



Bainbridge

BD1

STEERING & CONTROLS

MECHANICAL & HYDRAULIC STEERING
MANUAL & ELECTRONIC CONTROLS • CONTROL CABLES



SEASTAR SOLUTIONS

AQUAMARINE



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Contents

STEERING

Selection Guide – Outboard	2
Selection Guide – Inboard	4

MECHANICAL STEERING

Overview	6
Cable Identification	7
Helm Identification	10
Tilt Helm Options	14
Measuring Steering Cables	15

ROTARY MECHANICAL STEERING

SH8050 Helm & Cables	16
D290 Helm & Cables	17
Safe-T QC Helm & Cables	18
Safe-T QC Kits	19
NFB Safe-T Helm & Cables	20
NFB Safe-T Kits	21
NFB 4.2 Helm & Cables	22
4.2 Helm & Cables	23
Big-T Helm & Cables	24
Xtreme NFB Helm & Cables	25

RACK & PINION MECHANICAL STEERING

The Rack Helm & Cables	26
NFB Rack & Pinion Helm & Cables	27
Xtreme Jet Boat Mini Rack Helm & Cables	28
JBS Helm & Cables	29
C200 Replacement Rack Cables	30
Mechanical Steering Identification Guide	37
Mechanical Steering FAQ's	41

UNIVERSAL PARTS

Connection Kits	31
Accessories	32
Motor Splashwell Grommets	33
Wheels	34
Pro Trim Steering wheel control	36

HYDRAULIC STEERING

Overview	46
Helm Identification	47
BayStar Outboard Systems	48
SeaStar Outboard Systems	50
BayStar Inboard Systems	51
SeaStar Inboard Systems	52
Hoses & Nylon Tubing	54
Hydraulic Steering Fluid	54
Hydraulic Steering Fittings	54
Hydraulic Steering Service Parts	55
Hydraulic Steering FAQ's	55

CONTROLS

Selection Guide – Mechanical	58
Selection Guide – Electronic	59

UNIVERSAL CONTROL CABLES

Selection Guide	58
-----------------	----

DUAL FUNCTION CONTROLS

Xtreme Side Mount	61
Xtreme Centre Console	62
Xtreme Top Mount Single	63
Xtreme Top Mount Twin	64
MT-3 Single / Twin	65
700 Series Top Mount	66
700 Series Side Mount	67
700 Series Sail Boat	67
700 Series Surface Mount	68
CH2800/50 Side Mount	69
MV-3 Single Side Mount	70
CH2200/2300 Single Side Mount	71
Outboard Dual Station Units	72
Inboard Dual Station Units	73

SINGLE FUNCTION CONTROLS

CH5210 – S Type Top Mount	74
NB Top Mount	75
KB Top Mount	75
STB Side Mount	76
MJB Side Mount	76
D2 Side Mount	77
DC Bulkhead Mount	77
Venus Side Mount	77

ELECTRONIC CONTROLS

I7700 Dual Function Controls	78
KE Dual Function Controls	80

UTILITY / STOP CABLES

Cut to length cables	82
----------------------	----

UNIVERSAL 33C / 43C TYPE CONTROL CABLES

Selection Guide	83
Measuring a control cable	83
Light duty – black jacket 33c type	84
Miracable – black jacket 33c type	84
Standard – red jacket 33c type	85
Premium – red jacket 33c type	85
Super Premium – Xtreme black jacket 33c type 8	6
Super Premium – Xtreme black jacket 43C type	86
Control Cable Identification	87

OEM SPECIFIC CONTROL CABLES

Selection Guide	88
Measuring a control cable	89
OEM cable Identification Guide	90
BRP/OMC/Johnson/Evinrude/Volvo OMC Cables	92
Mercury/Mariner/Force/US Marine	93

CONNECTION & INSTALLATION

Connection Kits	97
Installation Tips	100
Control Cables FAQ's	101

PART NUMBER INDEX page 103

PRODUCT INDEX page 107

Which outboard steering system?

As specialists in the art of steering, SeaStar Solutions takes the recommendation of steering systems very seriously especially as modern outboard engines become more powerful. Systems recommendations based on "optimum comfort" and safety.

Step 1

MECHANICAL SYSTEMS

- Affordable
- Simple installation
- Fixed number of turns lock-to-lock

Step 2

MECHANICAL ROTARY

Compact housing allows installation where behind dash space is limited.

Step 3

ROTARY - NO FEEDBACK

For more comfort and control, NFB steering locks out load created by propeller torque. NFB is recommended as replacement steering for all non-power assisted outboards. Replacement for original helm as specified by the boat manufacturer.



MECHANICAL RACK

More efficient than mechanical rotary steering, rack helms require more mounting space side to side behind dash.

RACK - NO FEEDBACK

For more comfort and control, NFB steering locks out load created by propeller torque. NFB is recommended as replacement steering for all non-power assisted outboards. Replacement for original helm as specified by the boat manufacturer.



Step 1

HYDRAULIC SYSTEMS

- Superior feel
- Ideal for higher torque applications
- Reduces driver fatigue
- Flexible number of turns lock-to-lock

Q101124



Q101002

Step 2

BAYSTAR

The latest edition to the SeaStar family featuring the same trademark "pivot" design seen in the world renowned SeaStar outboard cylinder.

SEASTAR

The most popular hydraulic cylinder in the world, featuring a unique "pivot" design that ensures optimum efficiency in all applications (single or multiple) engine.

NOTE: Some high performance boat/engine combinations develop instability at high speed. Instability becomes more prevalent in boats faster than 50mph. Dual-cable steering or SeaStar PRO systems are recommended by SeaStar Solutions and engine manufacturers for these boats.
IMPORTANT: No FeedBack Steering **MUST NOT** be used in dual station, power-assisted, or autopilot installations. (Mechanical systems only)

Please use these guides to assist in making your selection, but remember that the recommendations are general in nature. Any boat/steering system combination should be water-tested by the installer to ensure safe and dependable steering. Displacement hulls do react differently than planing hulls. As a result, the type of hull on the boat, as well as the horsepower, may affect steering system selection. If in doubt, please contact Bainbridge Technical Service for assistance.

Step 4

		50HP	75HP	100HP	115HP	130HP	150HP
SAFE T ROTARY	Optimum	██████████					
	Standard	Replacement for original helm as specified by the boat manufacturer.					
SAFE T II - (NFB) ROTARY*	Optimum	████████████████████					
	Standard	50mph or less					
NFB 4.2 - ROTARY*	Optimum		██				
	Standard	50mph or less					
NFB 4.2 Rotary Dual Cable*	Optimum		██				
	Standard	50mph or less					
xtreme NFB	Optimum		██				
	Standard	50mph or less					
RACK	Optimum	████████████████████					
	Standard	Replacement for original helm as specified by the boat manufacturer.					
NFB RACK	Optimum		██				
	Standard	50mph or less					

Step 3

		75HP	115HP	150HP	200HP	250HP	300HP	300+HP
BAYSTAR	Optimum	████████████████████						
	***Maximum	██						
SEASTAR	Optimum			██				
	Maximum	██						

Chart based on "optimum comfort"
 * Not suitable for boats with power steering or autopilots
 ** Ideal for bass boats that exceed 60mph

Which inboard steering system?

Step 1

MECHANICAL SYSTEMS

- Affordable
- Simple installation
- Fixed number of turns lock-to-lock

Step 2

MECHANICAL ROTARY

Compact housing allows installation where behind dash space is limited.

MECHANICAL RACK

More efficient than mechanical rotary steering, rack helms require more mounting space side to side behind dash.

3 turns lock-to-lock



See page 19

Big-T See page 24

4 turns lock-to-lock

See page 26



Step 1



HYDRAULIC SYSTEMS

- Superior feel
- Ideal for higher torque applications
- Reduces driver fatigue
- Variable number of turns lock-to-lock is dependent on helm/cylinder selection
- Easy to add autopilot



Q101140, Q101141, Q101142

Step 2

BOAT LENGTH	PLANING HULLS 				DISPLACEMENT HULLS 				SAIL	
	1 Engine		2 Engines		1 Engine		2 Engines		1 Engine	
	Pleasure	Work	Pleasure	Work	Pleasure	Work	Pleasure	Work	Pleasure	Work
26ft (8m)	1	4	1	4	2	4	2	4	4	4
32ft (10m)	2	4	1	4	3	4	3	4	4	4
38ft (11.5m)	3	5	2	5	5	5	3	5	4	5
44ft (13.5m)	5	-	3	5	-	-	5	-	5	-
50ft (15m)	-	-	5	-	-	-	-	-	-	-

Choose a system using the chart above

1	Cylinder	QTY 1	Q101140
	Helm (4 Turns)	QTY 1	Q101002
	Nylon Tubing 3/8"	As Req'd	HT5100
	Oil 1 liter	QTY 2	Q101020

2	Cylinder	QTY 1	Q101141
	Helm (5 Turns)	QTY 1	Q101002
	Nylon Tubing 3/8"	As Req'd	HT5100
	Oil 1 liter	QTY 2	Q101020

3	Cylinder	QTY 1	Q101142
	Helm (6 Turns)	QTY 1	Q101002
	Nylon Tubing 3/8"	As Req'd	HT5100
	Oil 1 liter	QTY 2	Q101020

4	Cylinder	QTY 1	Q101143
	Helm (4.25 Turns)	QTY 1	Q101003
	Copper Tubing 3/8"	As Req'd	NA
	Oil 1 liter	QTY 2	Q101020

5	Cylinder	QTY 1	Q101144
	Helm (5.5 Turns)	QTY 1	Q101003
	Copper Tubing 3/8"	As Req'd	NA
	Oil 1 liter	QTY 1	Q101020



Q101143, Q101144

SeaStar Solutions recommend that all steering applications are validated by a qualified SeaStar Solutions dealer/installer.

