

Multiflex Marine



CATALOG 2019



INDEX

Introduction	02
Management System Certificate	04
CE Certificates	05
Global Presence	06
Packaged Hydraulic Steering System : Outboard	09
Packaged Hydraulic Steering System : Inboard	23
Hydraulic Steering System : Products & Accessories	33
Mechanical Steering System	55
Steering Wheels	71
Engine Control Cables	75
Personal Watercraft / JET SKI Cables	83
Engine Control Levers	87
Boat Trailer Polyurethane Rollers	91
Boat Trailer Rubber Rollers	95
Mooring Compensators	101
Warranty Condition & Exclusions	103



Multiflex Marine

ASSEMBLER PROGRAM

Become **Multiflex**

EDGE CONTROL CABLE ASSEMBLER

NEED FOR ASSEMBLER PROGRAM?

Engine Control Cables are used in varied lengths from 6 feet to 40 feet. Investment in stock of all lengths of control cables requires large investments in space and money. Delay in delivery from manufacturer results in loss of business.

WHAT IS ASSEMBLER PROGRAM?

Assembler Program offers the capability to locally manufacture cables as per demand. The Program offers a complete package of Equipment, Raw Material, Training and Technical Support to assemble the complete range of control cables.

SALIENT FEATURES OF MULTIFLEX EDGE CONTROL CABLE:

- ▲ Competitive Pricing
- ▲ Exceeds Performance of the best cable offered by competitors
- ▲ Very Low Backlash allows small bending for complex cable routing
- ▲ Frictionless Movement lead to Greater Efficiency
- ▲ Abrasion Resistant
- ▲ Suits Inboard / Outboard / Stern Drive Engines

BENEFITS OF ASSEMBLER PROGRAM:

- ▲ Capture the demand of Engine Control Cables of your country by offering immediate deliveries
- ▲ High Profit Margins

MULTIFLEX ASSEMBLERS ARE LOCATED IN MALAYSIA, SOUTH AFRICA, POLAND, CROATIA AND AUSTRALIA.

(2)

All manufacturing facilities of EXCEL are IATF 16949:2016 certified and equipped with latest state of art manufacturing & quality control systems.

INTRODUCTION

1

Leisure boating is an exhilarating experience. All the more when you are assured about the technology that drives it. Technology, which has been refined over years of experience, uses advanced manufacturing techniques, ensures prudent selection of input materials and guarantees total reliability.

2

With two decades of experience in manufacturing and distribution of Motion Control Engineering Products. The "MULTIFLEX" range of products are manufactured at multi location plants of Excel Controlinkage Pvt. Ltd. The core strength lies in our fully integrated manufacturing lines. This allows us to increase our product offerings to our customers including customization of products and services.

THIS IS THE MULTIFLEX ADVANTAGE

MULTIFLEX offers a wide variety of products for leisure boating industry

- 1 Hydraulic Steering System
- 2 Mechanical Steering System
- 3 Engine Control Cables and Levers
- 4 PWC Cables
- 5 Sports and S S Steering Wheels
- 6 Boat Trailer PU and Rubber Rollers
- 7 Mooring Compensators

(3)

MANAGEMENT SYSTEM CERTIFICATE

DNV·GL

MANAGEMENT SYSTEM CERTIFICATE

Certificate No.: 140828-2013-AQ-IND-IATF

Valid until:
03 October, 2018 - 02 October, 2021

IATF Certificate No.: 0336876

This is to certify that the management system of

Excel Controlinkage Pvt Ltd, Unit I

Plot No W 67, 68(B), 69, 70, MIDC Hingna Road, Nagpur 440016, Maharashtra, India and, if applicable, the remote support locations as mentioned in the Appendix accompanying this Certificate

has been found to conform to quality management system standard:
IATF 16949:2016

This certificate is valid for the following Scope:
DESIGN AND MANUFACTURING OF MECHANICAL PUSH-PULL CONTROL CABLES, LEVERS AND ASSEMBLIES

Place and date:
Katy, TX. 04 October 2018



For the issuing office:
DNV GL - Business Assurance
Pune, India

Robert Kozak
Robert Kozak
Management Representative

Lack of fulfillment of conditions as set out in the Certification Agreement may render this Certificate invalid.
ACCREDITED UNIT: DNV GL - Business Assurance, 1400 Ravello Drive, Katy, TX 77449. Tel.: 281-396-1000. www.dnvgkcert.com

Page 1 of 1

CE CERTIFICATES



GLOBAL PRESENCE

MULTIFLEX FACILITIES

-  India
-  Malaysia
-  Australia
-  South Africa
-  Croatia
-  Poland

DISTRIBUTION

- | | | | | | |
|--|--|---|--|--|---|
|  Albania |  Denmark |  Italy |  Philippines |  Sweden |  Brunei |
|  Algeria |  Egypt |  Kenya |  Poland |  Thailand |  Colombia |
|  Austria |  Finland |  Lebanon |  Portugal |  Tanzania |  Cyprus |
|  Bahrain |  France |  Latvia |  Qatar |  Tunisia |  Estonia |
|  Belgium |  French Polynesia |  Malaysia |  Russia |  Turkey |  Israel |
|  Brazil |  Germany |  Maldives |  Serbia |  UAE |  Lithuania |
|  Canada |  Greece |  Malta |  Seychelles |  Ukraine |  Oman |
|  Chile |  Hong Kong |  Mauritius |  Singapore |  UK | |
|  China |  Hungary |  Netherlands |  South Africa |  USA | |
|  Croatia |  Iran |  New Zealand |  Spain |  Vietnam | |
|  Czech Republic |  Iraq |  Norway |  Sri Lanka |  Yemen | |

(6)



Excel Controlinkage Pvt Ltd Group Factories

(7)

PACKAGED HYDRAULIC STEERING SYSTEM : OUTBOARD



HYDRAULIC STEERING SYSTEM : OUTBOARD

Multiflex manufactures a wide range of Outboard Hydraulic Steering Systems for applications on pleasure, commercial and fishing boats under the brand name MultiSteer.

MultiSteer Hydraulic Steering System are an outcome of years of design and testing thereby resulting in a real state of the art product line.

All the products are manufactured under strict quality control on modern machines and the final product is subjected to series of tests before being dispatched to the customer.

MultiSteer Hydraulic Steering System are warranted for 2 years.

MultiSteer products are tested and conform to Recreational Craft and Personal Watercraft Directive 2013/53/EU in accordance with EN ISO 10592:1995/A1:2000.

One can easily select the best suited system for the boat within the most comprehensive range available in the market with a guarantee on reliability, innovation and technology.

Description of MultiSteer Hydraulic Steering Systems:

Generally, an Outboard Hydraulic Steering System includes:

- ▲ Hydraulic Balanced Cylinder
- ▲ Hydraulic Manual Helm Pump
- ▲ Hydraulic Hose Tube
- ▲ Hydraulic Steering Fluid

Hydraulic Balanced Cylinder:

The cylinder is the most important component which provides linear movement to the engine or rudder depending on application and thus steers the boat to starboard or port.

Hydraulic Manual Helm Pump:

The manual helm pump is an axial piston driven pump which draws and forces the steering fluid when the wheel mounted on the helm shaft is rotated. Its volume determines the number of turns required hard over to hard over to guide the engine. The pump is assembled with lock valve to prevent untimely engine movement when the helm is not operated. The lock valve is also fitted with pressure relief valve to protect the system against unusual pressure increase.

Hydraulic Hose Tube:

Hose Tube is designed for transferring steering fluid from helm pump to the cylinder and vice versa. Hoses are designed flexible so as to be routed through complex or small bending radius. It is also tested at higher pressure than maximum working pressure to prevent oil leakage from system.

Hydraulic Steering Fluid:

Hydraulic Steering Fluid is required where the helm pump while being turned, pushes the fluid such that it travels through the tubing and displaces the cylinder. Use of correct steering fluid is highly recommended.

SELECTION OF THE HYDRAULIC STEERING SYSTEM FOR OUTBOARD ENGINE:

To select a correct MultiSteer Steering System for your boat, first define the maximum horse power developed by the outboard engine(s) and the rotational direction of the propellers on installations with respective engines. For Single Engine installation; working in any rotational direction, directly use the steering system as per mentioned maximum horse power of the engine.

Example for Single Engine of 115 Hp:

Maximum horse power for the installation of single engine $1 \times 115 \text{ Hp} = 115 \text{ Hp}$.

Here, you will select MultiSteer Hydraulic Steering System up to 115 Hp i.e. POHS-115AFN.

For Twin Engine installations; working in the same rotational direction, add the power of both engines

Example for Twin Engine of 115 Hp in same rotational direction :

Maximum horse power for the installation of twin engine $2 \times 115 \text{ Hp} = 230 \text{ Hp}$.

Here you will select MultiSteer Steering System up to 350 Hp. i.e. POHS-350AF-TR. This way you can install single steering system for twin engines through tie rod. For twin engine installations working in counter-rotational direction, take into account the power of one engine only + 20%

Example for Twin engine of 115 Hp in counter-rotational direction :

1 Maximum horse power for the installation of twin engine $115 \text{ Hp} + 20\% = 138 \text{ Hp}$.

Here you will select MultiSteer Steering System up to 250 Hp. i.e. POHS-115AFN-TR. This way you can install single steering system for twin engines through tie rod.

For Twin Engine installations; when the calculated maximum power exceeds the maximum power of the available steering system; it will be necessary to install a cylinder on each engine with a parallel hydraulic circuit (see "Different Types of Steering Assemblies").

Example for Twin Engine of 300 Hp in same rotational direction :

Maximum horse power for the installation of twin engine $2 \times 300 \text{ Hp} = 600 \text{ Hp}$.

Here you will select MultiSteer Steering System up to 600 Hp. i.e. POHS-350AF-TT. This way you can install a steering system with two cylinders LM-OC-350AF for twin engines connected through tie rod as well as hydraulic line.

Example for Twin Engine of 350 Hp in counter-rotational direction :

Maximum horse power for the installation of twin engine $350 \text{ Hp} + 20\% = 420 \text{ Hp}$.

Here you will select MultiSteer Steering System up to 600 Hp. i.e. POHS-350AF-TT. This way you can install steering system with two cylinders i.e. POHS-350AF for twin engines connected through tie rod as well as hydraulic line.

Example for Triple Engine of 175 Hp; 2 in counter 1 in same rotational direction :

Maximum horse power for the installation of triple engine $175 \text{ Hp} + 175 \text{ Hp} + 20\% = 385 \text{ Hp}$.

Here you will select MultiSteer Steering System up to 700 Hp. i.e. POHS-350AF-TT-3E.

This way you can install a steering system with two cylinders LM-OC-350AF for triple engines connected through two tie rods

HYDRAULIC STEERING FOR OUTBOARD

Packaged Hydraulic Steering System for Engines up to 115 Hp : POHS-115AFN 

The Standard Steering Kit POHS-115AFN for Single Cylinder - Single Engine includes following items:

Model	Description	Quantity
LM-HP-16	Front Mount Hydraulic Helm Pump	1 No.
LM-OC-115AFN	Single Balanced Front Mount Cylinder	1 No.
LM-HO-150	Hydraulic Steering Fluid	1 Liter
LM-CT-5.0	Hydraulic Hose of 5.0 meters with factory crimped hose connectors	2 Nos.
LM-OF-01	Oil Filling Kit	1 No.

Note : The Steering Wheel is not included in the standard Kit. To order Steering Wheel, please refer Steering Wheels Section.



Application Guide : Single Cylinder - Single Engine

Part No.	Compatible Outboard Engine	Power Range
LM-OC-115AFN	YAMAHA Four Stroke	20 Hp to 115 Hp
	YAMAHA Two Stroke	25 Hp to 90 Hp
	MERCURY Four Stroke	20 Hp to 115 Hp
	MERCURY Two Stroke	25 Hp to 60 Hp
	SUZUKI Four Stroke	30 Hp to 115 Hp
	SUZUKI Two Stroke	30 Hp to 40 Hp
	HONDA Four Stroke	20 Hp to 115 Hp
	EVINRUDE Four Stroke	30 Hp to 115 Hp
	TOHATSU Four Stroke	15 Hp to 115 Hp

Note : If there is wing nut type transom mount clamp screw, CUT it. It may foul the cylinder when trimmed fully.

HYDRAULIC STEERING FOR OUTBOARD

Packaged Hydraulic Steering System for Engines up to 175 Hp : POHS-175AF 

The Standard Steering Kit POHS-175AF for Single Cylinder - Single Engine includes following items:

Model	Description	Quantity
LM-HP-23	Front Mount Hydraulic Helm Pump	1 No.
LM-OC-175AF	Single Balanced Front Mount Cylinder	1 No.
LM-HO-150	Hydraulic Steering Fluid	2 Liters
LM-CT-7.5	Hydraulic Hose of 7.5 meters with factory crimped hose connectors	2 Nos.
LM-OF-01	Oil Filling Kit	1 No.

Note : The Steering Wheel is not included in the standard Kit. To order Steering Wheel, please refer Steering Wheels Section.



Application Guide : Single Cylinder - Single Engine

Part No.	Compatible Outboard Engine	Power Range
LM-OC-175AF	YAMAHA Four Stroke	90 Hp to 250 Hp
	YAMAHA Two Stroke	90 Hp to 250 Hp
	MERCURY Four Stroke	75 Hp to 250 Hp
	MERCURY Two Stroke	90 Hp to 250 Hp
	SUZUKI Four Stroke	70 Hp to 250 Hp
	SUZUKI Two Stroke	NA
	HONDA Four Stroke	75 Hp to 250 Hp
	EVINRUDE Four Stroke	90 Hp to 250 Hp
	TOHATSU Four Stroke	70 Hp to 250 Hp

Note : If there is wing nut type transom mount clamp screw, CUT it. It may foul the cylinder when trimmed fully.

HYDRAULIC STEERING FOR OUTBOARD

Packaged Hydraulic Steering System for Engines up to 350 Hp : POHS-350AF 

The Standard Steering Kit POHS-350AF for Single Cylinder - Single Engine includes following items:

Model	Description	Quantity
LM-HP-27	Front Mount Hydraulic Helm Pump	1 No.
LM-OC-350AF	Single Balanced Front Mount Cylinder	1 No.
LM-HO-150	Hydraulic Steering Fluid	2 Liters
LM-CT-7.5	Hydraulic Hose of 7.5 meters with factory crimped hose connectors	2 Nos.
LM-OF-01	Oil Filling Kit	1 No.

Note : The Steering Wheel is not included in the standard Kit. To order Steering Wheel, please refer Steering Wheels Section.



Application Guide : Single Cylinder - Single Engine

Part No.	Compatible Outboard Engine	Power Range
LM-OC-350AF	YAMAHA Four Stroke	90 Hp to 350 Hp
	YAMAHA Two Stroke	90 Hp to 200 Hp
	MERCURY Four Stroke	75 Hp to 350 Hp
	MERCURY Two Stroke	90 Hp to 250 Hp
	SUZUKI Four Stroke	70 Hp to 350 Hp
	SUZUKI Two Stroke	NA
	HONDA Four Stroke	75 Hp to 250 Hp
	EVINRUDE Four Stroke	90 Hp to 300 Hp
	TOHATSU Four Stroke	70 Hp to 250 Hp

Note : If there is wing nut type transom mount clamp screw, CUT it. It may foul the cylinder when trimmed fully.

HYDRAULIC STEERING FOR OUTBOARD

Packaged Hydraulic Side Mount Steering System for Engines up to 300 Hp : POHS-300AS

The Standard Steering Kit POHS-300AS for Single Cylinder - Single Engine includes following items:

Model	Description	Quantity
LM-HP-27	Front Mount Hydraulic Helm Pump	1 No.
LM-OC-300AS	Single Unbalanced Side Mount Cylinder	1 No.
LM-HO-150	Hydraulic Steering Fluid	2 Liters
LM-CT-7.5	Hydraulic Hose of 7.5 meters with factory crimped hose connectors	2 Nos.
LM-OF-01	Oil Filling Kit	1 No.

Note : The Steering Wheel is not included in the standard Kit. To order Steering Wheel, please refer Steering Wheels Section.



Application Guide : Single Cylinder - Single Engine

Part No.	Compatible Outboard Engine	Power Range
LM-OC-300AS	YAMAHA Four Stroke	90 Hp to 300 Hp
	YAMAHA Two Stroke	90 Hp to 300 Hp
	MERCURY Four Stroke	75 Hp to 300 Hp
	MERCURY Two Stroke	90 Hp to 250 Hp
	SUZUKI Four Stroke	70 Hp to 300 Hp
	SUZUKI Two Stroke	NA
	HONDA Four Stroke	75 Hp to 250 Hp
	EVINRUDE Four Stroke	90 Hp to 300 Hp
	TOHATSU Four Stroke	70 Hp to 250 Hp

Note : If there is wing nut type transom mount clamp screw, CUT it. It may foul the cylinder when trimmed fully.

HYDRAULIC STEERING FOR OUTBOARD

Dual Station Kit For Single Cylinder : LM-DSK-01-HP-XX

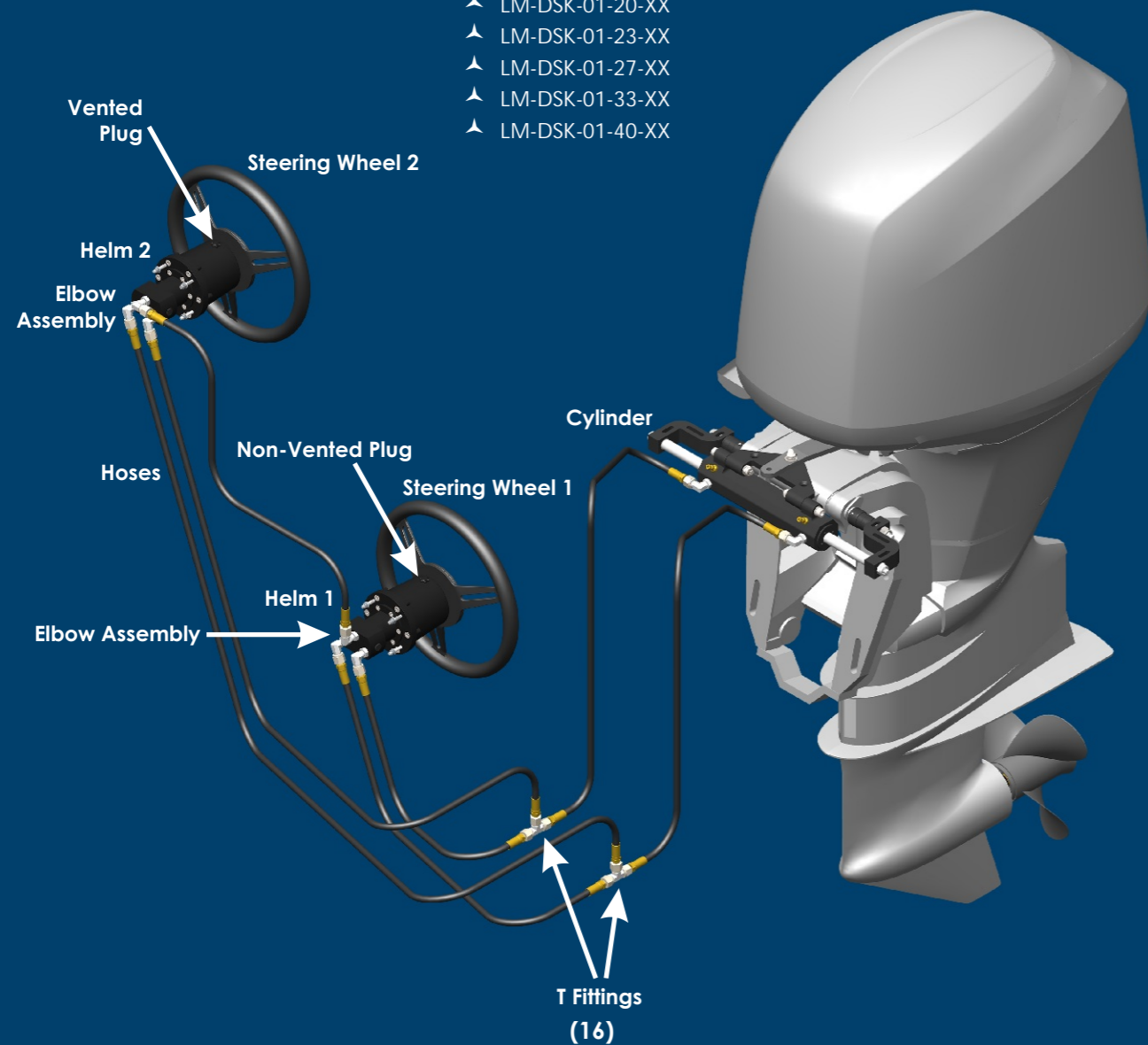
The Standard Dual Station Kit LM-DSK-01-HP-XX includes following items:

SN	Model No.	Description	Quantity
1	LM-HP-16/20/23/27/33/40	Front Mount Hydraulic Helm Pump (Select Model)	1 No.
2	LM-EB-02/03	Elbow Assembly	1 No.
3	LM-HC-R1	Reusable End Fittings	14 Nos.
4	LM-HT-XX	Hose Tube XX Meters	1 No.
5	LM-TF-01	T Fittings 9/16"-9/16"-9/16"	2 No.
6	LM-HO-150	Hydraulic Steering Fluid	2 Liters
7	LM-OF-01	Oil Filling Kit	1 No.

Note : Part No. LM-DSK-02-HP-XX; HP stands for Helm Part No. & XX stands for length of hose in Meters. Please mention the length of hose while ordering. If the length of hose is calculated, always prefer factory crimped hose over reusable hose to avoid oil leakage issues.

Standard Dual Station Kit Part Nos.:

- ▲ LM-DSK-01-16-XX
- ▲ LM-DSK-01-20-XX
- ▲ LM-DSK-01-23-XX
- ▲ LM-DSK-01-27-XX
- ▲ LM-DSK-01-33-XX
- ▲ LM-DSK-01-40-XX



HYDRAULIC STEERING FOR OUTBOARD

Dual Station Kit For Twin Cylinders : LM-DSK-02-HP-XX

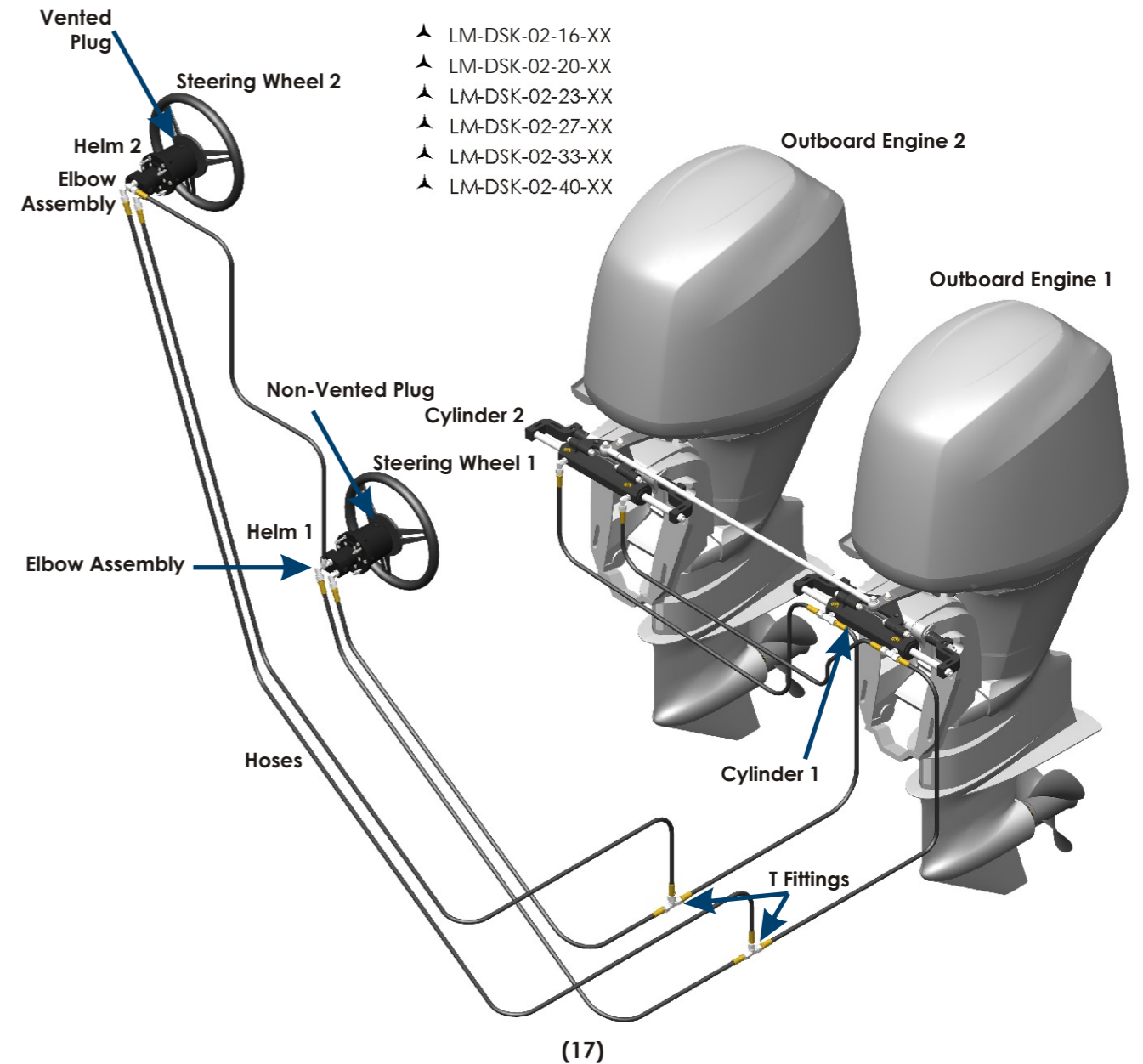
The Standard Dual Station Kit LM-DSK-02-HP-XX includes following items:

SN	Model No.	Description	Quantity
1	LM-HP-16/20/23/27/33/40	Front Mount Hydraulic Helm Pump (Select Model)	1 No.
2	LM-EB-02/03	Elbow Assembly	1 No.
3	LM-HC-R1	Reusable End Fittings	18 Nos.
4	LM-HT-XX	Hose Tube XX Meters	1 No.
5	LM-TF-01	T Fittings 9/16"-9/16"-9/16"	2 No.
6	LM-HO-150	Hydraulic Steering Fluid	2 Liters
7	LM-OF-01	Oil Filling Kit	1 No.

Note : Part No. LM-DSK-02-HP-XX; HP stands for Helm Part No. & XX stands for length of hose in Meters. Please mention the length of hose while ordering. If the length of hose is calculated, always prefer factory crimped hose over reusable hose to avoid oil leakage issues.

