Stainless Steel Cable Hook Clip

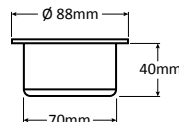
Part No	Description	Dimensions (L x W x H) mm	Suits Cables
83608	Single Quick Cable Hook Clip	350 x 250 x 340	C8 C33 MACH Zero
83609	Double Quick Cable Hook Clip	350 x 320 x 340	MACH Zero

- Single or double cable hook clip offers a secure attachment point for cables.
- Stainless steel.



## Engine Control - Shutoff Recess

Part No.	Description	Model	Suits Cables
83627	Recessed Bulkhead	K68	B14



## Engine Control - One Function T Handle

Part No.	Description
83641	One Function T Handle Operation

- One function T handle operation
- Ideal for throttle, choke and air or fuel shutdown.
- For use with C8, MACH Zero and C33 cables



The easy to install Power A Mark II™ control system provides fingertip operation of throttle and shift levers.

Using reliable and precise digital data transmission, this single or dual function control system is specifically designed to work on mechanically controlled as well as electronic and electro-hydraulic gas and diesel inboards, sterndrives and outboards.

The Power A Mark II™ comes with many features including Dock Assist, which offers the operator the opportunity to reduce the sensitivity of the throttle function for easier dock side handling.

Other standard features include RPM Synchronization, which reduces engine vibration and improves fuel economy, a High Idle feature to increase RPM where higher idle is necessary for cold engine operations, a programmable Trolling Valve Control and neutral Warm Up.

The stylish and ergonomically designed control makes the Power A Mark II™ suitable for many types of applications ranging from sport boats, yachts and commercial applications.

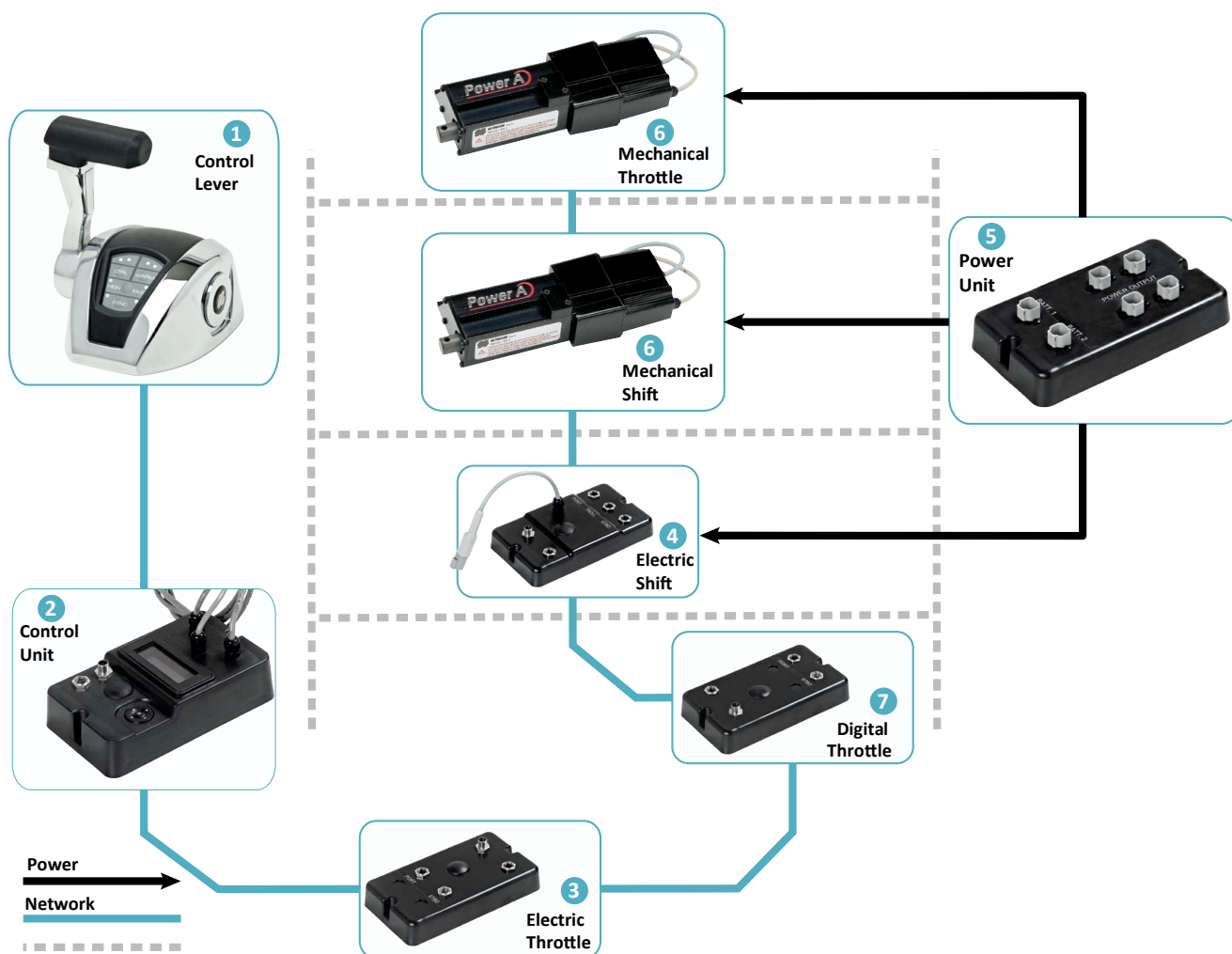
Available with and without trim, the control has audible and visual interfaces which alert the operator to the current status of the control system.