BIG-T Steering Components (Single/Dual)

Helm	TXSH5000
QC Cable & Helm Converter	TXSSC62xx / TXSA27620
Cable (Dual Station)	TXSSC81AxxBxx†
Bezel 2-pc. Black (90°/20° mount)	TXSB27265

SAFE T Steering Kit SS137xx comprising

Helm	TXSH5094
QC Cable	TXSSC62xx
Rotary Bezel (90°)	TXSB27484

Rack Steering Kit SS141xx comprising

Back Mount Rack Helm (single/dual)	TXSH5210
Back Mount Bezel (90°)	TXSB39526
Back Mount Rack Single Cable	TXSSC134xx

Tilt Mechanisms

Sport	- Flexible Bellows	TXSH91800*
Sport	- Flexible Bellows	TXSH91810*•
Sport Plus	- Solid Round Cover	TXSH91900*
Sport Plus	- Solid Round Cover	TXSH91910*•

SPORT
TXSH91800



SPORT PLUS
TXSH91900



Rotary Tilt Helms

Safe -QC	TXSH91523
----------	-----------

Rack Tilt Helms

Helm	TXSH91610
------	-----------

Note: * Mechanical Tilt mechanism only - select helm type from lists below. † Dual station requires purchase of special cable. See preceding page for Big-T single station steering. • Tilt mechanisms with splined steering wheel shafts.

SELECTABLE OPTIONS/VARIABLES

- 1 - Use an alternative helm to increase or reduce number of turns lock-to-lock
- 2 - Reduce or increase wheel torque (larger capacity helm will reduce number of turns and increase torque)
- 3 - Gain the advantages of a Tilt function
Select from 3 different styles
- 4 - Mount the helm behind the dash (various back mount helm options also available)
- 5 - Multi Station or Autopilots require HF6010 "add station kit"



SPORT
TXSH91800



SPORT PLUS
TXSH91900



CLASSIC
HH6541

Hydraulic
Only



Steering Overview

- ◆ It is seen as good practice to replace a steering system with one of the same type: rotary with rotary (i.e. Safe-T®), rack with rack (i.e. The Rack™), hydraulic with hydraulic (i.e. SeaStar®), etc. Use a steering system with the same number of steering wheel turns lock-to-lock as the original system.
- ◆ This ensures the boat continues to perform in manoeuvres as designed and makes installation of the replacement system as simple as possible.
- ◆ Changing the type of steering on a boat requires some careful consideration. The steering system was selected by the boat builder based on the following criteria:
 - Fit: steering components accommodate dash design and splashwell dimensions.
 - Performance: meets manufacturer's performance specifications.
 - Value: quality products supplied by a reliable, experienced company that stands behind them.
- ◆ Any change from the original steering system may affect the handling and feel of the boat. In addition, installation may be further complicated by modifications needed to accommodate components for which the boat was not originally designed.

About Mechanical Steering

- ◆ Mechanical cable steering is durable and reliable and comes in two main forms, each of which has advantages in specific applications. They are:
 - Rotary (cable wraps around a gear).
 - Rack & Pinion (cable attached to rack gear moved by a pinion).
- ◆ All mechanical steering systems except Big-T are for single station use only. Hydraulic steering is the preferred system for dual station boats.

Rotary Steering

- ◆ Various Rotary helms are available, each resulting in a different number of lock-to-lock steering wheel turns. All SeaStar Solutions helms feature a unique mounting plate that allows installation at several angles to accommodate the many space constraints which occur behind all dashboards. Most versions are available with No FeedBack (NFB) technology. NFB is recommended for all outboards and stern drives without power-assisted steering. HPS and Safe-T QC are offered for most boats with power-assisted steering. Big-T is a good choice for small inboards, especially those with twin stations.

There are two main rotary helm designs:

Reduction Gear Type: (one or more gears mesh externally with the drum to move the helical core of the steering cable). This is the best rotary design in terms of strength and efficiency as there are usually only two gears. The one drawback is that the helm shaft must be placed outside the cable drum, resulting in a fairly large round helm behind the dash. These helms often cannot be used in small dashboards.

The original, time-proven SeaStar Solutions helms such as Big-T® and Safe-T® were designed with reduction gears, resulting in simple, efficient gearboxes. With smaller, more crowded dashboards came the need for a more compact helm, thus one with planetary gears to save space.

Planetary Gear Type: (three or more gears mesh internally with the cable drum to move the helical core of the steering cable). This is an alternative rotary design whose purpose is to take up the least possible space behind the dash, useful in boats with small dashboards and/or instruments clustered right around the wheel.

Rack and Pinion

- ◆ There is only one kind of Rack and Pinion. A pinion gear hobbled directly into the helm shaft engages a rack gear in a tubular housing. Rack and pinion steering is the most efficient mechanical approach to moving the cable. The drawback is that it requires a long tubular rack housing and cannot fit behind many dashboards. SeaStar Solutions rack mounting allows installation of the rack tube at several different angles, but because it is very long, there is not as much mounting flexibility as with rotary helms. The Rack (without the NFB feature) is offered for most boats with power-assisted steering.



CABLE IDENTIFICATION GUIDE

SeaStar Solutions Steering Cables

- ◆ All SeaStar Solutions steering cables exceed ABYC safety standards and ISO/IMCI/NMMA certification requirements. SeaStar Solutions steering cables are designed with a rotary or rack and pinion design to fit various helm space and application requirements. All SeaStar steering cables feature:
 - A tightly controlled core to conduit fit to offer precise steering.
 - Outer jacket is constructed with HDPE, a high density polyethylene material that is abrasion resistant and provides a high resistance to water penetration.
 - All cables feature output ends constructed of stainless steel material for corrosion resistance.

SeaStar Solutions Rotary Steering Cable

TXSSC131XX

- ◆ TXSH8050 steering cable for the SeaStar Solutions light duty steering helms; TXSH8050. Can also be used as a replacement for Morse cables: 208777, 207909 and 264030. Also replaces Ultraflex M58 cable.



TXSSC290XX

- ◆ D290 steering cable for the SeaStar Solutions steering helm; D290. Can also be used as a replacement for Morse cables: 203170, 206568, 208766, 264090 and 206589.



CABLE IDENTIFICATION GUIDE

SeaStar Solutions Rotary Steering Cables

HELM END - Simple snap in connection for easy installation



TXSSC62XX

- ◆ Standard quick connect rotary cable fits TXSH5150, TXSH4910, TXSH4920, TXSH5094, TXSH91190, TXSH91526, TXSH91527, TXSH91523.

TXSSC63XX

- ◆ High Performance quick connect rotary steering cable designed to reduce backlash used in conjunction with the TXSH5180 and TXSH91650 helms. This cable has a special powder coated helical core to allow the most precise fit to the conduit. This cable and helm will allow incredible response with minimal lost motion.

TXSSC290XX

- ◆ Rotary replacement steering cable for the Morse® 304411 and the SeaStar Solutions TXSSC52XX Command 290 steering helms; 292525, (The following are all obsolete) 305015, 304857, 310988, 310989, 310990, 310991.

Note: TXSA88304 adaptor allows a SSC62 cable to fit the D0290 helm.



TXSA27620P

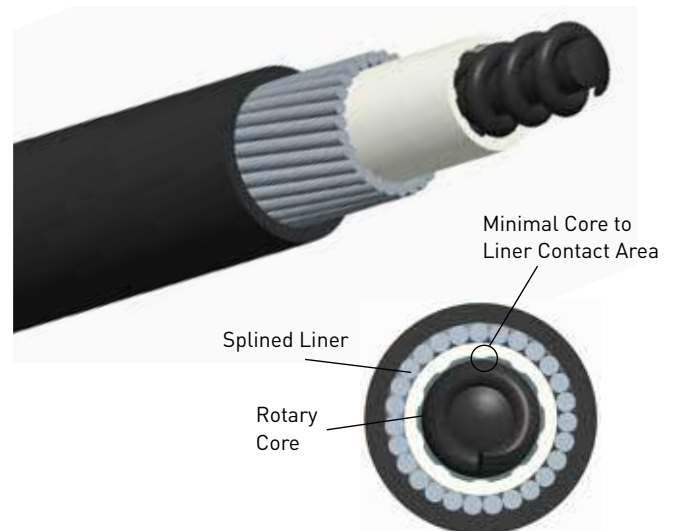
Helm End Adaptor
(For use with older Safe-T and Big-T Helms)

TXSSC62XX (with TXSA27620 adaptor)
Old Safe T (SH5023P, SH5075P, SH91075P and SH91077P) and Big T helms (SH5000P and SH91525P) use with SSC61XX steering cable.
Note: SSC61XX is directly replaced by SSC62XX and SA27620P

TXSSCX64XX XTREME Cable

- ◆ A brand new XTREME™ steering cable was designed specifically for the XTREME helms. This cable offers lower backlash and is more efficient than a standard steering cable. It provides the lowest ease of effort, a close "fit" of the core to liner for lowest lost motion. The concept provides the "tight" fit of core to liner yet allows area for lubrication. The design of the helm allows higher loads to be placed into the cable requiring this new design cable. There is a quick connect feature on both the steering cable and spent travel tube for easy, quick installation.

Note: All TXSSCX XTREME Cables are designed to ONLY fit XTREME helms.