Standard Dual Station Kit Part Nos.:

- ▲ LM-DSK-02-16-XX
- ▲ LM-DSK-02-20-XX
- ▲ LM-DSK-02-23-XX
- ▲ LM-DSK-02-27-XX
- ▲ LM-DSK-02-33-XX
- ▲ LM-DSK-02-40-XX



HYDRAULIC STEERING FOR OUTBOARD

Different Types of Steering Assemblies

A. Single Cylinder - Single Engine

List of Components	Engine Up To 115 Hp	Engine Up To 175 Hp	Engine Up To 350 Hp	Unit
Steering Kit	POHS-115AFN	POHS-175AF	POHS-350AF	1 No.
Cylinder	LM-OC-115AFN	LM-OC-175AF	LM-OC-350AF	1 No.
Helm	LM-HP-16	LM-HP-23	LM-HP-27	1 No.
Hose Kit	LM-CT-5.0	LM-CT-7.5	LM-CT-7.5	2 Nos.
Steering Fluid	LM-HO-150*	LM-HO-150**	LM-HO-150**	1* / 2** Liters
Steering Wheel Revolution	5.3	5.3	6.1	Hard Over To Hard Over

B. Single Cylinder - Twin Engines in Same / Counter Rotating Direction with Tie Rod

List of Components	Engines Up To 120/180 Hp	Engines Up To 200/300 Hp	Engines Up To 450/600 Hp	Unit
Steering Kit	POHS-115AFN-TR	POHS-175AF-TR	POHS-350AF-TR	1 No.
Cylinder	LM-OC-115AFN	LM-OC-175AF	LM-OC-350AF	1 No.
Helm	LM-HP-16	LM-HP-23	LM-HP-27	1 No.
Hose Kit	LM-CT-5.0	LM-CT-7.5	LM-CT-7.5	2 Nos.
Steering Fluid	LM-HO-150*	LM-HO-150**	LM-HO-150**	1* / 2** Liters
Tie Rod	LM-T-3/4	LM-T-3/4	LM-T-3/4	1 No.
Steering Wheel Revolution	5.3	5.3	6.1	Hard Over To Hard Over

C. Twin Cylinders - Twin Engines in Same / Counter Rotating Direction with Tie Rod

List of Components	Engines Up To 230 Hp	Engines Up To 250/350 Hp	Engines Up To 600/700 Hp	Unit
Steering Kit	POHS-115AFN-TT	POHS-175AF-TT	POHS-350AF-TT	1 No.
Cylinder	LM-OC-115AFN	LM-OC-250AF	LM-OC-350AF	2 Nos.
Helm	LM-HP-16	LM-HP-23	LM-HP-27	1 No.
Hose Kit 1	LM-CT-5.0	LM-CT-7.5	LM-CT-7.5	2 Nos.
Hose Kit 2	LM-CT-1.0	LM-CT-1.0	LM-CT-1.0	2 Nos.
Steering Fluid	LM-HO-150	LM-HO-150	LM-HO-150	3 Liters
Tie Rod	LM-T-3/4	LM-T-3/4	LM-T-3/4	1 No.
Steering Wheel Revolution	6.3	7.4	8.3	Hard Over To Hard Over

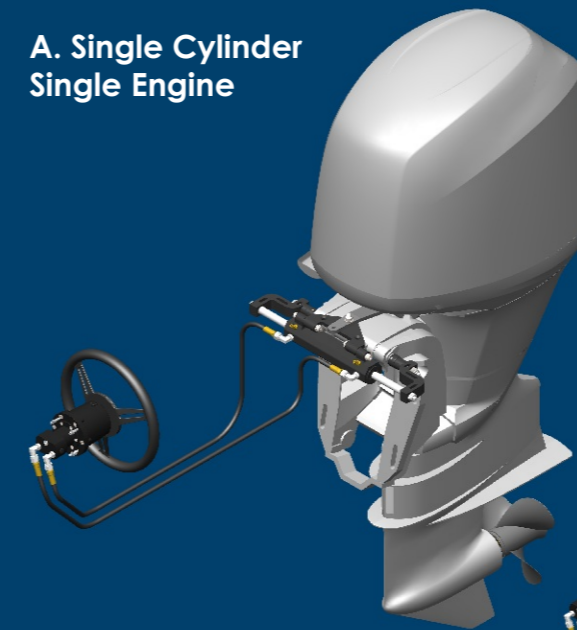
D. Twin Cylinders - Twin Engines in Same / Counter Rotating Direction w/ Liquid Tie Rod

List of Components	Engines Up To 230 Hp	Engines Up To 250/350 Hp	Engines Up To 600/700 Hp	Unit
Steering Kit	POHS-115AFN-DV	POHS-175AF-DV	POHS-350AF-DV	1 No.
Cylinder	LM-OC-115AFN	LM-OC-175AF	LM-OC-350AF	2 Nos.
Helm	LM-HP-16	LM-HP-23	LM-HP-27	1 No.
Hose Kit 1	LM-CT-5.0	LM-CT-7.5	LM-CT-7.5	2 Nos.
Hose Kit 2	LM-CT-1.0	LM-CT-1.0	LM-CT-1.0	2 Nos.
Steering Fluid	LM-HO-150	LM-HO-150	LM-HO-150	3 Liters
Liquid Tie Rod	LM-DV-01	LM-DV-01	LM-DV-01	1 No.
Steering Wheel Revolution	6.3	7.4	8.3	Hard Over To Hard Over

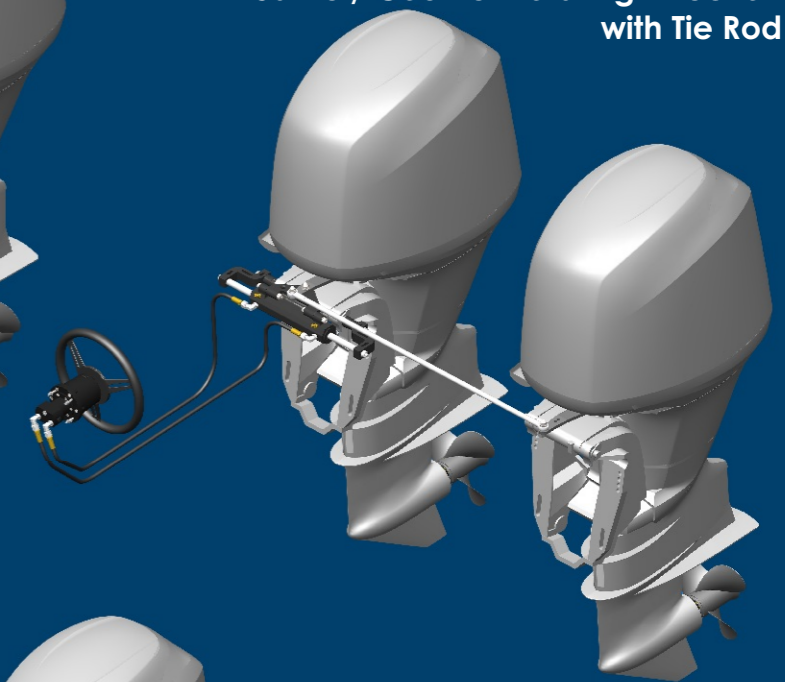
HYDRAULIC STEERING FOR OUTBOARD

Different Types of Steering Assemblies

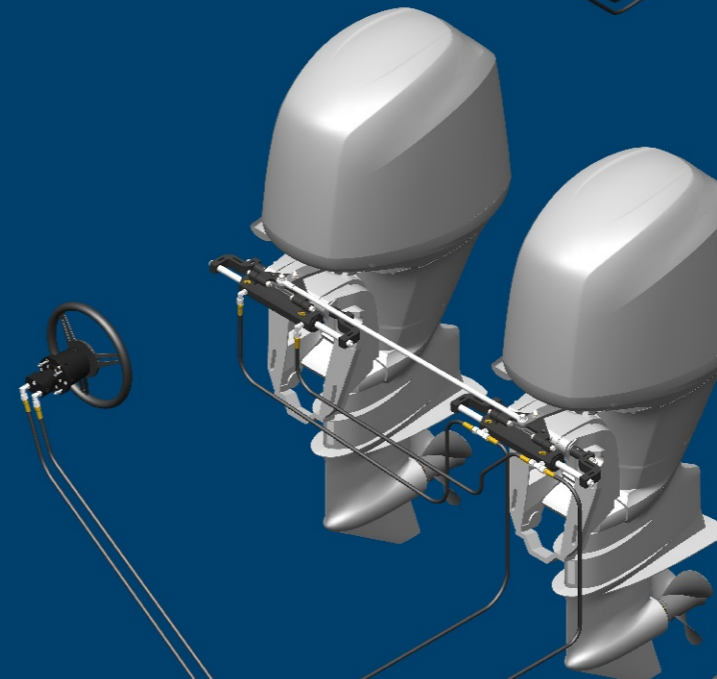
A. Single Cylinder Single Engine



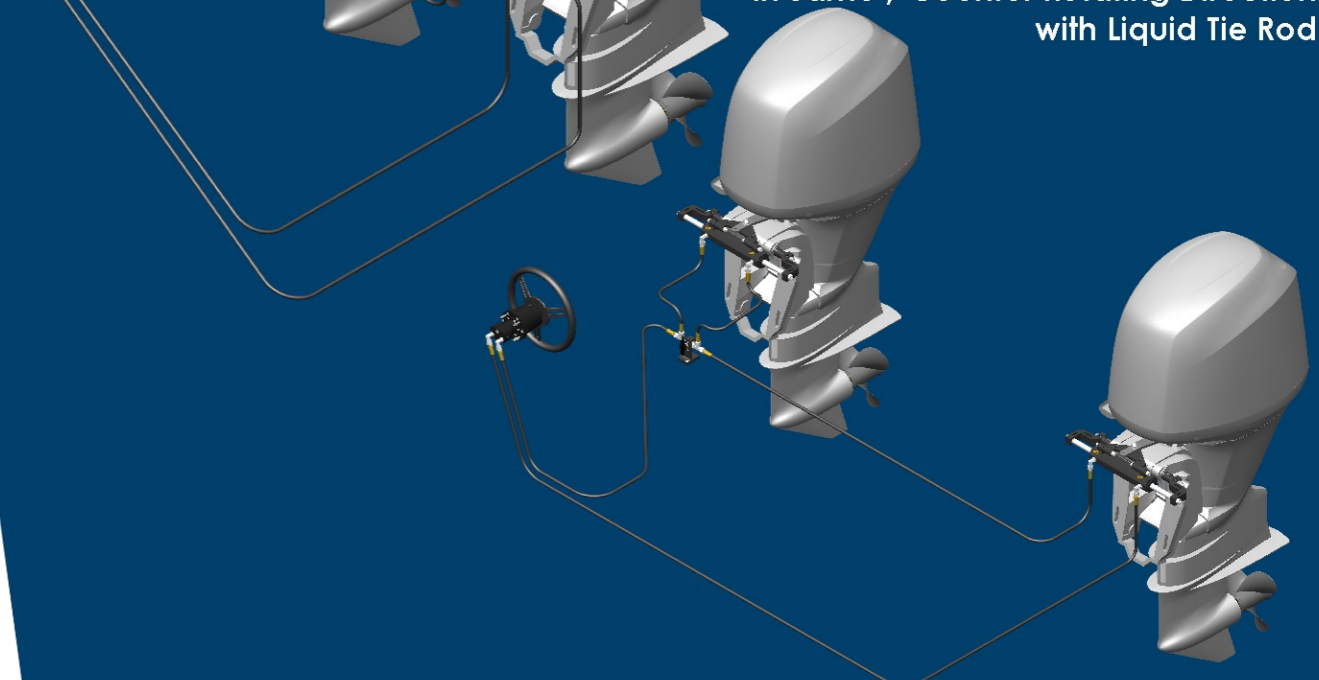
B. Single Cylinder - Twin Engines in Same / Counter Rotating Direction with Tie Rod



C. Twin Cylinders - Twin Engines in Same / Counter Rotating Direction with Tie Rod

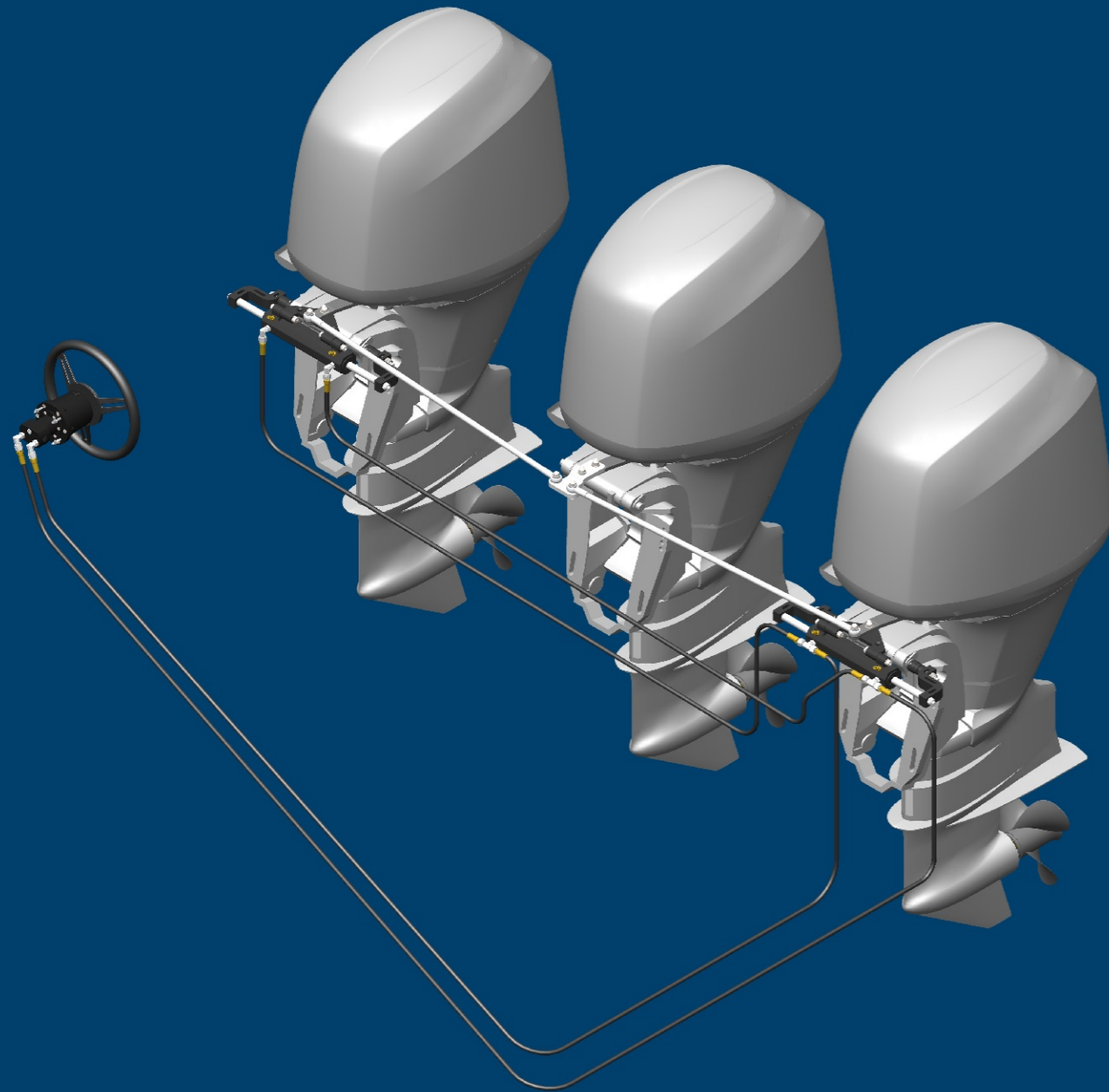


D. Twin Cylinders - Twin Engines in Same / Counter Rotating Direction with Liquid Tie Rod



HYDRAULIC STEERING FOR OUTBOARD

Different Types of Steering Assemblies



Twin Cylinder - Triple Engine in Same / Counter Rotating Direction

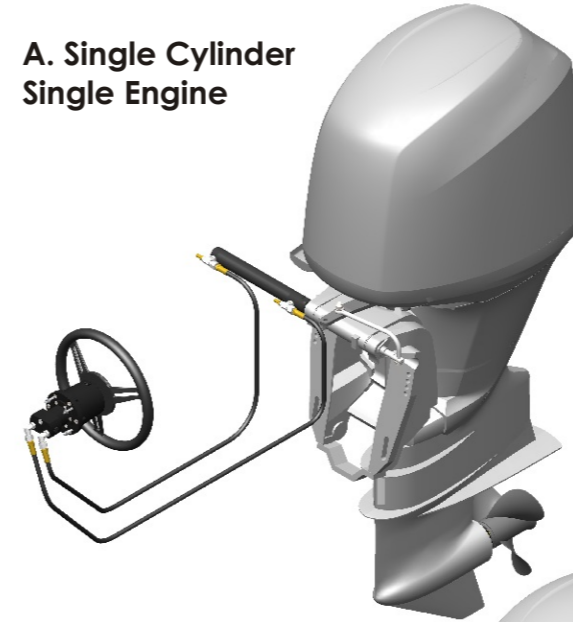
List of Components	Engines Up To 230 Hp	Engines Up To 250/350 Hp	Engines Up To 600/700 Hp	Unit
Steering Kit	POHS-115AFN-TT-3E	POHS-175AF-TT-3E	POHS-350AF-TT-3E	1 No.
Cylinder	LM-OC-115AFN	LM-OC-175AF	LM-OC-350AF	2 Nos.
Helm	LM-HP-16	LM-HP-23	LM-HP-27	1 No.
Hose Kit 1	LM-CT-5.0	LM-CT-7.5	LM-CT-7.5	2 Nos.
Hose Kit 2	LM-CT-1.0	LM-CT-1.0	LM-CT-1.0	2 Nos.
Steering Fluid	LM-HO-150	LM-HO-150	LM-HO-150	3 Liters
Tie Rod	LM-T-3	LM-T-3	LM-T-3	2 Nos.
Steering Wheel Revolution	6.3	7.4	8.3	Hard Over To Hard Over

(20)

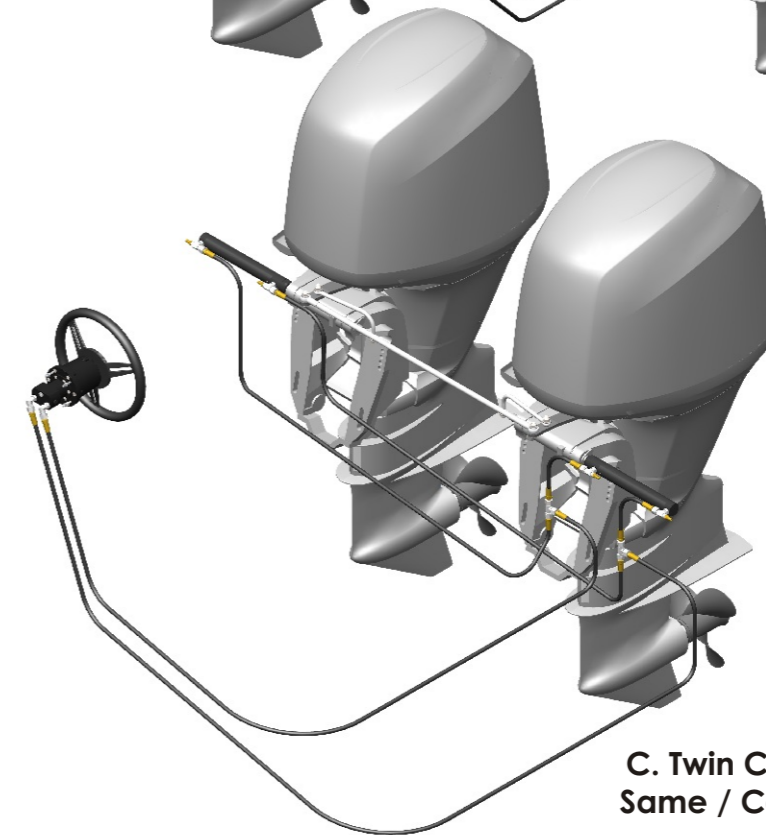
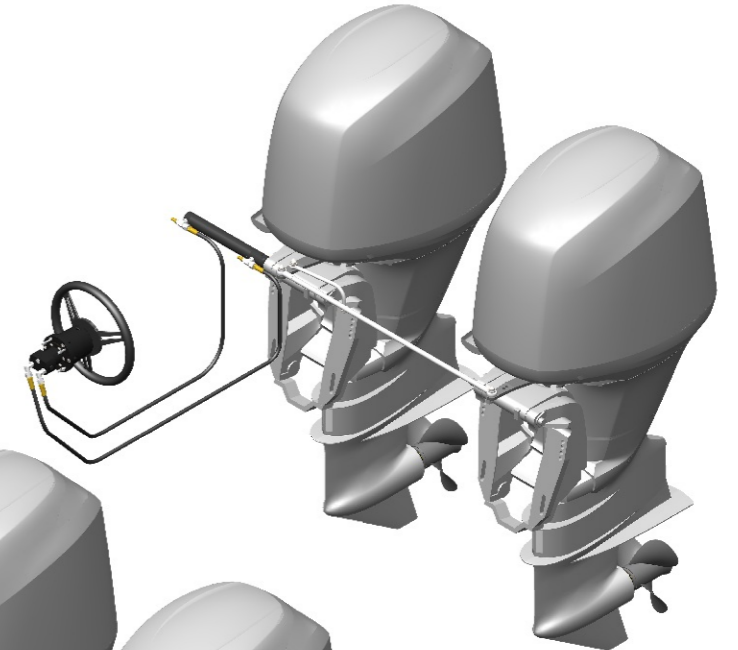
HYDRAULIC STEERING FOR OUTBOARD

Different Types of Steering Assemblies for Side Mount Cylinder

A. Single Cylinder Single Engine



B. Single Cylinder - Twin Engines in Same / Counter Rotating Direction



C. Twin Cylinders - Twin Engines in Same / Counter Rotating Direction

List of Components	A. Engines Up To 300 Hp	B. Engines Up To 300/600 Hp	Unit	C. Engines Up To 600 Hp	Unit
Steering Kit	POHS-300AS	POHS-300AS-TR	1 No.	POHS-300AS-TT	1 No.
Cylinder	LM-OC-300AS	LM-OC-300AS	1 No.	LM-OC-300AS	2 Nos.
Helm	LM-HP-16	LM-HP-27	1 No.	LM-HP-27	1 No.
Hose Kit	LM-CT-7.5	LM-CT-7.5	2 Nos.	LM-CT-7.5	2 Nos.
Steering Fluid	LM-HO-150	LM-HO-150	2 Liters	LM-HO-150	3 Liters
Tie Rod	NA	LM-T-3	1 No.	LM-T-3	1 No.
Steering Wheel Revolution L/R	L/R	L/R	Hard Over To Hard Over	L/R	Hard Over To Hard Over

(21)

PACKAGED HYDRAULIC STEERING SYSTEM : INBOARD



SELECTION OF A HYDRAULIC STEERING SYSTEM FOR INBOARD APPLICATIONS

For A boat fitted with a rudder with speed not exceeding 25 knots, the torque of the rudder or rudders is calculated according to following formula and corrections. It must be known that the torque necessary to manoeuvre a boat depends on:

- The speed of the water flowing on the surface of the Rudder at a certain angle
- The rudder size
- The total sweep of the rudder (and part of the boat), if the rudder stock is not perpendicular
- The compensating surface of the rudder.

Note: An important factor for the choice of the steering cylinder is the type of hull (i.e.: planing or displacement) as it can persuade the vessel speed:

● Planing Hull:

Boats with planing hulls are designed to rise up and glide on top of the water when enough power is supplied. These boats may operate like displacement hulls when at rest or at slow speeds but climb towards the surface of the water as they move faster.

- Boats with planing hulls can skim along at high speed, riding almost on top of the water rather than pushing it aside.

● Flat-bottomed and vee-bottomed hull shapes act as planing hulls. Most small power-driven vessels, including personal watercraft (PWCs), and some small sailboats have planing hulls, allowing them to travel more rapidly across the water.

● Displacement Hull:

Boats with displacement hulls move through the water by pushing the water aside and are designed to cut through the water with very little propulsion.

● If you lower a boat into the water, some of the water moves out of the way to adjust for the boat. If you could weigh that displaced water, you would find it equals the weight of the boat. That weight is the boat's displacement.

- Boats with displacement hulls are limited to slower speeds.

● A round-bottomed hull shape acts as a displacement hull. Most large cruisers and most sailboats have displacement hulls, allowing them to travel more smoothly through the water.

● Once the rudder torque has been calculated, the most suitable steering cylinder can be selected referring the different options available.

SELECTION OF A HYDRAULIC STEERING SYSTEM FOR INBOARD APPLICATIONS

Torque Calculation Formula for Speed below 25 Knots:

$$T = A \times [(0.4W) - Wc] \times V^2 \times K$$

T = Torque in Kgm

A = Total surface area of rudder (H x W) in sq. m

H = Height of rudder in m

W = Width of rudder in m

Wc = Compensation width in m

V = Maximum speed of the boat in knots

K = Coefficient according to total angle of rudder

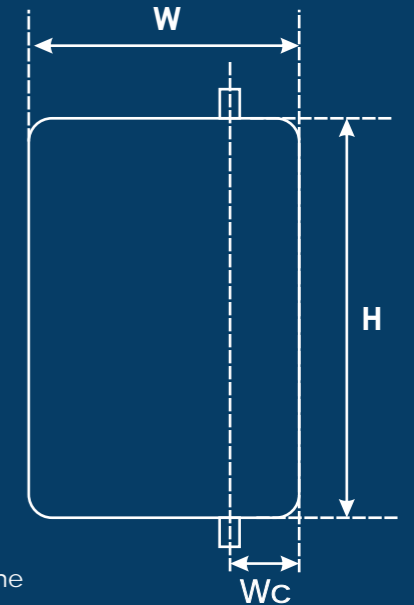
- Port to starboard 70° K = 15.90
- Port to starboard 80° K = 17.80
- Port to starboard 90° K = 19.60

Corrections in function of the type of boat :

- For sailing-boats T x 0.5
- For a boat with a steering nozzle T x 2.0
- For twin engine power boats with 1 rudder T x 0.5
- For boats fitted with several rudders (catamarans, trimarans, monohulls), multiply the calculated torque result by the number of rudders fitted on the boat.

As the torque is calculated, the appropriate cylinder is selected accordingly (refer page no. 25 or 28).

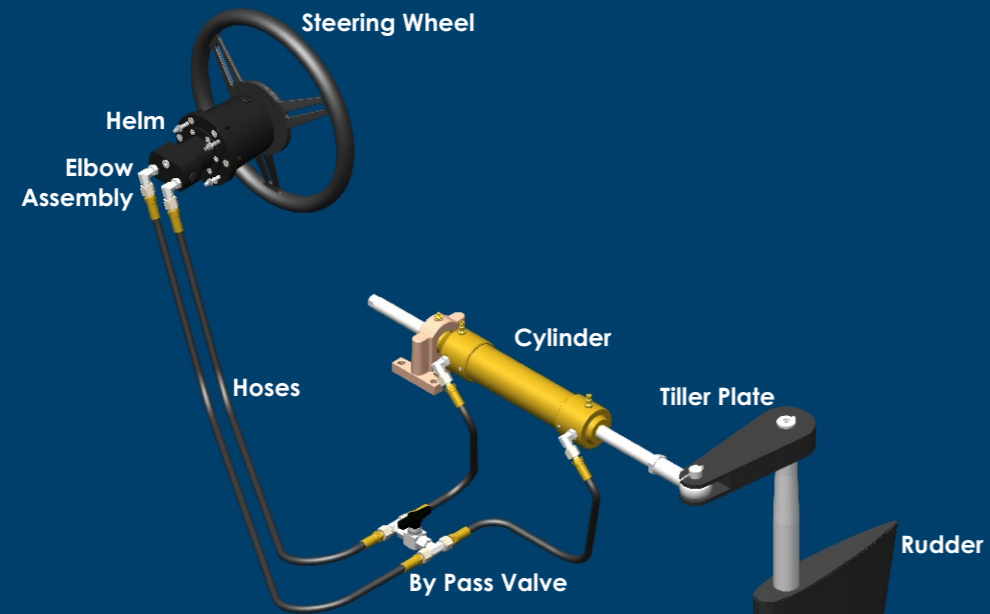
Note: If the selected pump has a higher flow rate in order to reduce the number of turns lock to lock, it will be necessary to use a steering wheel with the maximum recommended diameter.



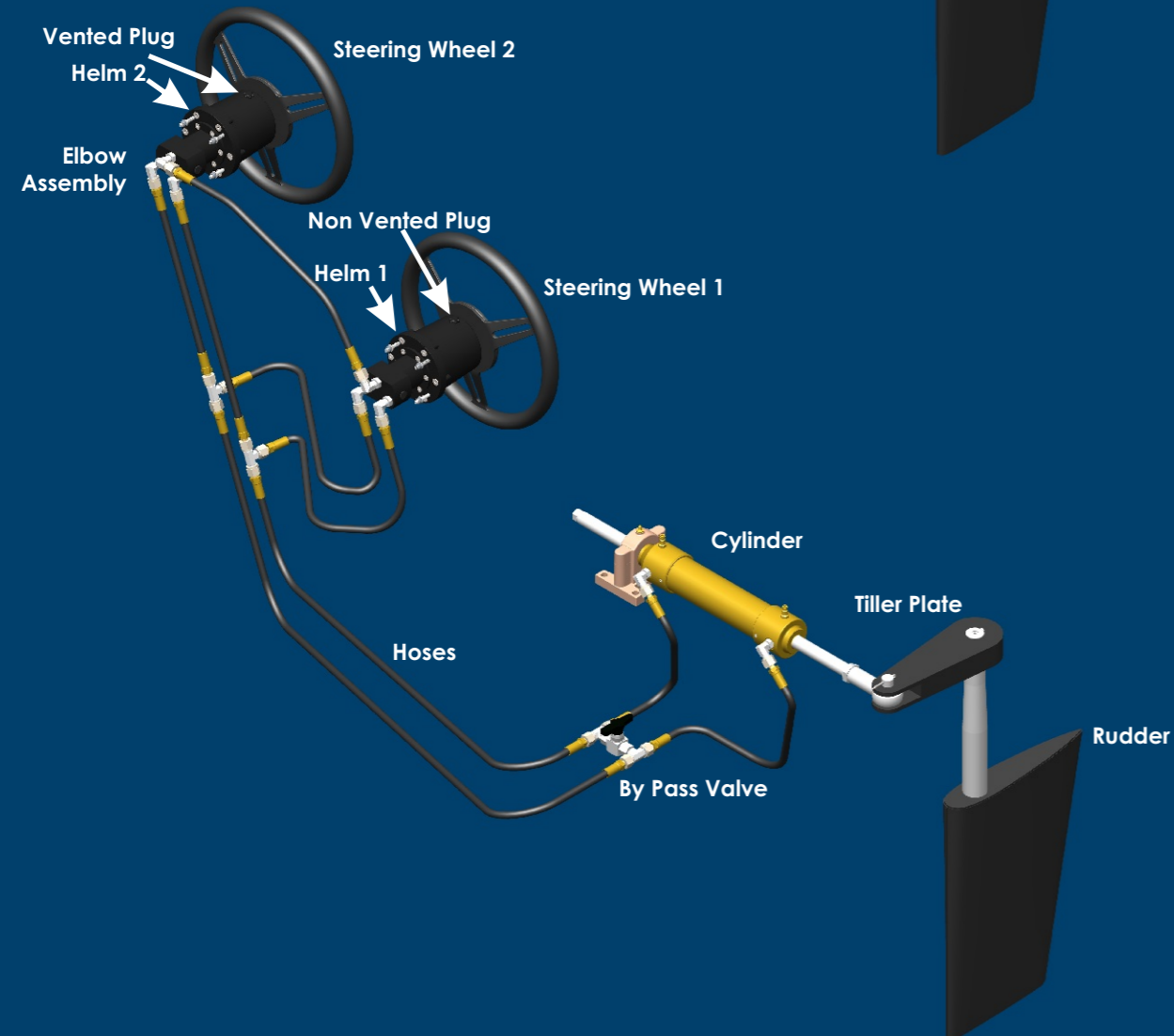
HYDRAULIC STEERING FOR INBOARD APPLICATION

Assembly Diagram for Hydraulic Steering System for Inboard Engines

Single Station Assembly



Dual Station Assembly



HYDRAULIC STEERING FOR INBOARD APPLICATION

Assembly Diagram for Hydraulic Steering System for Inboard Engines



Single Cylinder - Single Rudder



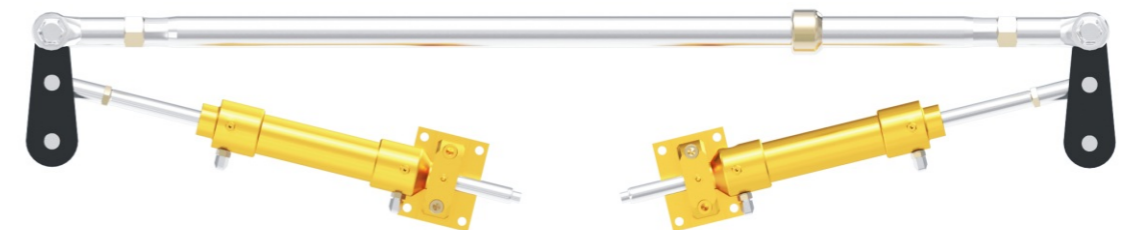
Twin Cylinders - Single Rudder



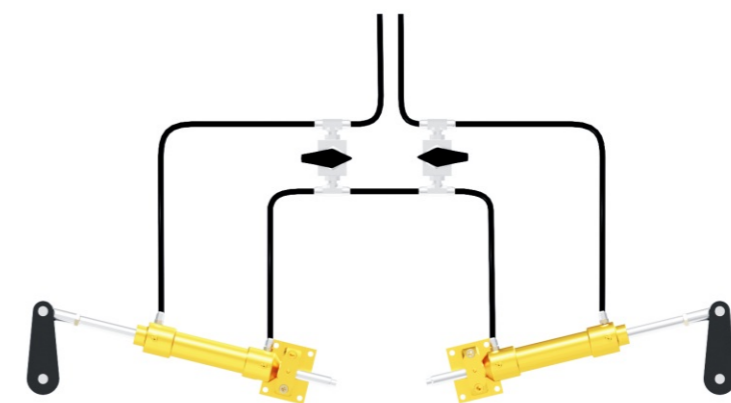
Twin Cylinders - Single Rudder



Single Cylinder - Twin Rudders



Twin Cylinders - Twin Rudders



Twin Cylinders - Twin Rudders Coupled with Hydraulic Hose

HYDRAULIC STEERING FOR INBOARD APPLICATION

Packaged Hydraulic Steering System for Inboard Engines : Aluminium Series

The Standard Steering Kit IBHS-XX-YY-AL-ZZ for Single Inboard Engine includes following items:

Model	Description	Quantity
LM-HP-XX	Front Mount Hydraulic Helm Pump	1 No.
LM-IC-YY-AL	Single Balanced Aluminium Cylinder	1 No.
LM-HO-150	High Viscosity Index Hydraulic Steering Fluid	2 Liters
LM-CT-ZZ	Hydraulic Hose of ZZ meters with factory crimped hose connectors	ZZ Meters
LM-OF-01	Oil Filling Kit	1 No.