With the ability to control up to 2 engines from up to 4 different stations, the Power A Mark II™ is a modular and flexible system with simple to install components. The unique Control Unit Display of the Power A Mark II™ provides simple touch pad programming with descriptive information regarding the set up, tuning and diagnostics of the system.

The Power A Mark II™ is a system that can replace mechanical controls either on fully mechanical engines, or on fully electrical engines, or on engines with the combination of both characteristics.

The "Power A Mark II™ - Installation and User Manual" describes activities, operations, technical specifications which must be followed during the installation and/or usage of the product, in order to keep a valid warranty and obtain the better performance. Description and drawings in that manual are suitable to allow an easy installation and safe use of the product by skilled personnel.

### Power A Mark II™





### Electronic Control System - Power A Mark II™



Part No.	Description	Trim
84400	Single Engine Control without Trim	Yes
84401	Single Engine Control with Trim	No
84402	Twin Engines Control without Trim	Yes
84403	Twin Engines Control with Trim	No

#### Technical Features:

- Single Lever/Dual Function and Dual Lever/Dual Function for shift, throttle and trolling.
- Up to 4 control stations.
- **Power supply:** min 9V to max 32V
- **Working temperature:** -25°C to +75°C
- **Control station functions:** Station Select, Engines Warm up, High idle, Docking, Engine synchronization and Trolling valve.
- **Electronic throttle outputs:** Voltage (double output 0-5V and 0 - 2.5V), PWM (0-100%, frequency from 200Hz to 1kHz) - Current (4 - 10mA).
- **Digital Throttle Output:** SAE J 1939, NMEA 2000.
- **Trolling valve output:** Voltage (0 - 5V), PWM (0-100%, frequency from 100Hz to 1 kHz), Current (4 - 20mA).
- **Electric shift control:** 2 or 3 ON/OFF or proportional solenoids, Shift delays fully programmable.

#### Safety Devices:

- Start in-gear PROTECTION (start inhibition with shifted gear)
- Audible and visual diagnostic failure alarm (readable messages on the control unit display).
- Proportional shift delays.
- Programmable working parameters.
- Meets CEI EN 60945 standards.

#### EMC Certification and CE Mark

- Conforms with: CEI EN60945 and UNI-EN ISO 11547.

#### Compatibility With All Mechanical and Electronic Throttle Engines

- Cummins, Detroit Diesel, Scania, Iveco, FPT, Lombardini, VM Motori, FNM, Yanmar, CMD-Volkswagen and Hyundai.

**NOTE:** The Power A Mark II™ electronic system actuators cannot be installed in rooms where ignition-proof devices are required.





## Electronic Control - Control Unit



Part No.	Description	Dimensions (mm)
<b>84410</b>	Control Unit	210 x 120

- Control Unit: user interface for the configuration, settings and diagnostic of all the modules in a system.
- IP protection: IP65.