SeaStar Solutions Jet Boat Steering Cables

TXSSC219XX

- ◆ JBS steering cable for the SeaStar Solutions Jet boat steering helms; TXSH5087, TXSH5088, TXSH91691, TXSH91692 (the following are obsolete) TXSH91678, TXSH91679.

***Note: Direct Replacement for TXSSC229XX**



SeaStar Solutions Rack Steering Cables

TXSSC134xx

- ◆ Standard rack cable fits TXSH5210, TXSH5230, TXSH91610, and TXSH91630. For single cable steering only.



TXSSC130XX

- ◆ Rack replacement cable for the Morse® 300619 cable used on the Command 200 rack steering system helms; 300252, 300853, 310992, 310993, 910994, 310995. All of these helms are obsolete.



TXSSC124XX

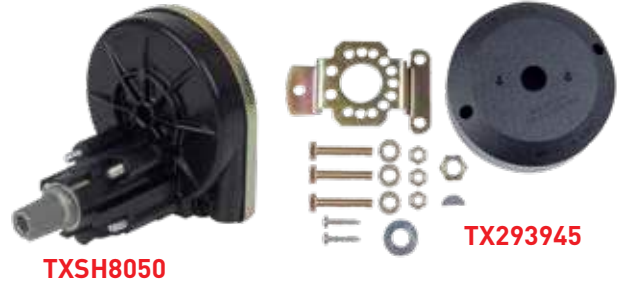
- ◆ Old style XR-4 rack steering cable that fits the old SeaStar Solutions rack helms; TXSH5098, TXSH5097, TXSH91528, TXSH91529 All of these helms are obsolete.



HELM IDENTIFICATION GUIDE

TXSH8050 Light Duty Helm

- ◆ 2.6 turns lock to lock
- ◆ Compact size
- ◆ Minimum intrusion behind panel
- ◆ Damper externally adjustable
- ◆ Variable cable approach
- ◆ Replaces Compac-T and C230 helms
- ◆ Includes 90° bezels
- ◆ Suitable up to 53bhp



TXSH8050

TX293945

Command D290 Rotary Steering

- ◆ 3.3 turns lock to lock
- ◆ Port or starboard cable entry
- ◆ Standard 3/4" taper on steering wheel shaft
- ◆ Compact size, minimum intrusion behind panel
- ◆ Can accept Quick Connect steering cables with adaptor TXSA88304



TXD0290

Safe-T® QC

- ◆ Collet & hitch pin secure QC cable to helm.
- ◆ Conical plastic nut holds spent travel tube.

Kits:

TXSS137XX (Safe-T QC Single Cable without wheel)

TXSS139XX (Safe-T QC Single Cable with wheel)

Note: The old style helm has a threaded spent travel tube. The SH5094-1P is a quick connect spent travel tube. Both use the same cable.

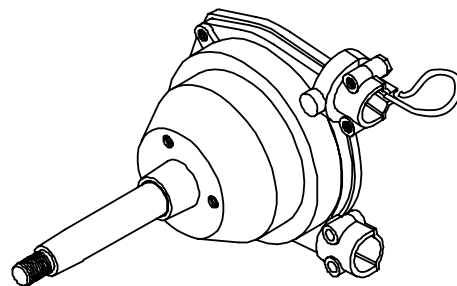


TXSH5094

NFB™ Safe-T II & HPS Rotary™

- ◆ Collet & hitch pin secure QC cable to helm.
- ◆ One bolt holds spent travel tube.
- ◆ Safe-T II cast finish helm has No FeedBack™ feature; HPS gold-finish helm does not.

Kit: TXSS132XX (Safe-T II Single Cable); HPS Rotary is sold as components only.



TXSH5150 (Safe-T II – cast finish)



TXSH5180 (HPS – gold finish)

NFB™ 4.2

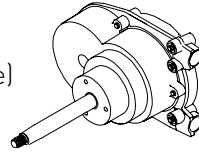
- ◆ Two bolts secure QC cable to helm.
- ◆ One bolt holds spent travel tube.
- ◆ Cast finish helms have No FeedBack™ feature.

Kits: TXSS147XX (4.2 Single Cable)

TXSH4910



TXSH4910
(Single Cable)



XTREME™ NFB™

- ◆ Quick connect feature on both the cable and spent travel tube side.
- ◆ Improved NFB feature for smoother release.

TXSSX176XX (XTREME™ NFB)

TXSSX177XX (XTREME™ Tilt NFB)

TXSHX7606



TXSHX97606



TX293945
(90° Bezel)
SH8050



TX292748
(90° Bezel)
D290



TXSB27150P
(90° Bezel)
NFB 4.2
Safe-T II



TXSB27483P
(20° Bezel)
NFB 4.2
Safe-T II & HPS
Safe-T QC



TXSB27484P
(90° Bezel)
HPS
Safe-T QC



HELM IDENTIFICATION GUIDE

Big-T®

TXSH5000



- ◆ Large thread-on nut secures cable to helm.
- ◆ Conical plastic nut holds spent travel tube.
- ◆ Diecast bezel which can be either round one-piece or oval 2-piece design.
- ◆ Older systems may have 2 helms (twin station).

The Rack™ & HPS Rack™ ("Back Mount" Rack)

TXSH5210



Note: Rack steering requires 2 1/4" hole.

- ◆ Four bolts and nuts secure cable's rack housing to helm.
- ◆ Helm/cable install as unit from back of dash.
- ◆ Helm requires current generation rack cables (will not bolt up to older style cables).
- ◆ Dual cable has one rack housing with two cables attached. Single helm works on both single and dual cable applications (NFB recommended for non-power assist outboards).
- ◆ One bezel is offered; angle to dash is changed by adding wedges. See below:

NFB™ Rack & NFB™ Pro Rack™ ("Back Mount" Rack)

TXSH5230



- ◆ Four bolts and nuts secure cable's rack housing to helm.
- ◆ Helm has No FeedBack™ feature.
- ◆ Helm/cable install as unit from back of dash.
- ◆ Helm requires current generation rack cables (will not bolt up to older style cables).
- ◆ Dual cable has one rack housing with two cables attached. Single helm works on both single and dual cable applications.
- ◆ One bezel is offered; angle to dash is changed by adding wedges. See below:



TXSB27265
Big-T®



TXSB39526
(90° Bezel)
The Rack
HPS Rack

Rack Wedge Kits



TXSB27449
(20° Wedge Kit)
The Rack, HPS Rack,
NFB Rack & NFB Pro Rack

JBS Helms

- ◆ Just for Jets! JBS by SeaStar Solutions means Jet Boat Steering. Designed exclusively for jet boats, JBS features a choice of two steering arcs, a real steering cable (not a control cable) plus an assortment of mounting options for virtually any boat.

Description	Part number
JBS Helm (135° turning arc)	TXSH5087P
JBS Helm (270° turning arc)	TXSH5088P



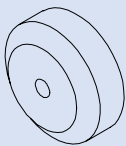
Mechanical Helm Mounting Options:

- ◆ SeaStar Solutions offers several helm mounting options to accommodate nearly any preference. These options are available for all helms, except as noted. Please take a moment to familiarise yourself with these options before ordering replacement steering systems or components.
- ◆ Mechanical (cable) steering typically comes with 90° mounting hardware for the helm. (Steering shaft is perpendicular to dash). 20° mounting kits (steering shaft 20° from perpendicular) can be purchased as options. Rack steering allows variations from 90° mounting in two settings: 10° and 20° from perpendicular. Big-T has two bezel mounting options, a 2-piece oval bezel which can be configured in either 90° or 20° helm mounting plus a 1-piece 90° bezel which reduces shaft protrusion from the dashboard.

Mechanical steering bezel mounts:

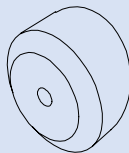
(typical)

Typical bezel for 90° mount
(steering wheel parallel to dash)

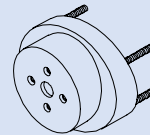


Note: Requires 3 1/4" centre hole.

Typical rotary bezel for 20° mount
(steering wheel 20° from parallel to dash)
TXSB27483



Big-t 2-piece 90°/20° bezels:
TXSB27265



Note: Requires 3 1/2" centre hole.