Note : The Steering Wheel is not included in the standard Kit. To order Steering Wheels, please refer Steering Wheels Section.

* Quantity of oil will differ from kit to kit. Please specify your exact requirements while ordering.



Order Guide : Single Cylinder - Single Inboard Engine

Steering Kit Part No.	System Basic Components		Wheel turns Lock to lock	Max Torque at 70 Bar	Recommended Steering Wheel Dia.
	Helm Pump	Cylinder			
IBHS-16-25-AL	LM-HP-16	LM-IC-25-AL	3.8	31	300 mm
IBHS-23-32-AL	LM-HP-23	LM-IC-32-AL	5.0	59	350 mm
IBHS-27-32-AL-1	LM-HP-27	LM-IC-32-AL-1	5.4	74.5	350 mm
IBHS-33-40-AL	LM-HP-33	LM-IC-40-AL	5.1	85.5	400 mm
IBHS-40-40-AL-1	LM-HP-40	LM-IC-40-AL-1	5.4	111	400 mm

Note : The Steering Wheel is not included in the standard Kit. To order Steering Wheels, please refer Steering Wheels Section.

HYDRAULIC STEERING FOR INBOARD APPLICATION

Packaged Hydraulic Steering System for Inboard Engines : Brass Series

The Standard Steering Kit IBHS-XX-YY-BR-ZZ for Single Inboard Engine includes following items:

Model	Description	Quantity
LM-HP-XX	Front Mount Hydraulic Helm Pump	1 No.
LM-IC-YY-BR	Single Balanced Brass Cylinder	1 No.
LM-HO-150	High Viscosity Index Hydraulic Steering Fluid	2 Liters
LM-CT-ZZ	Hydraulic Hose of ZZ meters with factory crimped hose connectors	ZZ Meters
LM-OF-01	Oil Filling Kit	1 No.

Note : The Steering Wheel is not included in the standard Kit. To order Steering Wheels, please refer Steering Wheels Section.

* Quantity of oil will differ from kit to kit. Please specify your exact requirements while ordering.



Order Guide : Single Cylinder - Single Inboard Engine

Steering Kit Part No.	System Basic Components		Wheel turns Lock to lock	Max Torque at 70 Bar	Recommended Steering Wheel Dia.
	Helm Pump	Cylinder			
IBHS-16-25-BR	LM-HP-16	LM-IC-25-BR	3.8	31	300 mm
IBHS-23-32-BR	LM-HP-23	LM-IC-32-BR	5.0	59	350 mm
IBHS-27-32-BR-1	LM-HP-27	LM-IC-32-BR-1	5.4	74.5	350 mm
IBHS-33-40-BR	LM-HP-33	LM-IC-40-BR	5.1	85.5	400 mm
IBHS-40-40-BR-2	LM-HP-40	LM-IC-40-BR-2	5.4	111	400 mm
IBHS-40-50-BR	LM-HP-40	LM-IC-50-BR	6.3	129	400 mm
IBHS-43-50-BR-1	LM-HP-43	LM-IC-50-BR-1	8.9	181	400 mm
IBHS-63-63-BR	LM-HP-63	LM-IC-63-BR	9.9	319	600 mm
IBHS-86-75-BR	LM-HP-86	LM-IC-75-BR	9.8	319	600 mm
IBHS-86-75-BR-1	LM-HP-120	LM-IC-75-BR-1	11.6	700	800 mm
IBHS-120-100-BR	LM-HP-120	LM-IC-100-BR	16.5	1010	800 mm
IBHS-120-100-BR-1	LM-HP-160	LM-IC-100-BR-1	22	1342	800 mm
IBHS-160-100-BR-1	LM-HP-160	LM-IC-100-BR-1	16.5	1342	800 mm

Note : The Steering Wheel is not included in the standard Kit. To order Steering Wheels, please refer Steering Wheels Section.

HYDRAULIC STEERING FOR INBOARD APPLICATION

Packaged Hydraulic Steering System for Inboard Engines : Steel Series



The Standard Steering Kit IBHS-XX-YY-AL-ZZ for Single Inboard Engine includes following items:

Model	Description	Quantity
LM-HP-XX	Front Mount Hydraulic Helm Pump	1 No.
LM-IC-YY-ST	Single Balanced Steel Cylinder	1 No.
LM-HO-150	High Viscosity Index Hydraulic Steering Fluid	4 Liters*
LM-CT-ZZ	Hydraulic Hose of ZZ meters with factory crimped hose connectors	ZZ Meters
LM-OF-01	Oil Filling Kit	1 No.

Note : The Steering Wheel is not included in the standard Kit. To order Steering Wheels, please refer Steering Wheels Section.

* Quantity of oil will differ from kit to kit. Please specify your exact requirements while ordering.



Order Guide : Single Cylinder - Single Inboard Engine

Steering Kit Part No.	System Basic Components		Wheel turns Lock to lock	Max Torque at 70 Bar	Recommended Steering Wheel Dia.
	Helm Pump	Cylinder			
IBHS-43-50-ST	LM-HP-43	LM-IC-50-ST	8.9	185	400 mm
IBHS-63-63-ST	LM-HP-63	LM-IC-63-ST	9.9	319	600 mm
IBHS-86-75-ST	LM-HP-86	LM-IC-75-ST	9.8	458	600 mm
IBHS-86-75-ST-1	LM-HP-120	LM-IC-75-ST-1	11.6	700	800 mm
IBHS-120-100-ST	LM-HP-120	LM-IC-100-ST	16.5	1010	800 mm
IBHS-120-100-ST-1	LM-HP-160	LM-IC-100-ST-1	22	1342	800 mm
IBHS-160-100-ST-1	LM-HP-160	LM-IC-100-ST-1	16.5	1342	800 mm

Note : The Steering Wheel is not included in the standard Kit. To order Steering Wheels, please refer Steering Wheels Section.

HYDRAULIC STEERING FOR INBOARD APPLICATION

Packaged Hydraulic Steering System for Inboard Engines : Twin Cylinders Steel Series

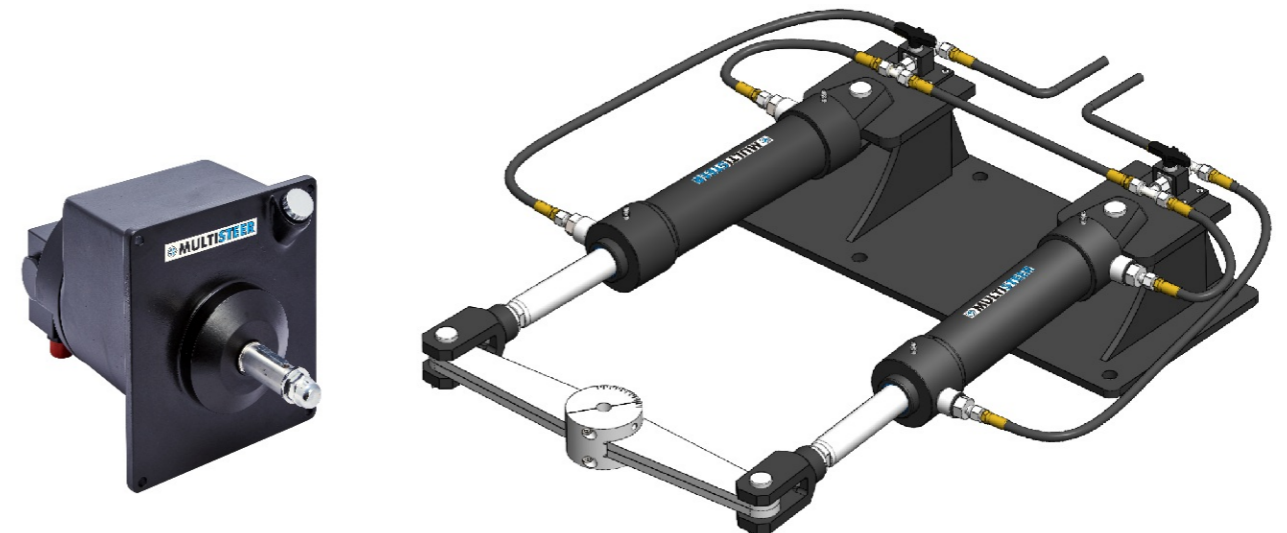


The Standard Steering Kit IBHS-XX-YY-ST/SE-DC-ZZ for Twin Inboard Engines includes following items:

Model	Description	Quantity
LM-HP-XX	Front Mount Hydraulic Helm Pump	1 No.
LM-IC-YY-ST/SE	Balanced/Unbalanced Steel Cylinder	2 Nos.
LM-HO-150	High Viscosity Index Hydraulic Steering Fluid	10 Liters*
LM-CT-ZZ	Hydraulic Hose of ZZ meters with factory crimped hose connectors	ZZ Meters
LM-OF-01	Oil Filling Kit	1 No.
LM-BV-01	By Pass Valve 1/2" - 1/2" - 1/2"	2 Nos.
LM-TF-02	T Fittings 1/2"	4 Nos.

Note : The Steering Wheel is not included in the standard Kit. To order Steering Wheel, please refer Steering Wheels Section.

* Quantity of oil will differ from kit to kit. Please specify your exact requirements while ordering.



Order Guide : Twin Cylinders - Twin Inboard Engines

Steering Kit Part No.	System Basic Components		Wheel turns Lock to lock	Max Torque at 70 Bar	Recommended Steering Wheel Dia.
	Helm Pump	Cylinder			
IBHS-63-50-ST-DC	LM-HP-63	LM-IC-50-ST	11.6	370	600 mm
IBHS-86-63-ST-DC	LM-HP-86	LM-IC-63-ST	14.2	638	600 mm
IBHS-120-75-ST-DC	LM-HP-120	LM-IC-75-ST	15	916	800 mm
IBHS-120-75-ST-1-DC	LM-HP-120	LM-IC-75-ST-1	23	1400	800 mm
IBHS-160-100-ST-DC	LM-HP-160	LM-IC-100-ST	24.7	2020	800 mm
IBHS-160-100-ST-1-DC	LM-HP-160	LM-IC-100-ST-1	33	2684	800 mm
IBHS-120-75-SE-DC	LM-HP-120	LM-IC-75-SE-DC	19.3	1178	800 mm
IBHS-120-75-SE-1-DC	LM-HP-120	LM-IC-75-SE-1-DC	26	1577	800 mm
IBHS-160-100-SE-DC	LM-HP-160	LM-IC-100-SE-DC	28	2247	800 mm
IBHS-160-100-SE-1-DC	LM-HP-160	LM-IC-100-SE-1-DC	37	3008	800 mm

Note : The Steering Wheel is not included in the standard Kit. To order Steering Wheels, please refer Steering Wheels Section.

HYDRAULIC STEERING SYSTEM : PRODUCTS & ACCESSORIES



HYDRAULIC STEERING PRODUCTS

Front Mount Helm Pumps

Technical Specifications

Model No.	Volume		Port Threads (UNEF)	Relief Pressure in Bar	Recommended Steering Wheel Diameter	Weight in Kg
	cc	ci				
LM-HP-16	16	0.9	9/16"	50	280 mm	2.2
LM-HP-20	20	1.2	9/16"	70	350 mm	4.0
LM-HP-23	23	1.4	9/16"	70	350 mm	4.0
LM-HP-27	27	1.7	9/16"	70	400 mm	4.0
LM-HP-33	33	2.0	9/16"	70	400 mm	4.0
LM-HP-40	40	2.4	9/16"	70	400 mm	4.0

Salient Features :

- ▲ Available in six different sizes with fixed displacement
- ▲ Robust design
- ▲ Ball Bearing Piston race
- ▲ Built-in Lock Valve to safeguard feedback from the Rudder
- ▲ Integral Relief Valve to protect the steering system from excess pressure
- ▲ 3/4" standard tapered Shaft
- ▲ Easily accessible Lock Valve Seals & Shaft Seal for replacement
- ▲ All Helms include a pair of 90° adjustable Chrome plated Brass Elbow Fittings to connect to 5/16" Hose tube
- ▲ Both the Ports are tightly locked with red dummy plugs for hose connection to the Cylinder
- ▲ The dummy port is locked with Hex Stud which can be used to connect to the dual station kit
- ▲ Mounting Hardware & Template are provided with helms
- ▲ Helm mounting is designed in such a way that it is easily interchangeable with other brands



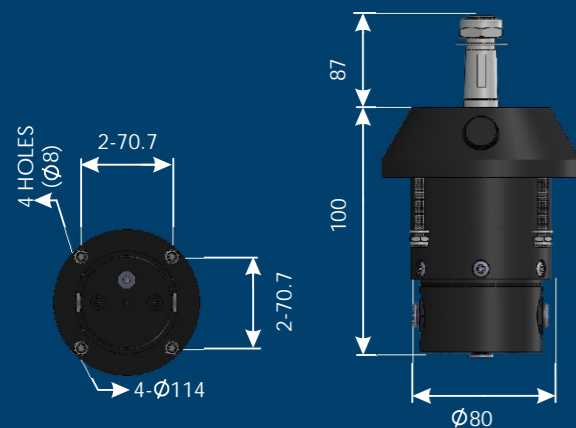
LM-HP-16



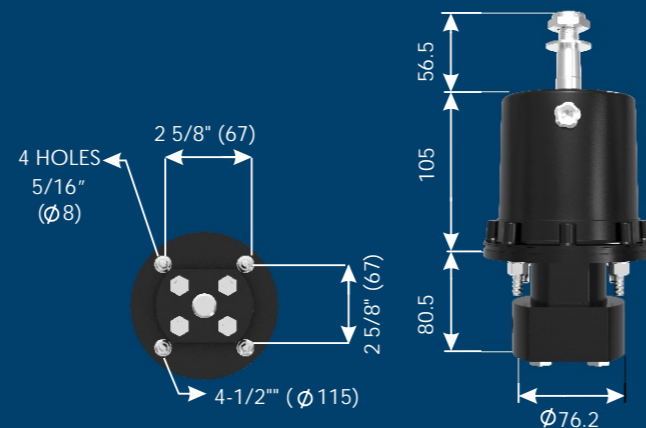
LM-HP-20/23/27/33/40

Drawings with Dimensions in mm

LM-HP-16



LM-HP-20/23/27/33/40



(34)

HYDRAULIC STEERING PRODUCTS

Front Mount Helm Pumps

Technical Specifications

Model No.	Volume		Port Threads (BSP)	Design Pressure in Bar	Recommended Steering Wheel Diameter	Weight in Kg
	cc	ci				
LM-HP-43	42	2.5	1/4"	70	400 mm	6.5
LM-HP-63	63	3.8	1/2"	70	600 mm	12.2
LM-HP-86	88	5.3	1/2"	70	600 mm	10.5

Salient Features :

- ▲ Available in Three different sizes with fixed displacement
- ▲ Robust design
- ▲ Marine Grade Die Cast Aluminium Housing
- ▲ Ball Bearing Piston race
- ▲ Built-in Lock Valve to safeguard feedback from the Rudder
- ▲ SS Helm Shaft
- ▲ Both the Ports are tightly locked with dummy plugs for hose connection to the Cylinder
- ▲ Mounting Hardware & Template are provided with helms
- ▲ Helm mounting is designed in such a way that it is easily interchangeable with other brands



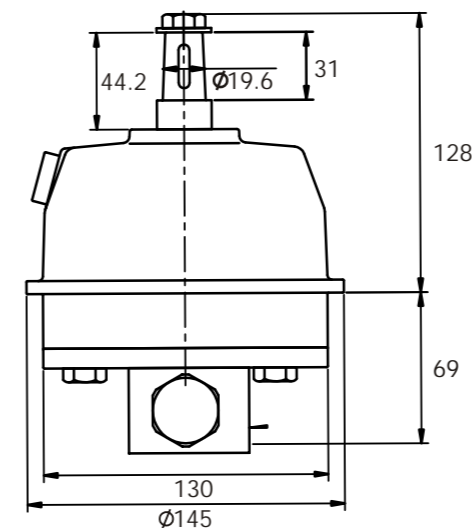
LM-HP-43



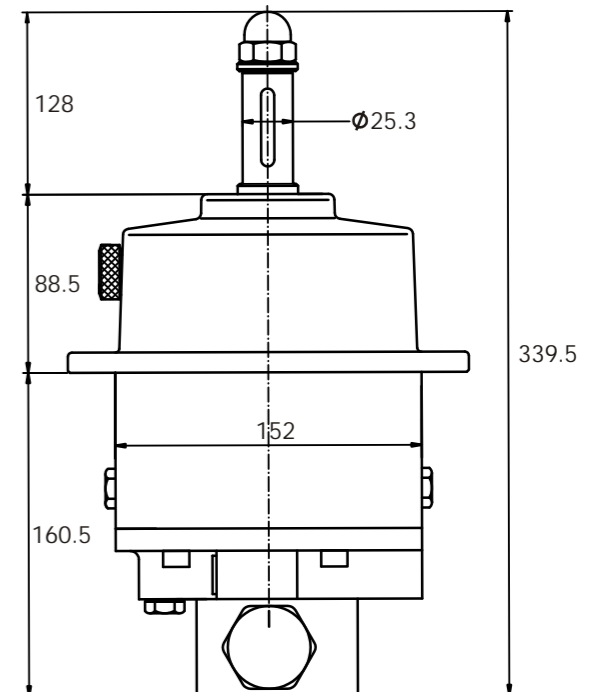
LM-HP-63/86

Drawings with Dimensions in mm

LM-HP-43



LM-HP-63 / 86



(35)

HYDRAULIC STEERING PRODUCTS

Front Mount Heavy Duty Helm Pumps

Technical Specifications

Model No.	Volume		Port Threads (BSP)	Design Pressure in Bar	Recommended Steering Wheel Diameter	Weight in Kg
	cc	ci				
LM-HP-120	120	7.3	1/2"	70	800 mm	17.0
LM-HP-160	160	9.7	1/2"	70	800 mm	35.0

Salient Features :

- ▲ Available in Two different sizes with fixed displacement
- ▲ Robust design
- ▲ Marine Grade Die Cast Aluminium Housing
- ▲ Ball Bearing Piston race
- ▲ Built-in Lock Valve to safeguard feedback from the Rudder. (LM-HP-160 doesn't have lock valve & needs to order separately)
- ▲ SS Helm Shaft
- ▲ Both the Ports are tightly locked with dummy plugs for hose connection to the Cylinder
- ▲ Mounting Hardware & Template are provided with helms
- ▲ Helm mounting is designed in such a way that it is easily interchangeable with other brands



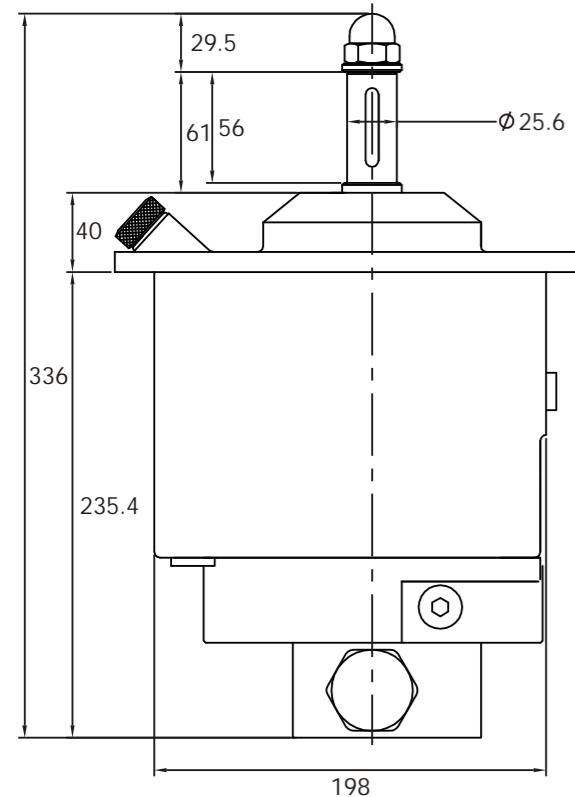
LM-HP-120



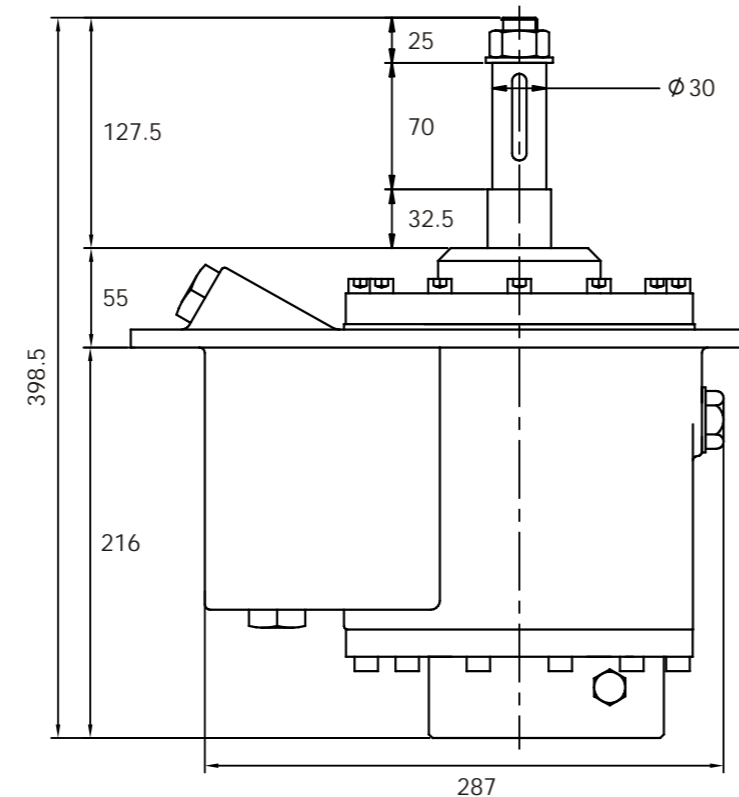
LM-HP-160

Drawings with Dimensions mm

LM-HP-120



LM-HP-160



(36)

HYDRAULIC STEERING PRODUCTS

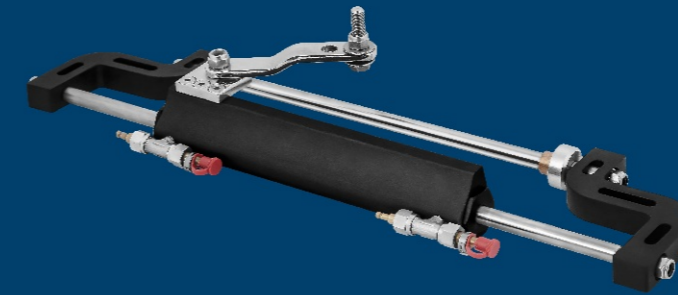
Front Mount Single Balanced Outboard Cylinders

Technical Specifications

Model No.	Volume		Port Threads (UNEF)	Force (Kg)	Stroke (mm)	Air Bleeder Fittings	Weight (Kg)
	cc	ci					
LM-OC-115AFN	92.5	5.6	9/16"	251	184	LM-AB-04	2.1
LM-OC-175AF	122	7.4	9/16"	422	203	LM-AB-02	3.7
LM-OC-350AF	166	10.1	9/16"	573	203	LM-AB-01	5.1
LM-OC-300AS	130/164	7.9/10	9/16"	464/574	204.5	LM-AB-05	1.1

Salient Features :

- ▲ Balanced Cylinder : The number of turns (lock to lock) are equal from port to starboard.
- ▲ SS 316L hard chrome plated Piston Rod
- ▲ SS 316L Support Rod
- ▲ Anodized Aluminum Tube
- ▲ Anodized Aluminum Support Brackets
- ▲ SS 316L Fasteners - Lock Nuts / Washers etc
- ▲ Includes a pair of 90° adjustable Chrome plated Brass Elbow Fittings to connect to 5/16" Hose tube
- ▲ Robust design
- ▲ Installation for Single and Twin engines
- ▲ Includes Hex Stud to connect Cylinder to the Engine



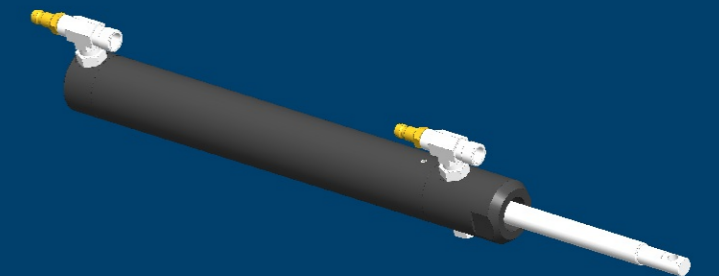
LM-OC-115AFN



LM-OC-350AF



LM-OC-250AF



LM-OC-300AS (Unbalanced Cylinder)

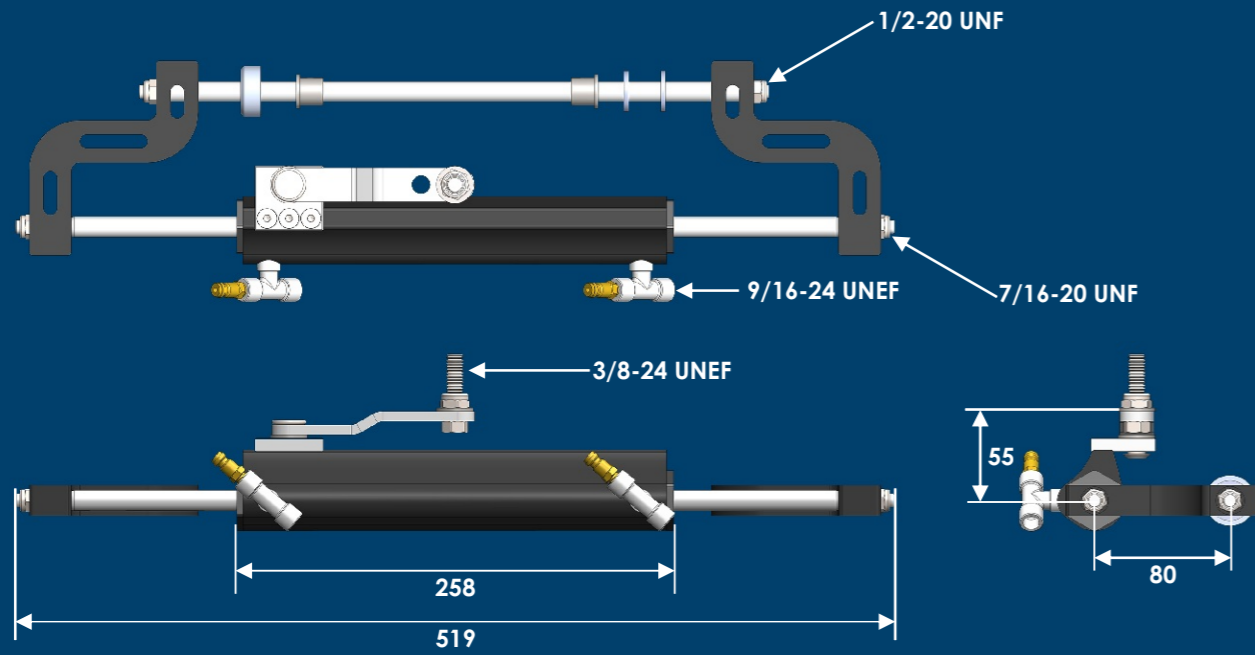
(37)

HYDRAULIC STEERING PRODUCTS

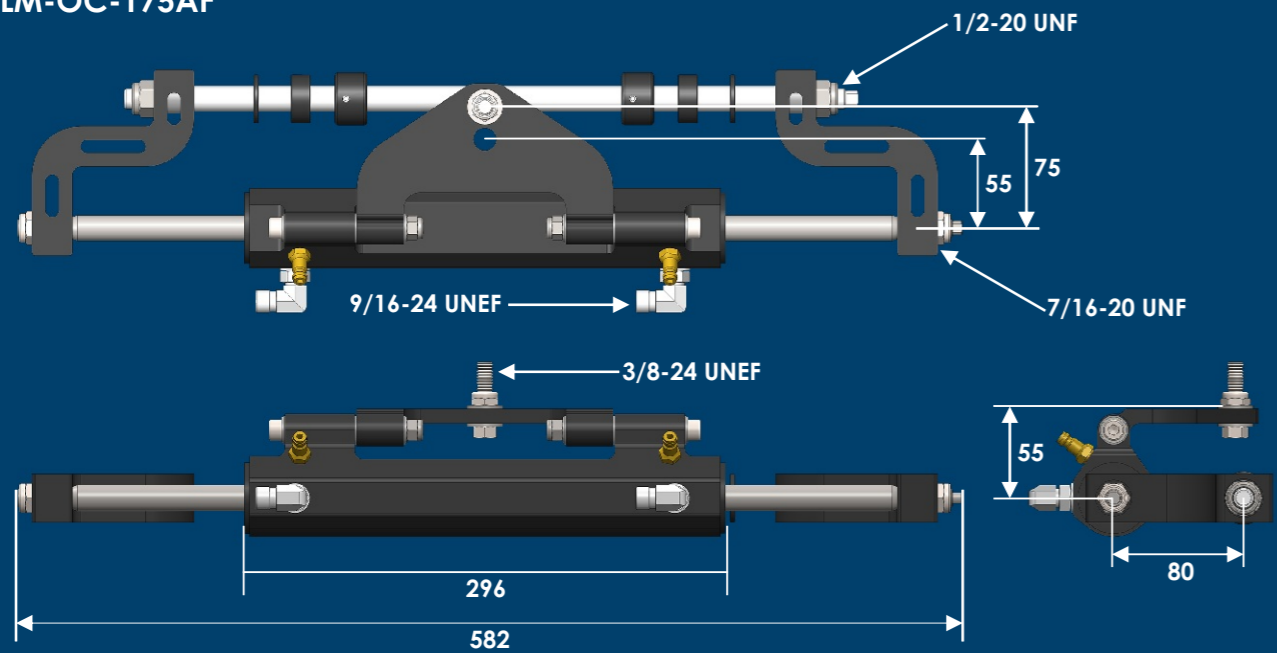
Front Mount Single Balanced Outboard Cylinders 