## Electronic Control - Throttle Units - V / I



84412, 84414



Part No.	Description	Dimensions (mm)
<b>84412</b>	V-Throttle for 0-5V interfaces (voltage)	205 x 110
<b>84414</b>	I-Throttle for 4-20 mA interfaces (current)	205 x 110

- Supplies the throttle electronic signal.
- Required for use with direct connection to electronic throttle on the engine.
- IP protection: IP65.

## Electronic Control - Throttle Units - PWM



Part No.	Description	Dimensions (mm)
<b>84416</b>	PWM-Throttle	205 x 110

- Supplies the electrical signals to PWM interfaces.
- IP protection: IP65.

## Electronic Control - Shift Unit



Part No.	Description	Dimensions
<b>84420</b>	Shift Unit	210 x 120

- Controls up to 2 shifts with solenoids. Required for use with direct connection to the electrical shift unit on the transmission.
- Grants the power supply up to 4 modules with the input combination of up to 2 batteries, 12 and 24V. Required for all Power A Mark II installations.
- IP Protection: IP65.

## Electronic Control - Power Unit



Part No.	Description	Dimensions
<b>84426</b>	Power Unit	205 x 110

- Required for all Power A Mark II installations.
- Grants the power supply up to 4 modules with the input combination of up to 2 batteries, 12 and 24V.
- IP Protection: IP65.

## Electronic Control - M -Actuator



Part No.	Description	Length
<b>84428</b>	M-Actuator	320mm (12.6")

- The electromechanical actuators can control any mechanical interface (throttle shift or custom made trolling valve) through MACHZero and C8 mechanical cables.
- IP Protection: IP66.





## Electronic Control - Main Power Supply Cable

Part No.	Description	Length (m)
84430	Main Power Supply Cable	1
84431	Main Power Supply Cable	3
84432	Main Power Supply Cable	7
84433	Main Power Supply Cable	10

- Main power supply of the system.

NOTE: One each battery.



## Electronic Control - Power Cable Extension

Part No.	Description	Length (m)
84440	Power Cable Extension	1
84441	Power Cable Extension	3
84442	Power Cable Extension	7
84443	Power Cable Extension	10

- Power extension cable for modules connection.

NOTE: One each mechanical actuator.



## Electronic Control - Shift Cable with Electric Troll

Part No.	Description	Length (m)
84460	Shift Cable with Electric Troll	1
84461	Shift Cable with Electric Troll	3
84462	Shift Cable with Electric Troll	7
84463	Shift Cable with Electric Troll	10

- Shift and trolling solenoid connection cable.

NOTE: One each shift and trolling with solenoids.



## Electronic Control - 3 Solenoid Shift Cable (Neutral Solenoid)

Part No.	Description	Length (m)
84470	3 Solenoid Shift Cable (Neutral Solenoid)	1
84471	3 Solenoid Shift Cable (Neutral Solenoid)	3
84472	3 Solenoid Shift Cable (Neutral Solenoid)	7
84473	3 Solenoid Shift Cable (Neutral Solenoid)	10

- 3 solenoid connection cable.

NOTE: One each 3 solenoid shift.



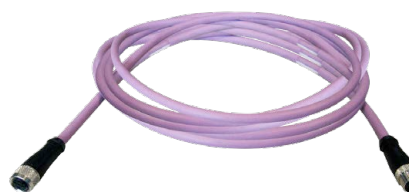
## Electronic Control - Shift Cable

Part No.	Description	Length (m)	Part No.	Description	Length (m)
84450	Shift Cable	1	84453	Shift Cable	10
84451	Shift Cable	3	<ul style="list-style-type: none"> <li>• Solenoid connection cable.</li> </ul> <p>NOTE: One each solenoid shift.</p>		
84452	Shift Cable	7			



## Electronic Control - Can Cable

Part No.	Description	Length (m)	Part No.	Description	Length (m)
84480	CAN Cable	1	84484	CAN Cable	15
84481	CAN Cable	3	84485	CAN Cable	20
84482	CAN Cable	7	<ul style="list-style-type: none"> <li>• Network connection cable.</li> </ul>		
84483	CAN Cable	10			



## Electronic Control - Universal V-Troll Cable



Part No.	Description	Length (m)
<b>84490</b>	Universal V-Troll Cable	2
<b>84491</b>	Universal V-Troll Cable	4

- 0-5 V cable with no redundancy.