Tilt Steering:

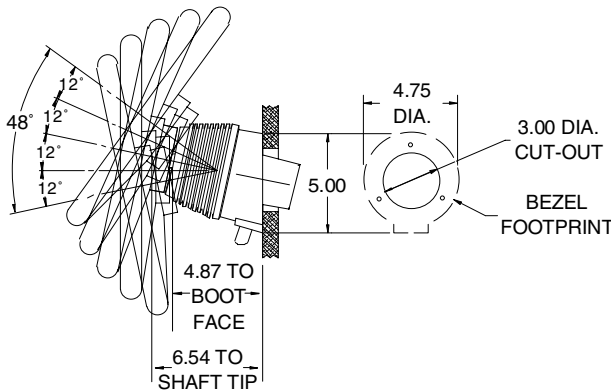
- ◆ Available in NFB, Safe-T, Rack & Big-T formats
- ◆ Provides extra convenience and comfort
- ◆ Wheel can be moved through a 48° arc - five positive lock positions at 12° increments
- ◆ Tilt steering is supplied as two separate parts: A tilt helm and a tilt mechanism
- ◆ Tilt helms have a special flat ended shaft with a cross hole for connection to the "universal joint" in the tilt mechanism
- ◆ Preloaded dual taper bearings ensure minimal excess free play
- ◆ Smooth operation and feel
- ◆ Shaft seals prevent water ingress
- ◆ Compact footprint
- ◆ Maintenance free



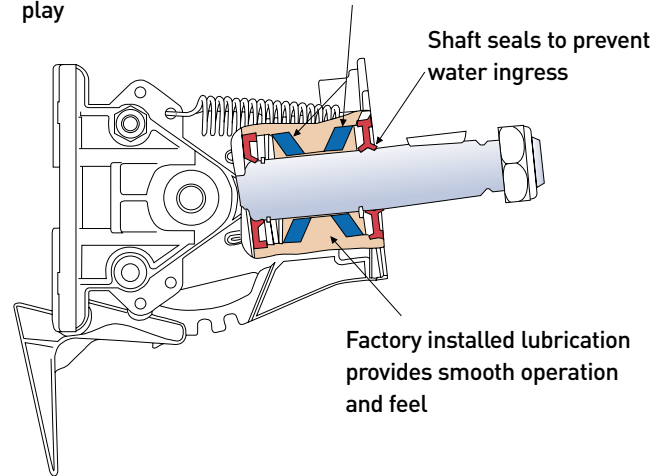
SPORT PLUS TILT
TXSH91900



SPORT TILT
TXSH91800



Preloaded dual taper bearings ensure minimal excess free play



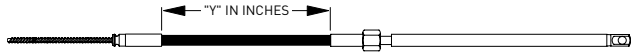
Description	Wheel Shaft	Seastar Part No	No
Sport Flexible Rubber Bellows	Taper	SH91800*	TXSH91800*
Sport Plus Solid Round Cover	Taper	SH91900*	TXSH91900*
* Mechanical Tilt mechanism only - select Helm type from list below			
Safe T QC Tilt Helm	-	SH91523-1	TXSH91523
Safe T ll (NFB) Tilt Helm	-	SH91190	TXSH91190
4.2 (NFB) Tilt Helm	-	SH91526	TXSH91526
Rack Tilt Helm	-	SH91610	TXSH91610
Rack (NFB) Tilt Helm	-	SH91630	TXSH91630
HPS Tilt Helm	-	SH91650	TXSH91650
Jet Boat Tilt Helm (270° tilt) - Tilt Mechanism Included	-	SH91692	TXSH91692
XTREME™ Tilt NFB Helm	-	SHX97606	TXSHX97606

How to Measure Steering Cables **"MEASURE TWICE. ORDER ONCE."**

Replacement of Existing Cable:

If possible, find the part number stamped on the plastic jacket of the old cable.

If you removed the old cable, measure for the replacement cable as follows:



For rotary steering cable replacement:

Measure the plastic cable jacket (Y) in inches, then, add 18 inches to this measurement.

Now round this measurement up to the nearest foot.

Check the helm and cable type and order that length of cable.

For rack steering cable replacement:

Measure the plastic cable jacket (Y) in inches, then, add 30 inches to this measurement.

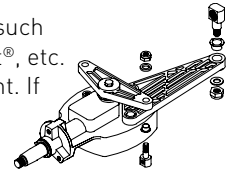
Now round this measurement up to the nearest foot.

Check the helm and cable type and order that length of cable.

For JBS jet boat cable replacement:

Measure cable from tip to tip. Order that length cable.

JBS helms are ONLY for smaller jets such as Mercury Sport Jet®, OMC Turbo Jet®, etc. and look like the helm depicted at right. If your jet steering is different, contact Bainbridge.



New Installation:

Measure cable routing path from wheel centre line to engine connection, as follows:

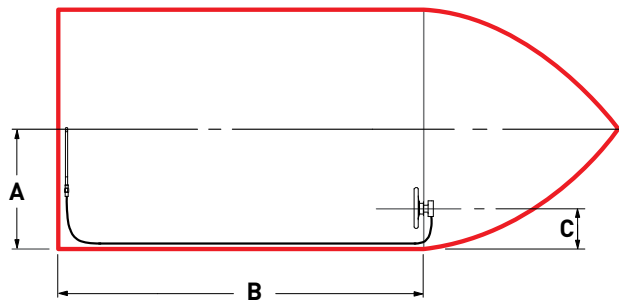
- A = Centre line of wheel to gunwale (or deck, if routed downward),
- B = Dash to transom,
- C = Gunwale to centreline of cable connection at centred tiller.

For cable installations through the engine tilt tube: add A, B & C + 6", and round up to the next foot. Order that length cable.

For cables mounted to transom, splashwell or stringer: add A, B & C, then subtract 6" and round up to the next foot. Order that length cable.

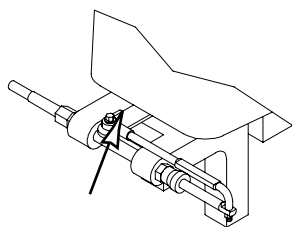
If your engine does not have a tilt tube cable connection as shown below, see 'Connection Kits' on page 31'

TYPICAL SINGLE STATION ROUTING

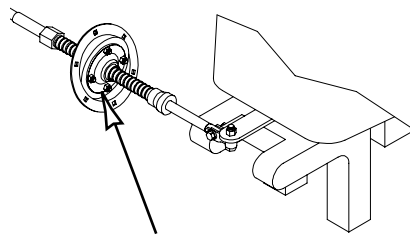


A single-cable, starboard drive push-pull mechanical cable system is shown in this diagram. If your mechanical system is different than the one depicted and/or you have any questions about mechanical steering after reviewing this guide, please contact Bainbridge.

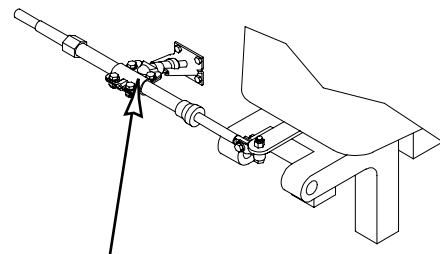
Cable routings (such as those found on pontoon boats) may vary from this drawing. Confirm length by laying a garden hose (or similar object) along cable path and measure run from wheel to engine connection point.



CABLE THROUGH ENGINE TILT TUBE

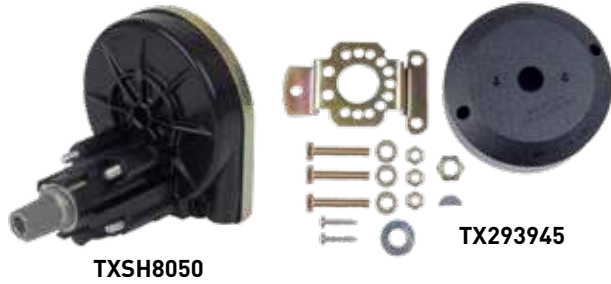


SPLASHWELL CABLE MOUNT



TRANSOM CABLE MOUNT (similar to stringer type)

SH8050 rotary steering system



TXSH8050

TX293945

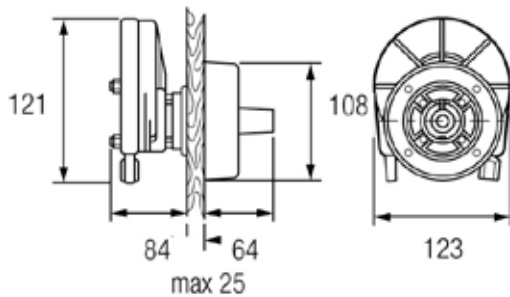
- ◆ Comfortable 2.6 turns lock to lock
- ◆ Compact size
- ◆ Minimum intrusion behind panel
- ◆ Damper externally adjustable
- ◆ Variable cable approach
- ◆ Replaces Compac-T and C230 helms
- ◆ Includes 90° bezels
- ◆ Suitable up to 53hp
- ◆ Standard 3/4" tapered steering shaft

Helms

SH8050 Helm & Bezel Kit - **TXSH8050**

293945 Bezel Kit - **TX293945**

C230/31 older cable adaptor for use with SH850 helm
TX294094



Kits

- ◆ SH8050 helm, 90° bezel, steering cable and Champion steering wheel in a retail box

Length (ft)	Length (m)	Seastar Part No	No
7	2.13	SS138007	TXSS138007
8	2.43	SS138008	TXSS138008
9	2.73	SS138009	TXSS138009
10	3.03	SS138010	TXSS138010
11	3.33	SS138011	TXSS138011
12	3.64	SS138012	TXSS138012
13	3.93	SS138013	TXSS138013
14	4.24	SS138014	TXSS138014
15	4.55	SS138015	TXSS138015
16	4.85	SS138016	TXSS138016
17	5.15	SS138017	TXSS138017
18	5.45	SS138018	TXSS138018
19	5.76	SS138019	TXSS138019
20	6.06	SS138020	TXSS138020

Steering Cables

- ◆ The cables below can be used as replacement for Morse cables 208777, 207909 & 264030 and Ultraflex M58 cable
- ◆ Steering Cable for SeaStar SH8050 & Ultraflex Compac-T, C230/231 Helms

Length 'Y' (ft)	Length (m)	Seastar Part No	No
7	2.13	SSC13107	TXSSC13107
8	2.43	SSC13108	TXSSC13108
9	2.73	SSC13109	TXSSC13109
10	3.03	SSC13110	TXSSC13110
11	3.33	SSC13111	TXSSC13111
12	3.64	SSC13112	TXSSC13112
13	3.93	SSC13113	TXSSC13113
14	4.24	SSC13114	TXSSC13114
15	4.55	SSC13115	TXSSC13115
16	4.85	SSC13116	TXSSC13116
17	5.15	SSC13117	TXSSC13117
18	5.45	SSC13118	TXSSC13118
19	5.76	SSC13119	TXSSC13119
20	6.06	SSC13120	TXSSC13120
21	6.36	SSC13121	TXSSC13121
22	6.67	SSC13122	TXSSC13122
23	6.97	SSC13123	TXSSC13123
24	7.27	SSC13124	TXSSC13124
25	7.58	SSC13125	TXSSC13125
26	7.92	SSC13126	TXSSC13126
27	8.23	SSC13127	TXSSC13127
28	8.53	SSC13128	TXSSC13128
29	8.84	SSC13129	TXSSC13129
30	9.14	SSC13130	TXSSC13130

Cables are only supplied in feet lengths. Over 30ft cable are supplied in 2ft increments. Longer lengths available to order.