Drawings with Dimensions in mm

LM-OC-115AFN



LM-OC-175AF



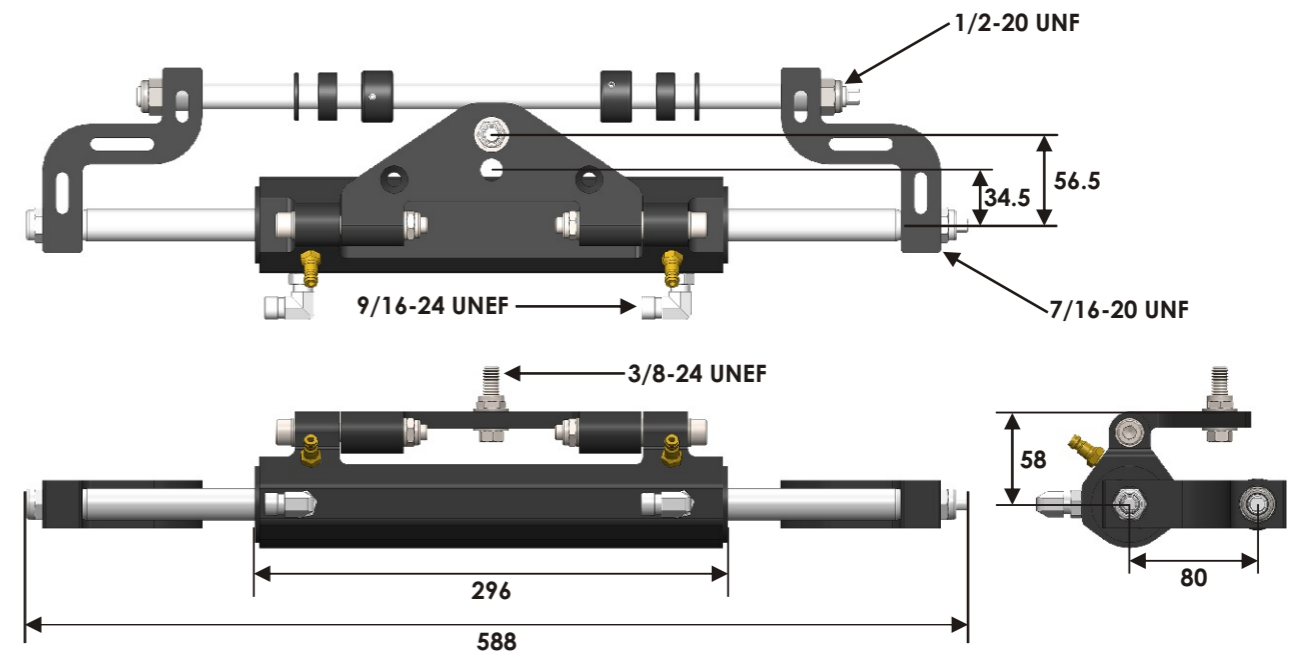
(38)

HYDRAULIC STEERING PRODUCTS

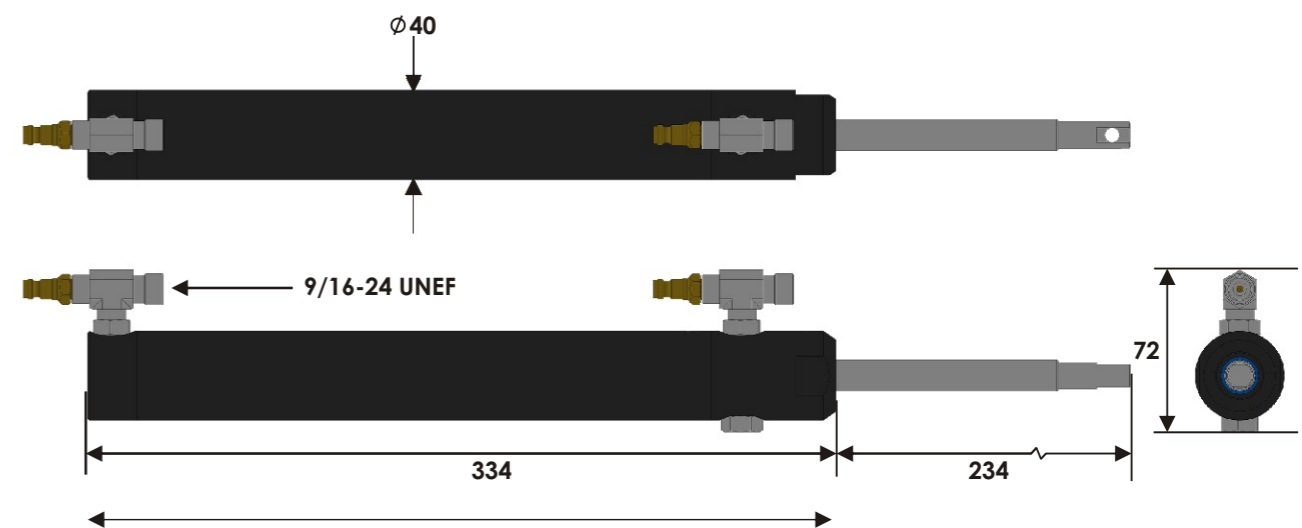
Front Mount Single Balanced Outboard Cylinders 

Drawings with Dimensions in mm

LM-OC-350AF



LM-OC-300AS



(39)

HYDRAULIC STEERING PRODUCTS

Single Balanced Inboard Cylinders : Aluminium

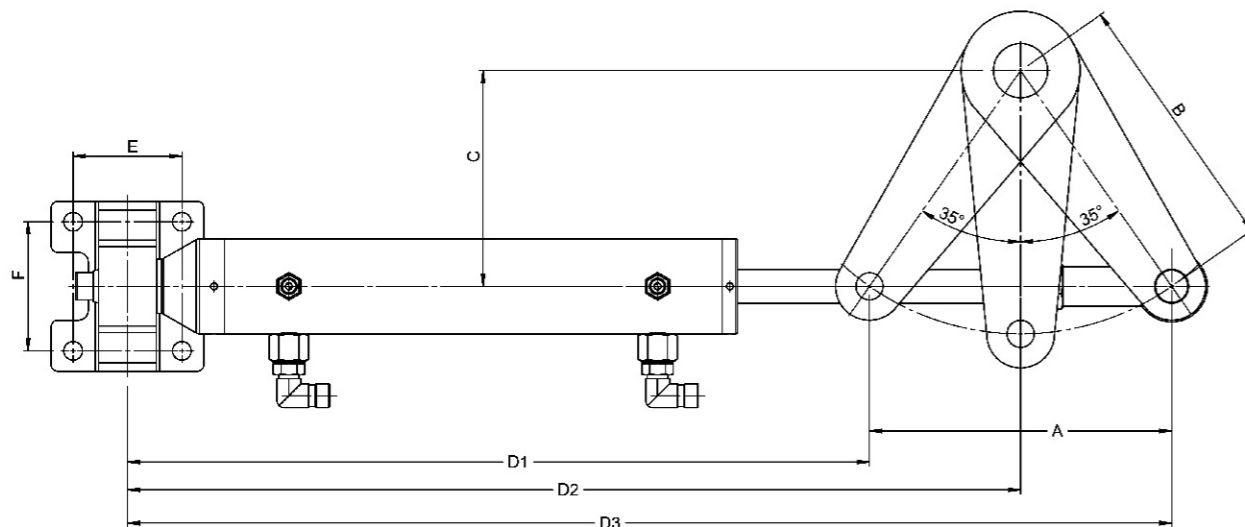
Technical Specifications

Model No.	Max Torque at 70 Bar (Kg-m)	Force (Kg)	Volume		Stroke (mm)	Tiller (mm)	Port Threads (UNEF)	Weight (Kg)
			cc	ci				
LM-IC-25-AL	31	269	60	3.6	160	140	9/16-24	1.60
LM-IC-32-AL	59	464	116	7.0	178	155	9/16-24	2.13
LM-IC-32-AL-1	74.5	464	146	8.9	225	196	9/16-24	2.50
LM-IC-40-AL	85.5	673	168	10.2	178	155	9/16-24	3.90
LM-IC-40-AL-1	110	673	215	13.1	228	200	9/16-24	4.63



Mounting Dimensions

Model No.	Dimensions in mm							
	A	B	C	D1	D2	D3	E	F
LM-IC-25-AL	160	140	115	321	401	481	50	70
LM-IC-32-AL	178	155	127	354	443	532	50	70
LM-IC-32-AL-1	225	196	161	395	507.5	620	50	70
LM-IC-40-AL	178	155	127	437	526	615	64	76
LM-IC-40-AL-1	228	200	163	487	601	715	64	76



(40)

HYDRAULIC STEERING PRODUCTS

Single Balanced Inboard Cylinders : Steel

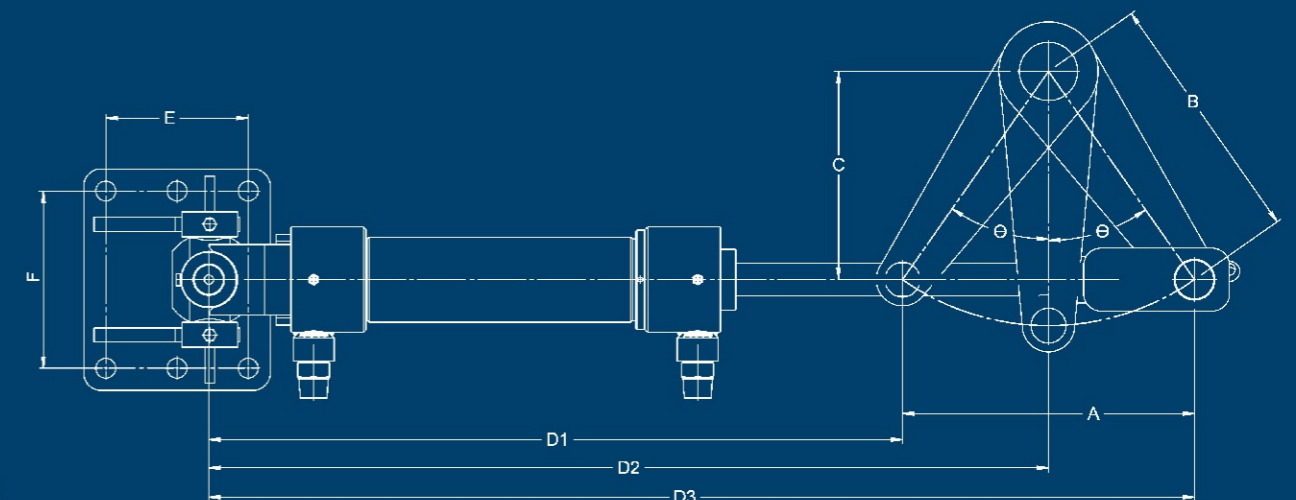
Technical Specifications

Model No.	Max Torque at 70 Bar (Kg-m)	Force (Kg)	Volume		Stroke (mm)	Tiller (mm)	Port Threads (UNEF/BSP)	Weight (Kg)
			cc	ci				
LM-IC-50-ST	185	1130	364	22.2	230	200	9/16-24 UNEF	11.5
LM-IC-63-ST	319	1785.5	625	38.1	250	218	½ BSP	21.0
LM-IC-75-ST	458	2256	901	55.0	285	248	½ BSP	30.0
LM-IC-75-ST-1	700	2256	1375	83.9	435	379	½ BSP	34.0
LM-IC-100-ST	1010	4709	1979	120.7	300	262	½ BSP	48.0
LM-IC-100-ST-1	1342	4709	2639	161.0	400	348	½ BSP	51.0



Mounting Dimensions

Model No.	Dimensions in mm							
	A	B	C	D1	D2	D3	E	F
LM-IC-50-ST	230	200	164	486	601	716	98	130
LM-IC-63-ST	250	218	179	593	718	843	122	152
LM-IC-75-ST	285	248	203	653	795.5	938	122	164
LM-IC-75-ST-1	435	379	310.5	802	1019.5	1237	122	164
LM-IC-100-ST	300	261.5	214	682	832	982	140	192
LM-IC-100-ST-1	400	348	285	782	982	1182	140	192



(41)

HYDRAULIC STEERING PRODUCTS

Single Balanced Inboard Cylinders : Brass

Technical Specifications

Model No.	Max Torque at 70 Bar (Kg-m)	Force (Kg)	Volume		Stroke (mm)	Tiller (mm)	Port Threads (UNEF/BSP)	Weight (Kg)
			cc	ci				
LM-IC-25-BR	31	269	60	3.6	160	140	9/16-24	3.3
LM-IC-32-BR	59	464	116	7.0	178	155	9/16-24	4.2
LM-IC-32-BR-1	74.5	464	146	8.9	225	196	9/16-24	4.5
LM-IC-40-BR	85.5	673	168	10.2	178	155	9/16-24	7.0
LM-IC-40-BR-2	111	625	219	13.3	250	218	9/16-24	8.2
LM-IC-50-BR	129	1130	253	15.4	160	140	9/16-24	7.6
LM-IC-50-BR-1	181	1130	356	21.7	225	196	9/16-24	8.5
LM-IC-63-BR	319	1785.5	625	38.1	250	218	½ BSP	18.0
LM-IC-75-BR	458	2256	901	55.0	285	248	½ BSP	29.0
LM-IC-75-BR-1	700	2256	1375	83.9	435	379	½ BSP	35.0
LM-IC-100-BR	1010	4709	1979	120.7	300	262	½ BSP	41.0
LM-IC-100-BR-1	1372	4709	2639	161.0	400	348	½ BSP	59.0



Mounting Dimensions

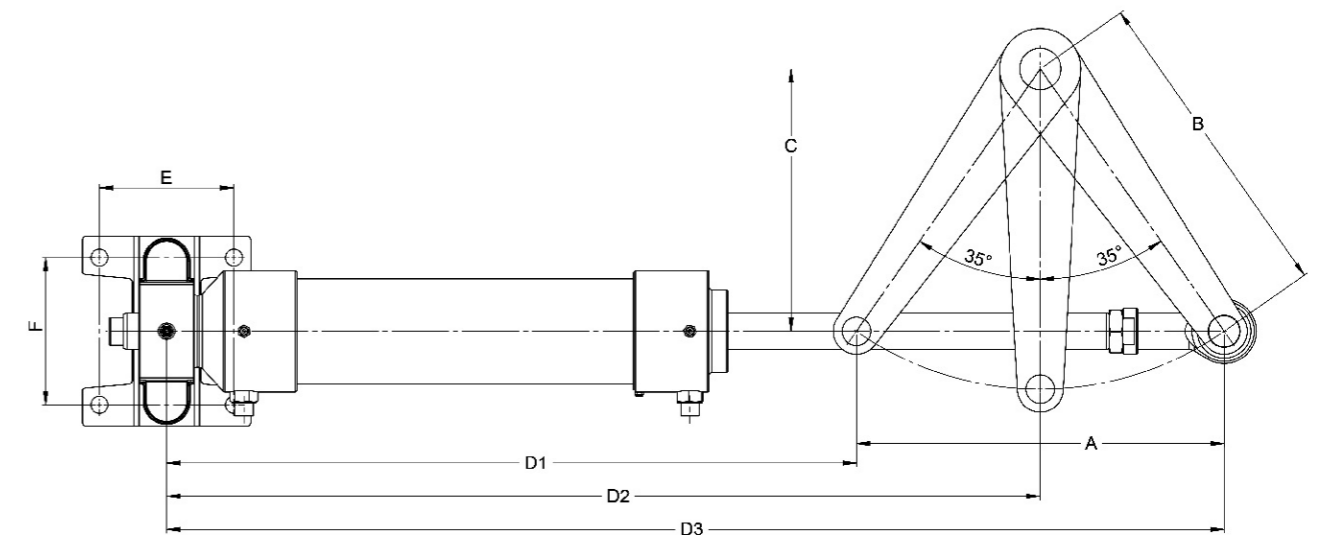
Model No.	Dimensions in mm							
	A	B	C	D1	D2	D3	E	F
LM-IC-25-BR	160	140	115	316	396	476	66	82
LM-IC-32-BR	178	155	127	352	441	530	66	82
LM-IC-32-BR-1	225	196	161	392	505	617	66	82
LM-IC-40-BR	178	155	127	392	481	570	70	90
LM-IC-40-BR-2	250	218	179	483	608	733	70	90
LM-IC-50-BR	160	140	115	380	460	540	70	90
LM-IC-50-BR-1	225	196	161	444	557	669	70	90
LM-IC-63-BR	250	218	179	527	652	777	100	128
LM-IC-75-BR	285	248	203	603	746	888	115	140
LM-IC-75-BR-1	435	379	310	752	970	1187	115	140
LM-IC-100-BR	300	261.5	214	648	798	948	146	160
LM-IC-100-BR-1	400	348	285	748	948	1148	146	160

(42)

HYDRAULIC STEERING PRODUCTS

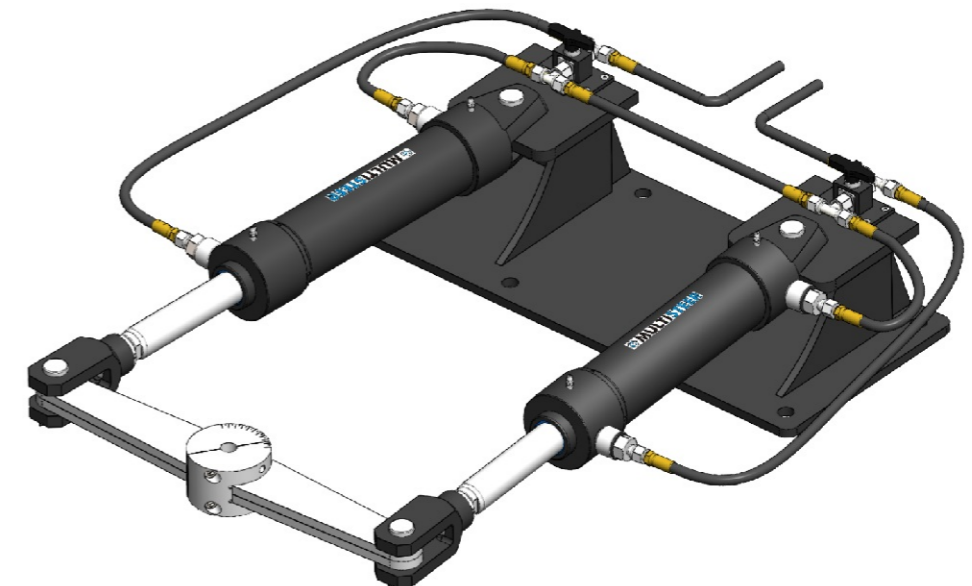
Single Balanced Inboard Cylinders : Brass

Mounting Dimensions



Twin Un-balanced Single Ended Inboard Cylinders : Steel

Model No.	Max Torque at 70 Bar (Kg-m)	Force (Kg)	Volume		Stroke (mm)	Tiller (mm)	Port Threads (BSP)	Weight (Kg)
			cc	ci				
LM-IC-75-SE-DC	1178	5409	2311	141	305	266	½"	78
LM-IC-75-SE-1-DC	1577	5409	3084	188.1	407	356	½"	95
LM-IC-100-SE-DC	2247	10315	4407	268.9	305	266	½"	112
LM-IC-100-SE-1-DC	3008	10315	5881	358.8	407	356	½"	122



Mounting Dimensions can be provided depending upon the type of assembly

(43)

HYDRAULIC STEERING PRODUCTS

Hose Kit for Hydraulic Steering

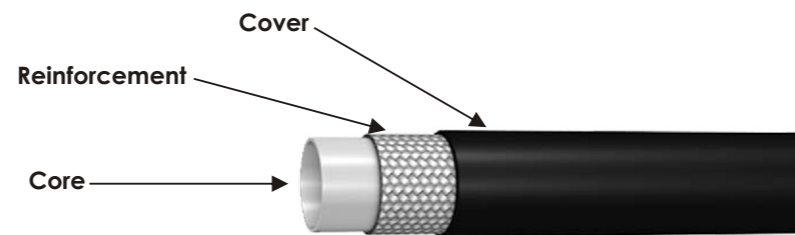
Hose Kit with Reusable End Connectors		
Model No.	Description	End Connector
LM-RT-3.0	3 Meters	LM-HC-R1
LM-RT-3.5	3.5 Meters	LM-HC-R1
LM-RT-4.0	4 Meters	LM-HC-R1
LM-RT-4.5	4.5 Meters	LM-HC-R1
LM-RT-5.0	5 Meters	LM-HC-R1
LM-RT-5.5	5.5 Meters	LM-HC-R1
LM-RT-6.0	6 Meters	LM-HC-R1
LM-RT-6.5	6.5 Meters	LM-HC-R1
LM-RT-7.0	7 Meters	LM-HC-R1
LM-RT-7.5	7.5 Meters	LM-HC-R1
LM-RT-8.0	8 Meters	LM-HC-R1
LM-RT-8.5	8.5 Meters	LM-HC-R1
LM-RT-9.0	9 Meters	LM-HC-R1
LM-RT-9.5	9.5 Meters	LM-HC-R1
LM-RT-10.0	10 Meters	LM-HC-R1

Hose Kit with Factory Crimped End Connectors		
Model No.	Description	End Connector
LM-CT-3.0	3 Meters	LM-HC-C1
LM-CT-3.5	3.5 Meters	LM-HC-C1
LM-CT-4.0	4 Meters	LM-HC-C1
LM-CT-4.5	4.5 Meters	LM-HC-C1
LM-CT-5.0	5 Meters	LM-HC-C1
LM-CT-5.5	5.5 Meters	LM-HC-C1
LM-CT-6.0	6 Meters	LM-HC-C1
LM-CT-6.5	6.5 Meters	LM-HC-C1
LM-CT-7.0	7 Meters	LM-HC-C1
LM-CT-7.5	7.5 Meters	LM-HC-C1
LM-CT-8.0	8 Meters	LM-HC-C1
LM-CT-8.5	8.5 Meters	LM-HC-C1
LM-CT-9.0	9 Meters	LM-HC-C1
LM-CT-9.5	9.5 Meters	LM-HC-C1
LM-CT-10.0	10 Meters	LM-HC-C1



Hose Tube for Hydraulic Steering

Model No.	Description	Size	Working Pressure
LM-HT-XX	Thermoplastic Hose Tube. XX-length in Meters	5/16" R7	70 Bar / 1000 psi
LM-XP-XX	Thermoplastic Hose Tube. XX-length in Meters	1/2" R7	140 Bar / 2050 psi



Construction	Description
Core	Thermoplastic Elastomer
Reinforcement	Single Braid of Synthetic Fiber
Cover	Polyurethane, Black Colour, Pin Pricked
Temperature Range	Continuous: -40°C to +100°C Temp

HYDRAULIC STEERING PRODUCTS

Hose Kit for Hydraulic Steering for Heavy Duty Applications

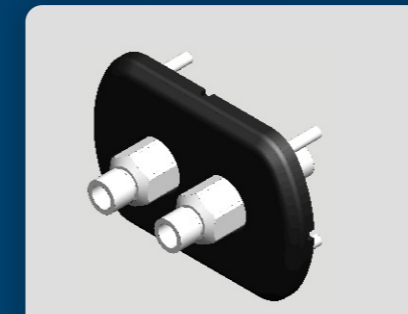
Hose Kit with Factory Crimped End Connectors		
Model No.	Description	End Connector
LM-XT-5.0	5 Meters	LM-XC-C1
LM-XT-5.5	5.5 Meters	LM-XC-C1
LM-XT-6.0	6 Meters	LM-XC-C1
LM-XT-6.5	6.5 Meters	LM-XC-C1
LM-XT-7.0	7 Meters	LM-XC-C1
LM-XT-7.5	7.5 Meters	LM-XC-C1
LM-XT-8.0	8 Meters	LM-XC-C1
LM-XT-8.5	8.5 Meters	LM-XC-C1
LM-XT-9.0	9 Meters	LM-XC-C1
LM-XT-9.5	9.5 Meters	LM-XC-C1
LM-XT-10.0	10 Meters	LM-XC-C1



Twin Cylinder Twin Engine Connection Standard Kit

Model No.	Description	Size	Working Pressure
LM-CT-1.0	Factory Crimped Hose Tubes 1 Meter	5/16" R7	70 Bar / 1000 psi
LM-CT-1.25	Factory Crimped Hose Tubes 1.25 Meters	5/16" R7	70 Bar / 1000 psi
LM-CT-1.5	Factory Crimped Hose Tubes 1.5 Meters	5/16" R7	70 Bar / 1000 psi

Bulkhead, Strain Relief Fittings & Hose End Connectors



LM-HT-BH-1B

Bulkhead Fitting (Black)



LM-HT-SR-1B

Bulkhead Strain Relief Fitting
Plastic



LM-HT-RR-1B

Bulkhead Strain Relief Fitting
Rubber



LM-HC-R1

Reusable Hose Fitting for Hose Kit
LM-RT-XX



LM-HC-C1

Crimped Hose Fitting for Hose Kit
LM-CT-XX



LM-XC-C1

Crimped Hose Fitting for Hose Kit
LM-XT-XX

HYDRAULIC STEERING PRODUCTS

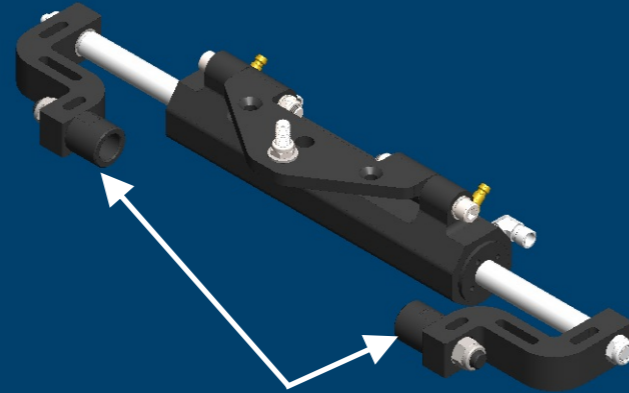
Adapter Kit for Outboard Cylinder with Limited Space LM-SR-AK-01

Adapter Kit for Outboard Cylinder with Limited Space LM-SR-AK-01

There are situations when the support Rod cannot be inserted directly in the transom due to limited space on the boat. Here, the Support Rod Adapter Kit can be used such that even when there is very limited space, the Adapter Kit can be installed with Cylinder.

Cylinder Model No.

- ▲ LM-OC-115AFN-SA
- ▲ LM-OC-175AF-SA
- ▲ LM-OC-350AF-SA



Adapter Kit LM-SR-AK-01

Hydraulic Steering Fluid LM-HO-150

MultiSteer Hydraulic Steering Fluid is a high-quality mineral oils with a high viscosity index (VI), designed for operation over a wide temperature range with minimum variations in viscosity. It contains anti-wear, anti-oxidation, anti-foam and anti-corrosion additives. This range is graded according to the (ISO) viscosity classifications. We highly recommend the use of MultiSteer Hydraulic Oil LM-HO-150. Use of non-recommended fluid may result in hard steering.

Grade & Specifications:

Viscosity at 40 Degrees: 15.5 cSt
 Viscosity Index: >150
 Pour Point : -40 Degrees
 Flash Point : >170 Degrees



Hydraulic Liquid Tie Bar / Distribution Valve

There are situations when the mechanical tie bar can not be used because of longer distance between two engines. Here, the Liquid Tie Bar/ Distribution Valve can be used to facilitate the realignment of two outboard engines or two rudders.

Model No.

1. LM-DV-01
All ports comes with 9/16" UNEF
2. LM-DV-02
All ports comes with 1/2" BSP

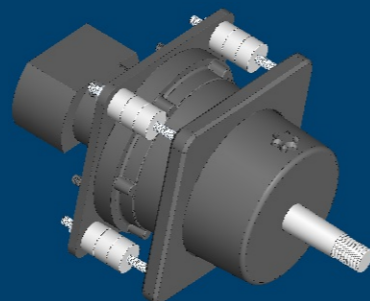


Mid Mount Helm Mechanism LM-HP-MM-01

MultiSteer offers Mid Mount Helm Mechanism to install the helm at intermediate position in to the dashboard.

Model No. for Standard Helm with Mid-Mount Mechanism

- ▲ LM-HP-20-MM-01
- ▲ LM-HP-23-MM-01
- ▲ LM-HP-27-MM-01
- ▲ LM-HP-33-MM-01
- ▲ LM-HP-40-MM-01



HYDRAULIC STEERING PRODUCTS

Packaged Hydraulic Steering System for Transom Hung Rudder : IBHS-27-35-BR-SL

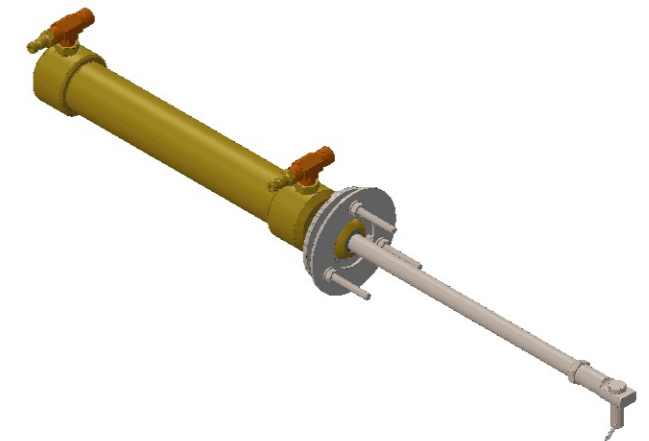
The Standard Steering Kit IBHS-27-35-BR-SL includes following items:

Model	Description	Quantity
LM-HP-27	Front Mount Hydraulic Helm Pump	1 No.
LM-IC-35-BR-SL	Single Balanced Sloop Cylinder	1 No.
LM-HO-150	Hydraulic Steering Fluid	2 Liters
LM-CT-7.5	Hydraulic Hose of 7.5 meters with factory crimped hose connectors	2 Nos.
LM-OF-01	Oil Filling Kit	1 No.

Note : The Steering Wheel is not included in the standard Kit. To order Steering Wheel, please refer Steering Wheels Section.

Sloop Cylinder for Transom Hung Rudder LM-IC-35-BR-SL

MultiSteer offers balanced hydraulic cylinder made of brass for transom hung rudders where the ram needs to protrude through. The Cylinder is supplied with SS flange & compression fittings. SS Rod End along with Pin is provided for locking.