## Electronic Control - Universal I-Troll Cable



Part No.	Description	Length (m)
<b>84494</b>	Universal I-Troll Cable	2
<b>84495</b>	Universal I-Troll Cable	4

- 4-20 mA output cable, no connectors included.

## Network Terminators, Spare Parts

## Electronic Control - Network Terminators



Part No.	Description
<b>84229</b>	Network Terminators

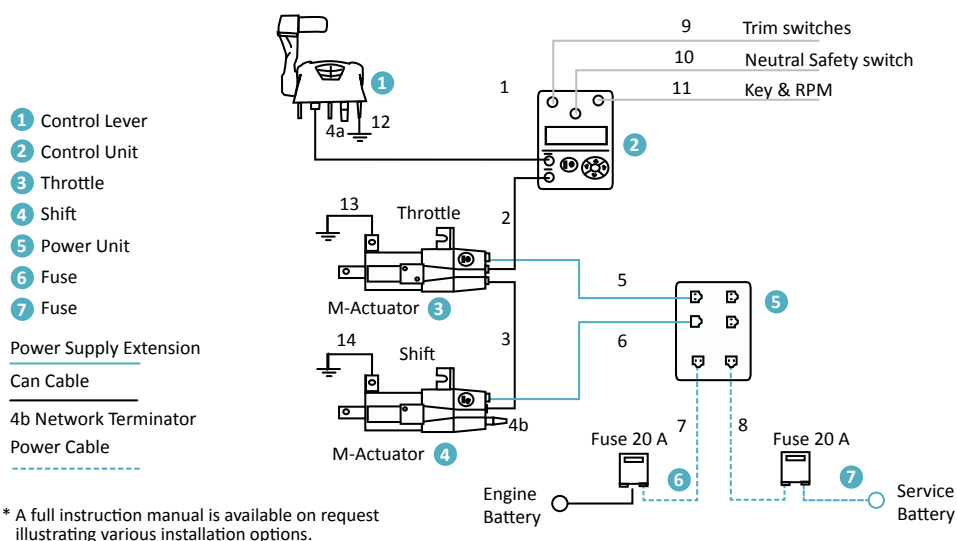
- Each system needs two terminators.
- For cable ends - choose terminator according to your needs.

## Electronic Control - Spare Parts

Part No.	Description	Qty
<b>84498</b>	Cable connection Kit	1 for each actuator
<b>84499</b>	Conduit clamp Kit	1 for each actuator

- **84498** Kit to connect mechanical cable to the actuator.
- **84499** Conduit clamp kit for mechanical cable kit.

The Diagram Illustrates a Typical Single Engine Application with Mechanical Throttle and Mechanical Shift





## Electronic Control - E-Throttle Unit

Model	Part No.	Description	Features	No. Of Engines	Note
V-Throttle	<b>84412</b>	Throttle with analog voltage interface	Redundant voltage input, IVS	1 - 2	FPT, VolksWagen, Yanmar, Mercruiser, Lombardini
I-Throttle	<b>84414</b>	Throttle with current analog interface	Current outputs	1 - 2	4 - 20 mA throttle engines
PWM Throttle	<b>84416</b>	Throttle with PWM interface	PWM outputs	1 - 2	Perkins, Caterpillar
SAEJ -Throttle	<b>Custom</b>	Throttle with SAEJ 1939 interface	CAN DeviceNet SAEJ 1939 outputs	1 - 2	SAEJ 1939 engines
NMEA -Throttle	<b>Custom</b>	Throttle with NMEA 2000 interface	CAN DeviceNet NMEA 2000 outputs	1 - 2	NMEA 2000 engines