Cable Length in feet

D290 rotary steering system



- ◆ Compact rotary drive steering system for use on boats up to 40ft (12m) fitted with outboards, outdrives, rudders or jets. Steering loads should not exceed 140kgf at the point of connection
- ◆ 3.3 turns lock to lock
- ◆ Port or starboard cable entry
- ◆ Standard 3/4" taper on steering wheel shaft
- ◆ Compact size, minimum intrusion behind panel
- ◆ Can accept Quick Connect steering cables with adaptor TXSA88304

Helms

Description	Seastar Part No	No
D290 Standard Helm	D0290	TXD0290
D290 Bezel Kit - Black 90°	292748	TX292748

Steering Cables

Length 'Y' (ft)	(m)	Seastar Part No	No
7	2.13	SSC29007P	TXSSC29007
8	2.43	SSC29008P	TXSSC29008
9	2.73	SSC29009P	TXSSC29009
10	3.03	SSC29010P	TXSSC29010
11	3.33	SSC29011P	TXSSC29011
12	3.64	SSC29012P	TXSSC29012
13	3.93	SSC29013P	TXSSC29013
14	4.24	SSC29014P	TXSSC29014
15	4.55	SSC29015P	TXSSC29015
16	4.85	SSC29016P	TXSSC29016
17	5.15	SSC29017P	TXSSC29017
18	5.45	SSC29018P	TXSSC29018
19	5.76	SSC29019P	TXSSC29019
20	6.06	SSC29020P	TXSSC29020
21	6.36	SSC29021P	TXSSC29021
22	6.67	SSC29022P	TXSSC29022
23	6.97	SSC29023P	TXSSC29023
24	7.27	SSC29024P	TXSSC29024
25	7.58	SSC29025P	TXSSC29025
26	7.92	SSC29026P	TXSSC29026
27	8.23	SSC29027P	TXSSC29027
28	8.53	SSC29028P	TXSSC29028
29	8.84	SSC29029P	TXSSC29029
30	9.14	SSC29030P	TXSSC29030
32	9.76	SSC29032	TXSSC29032
34	10.36	SSC29034P	TXSSC29034
36	10.97	SSC29036P	TXSSC29036
38	11.59	SSC29038	TXSSC29038
42	12.80	SSC29042P	TXSSC29042
44	13.41	SSC29044P	TXSSC29044
46	14.03	SSC29046P	TXSSC29046

Cables are only supplied in feet. Over 30ft cable are supplied in 2ft increments. Can be used as replacements for Morse 203170, 206568, 208766, 264090, 206589 & 264090.



★ **Safe-T[®] QC rotary steering system**



- ◆ Traditional SeaStar Solutions mechanical steering is still the choice for sterndrives, inboards, outboards and other power assisted applications
- ◆ It's just right for power steered boats in which No FeedBack™ systems are not required
- ◆ Safe-T[®] QC offers the quick response of three-turn steering, and easy installation with a patented, no-tools-required cable connection at the helm

Applications:

- ◆ Virtually all power-assisted sterndrive boats with wheels up to 16" diameter. Safe-T[®] QC replaces all SeaStar Solutions Safe-T helms made since 1968 with little or no dash modifications. (Requires use of SSC62 QC or SSC62 QC II steering cable.)
- ◆ For single station use only. Safe-T[®] QC accepts wheels up to 16" diameter

Features:

- ◆ Quick-response of 3 turns lock-to-lock
- ◆ Kits include: cable, helm, 90° bezel and hardware
- ◆ Standard 3/4" round tapered steering shaft
- ◆ Stainless steel cable output ends
- ◆ Fast, easy installation: uses simple snap-in cable connection, SeaStar Solutions Quick Connect (QC) cable, and industry-standard Safe-T[®] mounting hardware
- ◆ Tilt option available
- ◆ Dual entry
- ◆ Upto 75bhp
- ◆ Meets ABYC standards
- ◆ Meets NMMA certification requirements
- ◆ Made, designed and assembled in the USA

Helms

Description	Seastar Part No	No
Safe-T QC Helm	SH5094	TXSH5094
Safe-T QC Twin Helm	SH5294	TXSH5294
90° Black Bezel	SB27484	TXSB27484
20° Black Bezel	SB27483	TXSB27483

Steering Cables

Length 'Y'		Seastar	No
(ft)	(m)	Part No	
7	2.13	SSC6207P	TXSSC6207
8	2.43	SSC6208P	TXSSC6208
9	2.73	SSC6209P	TXSSC6209
10	3.03	SSC6210P	TXSSC6210
11	3.33	SSC6211P	TXSSC6211
12	3.64	SSC6212P	TXSSC6212
13	3.93	SSC6213P	TXSSC6213
14	4.24	SSC6214P	TXSSC6214
15	4.55	SSC6215P	TXSSC6215
16	4.85	SSC6216P	TXSSC6216
17	5.15	SSC6217P	TXSSC6217
18	5.45	SSC6218P	TXSSC6218
19	5.76	SSC6219P	TXSSC6219
20	6.06	SSC6220P	TXSSC6220
21	6.36	SSC6221P	TXSSC6221
22	6.67	SSC6222P	TXSSC6222
23	6.97	SSC6223P	TXSSC6223
24	7.27	SSC6224P	TXSSC6224
25	7.58	SSC6225P	TXSSC6225
26	7.92	SSC6226P	TXSSC6226
27	8.23	SSC6227P	TXSSC6227
28	8.53	SSC6228P	TXSSC6228
29	8.84	SSC6229P	TXSSC6229
30	9.14	SSC6230P	TXSSC6230
32	9.76	SSC6232P	TXSSC6232
34	10.36	SSC6234P	TXSSC6234
36	10.97	SSC6236P	TXSSC6236

Cables are only supplied in feet. Over 30ft cable are supplied in 2ft increments.



Safe-T® QC rotary steering system



Kit with Steering Wheel

The kit contains the following:

- ◆ 1 x SH5094-1P Helm
- ◆ 1 x SB27484P 90° Bezel Kit
- ◆ 1 x Q059491 Stealth Steering Wheel
- ◆ 1 x SSC62XX Steering Cable
- ◆ Hardware and Instruction sheets
- ◆ Kit sizes: 7-20 feet
- ◆ SSC62XX can be used as a replacement cable.

Applications:

- ◆ Safe-T® QC replaces all SeaStar Solutions Safe-T helms made since 1968 with little or no dash modifications. Requires use of SSC62. It is recommended No FeedBack steering for all dual cable steered, non-power-assisted outboards and sterndrives

Length (ft)	Length (m)	Seastar Part No	No
7	2.13	SS13907	TXSS13907
8	2.43	SS13908	TXSS13908
9	2.73	SS13909	TXSS13909
10	3.03	SS13910	TXSS13910
11	3.33	SS13911	TXSS13911
12	3.64	SS13912	TXSS13912
13	3.93	SS13913	TXSS13913
14	4.24	SS13914	TXSS13914
15	4.55	SS13915	TXSS13915
16	4.85	SS13916	TXSS13916
17	5.15	SS13917	TXSS13917
18	5.45	SS13918	TXSS13918
19	5.76	SS13919	TXSS13919
20	6.06	SS13920	TXSS13920

Kit without Steering Wheel

The kit contains the following:

- ◆ 1 x SH5094-1P Helm
- ◆ 1 x SB27484P 90° Bezel Kit
- ◆ 1 x SSC62XX Steering Cable
- ◆ Hardware and Instruction sheets
- ◆ Kit sizes: 7-20 feet
- ◆ SSC62XX can be used as a replacement cable

Applications:

- ◆ Safe-T® QC replaces all SeaStar Solutions Safe-T helms made since 1968 with little or no dash modifications. Requires use of SSC62. We recommend No FeedBack steering for all dual cable steered, non-power-assisted outboards and sterndrives

Length (ft)	Length (m)	Seastar Part No	No
7	2.13	SS13707	TXSS13707
8	2.43	SS13708	TXSS13708
9	2.73	SS13709	TXSS13709
10	3.03	SS13710	TXSS13710
11	3.33	SS13711	TXSS13711
12	3.64	SS13712	TXSS13712
13	3.93	SS13713	TXSS13713
14	4.24	SS13714	TXSS13714
15	4.55	SS13715	TXSS13715
16	4.85	SS13716	TXSS13716
17	5.15	SS13717	TXSS13717
18	5.45	SS13718	TXSS13718
19	5.76	SS13719	TXSS13719
20	6.06	SS13720	TXSS13720

NFB™ Safe-T® rotary system



- ◆ Major OEMs use SeaStar Solutions Safe-T® II, and so will your customers. It's the next generation of Safe-T®, the world's #1 rotary steering system – rugged, compact, lightweight, and with SeaStar Solutions No FeedBack technology. This ultra-smooth, 3-turn system takes the work out of steering most V-4 outboard powered boats. The Safe-T® II helm is a drop-in replacement for current generation Safe-T QC with no dash modifications
- ◆ With NFB fitted, steering loads are only felt when actively changing course. Mechanical NFB steering systems contain a patented clutch mechanism that engages when the wheel is not being turned and automatically disengages whenever it is turned providing the driver with improved comfort and control