Technical Specifications

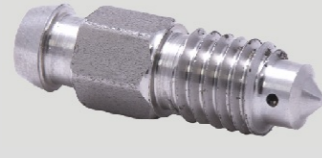
- ▲ Stroke: 225mm
- ▲ Volume: 182 cc/11.1 ci
- ▲ Tiller Arm Length: 196mm
- ▲ Weight: 3.1 Kg
- ▲ Max. Torque: 79 kgm
- ▲ Force: 494.5 Kgf
- ▲ Pressure: 70 Bar
- ▲ Port Threads: 9/16" UNEF
- ▲ Total Rudder Angle: 70° (2 x 35°)

HYDRAULIC STEERING ACCESSORIES



LM-AB-01

Air Bleeder Fitting for
LM-OC-350AF



LM-AB-02

Air Bleeder Fitting for
LM-OC-115AF & LM-OC-175AF



LM-AB-03

Air Bleeder Fitting for
Inboard Cylinders



LM-TF-01

T Fittings 9/16 UNEF All Ports



LM-TF-02

T Fittings 1/2 BSP All Ports



LM-TF-03

T Fittings for Twin Cylinders with
1 Port 1/2 UNF & 2 Ports 9/16 UNEF



LM-BV-01

By Pass Valve 9/16 UNEF All Ports



LM-BV-02

By Pass Valve 1/2 BSP All Ports



LM-PR-NT-01

Piston Rod Nut to Connect
Support Brackets



LM-OC-TP-SD-01

Engine Connector Stud for
LM-OC-350AF



LM-OC-TP-SD-02

Engine Connector Stud for
LM-OC-115AF & LM-OC-175AF



LM-SR-NT-01

Support Rod Nut to Connect
Support Brackets

HYDRAULIC STEERING ACCESSORIES



LM-OC-TP-01

Tiller Plate for OB Cylinder
LM-OC-350AF



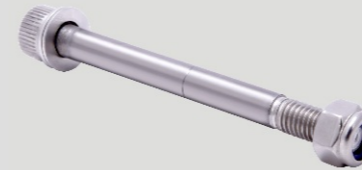
LM-OC-TP-02

Tiller Plate for OB Cylinder
LM-OC-175AF



LM-OC-TP-03

Tiller Plate for OB Cylinder
LM-OC-115AFN



LM-OC-TP-NB-01

Tiller Plate Stud for OB Cylinder
LM-OC-350AF



LM-OC-TP-NB-02

Tiller Plate Stud for OB Cylinder
LM-OC-175AF



LM-OC-SP-01

Spacer Kit to Connect
Support Rod to Transom Tilt Tube



LM-OC-BS-01

Tiller Plate Stud SS Bush for
OB Cylinder LM-OC-350AF



LM-OC-BS-02

Tiller Plate Stud SS Bush for
OB Cylinder LM-OC-175AF



LM-OF-01

Oil Filling Kit to pour oil into Helm
during Purging



LM-HP-WK-01

Woodruff Key for Helms
LM-HP-20/23/27/33/40



LM-HP-WK-02

Woodruff Key for Helm
LM-HP-43



LM-HP-WK-3

Woodruff Key for Helm
LM-HP-63/86

HYDRAULIC STEERING ACCESSORIES



LM-HP-WK-04

Woodruff Key for Helm
LM-HP-16



LM-HP-WK-05

Woodruff Key for Helm
LM-HP-120



LM-HP-WK-06

Woodruff Key for Helm
LM-HP-160



LM-HC-NT-01

Hose Connector Nut 9/16 UNEF



LM-HC-NT-02

Hose Connector Nut 1/2 BSP



LM-EB-01

Elbow to Connect Hoses to
Cylinders & Helms 9/16 UNEF



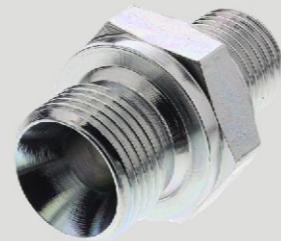
LM-OC-SB-01

Support Brackets for OB Cylinder
LM-OC-350AF & LM-OC-175AF



LM-OC-SB-02

Support Brackets for OB Cylinder
LM-OC-115AFN



LM-PT-01

SS Port Connector for
Cylinders & Helms 1/2 BSP



LM-IC-RE-63

SS Rod End for IB Cylinders
LM-IC-63



LM-IC-RE-50

SS Rod End for IB Cylinders
LM-IC-50



LM-IC-RE-40

SS Rod End for IB Cylinders
LM-IC-40

(50)

HYDRAULIC STEERING ACCESSORIES



LM-IC-RE-32

SS Rod End for IB Cylinder
LM-IC-32



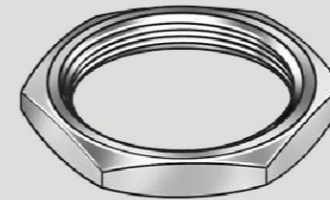
LM-IC-RE-25

SS Rod End for IB Cylinder
LM-IC-32



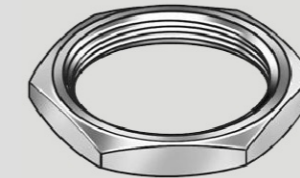
LM-RE-NT-100

SS Rod End Nut for IB Cylinder
LM-IC-100



LM-RE-NT-75

SS Rod End Nut for IB Cylinder
LM-IC-75



LM-RE-NT-63

SS Rod End Nut for IB Cylinder
LM-IC-63



LM-RE-NT-50

SS Rod End Nut for IB Cylinder
LM-IC-50



LM-RE-NT-40

SS Rod End Nut for IB Cylinder
LM-IC-40



LM-RE-NT-32

SS Rod End Nut for IB Cylinder
LM-IC-32



LM-RE-NT-25

SS Rod End Nut for IB Cylinder
LM-IC-25



LM-AK-HD-01

Adapter Kit for Honda
Outboards



LM-SK-WR-01

Seal Kit Wrench for LM-SK-350AF



LM-SK-WR-02

Seal Kit Wrench for LM-SK-175AF &
LM-SK-150/250 Old Model

(51)

HYDRAULIC STEERING ACCESSORIES



LM-SK-HP-20-40
Seal Kit for Helms
LM-HP-20/23/27/33/40



LM-SK-HP-16
Seal Kit for Helm LM-HP-16



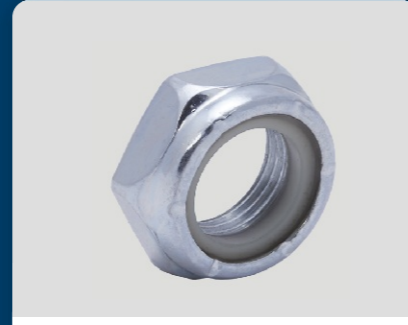
LM-SK-HP-43
Seal Kit for Helm LM-HP-43



LM-SK-HP-63-86
Seal Kit for LM-HP-63/86



LM-HP-20-40-SC
Seal Cap for Helm LM-HP-20-40



LM-HP-SF-NT
Shaft Nut for Helm LM-HP-16 &
LM-HP-20/23/27/33/40



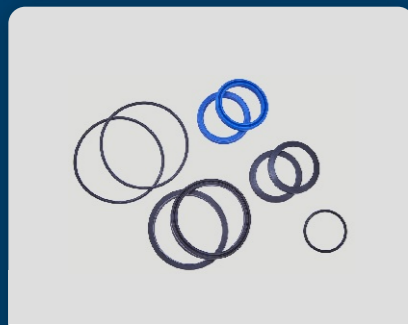
LM-SK-115AFN
Seal Kit for OB Cylinder
LM-OC-115AFN



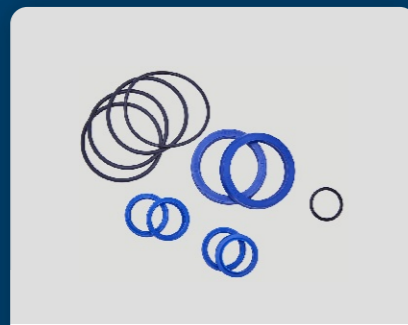
LM-SK-175AF
Seal Kit for OB Cylinder
LM-OC-175AF



LM-SK-350AF
Seal Kit for OB Cylinder
LM-OC-350AF



LM-SK-300AS
Seal Kit for OB Cylinder
LM-OC-300AS

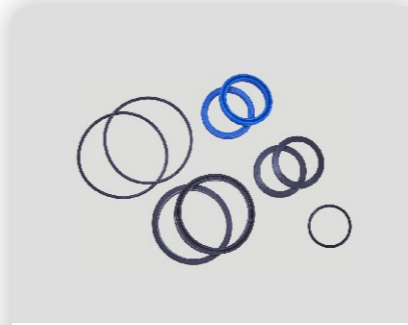


LM-SK-35-BR-SL
Seal Kit for Sloop Cylinder
LM-IC-35-BR-SL

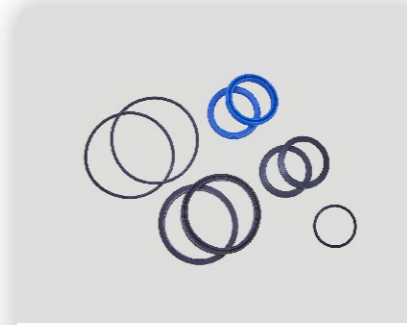


LM-SK-150AF/LM-SK-150AF
Seal Kit for OB Cylinder
LM-OC-150AF/250AF (OLD)

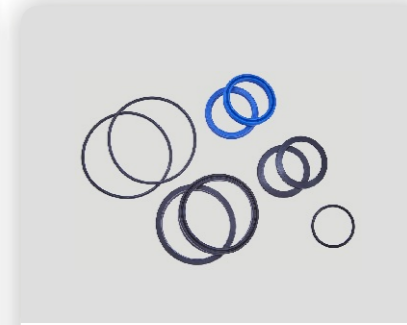
HYDRAULIC STEERING ACCESSORIES



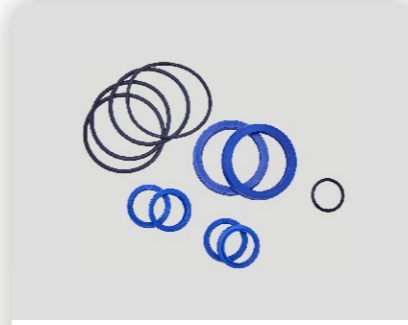
LM-SK-25-AL
Seal Kit for IB Cylinder
LM-IC-25-AL



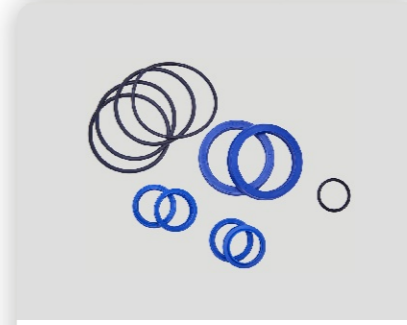
LM-SK-32-AL
Seal Kit for IB Cylinder
LM-IC-32-AL / AL-1



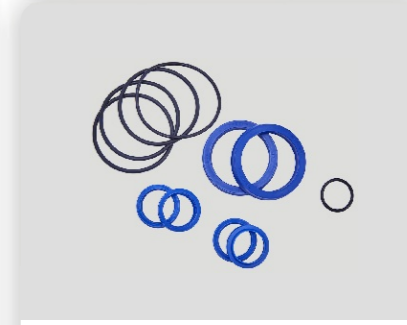
LM-SK-40-AL
Seal Kit for IB Cylinder
LM-IC-40-AL / AL-1



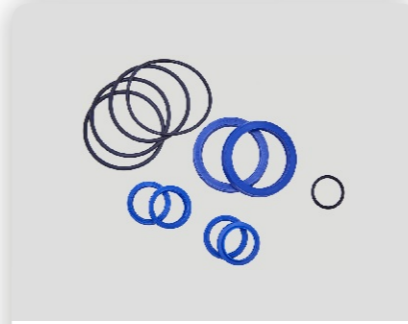
LM-SK-25-BR
Seal Kit for IB Cylinder
LM-IC-25-BR



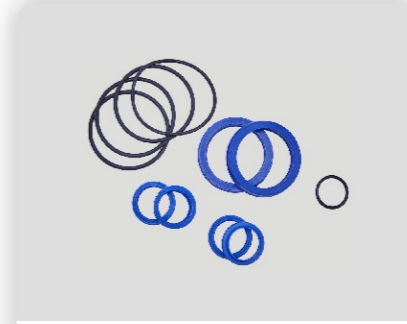
LM-SK-32-BR
Seal Kit for IB Cylinder
LM-IC-32-BR / BR-1



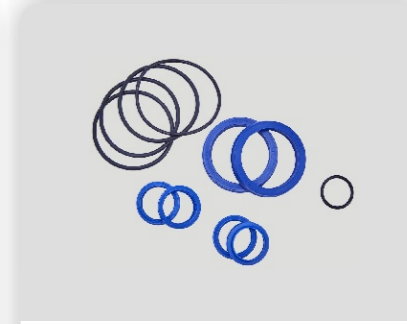
LM-SK-40-BR
Seal Kit for IB Cylinder
LM-IC-40-BR / BR-2



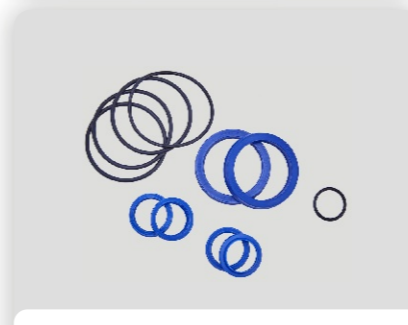
LM-SK-50-BR
Seal Kit for IB Cylinder
LM-IC-50-BR / BR-1



LM-SK-63-BR
Seal Kit for IB Cylinder
LM-IC-63-BR



LM-SK-75-BR
Seal Kit for IB Cylinder
LM-IC-75-BR / BR-1



LM-SK-100-BR
Seal Kit for IB Cylinder
LM-IC-100-BR / BR-1



LM-SK-50-ST
Seal Kit for IB Cylinder
LM-IC-50-ST



LM-SK-63-ST
Seal Kit for IB Cylinder
LM-IC-63-ST

HYDRAULIC STEERING ACCESSORIES



LM-SK-75-ST

Seal Kit for IB Cylinder
LM-IC-75-ST



LM-SK-100-ST

Seal Kit for IB Cylinder
LM-IC-100-ST / ST-1



LM-SK-75-SE

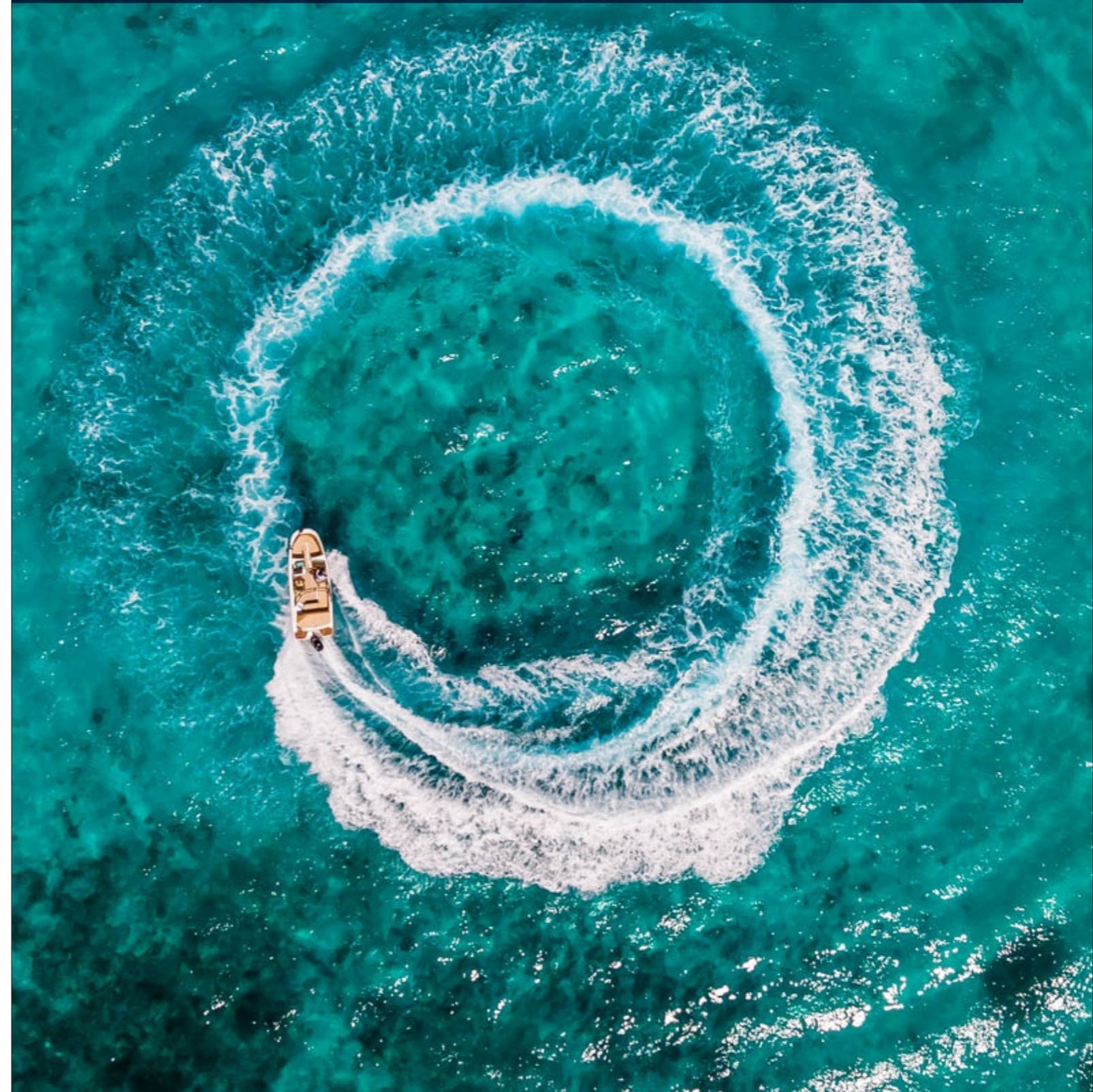
Seal Kit for IB Cylinder
LM-IC-75-SE / SE-1



LM-SK-100-SE

Seal Kit for IB Cylinder
LM-IC-100-SE / SE-1

MECHANICAL STEERING SYSTEM



MECHANICAL STEERING SYSTEM

Introduction : Components To Mechanical Steering System

Mechanical Steering system is an assembly of mechanical components used to steer a boat. MULTIFLEX manufactures a range of Rotary Mechanical Steering Systems which allows the Boat Builders worldwide to choose the system as per their requirement.

Steering Helm

The Steering Helm is a gearbox arrangement mounted on the dashboard of the boat. The Steering Wheel is mounted on the shaft of the helm.



Steering Cable

The Steering Cable is a push pull mechanical cable which converts the rotary motion of the helm to linear motion at the engine/rudder. One end of the cable is connected to the helm & the other end to the rudder.



Bezel Kit

Bezel kit is a plastic part along with related hardware which is mounted between the steering wheel and dash board to cover the helm hardware.



Connection Kit

Connection kit is used to connect the steering cable to the engine/rudder.



(56)

HOW TO SELECT CORRECT MECHANICAL STEERING SYSTEM

Multiflex Mechanical Steering System

Proper selection of a Steering System for a boat is very important to ensure proper functioning of the Steering System and also the safety of the boat.

The options of Steering Systems are : Hydraulic or Mechanical.

While selecting between Hydraulic and Mechanical Steering system, the following need to be considered:

Boat Size	Engine Type	Displacement
Boat Speed	Engine Power	Hull Type

For lower power engines (Typically below 150 Hp,) Mechanical Steering System can be considered.

Higher Engine Power or Boat Speed increases the load on the Steering System due to higher torque generated by the propeller, thereby requiring use of Hydraulic Steering System.

Hydraulic Steering Systems can be used in other applications as well, where the helmsman desires lower effort.

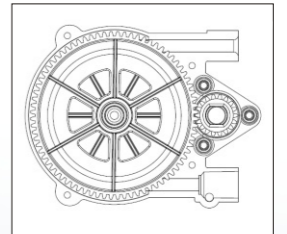
Types of Mechanical Steering System

Multiflex offers various types of Mechanical Steering System to choose from:

Rotary Steering:

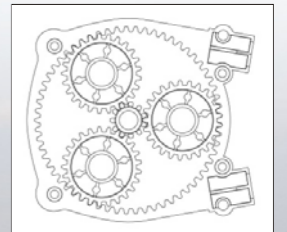
▲ Reduction Gear Design:

This design uses only two gears wherein one gear meshes externally with the drum and moves the inner helical core of the steering cable. Reduction Gear design is a sturdy design but lacks the advantage of compactness. The helm shaft is attached to the small gear and has to be placed outside the perimeter of the gear drum which makes the helm relatively large. This creates restrictive use in boats with small dashboard.



▲ Planetary Gear Design:

The Planetary Gear design uses three or more gears meshed internally which rotate on their own axis and also around the central helm axis. This design ensures uniform distribution of the torque, thereby ensuring longer life of the steering system with higher efficiency and lower feedback.



▲ Non Reaction Rotary Gear Design:

Mechanical Steering System when fitted on outboard powered boats experiences propeller torque feedback on the steering wheel through the helm shaft. This force needs to be compensated to keep the boat on a straight course.

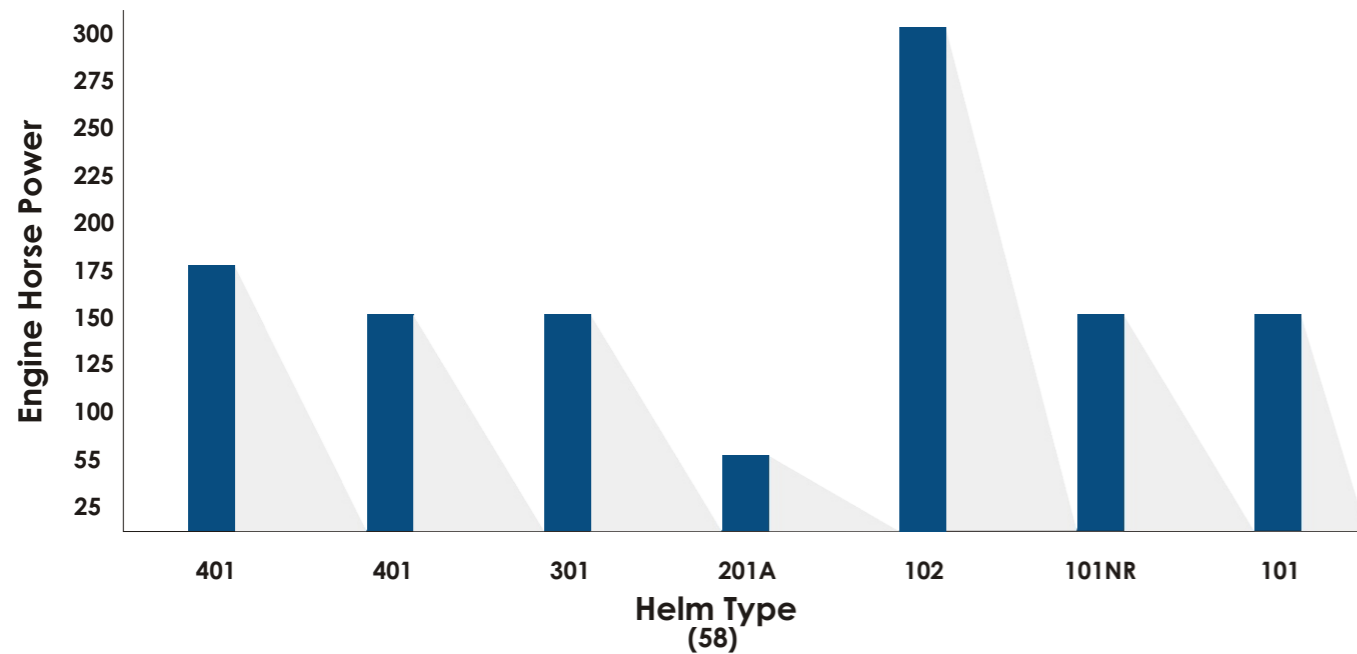
The NON Reaction Helms compensates these propeller torques by locking the helm shaft via a friction mechanism which is released only when the Steering wheel is turned by the helmsman. This ensures that the boat remains on a straight course and also benefits the helmsman due lesser fatigue.

(57)

HOW TO SELECT CORRECT MECHANICAL STEERING SYSTEM

Multiflex Range Of Steering Helms

Sr. No.	Types of Steering Helms	Image	Multiflex Part No.	Max Hp Rating	Steering Cable	Connection Type
1	Rotary Steering Planetary Gear type		LM-H-101	150 HP	SC-16	Easy Connect
2	Rotary Non-Reaction Steering Planetary Gear type		LM-H-101NR	150 HP	SC-16	Easy Connect
3	Rotary Steering Dual Helm (For Twin Engine Application) Planetary Gear type		LM-H-102	150 HP x 2 (Twin Engine)	SC-16	Easy Connect
4	Rotary Steering Reduction Gear type		LMH-201A	55 HP	SC-18	Easy Connect
5	Rotary Steering Reduction Gear type		LM-H-301	150 HP	SC-16	Easy Connect
6	Rotary Steering Reduction Gear type		LM-H-401	150 HP	SC-11	Thread Connect
7	Rotary Steering Reduction Gear type		LM-H-501 LM-H-601	175 HP	SC-05	Easy Connect



PLANETARY 150 MECHANICAL STEERING SYSTEM

Planetary 150 Mechanical Steering System : PSS-101-XX / PSS-102-XX

Planetary 150 Steering Systems are suitable for use on:

- ▲ Power Boats with engine upto 150Hp
- ▲ Power Assisted Stern Drive Boats with max. wheel dia : 16"

Planetary 150 Steering System consist of :

- ▲ Steering Helm :Part No : LM-H-101 (Shaft Length 125 mm)
- ▲ Steering Cable : Part No : SC-16-XX (XX is the length of the cable in feet)
- ▲ Bezel Kit 90° : Part No : LM-B-1B

Steering Helm : LM-H-101 / LM-H-102

- ▲ Compact Planetary Design
- ▲ Easy Connection , Quick Installation
- ▲ Helm Cover: High Pressure Die Cast Aluminium alloy
- ▲ Powder Coated for enhanced corrosion resistance
- ▲ Helm Shaft : Galvanised Steel
- ▲ Standard 3/4" tapered shaft

Steering Cable : SC -16-XX (XX is the length of the cable in feet)

- ▲ Output ends of Stainless Steel

Bezel Kit : LM-B-1B

- ▲ Bezel made from Engineering Plastic



PSS-101/ PSS-102



LM-H-101 LM-H-102



SC-16-XX



LM-B-1B LM-B-1W

Specifications

No. of Steering Wheel Turns	4 Approx.
Maximum Steering Wheel Diameter	16 inch (400 mm)
Shaft Length	125 mm
Maximum Travel	9 inch (230 mm)
Minimum Bend Radius	8 inch (200 mm)
Maximum Working Load at Tiller End	5000 N (500 kg)

Options

For Twin Engine Application	LM-H-102
90° White Bezel kit	LM-B-1W
20° Black Bezel kit	LM-B-2B
20° White Bezel Kit	LM-B-2W

- ▲ LM-H-101and LM-H-102 should not be used on boats where engine power exceeds the boat manufacturers specified horse power rating
- ▲ These systems are for single stations use only
- ▲ LM-H-102 should be used for double engine application with boat's speed not exceeding 50 mph

NON REACTION PLANETARY 150 STEERING SYSTEM

Non Reaction Mechanical Steering System : PSS-101NR-XX

Non Reaction Steering Systems are suitable for use on:

- ▲ Power Boats with engine up to 150Hp
- ▲ Power Assisted Stern Drive Boats with max. wheel dia : 16"

Non Reaction Steering System consist of :

- ▲ Steering Helm :Part No : LM-H-101NR (Shaft Length 115 mm)
- ▲ Steering Cable : Part No : SC-16-XX (XX is the length of the cable in feet)
- ▲ Bezel Kit 90° : Part No : LM-B-1B

▲ Steering Helm : LM-H-101NR

- ▲ Compact Planetary Design
- ▲ Easy Connection , Quick Installation
- ▲ Helm Cover: High Pressure Die Cast Aluminium alloy
- ▲ Powder Coated for enhanced corrosion resistance
- ▲ Helm Shaft : Galvanised Steel
- ▲ Standard 3/4" tapered shaft

Steering Cable : SC -16-XX (XX is the length of the cable in feet)

- ▲ Output ends of Stainless Steel

Bezel Kit : LM-B-1B

- ▲ Bezel made from Engineering Plastic



PSS-101 NR



LM-H-101NR



SC-16-XX



LM-B-1B LM-B-1W

Specifications

No. of Steering Wheel Turns	4 Approx.
Maximum Steering Wheel Diameter	16 inch (400 mm)
Shaft Length	115 mm
Maximum Travel	9 inch (230 mm)
Minimum Bend Radius	8 inch (200 mm)
Maximum Working Load at Tiller End	5000 N (500 kg)

90° White Bezel kit	LM-B-1W
20° Black Bezel kit	LM-B-2B
20° White Bezel Kit	LM-B-2W

- ▲ LM-H-101NR should not be used on boats where engine power exceeds the boat manufacturer's specified horse power rating

- ▲ These systems are for single stations use only

LITE 55 MECHANICAL REDUCTION STEERING SYSTEM

Lite 55 Mechanical Steering System : PSS-201A-XX

Lite 55 Steering Systems are suitable for use on:

- ▲ For Outboard Engine up to 40 Kw (55Hp)

Lite 55 Steering System consist of :

- ▲ Steering Helm :Part No : LM-H-201A (Shaft Length 37 mm)
- ▲ Steering Cable :Part No : SC-18-XX (XX is the length of the cable in feet)
(Bezel kit supplied along with helm, not to be ordered separately)

Steering Helm : LM-H-201A

- ▲ Reduction Gear Design
- ▲ Adjustable Mounting Position for easier steering cable routing
- ▲ Helm Cover: High Pressure Die Cast Aluminium alloy
- ▲ Gear & Shaft : High Pressure Die Cast Zinc alloy
- ▲ Standard 3/4" tapered shaft

Steering Cable : SC -18-XX (XX is the length of the cable in feet)

- ▲ Output ends of Stainless Steel



PSS-201A



LM-H-201A (with Bezel kit)



SC-18-XX

Specifications

No. of Steering Wheel Turns	4 Approx.
Maximum Steering Wheel Diameter	16 inch (400 mm)
Maximum Travel	5 inch (127 mm)
Minimum Bend Radius	9.8 inch (250 mm)
Maximum working load at Tiller end	5000 N (500 kg)