## Electronic Control - E-Throttle Cables

Model	Description	Application	Length Metres	Part No.	Note
Mercruiser 4.2 Black V-Throttle cable	Mercruiser 4.2 Black V-Throttle cable	Mercruiser engines 0 – 5 V cable	2	<b>84500</b>	Mercruiser 4.2 black engines
	Mercruiser 4.2 Black V-Throttle cable	Mercruiser engines 0 – 5 V cable	4	<b>84501</b>	
Mercruiser QSD V-Throttle cable	Mercruiser QSD V-Throttle cable	Mercruiser engines 0 – 5 V cable	2	<b>84504</b>	Mercruiser QSD engines
	Mercruiser QSD V-Throttle cable	Mercruiser engines 0 – 5 V cable	4	<b>84505</b>	
Yanmar V-Throttle cable	Yanmar V-Throttle cable	Yanmar engines 0 – 5 V cable	2	<b>84508</b>	Yanmar BY engines.
	Yanmar V-Throttle cable	Yanmar engines 0 – 5 V cable	4	<b>84509</b>	
Universal SAEJ1939-Throttle cable	Universal SAEJ1939 Throttle cable	SAEJ1939 cable with no connector	2	<b>84512</b>	None
	Universal SAEJ1939 Throttle cable	SAEJ1939 cable with no connector	4	<b>84513</b>	



## Components for Trolling Systems

Engine	No. Of Engines	Components	Part No.	Quantity
Mechanical trolling valve	Single Engine	Mechanical actuator (Troll)	<b>84428</b>	1
		CAN cable	Select CAN Cable	1
		Power Cable Extension	Select Power Cable Extension	1
	Twin Engines	Mechanical Actuator	<b>84428</b>	2
		Power Unit	<b>84426</b>	0 (*)
		CAN cable	Select Can Cable	2
		Power Supply Cable (general)	Select Power Supply Cable (general)	0 (*)
	Power cable extension	Select Power cable extension	2	
(*) When there are no more free sockets in the existing power unit, add one Power Unit with one or two power supply cables according to battery number. Refer to the diagram on installation manual.				
Electric troll (proportional solenoid)	Single Engine	Shift Unit	<b>84420</b>	1(**)
		Can Cable	Select Can Cable	1(**)
		Power Cable Extension	Select Power cable extension	1(**)
		Cavo Shift Con Troll	Select Cavo Shift Con Troll	1
	Twin Engines	Shift Unit	<b>84420</b>	1(**)
		Can Cable	Select Can Cable	1(**)
		Power Cable Extension	Select Power Cable Extension	1(**)
		Power Unit	<b>84426</b>	0(*)
		Power supply cable (general)	Select Power supply cable (general)	0(*)
	Shift Cable with Troll	Select Shift Cable with Troll	2	
(*) When there are no more free sockets in the existing power unit, add one Power Unit with one or two power supply cables according to battery number. Refer to the diagram on installation manual.				
(**) When a shift unit is already present in the system, it can control the electric troll by using the proper cable. When a shift box is not present, add one to the system with the shift and CAN cables.				
Electronic Troll (0-5V , 4-20mA)	Single Engine	E-Troll Unit	Select Custom Components	1
		Can Cable	Select Can Cable	1
		Troll Cable	Select Troll Cable	1
	Twin Engine			1
		Can Cable	Select Can Cable	1
Troll Cable	Select Troll Cable	2		