Applications:

- ◆ NFB Safe-T II single-cable systems are suitable for most single-station boats with a single non-power-assisted outboard engine up to V-4 and minimal engine flutter or steering instability. Safe-T® II accepts wheels up to 16" diameter. (NFB Safe-T® II is available in single cable configuration only). Replaces nearly all standard Safe-T® steering without dash modifications

Features:

- ◆ Patented No FeedBack™ Steering mechanism
- ◆ Quick response of 3 turns lock-to-lock
- ◆ Minimal clutch free play
- ◆ Standard 3/4" round tapered steering shaft
- ◆ Stainless steel cable output ends
- ◆ Fast, easy installation: uses SeaStar Solutions Quick Connect (QC) cable
- ◆ Engine size up to V4
- ◆ Up to 100bhp
- ◆ Meets ABYC standards
- ◆ Meets NMMA certification requirements
- ◆ Made, designed and assembled in the USA

Helms

Description	Seastar Part No	No
NFB Safe-T II Helm 3 Turns	SH5150	TXSH5150
90° Black Bezel	SB27150	TXSB27150
20° Black Bezel	SB27483	TXSB27483

Steering Cables

Length 'Y' (ft)	(m)	Seastar Part No	No
7	2.13	SSC6207P	TXSSC6207
8	2.43	SSC6208P	TXSSC6208
9	2.73	SSC6209P	TXSSC6209
10	3.03	SSC6210P	TXSSC6210
11	3.33	SSC6211P	TXSSC6211
12	3.64	SSC6212P	TXSSC6212
13	3.93	SSC6213P	TXSSC6213
14	4.24	SSC6214P	TXSSC6214
15	4.55	SSC6215P	TXSSC6215
16	4.85	SSC6216P	TXSSC6216
17	5.15	SSC6217P	TXSSC6217
18	5.45	SSC6218P	TXSSC6218
19	5.76	SSC6219P	TXSSC6219
20	6.06	SSC6220P	TXSSC6220
21	6.36	SSC6221P	TXSSC6221
22	6.67	SSC6222P	TXSSC6222
23	6.97	SSC6223P	TXSSC6223
24	7.27	SSC6224P	TXSSC6224
25	7.58	SSC6225P	TXSSC6225
26	7.92	SSC6226P	TXSSC6226
27	8.23	SSC6227P	TXSSC6227
28	8.53	SSC6228P	TXSSC6228
29	8.84	SSC6229P	TXSSC6229
30	9.14	SSC6230P	TXSSC6230
32	9.76	SSC6232P	TXSSC6232
34	10.36	SSC6234P	TXSSC6234
36	10.97	SSC6236P	TXSSC6236

Cables are only supplied in feet. Over 30ft cable are supplied in 2ft increments.



NFB™ Safe-T® rotary system



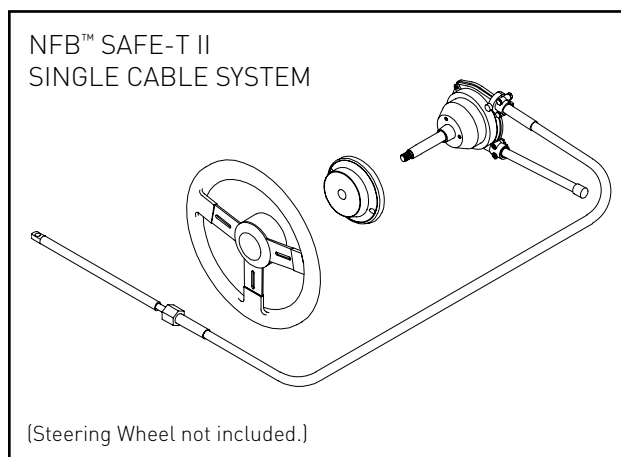
Kit without Steering Wheel

The kit contains the following:

- ◆ 1- SH5150P No FeedBack Helm
- ◆ 1- SB27150P 90° Bezel Kit
- ◆ 1- SSC62XX Steering Cable
- ◆ Hardware and Instruction sheets
- ◆ Kit sizes: 10-20 feet
- ◆ SSC62XX can be used as a replacement cable

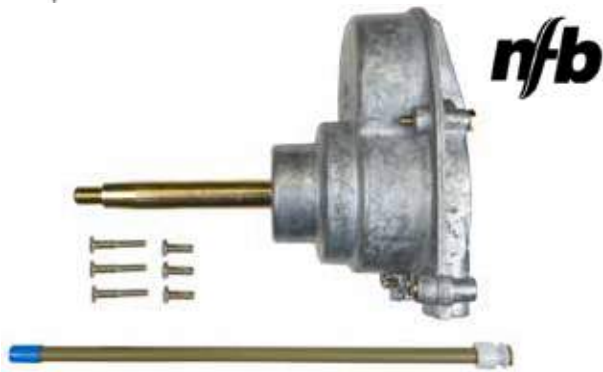
Applications:

- ◆ NFB Safe-T® II single-cable systems are suitable for most single-station boats with a single non-power-assisted outboard engine up to V-4 and minimal engine flutter or steering instability. (NFB Safe-T® II is available in single cable configuration only)



Length (ft)	Length (m)	Seastar Part No	No
7	2.13	SS13207	TXSS13207
8	2.43	SS13208	TXSS13208
9	2.73	SS13209	TXSS13209
10	3.03	SS13210	TXSS13210
11	3.33	SS13211	TXSS13211
12	3.64	SS13212	TXSS13212
13	3.93	SS13213	TXSS13213
14	4.24	SS13214	TXSS13214
15	4.55	SS13215	TXSS13215
16	4.85	SS13216	TXSS13216
17	5.15	SS13217	TXSS13217

NFB™ 4.2 rotary system



- ◆ Patented No FeedBack Steering Helm for about the cost of an old-fashioned steering replacement. With the advantage of 4.2 turns lock-to-lock and the patented No FeedBack steering to lock out steering loads, SeaStar Solutions' 4.2 Rotary NFB Steering is the ideal single-cable system for most non-power-steered boats. The helm is a drop-in replacement for current generation Safe-T® with no dash modifications required
- ◆ Similar to NFB Safe-T® II but with extra mechanical advantage and larger engine capability

Applications:

- ◆ NFB 4.2 single-cable systems are suitable for most single-station boats with a single non-power-assisted outboard engine up to V-6 and minimal engine flutter or steering instability. 4.2 accepts wheels up to 16" diameter
- ◆ Replaces nearly all SeaStar Solutions Safe-T® steering systems without dash modification

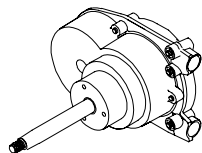
Features:

- ◆ Patented No FeedBack™ Steering mechanism
- ◆ Comfortable 4.2 turns from lock-to-lock
- ◆ Minimal clutch free play
- ◆ Standard 3/4" round tapered steering shaft.
- ◆ Stainless steel cable output ends
- ◆ Fast, easy installation: uses SeaStar Solutions Quick Connect (QC) steering cable.
- ◆ Engine size up to V6
- ◆ Tilt option available
- ◆ Upto 150bhp
- ◆ Meets ABYC standards
- ◆ Meets NMMA certification requirements
- ◆ Made, designed and assembled in the USA

Helms

Description	Seastar Part No	No
NFB Helm 4.2 Turns	SH4910	TXSH4910
90° Black Bezel	SB27150	TXSB27150
20° Black Bezel	SB27483	TXSB27483

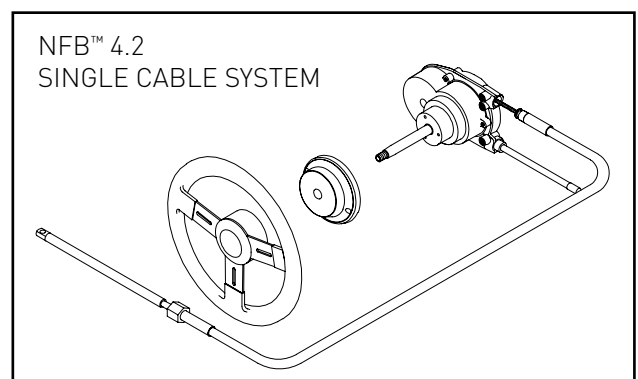
TXSH4910



Steering Cables

Length 'Y'	Seastar	No
(ft)	Part No	
7	SSC6207P	TXSSC6207
8	SSC6208P	TXSSC6208
9	SSC6209P	TXSSC6209
10	SSC6210P	TXSSC6210
11	SSC6211P	TXSSC6211
12	SSC6212P	TXSSC6212
13	SSC6213P	TXSSC6213
14	SSC6214P	TXSSC6214
15	SSC6215P	TXSSC6215
16	SSC6216P	TXSSC6216
17	SSC6217P	TXSSC6217
18	SSC6218P	TXSSC6218
19	SSC6219P	TXSSC6219
20	SSC6220P	TXSSC6220
21	SSC6221P	TXSSC6221
22	SSC6222P	TXSSC6222
23	SSC6223P	TXSSC6223
24	SSC6224P	TXSSC6224
25	SSC6225P	TXSSC6225
26	SSC6226P	TXSSC6226
27	SSC6227P	TXSSC6227
28	SSC6228P	TXSSC6228
29	SSC6229P	TXSSC6229
30	SSC6230P	TXSSC6230
32	SSC6232P	TXSSC6232
34	SSC6234P	TXSSC6234
36	SSC6236P	TXSSC6236

Cables are only supplied in feet. Over 30ft cable are supplied in 2ft increments.