Options

90° White Bezel kit	LM-B-3W
---------------------	---------

- ▲ LM-H-201A should not be used on boats where engine power exceeds the boat manufacturer's specified horse power rating

- ▲ These systems are for single stations use only



REDUCTION 150 MECHANICAL STEERING SYSTEM

Reduction 150 Mechanical Steering System : PSS-301-XX

- ▲ Reduction 150 Steering Systems are suitable for use on:
 - ▲ Power Boats with engine upto 150Hp
 - ▲ Power Assisted Stern Drive Boats with max. wheel dia : 16"

▲ Reduction 150 Steering System consist of :

- ▲ Steering Helm : Part No : LM-H-301 (Shaft Length 97 mm)
- ▲ Steering Cable : Part No: SC-16-XX (XX is the length of the cable in feet)
- ▲ Bezel Kit 90° : Part No : LM-B-1B

▲ Steering Helm : LM-H-301

- ▲ Reduction Gear Design
- ▲ Easy Connection , Quick Installation
- ▲ Helm Cover: High Pressure Die Cast Zinc Alloy
- ▲ Helm Shaft : Galvanised Steel
- ▲ Standard 3/4" tapered shaft

Steering Cable : SC -16-XX (XX is the length of the cable in feet)

- ▲ Output ends of Stainless Steel

Bezel Kit : LM-B-1B

- ▲ Bezel made from Engineering Plastic



PSS-301



LM-H-301



SC-16-XX



LM-B-1B LM-B-1W

Specifications

No. of Steering Wheel Turns	4 Approx.
Maximum Steering Wheel Diameter	16 inch (400 mm)
Shaft Length	97 mm
Maximum Travel	9 inch (230 mm)
Minimum Bend Radius	8 inch (200 mm)
Maximum Working Load at Tiller End	5000 N (500 kg)

Options

90° White Bezel kit	LM-B-1W
20° Black Bezel kit	LM-B-2B
20° White Bezel Kit	LM-B-2W

- ▲ LM-H-301 should not be used on boats where engine power exceeds the boat manufacturer's specified horse power rating
- ▲ These systems are for single stations use only

REDUCTION 150 MECHANICAL STEERING SYSTEM

Reduction 150 Mechanical Steering System : PSS-401-XX

- ▲ Reduction 150 Steering Systems are suitable for use on:
 - ▲ Power Boats with engine up to 150Hp
 - ▲ Power Assisted Stern Drive Boats with max. wheel dia : 16"

▲ Reduction 150 Steering System consist of :

- ▲ Steering Helm : Part No : LM-H-401 (Shaft Length 97 mm)
- ▲ Steering Cable : Part No: SC-11-XX (XX is the length of the cable in feet)
- ▲ Bezel Kit 90° : Part No : LM-B-1B

▲ Steering Helm : LM-H-401

- ▲ Reduction Gear Design
- ▲ Easy Connection , Quick Installation
- ▲ Helm Cover: High Pressure Die Cast Zinc Alloy
- ▲ Helm Shaft : Galvanised Steel
- ▲ Standard 3/4" tapered shaft

Steering Cable : SC -11-XX (XX is the length of the cable in feet)

- ▲ Output ends of Stainless Steel

Bezel Kit : LM-B-1B

- ▲ Bezel made from Engineering Plastic



PSS-401



LM-H-401



SC-11-XX



LM-B-1B LM-B-1W

No. of Steering Wheel Turns	4 Approx.
Maximum Steering Wheel Diameter	16 inch (400 mm)
Shaft Length	97 mm
Maximum Travel	9 inch (230 mm)
Minimum Bend Radius	8 inch (200 mm)
Maximum Working Load at Tiller End	5000 N (500 kg)

90° White Bezel kit	LM-B-1W
20° Black Bezel kit	LM-B-2B
20° White Bezel Kit	LM-B-2W

- ▲ LM-H-401 should not be used on boats where engine power exceeds the boat manufacturer's specified horse power rating
- ▲ These systems are for single stations use only

JET BOAT STEERING SYSTEM

Jet Boat Steering System : PSS-501- XX & PSS-601-XX

Jet Boat Steering Systems are suitable for use on :

- ▲ Jet Boats with engines up to 175 HP

Jet Boat Rotary Steering System consist of :

- ▲ Steering Helm : Part No : LM-H-501 & LM-H-601 (Shaft Length 74.5 mm)
- ▲ Steering Cable : Part No: SC-05-XX (XX is the length of the cable in feet)
- ▲ Bezel Kit 90° : Part No : LM-B-4B

Steering Helms : LM-H-501 & LM-H-601

- ▲ Compact Design
- ▲ Option of 270° turning arc and 135°
- ▲ Cable entry of 90° or 180° into helm which allows alternative cable routing
- ▲ Powder coated for increased corrosion resistance
- ▲ Die cast aluminum alloy housing

Steering Cable : SC -05-XX (XX is the length of the cable in feet)

- ▲ Output ends of Stainless Steel
- ▲ Bezel Kit : LM-B-4B
- ▲ Bezel made from Engineering Plastic



LM-H-501 & LM-H-601



SC-05-XX



LM-B-4B

Specifications

Maximum Steering Wheel Diameter	16 inch (400 mm)
Maximum Travel	5 inch (127 mm)
Minimum Bend Radius	9.8 inch (250 mm)
Maximum working load at Tiller end	5000 N (500 kg)

Options

90° White Bezel kit	LM-B-4W
---------------------	---------

- ▲ LM-H-501 and LM-H-601 should not be used on boats where engine power exceeds the boat manufacturer's specified horse power rating
- ▲ These systems are for single stations use only

ACCESSORIES FOR MECHANICAL STEERING SYSTEM

MULTIFLEX offers an exhaustive range of complimenting mechanical steering accessories thus offering a complete solution to the end user.

Selection of the best quality raw materials, and employing the best manufacturing techniques, covered with our quality control procedures, these accessories are brilliant engineered products guaranteed for trouble free performance.

Adaptors

LM-A-1/LM-A-2

To convert Thread Connect Helm LM-H-401 to Easy Connect Helm LM-H-101

- LM-A-1 : Single Helm Adaptor
- LM-A-2 : Double Helm Adaptor

LM-A-3

To convert Easy Connect Helm LM-H-101 To Snap Connect Helm

- LM-A-3 : Single Helm Adaptor

LM-A-4

To convert Easy Connect System LM-H-101 to Thread Connect Helm LM-H-001 (Discontinued)

- LM-A-4 : Single Helm Adaptor



Tie Rods

- ▲ For twin engine installation for Mechanical and Hydraulic Steering System
- ▲ Roll Threaded at both ends
- ▲ *Can be adjusted to the length to suit twin engine installation



SS Tie Rod Kit
Length : 800 mm



SS Tie Rod Kit
Length : 600 mm



Adjustable SS Tie Rod Kit
*Length :
650 mm minimum
950 mm maximum



Adjustable SS Tie Rod Kit
*Length :
450 mm minimum
650 mm maximum

Link Arm Kits

- ▲ To connect steering cable to the engine / rudder
- ▲ Available in heavy duty mild steel or stainless steel versions
- ▲ Permanently lubricated rod ends
- ▲ Kits supplied complete with dust wiper boot, nylock nut and 3/8 mount bolt
- ▲ Suits most popular brands of outboard engines



Link Arm kit in Stainless Steel



Link Arm kit in Mild Steel



Heavy Duty Link Arm kit



Adjustable Link Arm kit

ACCESSORIES FOR MECHANICAL STEERING SYSTEM



Link Arm kit for Johnson Engines



Link Arm for Yamaha Engines



Universal Adjustable Link Arm Stainless Steel

Clamp Block



Clamp Block to support Steering Cable



Clamp Block to support Steering Cable



Clamp Block to support Steering Cable



Stringer Mount Clamp Block to support Steering Cable



Clamp Block



Aluminium Tube for LM-C-1-2 & LM-S-1/2



Aluminium Tube for LM-C-3/3A

Swivel Connection Kit



Clevis for connecting Steering Cable at Engine End.
*Suitable for all steering cables

Splashwell Mounting



Splashwell Mounting Kit



Splashwell Mounting Kit

ACCESSORIES FOR MECHANICAL STEERING SYSTEM

Steering Grommets



GR 1601
Outer Diameter : 107 mm
Hole Diameter : NA
Height : 60 mm



GR 1602
Outer Diameter : 105 mm
Hole Diameter : 12 mm
Height : 65 mm



GR 1603
Outer Diameter : 150 mm
Hole Diameter : 12 mm
Height : 115 mm



GR 1604
Outer Diameter : 100 mm
Hole Diameter : 12 mm
Height : 105 mm



GR 1605
Outer Diameter : 90 mm
Hole Diameter : NA
Height : 100 mm



GR 1606
Outer Diameter : 117 mm
Hole Diameter : 55 mm
Height : 70 mm



GR 1607
Outer Diameter : 152 mm
Hole Diameter : 85 mm
Height : 92 mm



GR 1608
Outer Diameter : 138 mm
Hole Diameter : 18 mm
Height : 55 mm



GR 1609
Outer Diameter : 105 mm
Hole Diameter : 5 mm
Height : 50 mm



GR 1610
Outer Diameter : 30 mm
Hole Diameter : 15 mm
Height : 212 mm

Note : All the above listed Grommets are available in BLACK colour.

CROSS REFERENCE FOR MECHANICAL STEERING SYSTEM

MULTIFLEX	SEASTAR SOLUTIONS	ULTRAFLEX®
Part Numbers	Part Numbers	Part Numbers
LM-H-101	N/A	T-71FC
LM-H-102	N/A	T-72FC
LM-H-101-NR	SH5150P	T73NRFC
LM-H-101A	N/A	N/A
LM-H-201A	SH8050	T-67
LM-H-301	SH5094-1P	T-71
LM-H-401	SH5023 (Old Model)	N/A
LM-H-501	SH5087P / SH5088P	N/A
SC-11	SSC72	M-47
SC-16	SSC62	M-66
SC-18	SSC131	M-58
SC-05	SSC219XX	N/A
LM-B-1B	SB27484P	X34
LM-B-2B	SB27483P	X35
LM-B-3B	SB39452P	N/A
LM-P-1	N/A	P26
LM-C-1 / 2 / 3 / 3A	300614 / 16 / NA / NA	S61 / 62 / 39 / 38
LM-S-1 / 2	SA27253P / NA	S40 / 55
LM-L-1 / 5	N/A	A73SS / A74SS
LM-T-3	N/A	A88-40128E

HOW TO MEASURE A NEW STEERING CABLE

Once you have selected the Steering System, it is now required to measure the length of the required Steering Cable. Each boat has a specific requirement of Cable length which depends on the length of the boat and the routing of the cable.

The required Steering Cable length should be measured as below:

1. Measure the dimensions : A, B, and C in centimetres.
2. Ascertain how many 90 degree bends does the cable have in the routing.
3. Ascertain whether the cable installation is :
 - # Through Engine Tilt Tube
 - # Transom Support
 - # Splash well Mounting

Use the following method for calculating the Steering Cable Length :

1) For Installation through Engine Tilt Tube : (Diagram 1)

- # Add dimensions A + B + C
- # Subtract 10 cm from the above total for each 90 degree bend in the cable routing
- # Add 30.5 cm to the above figure

You have the required length of the Steering Cable in centimeter. If you wish to order in foot ,divide the above by 30.5 and round the figure to next foot.

Example :

If A = 100cm, B = 200 cm, C= 60 cm.

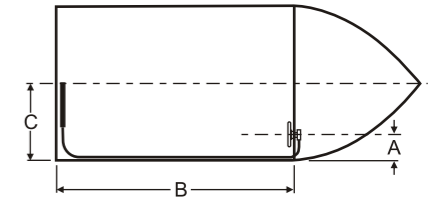
Assume there are two 90 degree bends in the routing.

The length of the required cable shall be : $100 + 200 + 60 = 360$

Subtract 20 cms on account of two 90 degree bends $360 - 20 = 340$

Add 30.5 on account of Tilt tube installation $340 + 30.5 = 370.50$ cms

For cable length in foot : $370.5 / 30.5 = 12.14$ Round off = 13 foot



2) For Transom Support & Splash well Mounting installation : (Diagram 2 & 3)

- # Add dimensions A + B + C
- # Subtract 10 cm from the above total for each 90 degree bend in the cable routing, You have the required length of the Steering Cable in centimeter. If you wish to order in foot, divide the above by 30.5 and round the figure to next foot.

Example :

If A = 100cm, B = 200cm, C = 60cm

Assume there are two 90 degree bends in the routing.

The length of the required cable shall be : $100 + 200 + 60 = 360$

Subtract 20 cms on account of three 90 degree bends $360 - 20 = 340$ cm

For cable length in foot : $340 / 30.5 = 11.14$ Round off = 12 foot

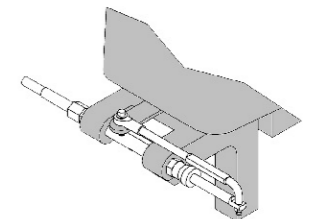


Diagram 1

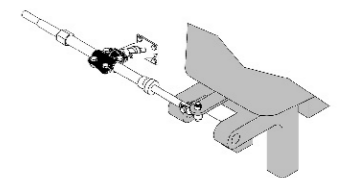


Diagram 2

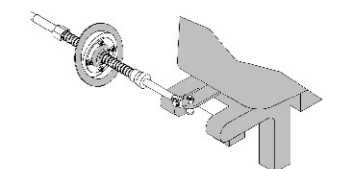


Diagram 3

Note : It is advised to consult a qualified technician while selecting, installing or servicing the Steering System on your boat.

SAFETY-CAUTIONS-WARNINGS | SERVICE & MAINTENANCE

For the safety of the boat, it is critical to select an appropriate boat steering system. The steering forces are dependent on factors such as engine power, hull, speed, etc. and can vary considerably.

The following should be considered when selecting a Steering System:

- ▲ Always consult a qualified technician for selection of a boat steering system.
- ▲ Do not install MULTIFLEX STEERING SYSTEM on any application that may exceed any of the design parameters.
- ▲ Do not install MULTIFLEX STEERING SYSTEM on boats where the engine horsepower may exceed the rating of the boat.
- ▲ Mechanical Steering Helms, Cables, Bezel Kits and Connection Kits are designed to be non-repairable.
- ▲ MULTIFLEX STEERING SYSTEM which have frozen should be replaced. Do not apply heat to thaw or dry them.
- ▲ A gradual or sudden decrease in the usable stroke of the cable is an indication of a pending or present performance problem. The cable should be replaced immediately.
- ▲ A gradual or sudden increase in the no load friction of a cable is an indication of a pending or present performance problem. The cable should be replaced immediately.
- ▲ Do not install MULTIFLEX STEERING SYSTEM with the engine running or power on. Serious accident could occur.

Any mechanical system requires regular service and maintenance to ensure reliability and durability of the system. Mechanical Steering Systems are no different. Maintenance of the Mechanical Steering Systems is a critical aspect since it affects the life of the system and also the safety of the user.

The following describe the important aspects of service and maintenance of a Mechanical Steering System:

- ▲ Always consult a qualified technician for maintenance and service of a mechanical steering system.
- ▲ The Steering Helm is a pre assembled unit and should not be opened or reassembled. Any tampering with the unit will render possibility of damage and failure of the system. The Helm should be installed as per the manufacturer's instructions.
- ▲ The Steering Cable should be installed providing minimum bends in the routing. In case of tight routings use slightly longer cables to avoid tight bends. Incorrect routing shall increase the back lash in the system and also make it less efficient.
- ▲ Regular and thorough inspection is a must. Any component found to have signs of excessive wear or causing excessive and/or rough motion should be replaced immediately.
- ▲ Regularly inspect the steering cables. If steering cable shows signs of external wear or damage to any of its components, it should be replaced immediately. Increase in hardness in cable movement or decrease in stroke are other indicators that cable should be replaced immediately.
- ▲ Corrosion is a continuous source of worry in marine applications. Corroded components will lead to reduction in efficiency and in extreme cases it may cause failure of the steering system.
- ▲ All components of mechanical steering systems should be regularly inspected, cleaned and lubricated at regular intervals.
- ▲ Components of mechanical steering system, namely, helms, cables, bezel kits and engine connection kits should not be repaired and should be replaced by complete units.
- ▲ Whenever a boat is de-commissioned for long periods of time, the mechanical steering system should be removed, cleaned, lubricated and stored separately. The system should be checked for any damages before re-installing it.
- ▲ Last but not the least, always diagnose the problem area thoroughly and correctly before taking any corrective steps.

STEERING WHEELS

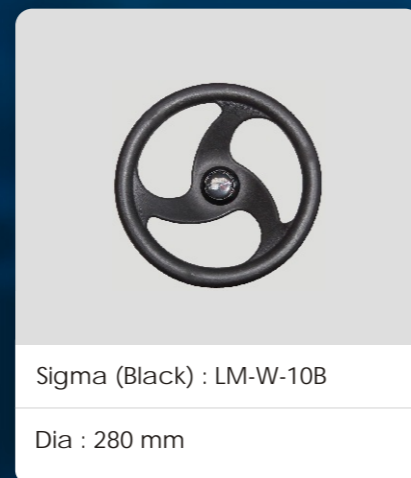
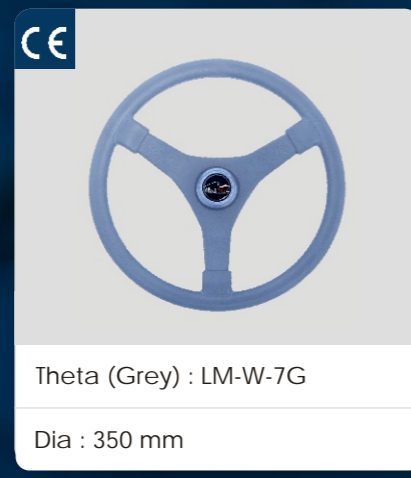
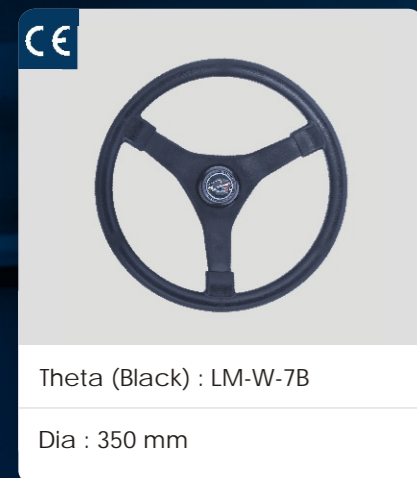
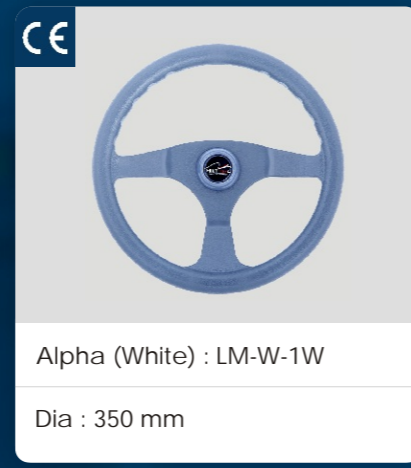
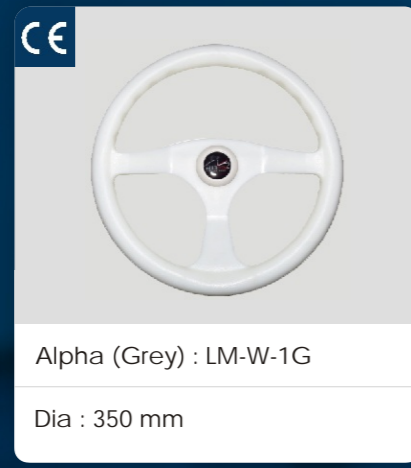
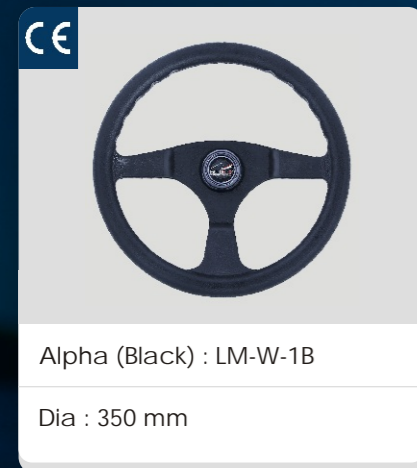


STEERING WHEELS

Standard Steering Wheels

Features

- ▲ Made from High Strength Engineering Plastic
- ▲ Inbuilt Hub
- ▲ Three Spokes Design
- ▲ Fits all Standard Marine Helms with 3/4" Tapered Shaft

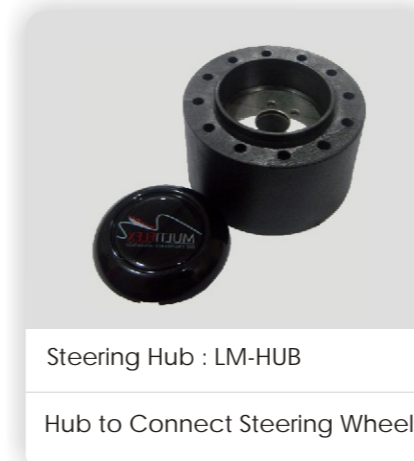
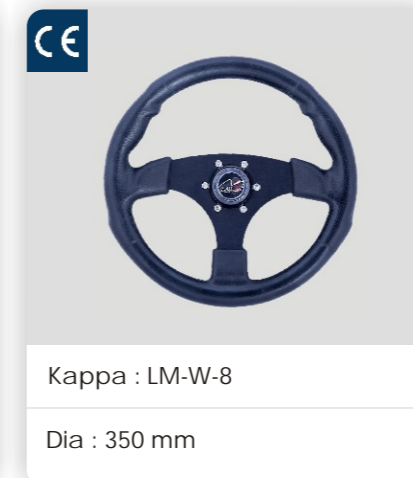
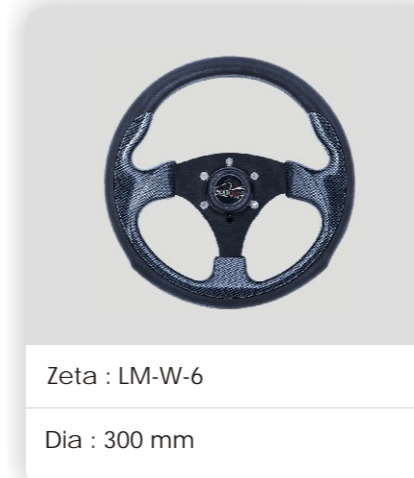
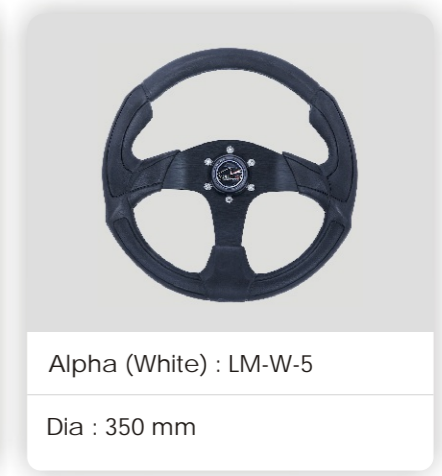
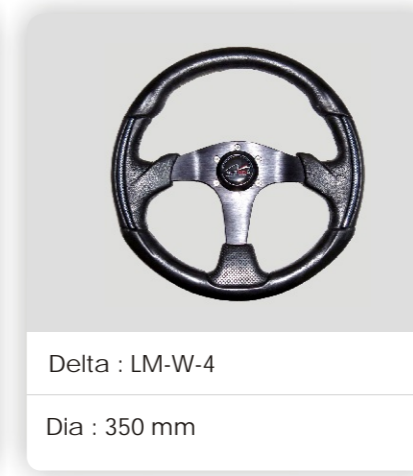


STEERING WHEELS

Sports Steering Wheels

Features

- ▲ Made from polyurethane and Aluminium Reinforcement
- ▲ Supplied with Hub
- ▲ Three Spokes Design
- ▲ Fits all Standard Marine Helms with 3/4" Tapered Shaft



STEERING WHEELS

Stainless Steel Steering Wheels

Features

- ▲ Made from High Strength Stainless Steel 316
- ▲ Supplied with Hub
- ▲ Five Spokes Design
- ▲ Fits all Standard Marine Helms with 3/4" Tapered Shaft



Aries : LM-W-21

Dia : 400 mm



Taurus (Black) : LM-W-22B

Dia : 400 mm



Taurus (Grey) : LM-W-22G

Dia : 400 mm



Gemini : LM-W-23

Dia : 400 mm

CONTROL CABLES



EDGE ENGINE CONTROL CABLES

Features of a High-Performance EDGE Control Cable

Special Edge Conduit

Unique design of Conduit provides structural integrity and a tighter minimum bend radius.

Improved Efficiency

Edge cables provide significantly greater efficiency due to use of low-friction materials and construction.

Minimal Backlash

Edge cables are built allowing optimum gap between inner core and conduit, resulting in significantly minimal backlash.

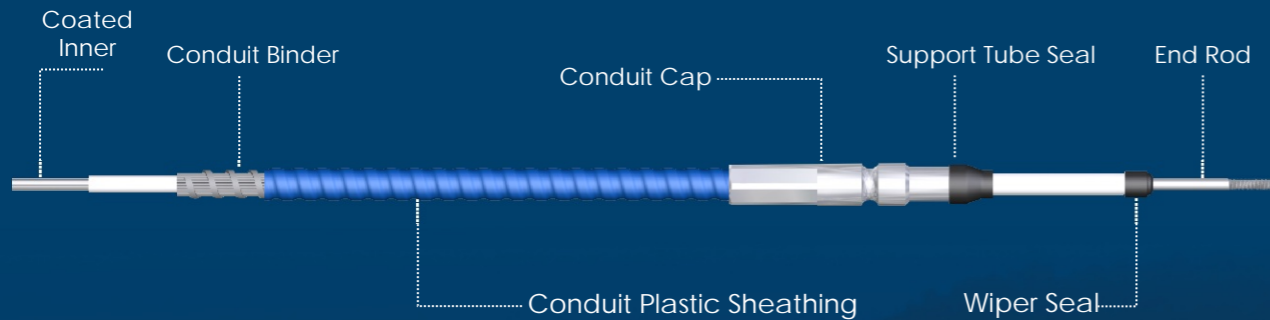
Less Friction Wiper Seal

The wiper seals are made from a polyurethane impregnated with lifetime lubricant to minimize operating friction.

Cable Bend Radius

Edge Cable has a minimum bend radius of 4 inches. However in use keep the bend radius as large as possible and the degree of bend to a minimum for optimal performance.

The above features translates into improved efficiency with reduced operator effort when EDGE cables are used



Construction of EDGE Series Control Cable

Engine Control Cables are used for Shift and Throttle application. Different designs of Engine Control Cables are used depending on the engine type and installation.

MULTIFLEX offers a wide variety of Engine Control Cables for different applications. Engineered out of corrosion resistant materials and components these control cables meet or exceed all industry standards.

Multiflex Engine Control Cables are interchangeable with most common SeaStar Solutions®, Morse®, Ultraflex® Engine Control Cables.

Refer to the Cross reference Chart for interchangeability.

(76)

ENGINE CONTROL CABLES

Selection of The Engine Control Cable :

OUTBOARD

Multiflex Engine Control Cable	Engine
EC-005 / EEC-005	Mercury®/ Mariner®/ Over 50 Hp (37KW)®
EC-033 / EC-133 / EC-133-R / EEC-133 / EEC-043	Force®/ Selva®/ Yamaha®/ Suzuki®/ Tohatsu®/ Honda®/ Nissan®
EC-004	Pre 1979
EC-014 / EEC-014	After 1979
EC-016 / EEC-016	Johnson®/ Evinrude®
EC-036 / EEC-036	Mercurise® & Gen. II Control

STERNDRIVE

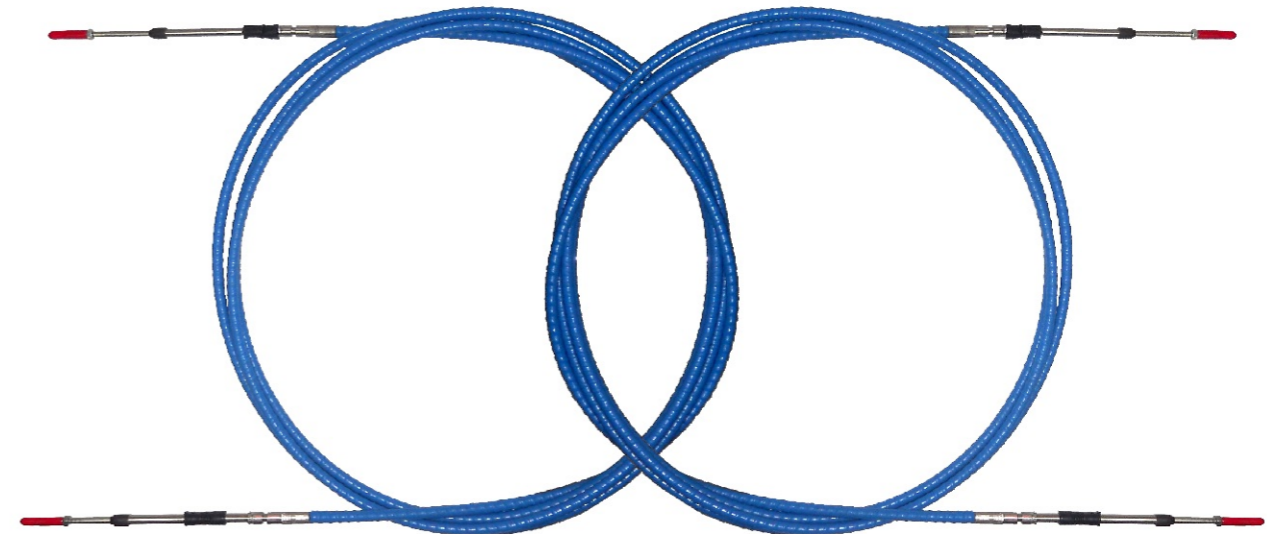
Multiflex Engine Control Cable	Engine
EC-005 / EEC-005	Mercuriser®
EC-004	Pre 1979
EC-014 / EEC-014	After 1979
EC-033 / EC-133 / EC-133-R / EEC-133 / EEC-043	Volvo Penta®
EC-036 / EEC-036	Mercurise® & Gen. II Control

INBOARD

Multiflex Engine Control Cable	Engine
EC-003 / EC-133 / EC-133-R / EEC-113 / EEC-043	All

Note: The above cross reference chart is for reference only. User should confirm the interchangeability before installation.