## Electronic Control - Trolling Valve Systems Order Guide

Engine	No. Of Engines	Components	Part No.	Quantity
PwA II-EE Electronic throttle  Electric shift	Single Engine	Single control with trim (or no trim)	Select control	1
		Control Unit	<b>84410</b>	1
		E-Throttle unit	Select E-Throttle Unit	1
		E-Shift unit	<b>84420</b>	1
		Throttle cable	Select Throttle cable	1
		Shift cable	Select Shift cable	1
		Power supply cable (general)	Select Power supply cable (general)	1
		CAN cable	Select CAN cable	3
		Network terminators	<b>84229</b>	1
		Power Unit (optional for second battery)	<b>84426</b>	1
	Two Engines	Power cable extension (optional for second battery)	Select Power Cable Extension	1
		Power supply cable (optional for second battery)	Select Power Supply Cable	1
		Dual control with trim (or no trim)	Select control	1
		Control Unit	<b>84410</b>	1
		E-Throttle unit	Select E-Throttle Unit	1
		E-Shift unit	<b>84420</b>	1
		Throttle cable	Select Throttle cable	2
		Shift cable	Select Shift cable	2
		Power supply cable (general)	Select Power supply cable (general)	1
		CAN cable	Select CAN cable	3
PwA II-EM Electronic throttle  Mechanical shift	Single Engine	Network terminators	<b>84229</b>	1
		Power Unit (optional for second battery)	<b>84426</b>	1
		Power cable extension (optional for second battery)	Select Power cable extension	1
		Power supply cable (optional for second battery)	Select Power supply cable	1
		Single control with trim (or no trim)	Select control	1
		Control Unit	<b>84410</b>	1
		E-Throttle unit	Select E-Throttle unit	1
		Mechanical actuator	<b>84428</b>	1
		Throttle cable	Throttle cable	1
		CAN cable	Select CAN cable	3
	Two Engines	Power supply cable (general)	Select Power supply cable (general)	1
		Network terminators	<b>84229</b>	1
		Power Unit (optional for second battery)	<b>84426</b>	1
		Power cable extension (optional for second battery)	Select Power cable extension	1
		Power supply cable (optional for second battery)	Select Power supply cable	1
		Dual control with trim (or no trim)	Select control	1
		Control Unit	<b>84410</b>	1
		E-Throttle unit	Select E-Throttle unit	1
		Mechanical actuator	<b>84428</b>	2
		Throttle cable	Select Throttle cable	2
For each additional station add:	Single Engine:	CAN cable	Select CAN cable	1
		Single lever control station with trim (or no trim)	Select control	1
	Two Engines:	CAN cable	Select CAN cable	1
		Dual lever control station with trim (or no trim)	Select control	1





## Electronic Control - Trolling Valve Systems Order Guide

Engine	No. Of Engines	Components	Part No.	Quantity
PwA II-ME Mechanical throttle  Electronic shift	Single Engine	Single control with trim (or no trim)	Select control	1
		Control Unit	<b>84410</b>	1
		E-Throttle unit	<b>84420</b>	1
		Mechanical actuator	<b>84428</b>	1
		Throttle cable	Select throttle cable	1
		CAN cable	Select CAN cable	3
		Power supply cable (general)	Select Power supply cable (general)	1
		Network terminators	<b>84229</b>	1
		Power Unit (optional for second battery)	<b>84426</b>	1
		Power extension cable (optional for second battery)	Select power extension cable	2
	Power supply cable (optional for second battery)	Select power supply cable	1	
	Two Engines	Dual control with trim (or no trim)	Select control	1
		Control Unit	<b>84410</b>	1
		E-Throttle unit	<b>84420</b>	1
		Mechanical actuator	<b>84428</b>	2
		Throttle cable	Select throttle cable	2
		CAN cable	Select CAN cable	4
		Power supply cable (general)	Select Power supply cable (general)	1
		Network terminators	<b>84229</b>	1
		Power Unit	<b>84426</b>	1
Power extension cable		Select Power extension cable	3	
Power supply cable (optional for second battery)	Select Power supply cable	1		
PwA II-MM Mechanical throttle  Mechanical shift	Single Engine	Single control with trim (or no trim)	Select control	1
		Control Unit	<b>84410</b>	1
		Mechanical actuator	<b>84428</b>	2
		CAN cable	Select CAN cable	3
		Power supply cable (general)	Select Power supply cable (general)	1
		Network terminators	<b>84229</b>	1
		Power Unit	<b>84426</b>	1
		Power extension cable	Select power extension cable	2
	Power supply cable (optional for second battery)	Select Power supply cable	1	
	Two Engines	Dual control with trim (or no trim)	Select control	1
		Control Unit	<b>84410</b>	1
		Mechanical actuator	<b>84428</b>	4
		CAN cable	Select CAN cable	5
		Power supply cable (general)	Select power supply cable (general)	1
		Network terminators	<b>84229</b>	1
		Power Unit	<b>84426</b>	1
		Power extension cable	Select power extension cable	4
Power supply cable (optional for second battery)	Select power supply cable	1		
For each additional station add:				
Single Engine:	Single lever control station with trim (or no trim)	Select control	1	
	CAN cable	Select CAN cable	1	
	Two Engines:	Dual lever control station with trim (or no trim)	Select control	1
		CAN cable	Select CAN cable	1