★ 4.2 rotary system



NEW!

- ◆ For the boat owner that likes the ease of the 4.2 mechanical advantage and does not want the NFB clutch in the helm
- ◆ Great for pontoon boats, and sail boats
- ◆ This system will fit most old Teleflex and SeaStar Solutions rotary mounting holes with no dash modification.

Applications:

- ◆ Ideal for boats that do not require the NFB clutch, yet want the ease of 4.2 rotary steering. Inboards, pontoons, where the steering loads may make three turn steering systems hard to turn. Uses the same steering cable and mounting holes.

Features:

- ◆ 4 turn lock to lock, providing more mechanical steering advantage over the three turn systems
- ◆ Standard 3/4 round taper steering wheel shaft
- ◆ Stainless Steel steering cable output end
- ◆ Fast, easy installation using the quick connect steering cable SSC62XX
- ◆ Meets ABYC standards
- ◆ Meets NMMA certification requirements
- ◆ Made, designed and assembled in the U.S.A

Helms

Description	Seastar Part No	No
4.2 NON NFB Helm (Single Cable)	SH4951	TXSH4951
90° Bezel Kit	SB27484	TXSB27484
20° Bezel Kit	SB27483	TXSB27483

Steering Cables

Length (ft)	Y (m)	Seastar Part No	No
7	2.13	SSC6207P	TXSSC6207
8	2.43	SSC6208P	TXSSC6208
9	2.73	SSC6209P	TXSSC6209
10	3.03	SSC6210P	TXSSC6210
11	3.33	SSC6211P	TXSSC6211
12	3.64	SSC6212P	TXSSC6212
13	3.93	SSC6213P	TXSSC6213
14	4.24	SSC6214P	TXSSC6214
15	4.55	SSC6215P	TXSSC6215
16	4.85	SSC6216P	TXSSC6216
17	5.15	SSC6217P	TXSSC6217
18	5.45	SSC6218P	TXSSC6218
19	5.76	SSC6219P	TXSSC6219
20	6.06	SSC6220P	TXSSC6220
21	6.36	SSC6221P	TXSSC6221
22	6.67	SSC6222P	TXSSC6222
23	6.97	SSC6223P	TXSSC6223
24	7.27	SSC6224P	TXSSC6224
25	7.58	SSC6225P	TXSSC6225
26	7.92	SSC6226P	TXSSC6226
27	8.23	SSC6227P	TXSSC6227
28	8.53	SSC6228P	TXSSC6228
29	8.84	SSC6229P	TXSSC6229
30	9.14	SSC6230P	TXSSC6230
32	9.76	SSC6232P	TXSSC6232
34	10.36	SSC6234P	TXSSC6234
36	10.97	SSC6236P	TXSSC6236

Cables are only supplied in feet. Over 30ft cable are supplied in 2ft increments.



Big-T[®] rotary steering system



- ◆ The Original SeaStar Solutions Steering System! For over 50 years, Big-T[®] has been the most durable, versatile mechanical steering system made, with both single and dual station capability. The heavy duty helm incorporates a strong steel pinion, dual diecast gears and meaty shaft bearing supports, all encased in a rugged gear housing. It's no wonder owners of small inboards have counted on the SeaStar Solutions Big-T since 1963!

Applications:

- ◆ Inboards to 34 feet with one engine. Also suitable for sterndrive boats with power-assisted steering. Big-T systems accept steering wheels up to 20" diameter
- ◆ The type of system shown on this page is for single station use

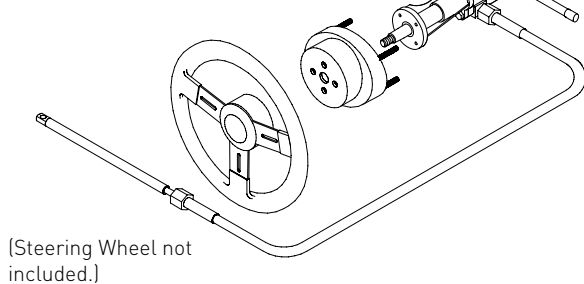
Features:

- ◆ Responsive 3 turns from lock-to-lock†
- ◆ Standard 3/4" round tapered steering shaft
- ◆ 2-piece bezel for 90° or 20° helm mount to dash.
- ◆ Uses SeaStar Solutions SSC62 type cable with helm converter SA27620P
- ◆ Meets ABYC standards
- ◆ Meets NMMA certification requirements
- ◆ Made, designed and assembled in the USA

Helms

Description	Seastar Part No	No
Big-T Helm (single station push-pull)	SH5000	TXSH5000
Helm End Steering Cable Adaptor	SA27620	TXSA27620
Bezel 2 pack. Black (90°/20° mount)	SB27265	TXSB27265

BIG-T[®] SINGLE STATION SYSTEM



Steering Cables

Length 'Y' (ft)	(m)	Seastar Part No	No
7	2.13	SSC6207P	TXSSC6207
8	2.43	SSC6208P	TXSSC6208
9	2.73	SSC6209P	TXSSC6209
10	3.03	SSC6210P	TXSSC6210
11	3.33	SSC6211P	TXSSC6211
12	3.64	SSC6212P	TXSSC6212
13	3.93	SSC6213P	TXSSC6213
14	4.24	SSC6214P	TXSSC6214
15	4.55	SSC6215P	TXSSC6215
16	4.85	SSC6216P	TXSSC6216
17	5.15	SSC6217P	TXSSC6217
18	5.45	SSC6218P	TXSSC6218
19	5.76	SSC6219P	TXSSC6219
20	6.06	SSC6220P	TXSSC6220
21	6.36	SSC6221P	TXSSC6221
22	6.67	SSC6222P	TXSSC6222
23	6.97	SSC6223P	TXSSC6223
24	7.27	SSC6224P	TXSSC6224
25	7.58	SSC6225P	TXSSC6225
26	7.92	SSC6226P	TXSSC6226
27	8.23	SSC6227P	TXSSC6227
28	8.53	SSC6228P	TXSSC6228
29	8.84	SSC6229P	TXSSC6229
30	9.14	SSC6230P	TXSSC6230
32	9.76	SSC6232P	TXSSC6232
34	10.36	SSC6234P	TXSSC6234
36	10.97	SSC6236P	TXSSC6236

Cables are only supplied in feet. Over 30ft cable are supplied in 2ft increments.



TXSA27620
Helm End Adaptor
(For use with older Safe-T and Big-T Helms)

TXSSC62XX (with TXSA27620 adaptor)
Old Safe T (SH5023P, SH5075P, SH91075P and SH91077P) and Big T helms (SH5000P and SH91525P) use with SSC61XX steering cable.
Note: SSC61XX is directly replaced by SSC62XX and SA27620P



xtreme NFB™ rotary system



- ◆ Helm features a completely new gear train designed to provide smooth feel, minimal backlash and low effort. NFB option has the smoothest clutch release and a smaller footprint than current 4.2 helm. Casting design combines superior strength at reduced weight
- ◆ Tilt steering option, uses TXSH91800 tilt mechanism which requires no dash modifications from old style Seastar Solutions tilt steering systems
- ◆ TXSSCX64 XTREME cable - is designed specifically for this system. Offers lower backlash and greater efficiency than standard cables. Low effort thanks to the close "fit" of the core to liner. This concept provides "tight" fit of core to liner yet allows area for lubrication. The helm design allows higher loads to be placed on the cable
- ◆ Quick connect feature for easy installation

Applications:

- ◆ XTREME single cable systems are suitable for most single-station boats with a single non-power assisted outboard engine up to V6 and minimal engine flutter
- ◆ XTREME steering accepts wheels up to 16" diameter

Features:

- ◆ Smoothest and lowest effort mechanical helm in the market with simple, easy installation
- ◆ Quick connect feature for easy quick installation
- ◆ Same mounting pattern and bracket location as most current SeaStar Solutions rotary steering systems
- ◆ Smallest footprint possible for tight dash stations

Helms

Description	Seastar Part No	No
XTREME™ NFB Helm, Bezel & Hardware Kit	SHX7606	TXSHX7606
XTREME™ Tilt NFB Helm	SHX97606P	TXSHX97606P
XTREME™ Non-NFB Helm, Bezel & Hardware Kit	SHX7626P	TXSHX7626P
XTREME™ Tilt Non-NFB Helm	SHX97626P	TXSHX97626P
XTREME™ Bezel & Hardware Kit NFB	SBX76061	TXSBX76061
XTREME™ Bezel & Hardware Kit Non-NFB	SBX76261	TXSBX76261

Steering Cables

Length (ft)	Y (m)	Seastar Part No	No
10	3.03	SSCX6410P	TXSSCX6410P
11	3.33	SSCX6411P	TXSSCX6411P
12	3.64	SSCX6412P	TXSSCX6412P
13	3.93	SSCX6413P	TXSSCX6413P
14	4.24	SSCX6414P	TXSSCX6414P
15	4.55	SSCX6415P	TXSSCX6415P
16	4.85	SSCX6416P	TXSSCX6416P
17	5.15	SSCX6417P	TXSSCX6417P
18	5.45	SSCX6418P	TXSSCX6418P
19	5.76	SSCX6419P	TXSSCX6419P
20	6.06	SSCX6420P	TXSSCX6420P
21	6.36	SSCX6421P	TXSSCX6421P
22	6.67	SSCX6422P	TXSSCX6422P
23	6.97	SSCX6423P	TXSSCX6423P
24	7.27	SSCX6424P	TXSSCX6424P
25	7.58	SSCX6425P	TXSSCX6425P
26	7.92	SSCX6426P	TXSSCX6426P
27	8.23	SSCX6427P	TXSSCX6427P
28	8.53	SSCX6428P	TXSSCX6428P
29	8.84	SSCX6429P	TXSSCX6429P
30	9.14	SSCX6430P	TXSSCX6430P
32	9.76	SSCX6432P	TXSSCX6432P
34	10.36	SSCX6434P	TXSSCX6434P
36	10.97	SSCX6436P	TXSSCX6436P