***Disclaimer:** Original part numbers and manufacturers names are mentioned for reference purpose only.



(77)

ENGINE CONTROL CABLES

Universal 3300 Cables

Application : Outboard, Inboard & Stern Drive with relevent accessories.



EC-033 Travel: 90mm | Conduit: 7.0mm | Inner:1.9mm SS-Solid Wire | End Thread :10-32 UNF

EC-133 Travel:90mm | Conduit: 8.4mm | Inner:1.9mm SS-Solid Wire | End Thread :10-32 UNF

EC-133R Travel:90mm | Conduit: 8.4mm | Inner:1.9mm SS-Solid Wire | End Thread :10-32 UNF

BRP® - EVINRUDE® (OMC®) ENGINE CABLES

Application : BRP®, Evinrude®, OMC® Engines

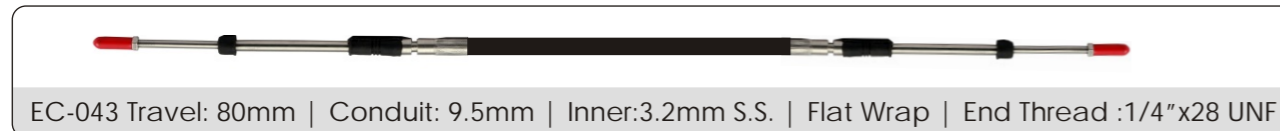


EC-004 (For engines manufactured Pre 1979) Travel: 70mm | Conduit: 7.0mm | Inner:1.9mm SS-Solid Wire

EC-014 (For engines manufactured Post 1979) Travel: 80mm | Conduit: 7.0mm | Inner:1.9mm SS-Solid Wire

UNIVERSAL 4300 CABLES

Application : Heavy duty Application



EC-043 Travel: 80mm | Conduit: 9.5mm | Inner:3.2mm S.S. | Flat Wrap | End Thread :1/4"x28 UNF

MERCURY® & MERCUISER® MARINER® ENGINE CABLES

Application : Mercury® & Mercruiser® Mariner® Engines



EC-036 (For Mercury® & Mercruiser® Engines ,Mercury® Generation II series controls) Travel: 80mm | Conduit: 7.0mm | Inner:1.9mm Solid Wire

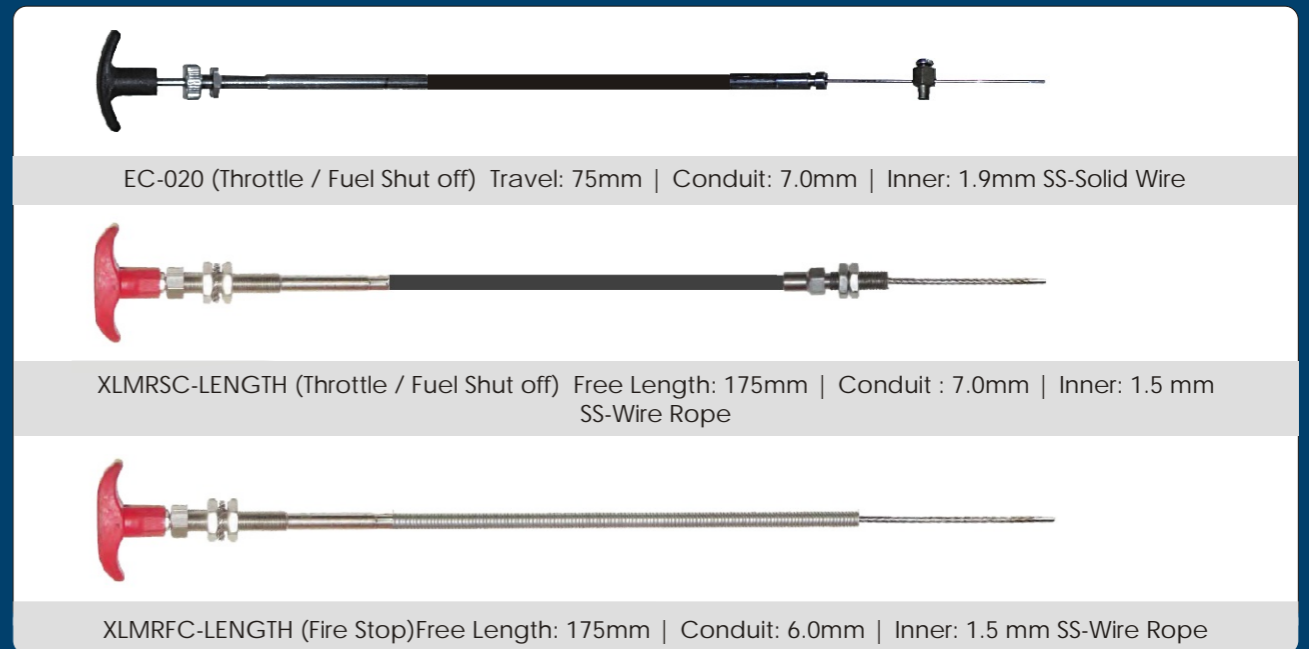
EC-005 (For Mercury® & Mercruiser® Engines) Travel:97mm | Conduit: 7.0mm | Inner:1.9mm SS-Solid Wire

EC-016(For Mariner® engines upto 40HP)Travel:90mm | Conduit: 7.0mm | Inner:1.9mm | End Thread :10-32 UNF

*Disclaimer: Original manufacturers names are mentioned for reference purpose only.

ENGINE CONTROL CABLES

STOP AND FIRE CABLES



EC-020 (Throttle / Fuel Shut off) Travel: 75mm | Conduit: 7.0mm | Inner: 1.9mm SS-Solid Wire

XLMRSC-LENGTH (Throttle / Fuel Shut off) Free Length: 175mm | Conduit : 7.0mm | Inner: 1.5 mm SS-Wire Rope

XLMRFC-LENGTH (Fire Stop)Free Length: 175mm | Conduit: 6.0mm | Inner: 1.5 mm SS-Wire Rope

EDGE Series



EEC-133 Travel:90mm | Conduit: 8.6mm | Inner: 2.75mm (Coated Inner) | End Thread : 10-32 UNF

EEC-014 (For engines manufactured Post 1979) Travel: 80mm | Conduit: 8.6mm | Inner: 2.7mm (Coated Inner) Flexible core

EEC-043 Travel: 80mm | Conduit: 11mm | Inner: 3.2mm S.S. | End Thread: 1/4" x 28 UNF

EEC-036 (For Mercury® & Mercruiser® Engines, Mercury® Generation II series controls) Travel: 80mm | Conduit: 8.6mm | Inner: 2.75mm (Coated Inner)

EEC-005 (For Mercury® & Mercruiser® Engines) Travel: 97mm | Conduit: 8.6mm | Inner: 2.75mm (Coated Inner)

EEC-016 (For Mariner® engines upto 40HP) Travel: 90mm | Conduit: 8.6mm | Inner: 2.75mm SS-Solid Wire | End Thread: 10/32 UNF

CROSS REFERENCE WITH OTHER CABLE BRANDS

				Application
Part No.	Part No.	Part No.	Part No.	
EC-033	UNIVERSAL CABLE CC230	C2	-NA-	YAMAHA® / SUZUKI® HONDA®/ NISSAN® TOHATSU® / SELVA®
EC-133	MIRACABLE CC330 PREMIUM CC199	C8	33C RED JACKET 32377-003	YAMAHA® / SUZUKI® HONDA®/ NISSAN® TOHATSU® / SELVA®
EC-005	600A CC179	C5	TYPE KM 637323	MERCURY® / MERCURISER® MARINER®/ OVER 50
EC-004	400A TYPE CC170	C4	TYPE O 48296	Pre 1979 OMC® / Evinrude® Johnson®
EC-014	400 TYPE CC205	C14	TYPE OS 302029	1979 TO DATE OMC® Johnson® Evinrude®
EC-043	Cc693	C22	43C REDLINE 65835-003	Heavy Duty
EC -016	CC 630	C16	-NA-	Mariner® upto 40 HP
EC -036	CC 189	C36	-NA-	Mercuriser® & Gen II™
EC-020	CC 343	B14	-NA-	Discontinuing Action

Note: The above cross reference chart is for reference only. User should confirm the interchangeability before installation.

***Disclaimer:** Original part numbers and manufacturers names are mentioned for reference purpose only.

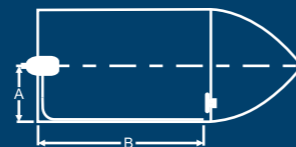
How To Measure Engine Control Cable For New Installation :

- ▲ Measure length A + B in feet. This is the distance from the Control Head to the clutch or throttle connection.
- ▲ Ensure that the path is straight line and has no obstructions along the routing.
- ▲ Round off the total A + B to the next whole feet which is the cable length.

Note: For Outboard Engine installations add three feet to the obtained length to allow engine movements.

OUTBOARD

$$A + B + 3' (90 \text{ cm}) = L$$

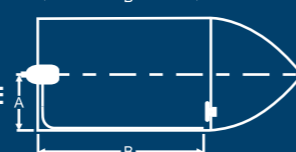


For Replacement Cable :

- ▲ Measure the length of the cable from End to End in feet.
- ▲ Round off the length to the next whole feet.

INBOARD/STERNDRIVE

$$A + B = L$$



Note: For Engine cable installation the recommended minimum bend radius is approximate 8" (200 mm)

ACCESSORIES FOR CONTROL CABLES

LM-K-1



Connection Kit for converting EC-005 cable

*Suitable for EC-005 series MULTIFLEX cables

LM-K-3



Clamp for Universal Control Cables

*Suitable for EC-033 & EC-133 series

LM-K-4



Clamp for Heavy Duty Control cables.

*Suitable for EC-043 series MULTIFLEX cable

LM-K-5



Clamp for Universal Control Cables.

*Suitable for EC-033 & EC-133 series Cables

LM-K-6



Clevis for Heavy Duty Control Cables.

*Suitable for EC-043 series Cable

LM-K-7



Metallic Eye End for Universal Control Cables

*Suitable for EC-033 & EC-133 series Cables

LM-K-8



Plastic Eye End for Universal control cables

*Suitable for EC-033 & EC-133 Series Cables

LM-K-9



Ball Joint for Connecting Universal Cables to Engine

*Suitable for EC-033 and EC-133 Series Cables

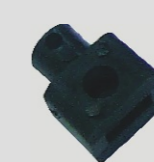
LM-K-10



SS Pivot for Universal Control Cables

*Suitable for EC-033 & EC-133 Series Cables

LM-K-11



SS Pivot Control Cables

* Suitable for EC-033 & EC-133 series cables

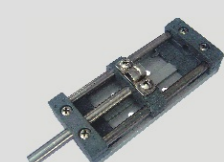
LM-K-12



SS Pivot Control Cables

* Suitable for EC-020 series MULTIFLEX cables

LM-K-13



Twin Station Control for connecting two station

* Suitable for 033C series MULTIFLEX cables

LM-K-14



Ball Joint for Connecting Universal Control Cable

LM-K-17



Universal Control Cable Mounting Clamp

LM-K-18



Ball Joint to connect PWC Cables

PERSONAL WATERCRAFT CABLES



PWC / JET SKI CABLES

Features of a High-Performance PWC / JET SKI CABLES

Multiflex manufactures high quality Steering, Throttle, Choke, Reverse, and Trim cables for most Jet Ski models. These cables are produced using internally lubricated stainless steel cable, OEM style connectors, and high strength sheathing.

- ▲ Multiflex PWC Cables are designed as OEM replacements.
- ▲ Product Made with the Highest Quality Components Available
- ▲ Each Cable is tested individually before dispatch
- ▲ Multiflex PWC Cables are Made to Match or Exceed Original Specifications



PWC / JET SKI CABLES

SR.NO	MANUFACTURER	APPLICATION	OEM PART NO	MULTIFLEX PART NO.
1	HONDA®	JET SKI THROTTLE CABLE	54330-VH7-K50	ETC-HD-0334
2	SEA DOO®	JET SKI THROTTLE CABLE	277001170	ETC-SD-4314
3	SEA DOO®	JET SKI THROTTLE CABLE	277000727	ETC-SD-2214
4	YAMAHA®	JET SKI THROTTLE CABLE	F0M-U7252-00-00	ESC-YA-2144
5	YAMAHA®	JET SKI THROTTLE CABLE	6L2-26301-01-00	PTC-YA-1036
6	KAWASAKI®	JET SKI STEERING CABLE	59406-3771	ESC-KW-2223
7	KAWASAKI®	JET SKI STEERING CABLE	59406-3778	ESC-SD-1713
8	KAWASAKI®	JET SKI STEERING CABLE	59406-3748	ESC-SD-2713
9	KAWASAKI®	JET SKI STEERING CABLE	59406-3757	ESC-SD-4013L
10	KAWASAKI®	JET SKI STEERING CABLE	59406-3776	ESC-SD-4013R
11	KAWASAKI®	JET SKI STEERING CABLE	59406-0003	ESC-KW-3223
12	KAWASAKI®	JET SKI STEERING CABLE	59406-3780	ESC-KW-1223
13	SEA DOO®	JET SKI STEERING CABLE	271000436	ESC-SD-2013
14	SEA DOO®	JET SKI STEERING CABLE	277001580	ESC-SD-8213
15	SEA DOO®	JET SKI STEERING CABLE	204390172	ESC-SD-4513
16	SEA DOO®	JET SKI STEERING CABLE	204390212	ESC-SD-5513
17	SEA DOO®	JET SKI STEERING CABLE	277000566	ESC-SD-1713
18	SEA DOO®	JET SKI STEERING CABLE	277000574	ESC-SD-2713
19	SEA DOO®	JET SKI STEERING CABLE	277000325	ESC-SD-4013L
20	SEA DOO®	JET SKI STEERING CABLE	277000324	ESC-SD-4013R
21	SEA DOO®	JET SKI STEERING CABLE	204390434	ESC-SD-3113
22	SEA DOO®	JET SKI STEERING CABLE	277001578	ESC-SD-9213
23	YAMAHA®	JET SKI STEERING CABLE	F1K-61481-01	ESC-YA-6243
24	YAMAHA®	JET SKI STEERING CABLE	GU5-U1481-00-00	ESC-YA-2243
25	YAMAHA®	JET SKI STEERING CABLE	GP7-U1481-00-00	ESC-YA-7143
26	YAMAHA®	JET SKI STEERING CABLE	F0X-U1481-00-00	ESC-YA-1243
27	YAMAHA®	JET SKI STEERING CABLE	GP8-U1481-00-00	ESC-YA-8143
28	YAMAHA®	JET SKI STEERING CABLE	F1S-61481-00-00	ESC-YA-7243
29	YAMAHA®	JET SKI STEERING CABLE	GP1-U1470-00-00	ESC-YA-4043
30	YAMAHA®	JET SKI STEERING CABLE	F0C-U1470-00-00	ESC-YA-7043
31	YAMAHA®	JET SKI STEERING CABLE	F1C-U1470-10-00	ESC-YA-8043
32	YAMAHA®	JET SKI STEERING CABLE	F1T-U1470-10-00	ESC-YA-0143L
33	YAMAHA®	JET SKI STEERING CABLE	F0R-U1470-10-00	ESC-YA-0543L
34	YAMAHA®	JET SKI STEERING CABLE	F0R-U1470-00-00	ESC-YA-0543R
35	YAMAHA®	JET SKI STEERING CABLE	F2N-61481-00	ESC-YA-1343
36	YAMAHA®	JET SKI STEERING CABLE	F1B-61481-02	ESC-YA-3243
37	YAMAHA®	JET SKI STEERING CABLE	F1G-61481-02	ESC-YA-4243
38	YAMAHA®	JET SKI STEERING CABLE	F1S-61481-10	ESC-YA-4343
39	YAMAHA®	JET SKI STEERING CABLE	F2F-61481-00	ESC-YA-9243

*Disclaimer: Original part numbers and manufacturers names are mentioned for reference purpose only.

PWC / JET SKI CABLES

SR.NO	MANUFACTURER	APPLICATION	OEM PART NO	MULTIFLEX PART NO.
40	SEASTAR®	Jet Ski Control Cable	277011324	ESC-SD-5113
41	SEASTAR®	Jet Ski Control Cable	CCX63316	ESC-SS-7042
42	SEASTAR®	Jet Ski Control Cable	CCX63317	ESC-SS-1142
43	SEA-DOO®	Jet Ski Reverse Cable	268000108	ESC-SD-4112
44	SEA-DOO®	Jet Ski Reverse Cable	268000109	ESC-SD-6012
45	SEA-DOO®	Jet Ski Reverse Cable	204160156	ESC-SD-5012
46	SEA-DOO®	Jet Ski Reverse Cable	204170058	ESC-SD-7012R
47	SEA-DOO®	Jet Ski Reverse Cable	268000110	ESC-SD-7112

CONTROL LEVERS



ENGINE CONTROL LEVERS

Engine Control Top Mount and Side Mount Lever provides you both throttle and shift operation for outboards and inboards at low shifting loads.

MULTIFLEX offers you following Control Levers under this range:

- ▲ Single Top Mount Lever
- ▲ Double Top Mount Lever
- ▲ Side Mount Lever (Black & Ivory)
- ▲ Side Mount Lever (Heavy Duty) (Black & Ivory)

LM-V-3 / LM-V-4

Top Mount - Control Lever (with Neutral Safety Switch)

Features:

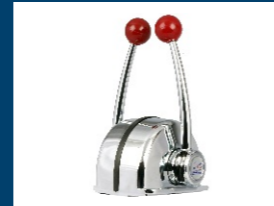
- ▲ Detents for Forward / Neutral / Reverse
- ▲ Dual action (throttle and shift in one lever)
- ▲ Neutral Safety Switch Indicator
- ▲ Sturdy control provides one-handed positive engine control
- ▲ Neutral warm-up

Technical Advantages:

- ▲ Chrome Housing for Sea worthy Applications
- ▲ Available in single (LM-V-3) or twin (LM-V-4) engine versions
- ▲ Suits EC-033 / EC-133 / EEC-133 / EC-133R / EC-043* / EC-016 Series MULTIFLEX Cables



LM-V-3



LM-V-4

LM-V-5 / LM-V-6

Side Mount - Control Lever (Plastic Housing)

Features:

- ▲ Provides Safe, Quick and Easy shifting with a positive Lock-in neutral to prevent accidental gear engagement unless engine is idling.
- ▲ Pull-out handle disengages shift for warm-up
- ▲ Neutral safety switch

Technical Advantages :

- ▲ Aluminum assembly covered in tough fiber plastic
- ▲ Allows both horizontally or vertically installation on the starboard or port side of the boat
- ▲ Suits EC-033 / EC-133 / EEC-133 / EC-133R / EC-043* / EC-016 series MULTIFLEX Cable
- ▲ Engine Control Side Mount Lever provides Multi-Utility operations for outboards & inboards at low shifting loads



LM-V-5



LM-V-6

LM-V-9 (L/R)

Side Mount - Control Lever (with Electric Start)

Features:

- ▲ Detents for Forward / Neutral / Reverse
- ▲ Dual action (throttle and shift in one lever)
- ▲ Sturdy control provides one-handed positive engine control
- ▲ Left and Right mounting options available
- ▲ Engineered Plastic Tough Body
- ▲ Suits EC-033 / EC-133 Series MULTIFLEX Cables

Technical Advantages:

- ▲ 10 Pin connection socket
- ▲ Automatic lock-in at neutral position
- ▲ Safety Switch for emergency stop
- ▲ Easy & Quick warm-up in neutral
- ▲ Secured key-start
- ▲ Forward/Reverse throttling
- ▲ Thumb-operated trim/tilt switches
- ▲ Oil & overheat indicators
- ▲ Choke switch



LM-V-9 (L/R)

ENGINE CONTROL LEVERS

LM-V-15

Side Mount - Control Lever (Without Trim-Tilt)

Features:

- ▲ Provides Safe, Quick and Easy shifting by preventing accidental gear engagement unless engine is idling
- ▲ Neutral safety switch
- ▲ Provided with a positive Lock-in neutral to prevent accidental gear engagement

Technical Advantages:

- ▲ Available in single engine versions
- ▲ Suits EC-033 / EC-133 Series MULTIFLEX Cables



LM-V-15

LM-V-18

Top Mount - Control Lever

Features:

- ▲ Detents for Forward / Neutral / Reverse
- ▲ Dual action (throttle and shift in one lever)
- ▲ Sturdy control provides one-handed positive engine control
- ▲ Neutral warm-up
- ▲ Suits EC-033 / EC-133 / EC-133R / EEC-133 / EC-043 / EC-016 Series MULTIFLEX Cables

Technical Advantages:

- ▲ Chrome Housing for Sea worthy Applications
- ▲ Friction Load on throttle



LM-V-18

LM-V-20T & LM-V-20S

Top & Side Mount - Control Lever

Features:

- ▲ Dual action (throttle and shift in one lever)
- ▲ Start in gear protection standard
- ▲ Neutral interlock mechanism prevents accidental engaging of gear (side mount only)
- ▲ Push button for neutral engine warm up
- ▲ Use Universal 3300C type cables or Johnson® Evinrude® / BRP® / OMC® / Mercury® OEM style cables
- ▲ Adjustable throttle damper
- ▲ Available with or without trim and/or tilt
- ▲ Easy to shift and throttle motion
- ▲ Port or starboard installation with several cable entry angles
- ▲ Easily adapted to push or pull cable actuation
- ▲ Complete gear mechanism is confined Side mount lever is available with engine cut off switch



LM-V-20T



LM-V-20S

ENGINE CONTROL LEVERS

Universal 3300 Cables

LEVERS AND CABLES	LM-V-3 LM-V-4	LM-V-5 LM-V-6	LM-V-9	LM-V-15	LM-V-18	LM-V-19	LM-V-20
EC-033	✓	✓	✓	✓	✓	✓	✓
EC-133	✓	✓	✓	✓	✓	✓	✓
EC-133R	✓	✓	✓	✓	✓	✓	✓
EC-043	✓			✓	✓		✓
EC-005		✓		✓			✓
EC-014		✓		✓			✓
EC-016	✓	✓	✓	✓	✓		✓
EC-036				✓			✓

BOAT TRAILER PU ROLLERS



POLYURETHANE ROLLERS

MULTIFLEX offers an exhaustive range of PU Products for Boat Trailers. Engineered out of the best quality raw materials, and guaranteed for performance, these products are your best choice for a high price-performance ratio.

Polyurethane Rollers are manufactured by casting method using highest quality raw materials.

PU rollers differ from Rubber Rollers in terms of:

Life : PU Roller has Longer life.

Strength : PU Rollers have Higher strength.

Cost : More expensive.









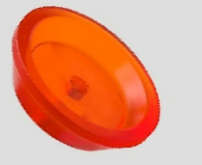
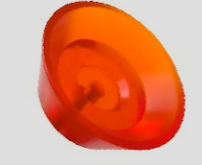

Marking on Boat : Non marking.

Resistance : Higher abrasion and weather resistant.

PUHKR01 KEEL  8" Heavy Duty keel Roller Length 200mm(8") I.D. 16mm	PUHKR02 KEEL  10" Heavy Duty keel Roller Length 250mm(10") I.D. 16mm	PUHKR03 KEEL  12" Heavy Duty keel Roller Length 302mm(12") I.D. 16mm	PUKR01 KEEL  5" keel Roller Length 128mm(6") I.D. 13mm
PUSCR01 KEEL  12" Self Centering keel Roller Length 287mm(12") I.D. 13mm	PUKR02 KEEL  5" keel Roller with 1/2 Hole Length 228mm(5") I.D. 16mm	PUWR01 WOBBLE  5" x 3" Rocker Roller O.D. 120mm(5") I.D. 17mm	PUWR02 WOBBLE  5" x 3" Rocker Roller O.D. 120mm(5") I.D. 20mm
PUWR03 WOBBLE  4" x 44" Molded Wobble Roller O.D. 195mm(7.7") I.D. 22mm	PUEC01 END CAP  End Cap for PUHKR01, PUHKR02 and PUHKR03 O.D. 83mm I.D. 16mm	PUEC02 END CAP  End Cap / Tip Roller O.D. 50.5mm(1.99") I.D. 16.5mm	PUBR01 BOW  3" Bow Roller Length 75mm(3") I.D. 13mm

Disclaimer : Please note that the Dimensions are approximate and may change due to design change.

POLYURETHANE ROLLERS

PUBR02 BOW  4" Bow Roller Length 99.5mm(3.92") I.D. 13.5mm	PUBG01 BOW  3" Bow Block Forewidth 150mm Afterwidth 75mm I.D. 13mm	PUBS01 BOW STOP  Bow Stop Roller Assembly Length 129mm(5.8") I.D. 13mm	PUBS02 BOW STOP  Bow Stop Roller Assembly Length 166mm(6.54") I.D. 13.5mm
PUSR01 STRAIGHT  12" Straight Roller Length 299mm(11.76") I.D. 17mm	PUPAD01 PAD  1" x 1/2" x 12" Bump Pad Length 299mm(11.77") No.of hole 4	PUPAD02 PAD  2" x 2" x 12" Bum Pad Length 300mm(11.81") No.of hole 4	PUPAD03 PAD  3" x 3" x 112" Bump Pad Length 301mm(11.85") No.of hole 4
PUEB01 END BELL  Small End Bell O.D. 106mm(4.17") I.D. 13mm	PUEB02 END BELL  Big End Bell O.D. 133mm(5.2") I.D. 13.5mm	PUVR01 V ROLLER  6.5" x 8" V Roller O.D. 160mm(6.3") I.D. 17mm	

Disclaimer : Please note that the Dimensions are approximate and may change due to design change.

BOAT TRAILER RUBBER ROLLERS



BOAT TRAILER RUBBER ROLLERS

MULTIFLEX offers an exhaustive range of Rubber Products for Boat Trailers. Engineered out of the best quality raw materials, and guaranteed for performance, these products are your best choice for a high price-performance ratio.

- Complete selection of rollers for most common applications.
- Constructed of high quality rubber.
- Extra large roller surface protects boat hulls.
- Friction reducing bushings for easy launch and load.
- Can handle heavy loads without deforming.
- Available in bulk or customized packaging.

<p>PR1001</p>  <p>2" Parallel Roller</p> <table border="1"> <tr><td>Length</td><td>50mm(1.97")</td></tr> <tr><td>I.D.</td><td>13mm(0.51")</td></tr> <tr><td>O.D.</td><td>64mm(2.52")</td></tr> </table>	Length	50mm(1.97")	I.D.	13mm(0.51")	O.D.	64mm(2.52")	<p>PR1002</p>  <p>6" Parallel Roller</p> <table border="1"> <tr><td>Length</td><td>149.5mm(5.88")</td></tr> <tr><td>I.D.</td><td>16.5mm(0.65")</td></tr> <tr><td>O.D.</td><td>61mm(2.40")</td></tr> </table>	Length	149.5mm(5.88")	I.D.	16.5mm(0.65")	O.D.	61mm(2.40")	<p>PR1002A</p>  <p>6" Parallel Roller</p> <table border="1"> <tr><td>Length</td><td>149.5mm(5.88")</td></tr> <tr><td>I.D.</td><td>19mm(2.75")</td></tr> <tr><td>O.D.</td><td>61mm(2.40")</td></tr> </table>	Length	149.5mm(5.88")	I.D.	19mm(2.75")	O.D.	61mm(2.40")	<p>PR1003</p>  <p>8" Parallel Roller</p> <table border="1"> <tr><td>Length</td><td>197.5mm(7.78")</td></tr> <tr><td>I.D.</td><td>17mm(0.75")</td></tr> <tr><td>O.D.</td><td>61mm(2.40")</td></tr> </table>	Length	197.5mm(7.78")	I.D.	17mm(0.75")	O.D.	61mm(2.40")
Length	50mm(1.97")																										
I.D.	13mm(0.51")																										
O.D.	64mm(2.52")																										
Length	149.5mm(5.88")																										
I.D.	16.5mm(0.65")																										
O.D.	61mm(2.40")																										
Length	149.5mm(5.88")																										
I.D.	19mm(2.75")																										
O.D.	61mm(2.40")																										
Length	197.5mm(7.78")																										
I.D.	17mm(0.75")																										
O.D.	61mm(2.40")																										
<p>PR1003A</p>  <p>8" Parallel Roller</p> <table border="1"> <tr><td>Length</td><td>197.5mm(7.78")</td></tr> <tr><td>I.D.</td><td>17mm(0.67")</td></tr> <tr><td>O.D.</td><td>61mm(2.40")</td></tr> </table>	Length	197.5mm(7.78")	I.D.	17mm(0.67")	O.D.	61mm(2.40")	<p>PR1004</p>  <p>8" Parallel Roller</p> <table border="1"> <tr><td>Length</td><td>202mm(7.95")</td></tr> <tr><td>I.D.</td><td>16mm(0.63")</td></tr> <tr><td>O.D.</td><td>42mm(1.65")</td></tr> </table>	Length	202mm(7.95")	I.D.	16mm(0.63")	O.D.	42mm(1.65")	<p>PR1005</p>  <p>8" Parallel Roller</p> <table border="1"> <tr><td>Length</td><td>202mm(7.95")</td></tr> <tr><td>I.D.</td><td>16mm(0.63")</td></tr> <tr><td>O.D.</td><td>57mm(2.24")</td></tr> </table>	Length	202mm(7.95")	I.D.	16mm(0.63")	O.D.	57mm(2.24")	<p>PR1006</p>  <p>9" Parallel Roller</p> <table border="1"> <tr><td>Length</td><td>225mm(8.86")</td></tr> <tr><td>I.D.</td><td>13mm(0.51")</td></tr> <tr><td>O.D.</td><td>51mm(2")</td></tr> </table>	Length	225mm(8.86")	I.D.	13mm(0.51")	O.D.	51mm(2")
Length	197.5mm(7.78")																										
I.D.	17mm(0.67")																										
O.D.	61mm(2.40")																										
Length	202mm(7.95")																										
I.D.	16mm(0.63")																										
O.D.	42mm(1.65")																										
Length	202mm(7.95")																										
I.D.	16mm(0.63")																										
O.D.	57mm(2.24")																										
Length	225mm(8.86")																										
I.D.	13mm(0.51")																										
O.D.	51mm(2")																										

Disclaimer : Please note that the Dimensions are approximate and may change due to design change.

BOAT TRAILER RUBBER ROLLERS

<p>PR1007</p>  <p>9" Parallel Roller</p> <table border="1"> <tr><td>Length</td><td>226mm(8.90")</td></tr> <tr><td>I.D.</td><td>16mm(0.63")</td></tr> <tr><td>O.D.</td><td>65mm(2.56")</td></tr> </table>	Length	226mm(8.90")	I.D.	16mm(0.63")	O.D.	65mm(2.56")	<p>PR1008</p>  <p>12" Parallel Roller</p> <table border="1"> <tr><td>Length</td><td>297mm(11.69")</td></tr> <tr><td>I.D.</td><td>25mm(0.98")</td></tr> <tr><td>O.D.</td><td>59mm(2.32")</td></tr> </table>	Length	297mm(11.69")	I.D.	25mm(0.98")	O.D.	59mm(2.32")	<p>PR1009</p>  <p>12" Parallel Roller</p> <table border="1"> <tr><td>Length</td><td>304mm(11.98")</td></tr> <tr><td>I.D.</td><td>13mm(0.51")</td></tr> <tr><td>O.D.</td><td>65mm(2.55")</td></tr> </table>	Length	304mm(11.98")	I.D.	13mm(0.51")	O.D.	65mm(2.55")	<p>PR1010</p>  <p>12" Parallel Roller</p> <table border="1"> <tr><td>Length</td><td>304.5mm(11.98")</td></tr> <tr><td>I.D.</td><td>16.5mm(0.63")</td></tr> <tr><td>O.D.</td><td>65mm(2.55")</td></tr> </table>	Length	304.5mm(11.98")	I.D.	16.5mm(0.63")	O.D.	65mm(2.55")
Length	226mm(8.90")																										
I.D.	16mm(0.63")																										
O.D.	65mm(2.56")																										
Length	297mm(11.69")																										
I.D.	25mm(0.98")																										
O.D.	59mm(2.32")																										
Length	304mm(11.98")																										
I.D.	13mm(0.51")																										
O.D.	65mm(2.55")																										
Length	304.5mm(11.98")																										
I.D.	16.5mm(0.63")																										
O.D.	65mm(2.55")																										
<p>CR2001</p>  <p>8" Curved Roller</p> <table border="1"> <tr><td>Length</td><td>198mm(7.80")</td></tr> <tr><td>I.D.</td><td>21mm(0.82")</td></tr> <tr><td>O.D.</td><td>69.5mm(2.74")</td></tr> </table>	Length	198mm(7.80")	I.D.	21mm(0.82")	O.D.	69.5mm(2.74")	<p>CR2002</p>  <p>12" Curved Roller</p> <table border="1"> <tr><td>Length</td><td>315mm(12.40")</td></tr> <tr><td>I.D.</td><td>25mm(0.98")</td></tr> <tr><td>O.D.</td><td>82.5mm(3.24")</td></tr> </table>	Length	315mm(12.40")	I.D.	25mm(0.98")	O.D.	82.5mm(3.24")	<p>BR3001</p>  <p>3" Bow Roller</p> <table border="1"> <tr><td>Length</td><td>100mm(3.14")</td></tr> <tr><td>I.D.</td><td>13mm(0.51")</td></tr> <tr><td>O.D.</td><td>88mm(2.95")</td></tr> </table>	Length	100mm(3.14")	I.D.	13mm(0.51")	O.D.	88mm(2.95")	<p>BR3002</p>  <p>4" Bow Roller</p> <table border="1"> <tr><td>Length</td><td>96.5mm(3.79")</td></tr> <tr><td>I.D.</td><td>13mm(0.51")</td></tr> <tr><td>O.D.</td><td>85mm(3.34")</td></tr> </table>	Length	96.5mm(3.79")	I.D.	13mm(0.51")	O.D.	85mm(3.34")
Length	198mm(7.80")																										
I.D.	21mm(0.82")																										
O.D.	69.5mm(2.74")																										
Length	315mm(12.40")																										
I.D.	25mm(0.98")																										
O.D.	82.5mm(3.24")																										
Length	100mm(3.14")																										
I.D.	13mm(0.51")																										
O.D.	88mm(2.95")																										
Length	96.5mm(3.79")																										
I.D.	13mm(0.51")																										
O.D.	85mm(3.34")																										
<p>SCR4001</p>  <p>6" Self Centering Roller</p> <table border="1"> <tr><td>Length</td><td>153mm(6.02")</td></tr> <tr><td>I.D.</td><td>18mm(0.70")</td></tr> <tr><td>O.D.</td><td>72.5mm(2.85")</td></tr> </table>	Length	153mm(6.02")	I.D.	18mm(0.70")	O.D.	72.5mm(2.85")	<p>SRC4002</p>  <p>8" Self Centering Roller</p> <table border="1"> <tr><td>Length</td><td>193.5mm(7.61")</td></tr> <tr><td>I.D.</td><td>21mm(0.82")</td></tr> <tr><td>O.D.</td><td>71mm(2.79")</td></tr> </table>	Length	193.5mm(7.61")	I.D.	21mm(0.82")	O.D.	71mm(2.79")	<p>SRC4003</p>  <p>12" Self Centering Roller</p> <table border="1"> <tr><td>Length</td><td>305mm(12")</td></tr> <tr><td>I.D.</td><td>22mm(0.86")</td></tr> <tr><td>O.D.</td><td>75mm(2.95")</td></tr> </table>	Length	305mm(12")	I.D.	22mm(0.86")	O.D.	75mm(2.95")	<p>SR5001</p>  <p>4" Spool Roller</p> <table border="1"> <tr><td>Length</td><td>99mm(3.89")</td></tr> <tr><td>I.D.</td><td>19mm(0.74")</td></tr> <tr><td>O.D.</td><td>75mm(2.95")</td></tr> </table>	Length	99mm(3.89")	I.D.	19mm(0.74")	O.D.	75mm(2.95")
Length	153mm(6.02")																										
I.D.	18mm(0.70")																										
O.D.	72.5mm(2.85")																										
Length	193.5mm(7.61")																										
I.D.	21mm(0.82")																										
O.D.	71mm(2.79")																										
Length	305mm(12")																										
I.D.	22mm(0.86")																										
O.D.	75mm(2.95")																										
Length	99mm(3.89")																										
I.D.	19mm(0.74")																										
O.D.	75mm(2.95")																										
<p>SR5002</p>  <p>4" Spool Roller Plastic Pipe Reinforced</p> <table border="1"> <tr><td>Length</td><td>99mm(3.89")</td></tr> <tr><td>I.D.</td><td>17mm(0.66")</td></tr> <tr><td>O.D.</td><td>75mm(2.96")</td></tr> </table>	Length	99mm(3.89")	I.D.	17mm(0.66")	O.D.	75mm(2.96")	<p>SR5003</p>  <p>5" Spool Roller Plastic Pipe Reinforced</p> <table border="1"> <tr><td>Length</td><td>126mm(4.96")</td></tr> <tr><td>I.D.</td><td>13mm(0.51")</td></tr> <tr><td>O.D.</td><td>75.5mm(2.97")</td></tr> </table>	Length	126mm(4.96")	I.D.	13mm(0.51")	O.D.	75.5mm(2.97")	<p>SR5004</p>  <p>5" Spool Roller Plastic Pipe Reinforced</p> <table border="1"> <tr><td>Length</td><td>126mm(4.96")</td></tr> <tr><td>I.D.</td><td>17mm(0.66")</td></tr> <tr><td>O.D.</td><td>75.5mm(2.97")</td></tr> </table>	Length	126mm(4.96")	I.D.	17mm(0.66")	O.D.	75.5mm(2.97")	<p>SHKR7003</p>  <p>5" Super Heavy Duty Keel Rollers</p> <table border="1"> <tr><td>Length</td><td>127mm(5")</td></tr> <tr><td>I.D.</td><td>17mm(0.66")</td></tr> <tr><td>O.D.</td><td>75.5mm(2.97")</td></tr> </table>	Length	127mm(5")	I.D.	17mm(0.66")	O.D.	75.5mm(2.97")
Length	99mm(3.89")																										
I.D.	17mm(0.66")																										
O.D.	75mm(2.96")																										
Length	126mm(4.96")																										
I.D.	13mm(0.51")																										
O.D.	75.5mm(2.97")																										
Length	126mm(4.96")																										
I.D.	17mm(0.66")																										
O.D.	75.5mm(2.97")																										
Length	127mm(5")																										
I.D.	17mm(0.66")																										
O.D.	75.5mm(2.97")																										

Disclaimer : Please note that the Dimensions are approximate and may change due to design change.

BOAT TRAILER RUBBER ROLLERS

<p>BG8001</p>  <p>2" Bow Block</p> <table border="1"> <tr><td>Forewidth</td><td>97.5mm(3.83")</td></tr> <tr><td>Afterwidth</td><td>50mm(1.96")</td></tr> <tr><td>I.D.</td><td>11mm(2.74")</td></tr> </table>	Forewidth	97.5mm(3.83")	Afterwidth	50mm(1.96")	I.D.	11mm(2.74")	<p>BG8002</p>  <p>3" Bow Block</p> <table border="1"> <tr><td>Forewidth</td><td>167mm(6.57")</td></tr> <tr><td>Afterwidth</td><td>75.5mm(2.97")</td></tr> <tr><td>I.D.</td><td>13mm(0.51")</td></tr> </table>	Forewidth	167mm(6.57")	Afterwidth	75.5mm(2.97")	I.D.	13mm(0.51")	<p>BG8003</p>  <p>4" Bow Roller</p> <table border="1"> <tr><td>Forewidth</td><td>175mm(6.87")</td></tr> <tr><td>Afterwidth</td><td>97.5mm(3.83")</td></tr> <tr><td>I.D.</td><td>14mm(0.55")</td></tr> </table>	Forewidth	175mm(6.87")	Afterwidth	97.5mm(3.83")	I.D.	14mm(0.55")	<p>HKR9002</p>  <p>12" Heavy Duty Keel Roller</p> <table border="1"> <tr><td>Length</td><td>292mm(11.49")</td></tr> <tr><td>I.D.</td><td>18mm(0.70")</td></tr> <tr><td>O.D.</td><td>86.5mm(3.40")</td></tr> </table>	Length	292mm(11.49")	I.D.	18mm(0.70")	O.D.	86.5mm(3.40")
Forewidth	97.5mm(3.83")																										
Afterwidth	50mm(1.96")																										
I.D.	11mm(2.74")																										
Forewidth	167mm(6.57")																										
Afterwidth	75.5mm(2.97")																										
I.D.	13mm(0.51")																										
Forewidth	175mm(6.87")																										
Afterwidth	97.5mm(3.83")																										
I.D.	14mm(0.55")																										
Length	292mm(11.49")																										
I.D.	18mm(0.70")																										
O.D.	86.5mm(3.40")																										
<p>HKR9003</p>  <p>10" Heavy Duty Keel Roller</p> <table border="1"> <tr><td>Length</td><td>250mm(9.56")</td></tr> <tr><td>I.D.</td><td>18mm(0.70")</td></tr> <tr><td>O.D.</td><td>87mm(3.42")</td></tr> </table>	Length	250mm(9.56")	I.D.	18mm(0.70")	O.D.	87mm(3.42")	<p>HKR9004</p>  <p>8" Heavy Duty Keel Roller</p> <table border="1"> <tr><td>Length</td><td>195mm(7.67")</td></tr> <tr><td>I.D.</td><td>18mm(0.70")</td></tr> <tr><td>O.D.</td><td>87mm(3.42")</td></tr> </table>	Length	195mm(7.67")	I.D.	18mm(0.70")	O.D.	87mm(3.42")	<p>KR1101</p>  <p>3" keel Roller</p> <table border="1"> <tr><td>Length</td><td>76mm(2.99")</td></tr> <tr><td>I.D.</td><td>17mm(0.66")</td></tr> <tr><td>O.D.</td><td>62.5mm(2.46")</td></tr> </table>	Length	76mm(2.99")	I.D.	17mm(0.66")	O.D.	62.5mm(2.46")	<p>KR1102</p>  <p>4" keel Roller</p> <table border="1"> <tr><td>Length</td><td>102mm(4.01")</td></tr> <tr><td>I.D.</td><td>17mm(0.66")</td></tr> <tr><td>O.D.</td><td>59mm(2.32")</td></tr> </table>	Length	102mm(4.01")	I.D.	17mm(0.66")	O.D.	59mm(2.32")
Length	250mm(9.56")																										
I.D.	18mm(0.70")																										
O.D.	87mm(3.42")																										
Length	195mm(7.67")																										
I.D.	18mm(0.70")																										
O.D.	87mm(3.42")																										
Length	76mm(2.99")																										
I.D.	17mm(0.66")																										
O.D.	62.5mm(2.46")																										
Length	102mm(4.01")																										
I.D.	17mm(0.66")																										
O.D.	59mm(2.32")																										
<p>KR1103</p>  <p>4.5" Keel Roller (Plastic Pipe Reinforced)</p> <table border="1"> <tr><td>Length</td><td>111.5mm(4.38")</td></tr> <tr><td>I.D.</td><td>17mm(0.66")</td></tr> <tr><td>O.D.</td><td>75mm(2.97")</td></tr> </table>	Length	111.5mm(4.38")	I.D.	17mm(0.66")	O.D.	75mm(2.97")	<p>KR1105</p>  <p>6" Keel Roller Plastic Pipe Reinforced</p> <table border="1"> <tr><td>Length</td><td>151mm(5.94")</td></tr> <tr><td>I.D.</td><td>17mm(0.66")</td></tr> <tr><td>O.D.</td><td>72mm(2.83")</td></tr> </table>	Length	151mm(5.94")	I.D.	17mm(0.66")	O.D.	72mm(2.83")	<p>KR1106</p>  <p>6" Keel / Sydney Roller</p> <table border="1"> <tr><td>Length</td><td>162mm(6.37")</td></tr> <tr><td>I.D.</td><td>17mm(0.66")</td></tr> <tr><td>O.D.</td><td>63mm(2.48")</td></tr> </table>	Length	162mm(6.37")	I.D.	17mm(0.66")	O.D.	63mm(2.48")	<p>KR1107</p>  <p>8" Keel Roller Plastic Pipe Reinforced</p> <table border="1"> <tr><td>Length</td><td>198.5mm(7.81")</td></tr> <tr><td>I.D.</td><td>17mm(0.66")</td></tr> <tr><td>O.D.</td><td>69mm(2.71")</td></tr> </table>	Length	198.5mm(7.81")	I.D.	17mm(0.66")	O.D.	69mm(2.71")
Length	111.5mm(4.38")																										
I.D.	17mm(0.66")																										
O.D.	75mm(2.97")																										
Length	151mm(5.94")																										
I.D.	17mm(0.66")																										
O.D.	72mm(2.83")																										
Length	162mm(6.37")																										
I.D.	17mm(0.66")																										
O.D.	63mm(2.48")																										
Length	198.5mm(7.81")																										
I.D.	17mm(0.66")																										
O.D.	69mm(2.71")																										
<p>KR1110</p>  <p>5" Keel Roller</p> <table border="1"> <tr><td>Length</td><td>126.5mm(4.98")</td></tr> <tr><td>I.D.</td><td>17mm(0.66")</td></tr> <tr><td>O.D.</td><td>72mm(2.83")</td></tr> </table>	Length	126.5mm(4.98")	I.D.	17mm(0.66")	O.D.	72mm(2.83")	<p>KR1110A</p>  <p>5" Keel Roller</p> <table border="1"> <tr><td>Length</td><td>126.5mm(4.98")</td></tr> <tr><td>I.D.</td><td>19mm(0.74")</td></tr> <tr><td>O.D.</td><td>72mm(2.83")</td></tr> </table>	Length	126.5mm(4.98")	I.D.	19mm(0.74")	O.D.	72mm(2.83")	<p>KR1111</p>  <p>7" Keel Roller</p> <table border="1"> <tr><td>Length</td><td>179mm(7.04")</td></tr> <tr><td>I.D.</td><td>19mm(0.74")</td></tr> <tr><td>O.D.</td><td>63.5mm(2.5")</td></tr> </table>	Length	179mm(7.04")	I.D.	19mm(0.74")	O.D.	63.5mm(2.5")	<p>VKR1201</p>  <p>5" Super Heavy Duty Keel Rollers</p> <table border="1"> <tr><td>Length</td><td>885mm(3.48")</td></tr> <tr><td>I.D.</td><td>11mm(0.43")</td></tr> <tr><td>O.D.</td><td>50mm(1.96")</td></tr> </table>	Length	885mm(3.48")	I.D.	11mm(0.43")	O.D.	50mm(1.96")
Length	126.5mm(4.98")																										
I.D.	17mm(0.66")																										
O.D.	72mm(2.83")																										
Length	126.5mm(4.98")																										
I.D.	19mm(0.74")																										
O.D.	72mm(2.83")																										
Length	179mm(7.04")																										
I.D.	19mm(0.74")																										
O.D.	63.5mm(2.5")																										
Length	885mm(3.48")																										
I.D.	11mm(0.43")																										
O.D.	50mm(1.96")																										

Disclaimer : Please note that the Dimensions are approximate and may change due to design change.


BOAT TRAILER RUBBER ROLLERS

<p>VKR1202</p>  <p>5" Vee Keel Roller</p> <table border="1"> <tr><td>Length</td><td>125mm(4.92")</td></tr> <tr><td>I.D.</td><td>19mm(0.74")</td></tr> <tr><td>O.D.</td><td>56mm(2.2")</td></tr> </table>	Length	125mm(4.92")	I.D.	19mm(0.74")	O.D.	56mm(2.2")	<p>VKR1203</p>  <p>5" Vee Keel Roller</p> <table border="1"> <tr><td>Length</td><td>125mm(4.92")</td></tr> <tr><td>I.D.</td><td>17mm(0.66")</td></tr> <tr><td>O.D.</td><td>56mm(2.2")</td></tr> </table>	Length	125mm(4.92")	I.D.	17mm(0.66")	O.D.	56mm(2.2")	<p>VKR1204</p>  <p>8" Vee Keel Roller</p> <table border="1"> <tr><td>Length</td><td>202mm(7.95")</td></tr> <tr><td>I.D.</td><td>19mm(0.74")</td></tr> <tr><td>O.D.</td><td>74.5mm(2.93")</td></tr> </table>	Length	202mm(7.95")	I.D.	19mm(0.74")	O.D.	74.5mm(2.93")	<p>VKR1206</p>  <p>7" Stepped Keel Roller</p> <table border="1"> <tr><td>Length</td><td>178mm(7")</td></tr> <tr><td>I.D.</td><td>22mm(0.86")</td></tr> <tr><td>O.D.</td><td>120mm(4.72")</td></tr> </table>	Length	178mm(7")	I.D.	22mm(0.86")	O.D.	120mm(4.72")
Length	125mm(4.92")																										
I.D.	19mm(0.74")																										
O.D.	56mm(2.2")																										
Length	125mm(4.92")																										
I.D.	17mm(0.66")																										
O.D.	56mm(2.2")																										
Length	202mm(7.95")																										
I.D.	19mm(0.74")																										
O.D.	74.5mm(2.93")																										
Length	178mm(7")																										
I.D.	22mm(0.86")																										
O.D.	120mm(4.72")																										
<p>WR1301</p>  <p>3" Smooth Wobble Roller (Nylon Centre Bush)</p> <table border="1"> <tr><td>Width</td><td>113mm(4.44")</td></tr> <tr><td>Height</td><td>76mm(2.99")</td></tr> <tr><td>I.D.</td><td>25mm(0.98")</td></tr> </table>	Width	113mm(4.44")	Height	76mm(2.99")	I.D.	25mm(0.98")	<p>WR1302</p>  <p>4" Smooth Wobble Roller (Nylon Centre Bush)</p> <table border="1"> <tr><td>Width</td><td>113mm(4.44")</td></tr> <tr><td>Height</td><td>99mm(3.89")</td></tr> <tr><td>I.D.</td><td>25mm(0.98")</td></tr> </table>	Width	113mm(4.44")	Height	99mm(3.89")	I.D.	25mm(0.98")	<p>WR1303</p>  <p>4" Rocker Wobble Roller (Steel Centre Bush)</p> <table border="1"> <tr><td>Width</td><td>110mm(4.33")</td></tr> <tr><td>Height</td><td>107mm(4.21")</td></tr> <tr><td>I.D.</td><td>19mm(0.74")</td></tr> </table>	Width	110mm(4.33")	Height	107mm(4.21")	I.D.	19mm(0.74")	<p>WR1304</p>  <p>4-3/8" Ribbed Wobble Roller (Nylon Side Bush)</p> <table border="1"> <tr><td>Width</td><td>110mm(4.33")</td></tr> <tr><td>Height</td><td>75.5mm(2.97")</td></tr> <tr><td>I.D.</td><td>17mm(0.66")</td></tr> </table>	Width	110mm(4.33")	Height	75.5mm(2.97")	I.D.	17mm(0.66")
Width	113mm(4.44")																										
Height	76mm(2.99")																										
I.D.	25mm(0.98")																										
Width	113mm(4.44")																										
Height	99mm(3.89")																										
I.D.	25mm(0.98")																										
Width	110mm(4.33")																										
Height	107mm(4.21")																										
I.D.	19mm(0.74")																										
Width	110mm(4.33")																										
Height	75.5mm(2.97")																										
I.D.	17mm(0.66")																										
<p>WR1305</p>  <p>4-3/8" Ribbed Wobble Roller (Nylon Side Bush)</p> <table border="1"> <tr><td>Length</td><td>110mm(4.33")</td></tr> <tr><td>Height</td><td>75.5mm(2.97")</td></tr> <tr><td>I.D.</td><td>15mm(0.59")</td></tr> </table>	Length	110mm(4.33")	Height	75.5mm(2.97")	I.D.	15mm(0.59")	<p>WR1306</p>  <p>4-3/8" Ribbed Wobble Roller</p> <table border="1"> <tr><td>Width</td><td>110mm(4.33")</td></tr> <tr><td>Height</td><td>76mm(2.99")</td></tr> <tr><td>I.D.</td><td>22mm(0.86")</td></tr> </table>	Width	110mm(4.33")	Height	76mm(2.99")	I.D.	22mm(0.86")	<p>WR1307</p>  <p>4-3/8" Ribbed Wobble Roller</p> <table border="1"> <tr><td>Width</td><td>110mm(4.33")</td></tr> <tr><td>Height</td><td>76mm(2.99")</td></tr> <tr><td>I.D.</td><td>17mm(0.66")</td></tr> </table>	Width	110mm(4.33")	Height	76mm(2.99")	I.D.	17mm(0.66")	<p>WR1308</p>  <p>5" Ribbed Wobble Roller (Nylon Side Bush)</p> <table border="1"> <tr><td>Width</td><td>125mm(4.92")</td></tr> <tr><td>Height</td><td>76mm(2.99")</td></tr> <tr><td>I.D.</td><td>23mm(0.90")</td></tr> </table>	Width	125mm(4.92")	Height	76mm(2.99")	I.D.	23mm(0.90")
Length	110mm(4.33")																										
Height	75.5mm(2.97")																										
I.D.	15mm(0.59")																										
Width	110mm(4.33")																										
Height	76mm(2.99")																										
I.D.	22mm(0.86")																										
Width	110mm(4.33")																										
Height	76mm(2.99")																										
I.D.	17mm(0.66")																										
Width	125mm(4.92")																										
Height	76mm(2.99")																										
I.D.	23mm(0.90")																										
<p>WR1309</p>  <p>5" Ribbed Wobble Roller (Nylon Side Bush)</p> <table border="1"> <tr><td>Width</td><td>125mm(4.92")</td></tr> <tr><td>Height</td><td>76mm(2.99")</td></tr> <tr><td>I.D.</td><td>28mm(1.10")</td></tr> </table>	Width	125mm(4.92")	Height	76mm(2.99")	I.D.	28mm(1.10")	<p>WR1310</p>  <p>5" Ribbed Wobble Roller (Nylon Side Bush)</p> <table border="1"> <tr><td>Width</td><td>125mm(4.92")</td></tr> <tr><td>Height</td><td>76mm(2.92")</td></tr> <tr><td>I.D.</td><td>22mm(0.86")</td></tr> </table>	Width	125mm(4.92")	Height	76mm(2.92")	I.D.	22mm(0.86")	<p>WR1311</p>  <p>5" Ribbed Wobble Roller (Nylon Side Bush)</p> <table border="1"> <tr><td>Width</td><td>125mm(4.92")</td></tr> <tr><td>Height</td><td>76mm(2.99")</td></tr> <tr><td>I.D.</td><td>17mm(0.66")</td></tr> </table>	Width	125mm(4.92")	Height	76mm(2.99")	I.D.	17mm(0.66")	<p>WR1312</p>  <p>5" Ribbed Wobble Roller (Nylon Side Bush)</p> <table border="1"> <tr><td>Width</td><td>127mm(5")</td></tr> <tr><td>Height</td><td>77mm(3.03")</td></tr> <tr><td>I.D.</td><td>25mm(2.98")</td></tr> </table>	Width	127mm(5")	Height	77mm(3.03")	I.D.	25mm(2.98")
Width	125mm(4.92")																										
Height	76mm(2.99")																										
I.D.	28mm(1.10")																										
Width	125mm(4.92")																										
Height	76mm(2.92")																										
I.D.	22mm(0.86")																										
Width	125mm(4.92")																										
Height	76mm(2.99")																										
I.D.	17mm(0.66")																										
Width	127mm(5")																										
Height	77mm(3.03")																										
I.D.	25mm(2.98")																										

Disclaimer : Please note that the Dimensions are approximate and may change due to design change.

BOAT TRAILER RUBBER ROLLERS

WR1313



5" Ribbed Wobble Roller

Width	126mm(4.96")
Height	77mm(3.03")
I.D.	30mm(1.18")

WR1314



5" Ribbed Wobble Roller(Plastic Pipe Insert)

Width	126mm(4.96)
Height	99mm(3.89")
I.D.	25mm(0.98")

WR1315



5" Wobble Roller

Width	126mm(3.89")
Height	99mm(3.89")
I.D.	32mm(1.25")


WR1316



4.5" Ribbed Wobble Roller(Plastic Pipe Insert)

Width	115mm(4.52")
Height	80mm(3.14")
I.D.	25mm(0.98")

WR1317



3.6" Caster Roller

Hight	50mm(1.9")
I.D.	19mm(0.75")
O.D.	92mm(3.6")

WR1318



4" Side Roller (Nylon Side Bush)

Hight	53mm(2.08")
I.D.	17mm(0.66")
O.D.	100.5mm(3.95")

TRP1401



4.5" Double Roller

Length	112mm(4.40")
I.D.	17mm(0.66")
O.D.	101mm(3.97")


TRP1402



2" Single Chok Roller

Length	51mm(2")
I.D.	17mm(0.66")
O.D.	101mm(3.97")

TRP1403



12" Snubber Pad

Length	305mm(12")
Width	41mm(1.61")
No. of Hole	4

TRP1404



12" Side Buffer

Length	305mm(12")
Width	44mm(1.73")
No. of Bolt	4


TRP1405



18" Side Buffer

Length	445mm(18")
Width	44mm(1.73")
No. of Bolt	4

TRP1406



6" Keel Block

Length	152mm(6")
No. of Bolt	2
Width	44mm(1.7")

TRP1407



5.5" Guard Block Jon Boat Bow

Forewidth	125mm(4.92)
Aftwidth	76mm(3")
I.D.	14mm(0.55")

Disclaimer: Please note that the Dimensions are approximate and may change due to design change.

MOORING COMPENSATORS




MOORING COMPENSATORS

MC1501




Structure	Flat Shape
Material	Rubber
Length	151.5mm(6")
Hole Dia	12mm
Rope Dia.	11mm

MC1502



Structure	Flat Shape
Material	Rubber
Length	218mm(8.27")
Hole Dia	16mm(0.63")
Rope Dia.	14mm(0.55")

MC1503




Structure	Flat Shape
Material	Rubber
Length	268mm(9.48")
Hole Dia	20mm(0.79")
Rope Dia.	18mm(0.79")

MC1504




Structure	Flat Shape
Material	Rubber
Length	330mm(12.6")
Hole Dia	20mm(0.87")
Rope Dia.	18mm(0.79")

MC1505




Structure	Dumble Shape
Material	Rubber
Length	385mm(15.35")
Hole Dia	21mm
Rope Dia.	20mm

MC1506




Structure	Dumble Shape
Material	Rubber
Length	430mm(16.9")
Hole Dia	13mm
Rope Dia.	12mm

MC1507




Structure	Dumble shape
Material	Rubber
Length	490mm(19.3")
Hole Dia	18mm
Rope Dia.	16mm

MC1508




Structure	Dumble Shape
Material	Rubber
Length	570mm(22.4")
Hole Dia	21mm
Rope Dia.	20mm

PUMC1501



Structure	Dumble Shape
Material	Polyurethane
Length	495mm(19.5")
Hole Dia	17mm
Rope Dia.	16mm

PUMC1502



Structure	Dumble Shape
Material	Polyurethane
Length	570mm(22.4")
Hole Dia	21mm
Rope Dia.	20mm

Disclaimer: Please note that the Dimensions are approximate and may change due to design change.

WARRANTY CONDITIONS & EXCLUSIONS

ALL **MULTIFLEX** manufactured products have warranty against manufacturing, material and workmanship defects. This warranty is not valid when the products are used for commercial, rental or income making activity or installed and used on commercial boats.

MULTIFLEX shall replace the defective product free of cost subject to product being returned to **MULTIFLEX** or its dealer within the warranty period on Freight Pre-Paid basis.

MULTIFLEX on receipt of the defective product shall undertake to examine the cause of the defect and if found defective the product shall be repaired or replaced as need be as per **MULTIFLEX**'s discretion. **MULTIFLEX**'s decision in this regard shall be binding and final.

The warranty under the above shall only be limited to repair and replacement of the defective product as per **MULTIFLEX** opinion and shall not cover under any circumstances labor costs of removal & replacement of the product.

All obligations under this warranty shall be null and void in case the product has been:

- ▲ Improperly Installed or installed other than as recommended by **MULTIFLEX**
- ▲ Improper application of products.
- ▲ Damaged due to non- recommended operation such as racing/ misused or failed due to accident. Modified , altered or repaired by any other entity other than **MULTIFLEX**
- ▲ Has been used on an engine/boat combination where the engine horsepower exceeds the rating specified by the boat manufacturer
- ▲ Has been used with products of other Brands which may not be compatible to **MULTIFLEX** products.

In no event will be liable for any incidental or consequential damages for breach of any express or implied warranty relating to the products. We shall not be responsible for any liability claims for direct or indirect damage.

The descriptions and guidelines shown in this catalogue should be used as general reference only. For any further information please contact our Technical Service. Contents of this catalogue are based on the latest information available at the time of publication. **MULTIFLEX** assumes no responsibility for the accuracy of the information contained herein. Product specifications are subject to change without notice.

Disclaimer: Original part numbers and manufacturers names mentioned in this catalog are for reference purpose only.

NOTES





EXCEL CONTROLINKAGE PVT. LTD.

+91-976 42 978 66 | mktg@multiflexmarine.com | www.multiflexmarine.com

© 2019 | Multiflex Marine | All Rights Reserved | Printed in India