The Rack rack+pinion system



- ◆ Traditional SeaStar Solutions mechanical steering is still the choice for sterndrives, inboards and other power assisted applications. It's just right for power steered boats in which No FeedBack™ systems are not required. The new Rack features the precision and comfort of four turns lock-to-lock with a cable and helm that install easily from behind the dash. In single cable configurations, this is the best 4-turn choice for power-steered boats

Applications:

- ◆ Virtually all power assisted sterndrive boats with wheels up to 16" diameter.
- ◆ Back Mount Rack replaces 1984-date SeaStar Solutions "The Rack" steering without dash modification. (Requires use of SSC134XX Back Mount Rack cable.)
- ◆ For single station use only. Components are available for dual cable systems, but we recommend No FeedBack steering for all dual cable steered, non-power assisted outboards and sterndrives.

Features:

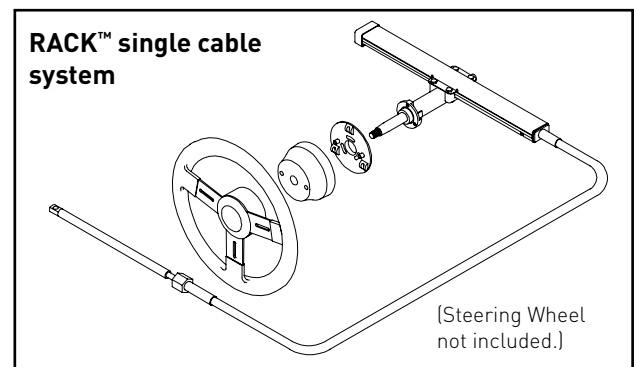
- ◆ Precise, easy 4 turns lock-to-lock
- ◆ Kits include: cable, helm, 90° bezel and hardware
- ◆ Standard 3/4" round tapered steering shaft
- ◆ Stainless steel cable output ends
- ◆ Fast, easy installation: back mount design allows quick placement in dash PLUS mounting hardware fits industry-standard SeaStar Solutions rack holes
- ◆ Meets ABYC standards
- ◆ Meets NMMA certification requirements
- ◆ Made, designed and assembled in the USA

Helms

Description	Seastar Part No	No
Back Mount Rack Helm (single/dual)	SH5210	TXSH5210
Back Mount Bezel (90°)	SB39526	TXSB39526
BM Rack Tilt Helm (single/dual)	SH91610	TXSH91610
Sport Tilt Mechanism	SH91800	TXSH91800
Sport Plus Tilt Mechanism	SH91900	TXSH91900
Dash Wedge Kit (20°)	SB27449	TXSB27449

Steering Cables

Length (ft)	Y (m)	Seastar Part No	No
8	2.43	SSC13408	TXSSC13408
10	3.03	SSC13410P	TXSSC13410
11	3.33	SSC13411P	TXSSC13411
12	3.64	SSC13412P	TXSSC13412
13	3.93	SSC13413P	TXSSC13413
14	4.24	SSC13414P	TXSSC13414
15	4.55	SSC13415P	TXSSC13415
16	4.85	SSC13416P	TXSSC13416
17	5.15	SSC13417P	TXSSC13417
18	5.45	SSC13418P	TXSSC13418
19	5.76	SSC13419P	TXSSC13419
20	6.06	SSC13420P	TXSSC13420
21	6.36	SSC13421P	TXSSC13421
22	6.67	SSC13422P	TXSSC13422
23	6.97	SSC13423P	TXSSC13423
24	7.27	SSC13424P	TXSSC13424
25	7.58	SSC13425P	TXSSC13425
26	7.92	SSC13426P	TXSSC13426
27	8.23	SSC13427P	TXSSC13427
28	8.53	SSC13428P	TXSSC13428
29	8.84	SSC13429P	TXSSC13429
30	9.14	SSC13430P	TXSSC13430
19	5.76	SSC13419P	TXSSC13419
20	6.06	SSC13420P	TXSSC13420



DISCLAIMER: This system is only recommended as replacement for the original system as installed by the boat manufacturer. SeaStar Solutions always recommends NFB helms for outboard applications. NFB helms lock out steering loads caused by propeller torque eliminating the driver fatigue normally experienced with a standard helm. Patented SeaStar Solutions steering helms are a drop in replacement for standard rack system.

NFB™ rack+pinion system



- ◆ The easy-to-sell, easy-to-install upgrade to the most popular Rack and Pinion steering system in boating. SeaStar Solutions has applied its patented No FeedBack technology to the incredible precision of a rack and pinion system, and engineered-in serious advances in steering comfort and control. And it's a drop-in replacement for SeaStar Solutions "The Rack"

Applications:

- ◆ NFB Rack single-cable systems are suitable for most single-station boats with a single non-power-assisted outboard engine up to V-6 and minimal engine flutter or steering instability. NFB Rack accepts wheels up to 16" diameter
- ◆ New Back Mount design means easy installation; helm & cable are installed as a unit from behind dash and replace standard SeaStar Solutions rack steering without dash modifications

Features:

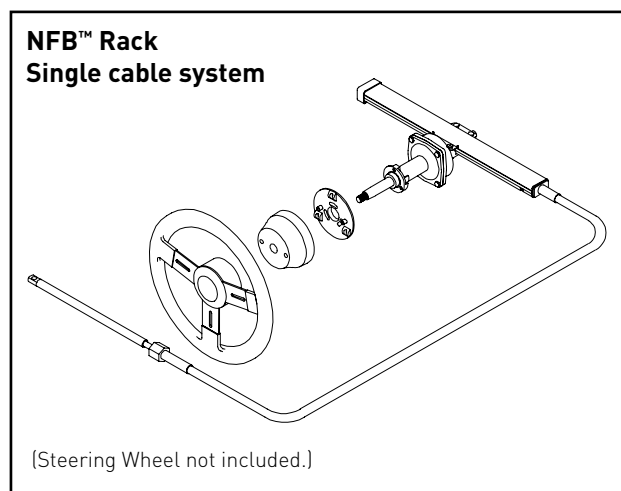
- ◆ Patented No FeedBack™ Steering mechanism
- ◆ Precise feel of 4 turns from lock-to-lock
- ◆ Minimal clutch free play
- ◆ Standard 3/4" round tapered steering shaft
- ◆ Stainless steel cable output ends
- ◆ Fast, easy installation; back mount design allows quick placement in dash PLUS mounting hardware fits industry-standard SeaStar Solutions rack holes
- ◆ Kits include: cable, helm, 90° bezel and hardware
- ◆ Meets ABYC standards
- ◆ Meets NMMA certification requirements
- ◆ Made, designed and assembled in the USA

Helms

Description	Seastar Part No	No
NFB Rack Helm (single/dual)	SH5230P	TXSH5230P
NFB Rack Tilt Helm (single/dual)	SH91630	TXSH91630
Sport Tilt Mechanism	SH91800	TXSH91800
Sport Plus Tilt Mechanism	SH91900	TXSH91900
Dash Wedge Kit (20°)	SB27449P	TXSB27449P

Steering Cables

Length (ft)	Y (m)	Seastar Part No	No
8	2.43	SSC13408	TXSSC13408
10	3.03	SSC13410P	TXSSC13410
11	3.33	SSC13411P	TXSSC13411
12	3.64	SSC13412P	TXSSC13412
13	3.93	SSC13413P	TXSSC13413
14	4.24	SSC13414P	TXSSC13414
15	4.55	SSC13415P	TXSSC13415
16	4.85	SSC13416P	TXSSC13416
17	5.15	SSC13417P	TXSSC13417
18	5.45	SSC13418P	TXSSC13418
19	5.76	SSC13419P	TXSSC13419
20	6.06	SSC13420P	TXSSC13420
21	6.36	SSC13421P	TXSSC13421
22	6.67	SSC13422P	TXSSC13422
23	6.97	SSC13423P	TXSSC13423
24	7.27	SSC13424P	TXSSC13424
25	7.58	SSC13425P	TXSSC13425
26	7.92	SSC13426P	TXSSC13426
27	8.23	SSC13427P	TXSSC13427
28	8.53	SSC13428P	TXSSC13428
29	8.84	SSC13429P	TXSSC13429
30	9.14	SSC13430P	TXSSC13430
19	5.76	SSC13419P	TXSSC13419
20	6.06	SSC13420P	TXSSC13420



xtreme Jet Boat mini rack system



- ◆ This new mechanical steering system is designed to deliver the smoothest and most efficient steering available for twin engine jet boats. Developed for twin jet engine boats, this new product combines the mechanical advantage of a four turn steering system with the responsiveness of a 1 1/2 turn system
- ◆ Featuring SeaStar Solutions pioneered Xtreme cable technology, the system has a small behind-dash profile and independently routed steering cables mounted to each bucket of the twin engine system. The robust, high performance armour wrapped cable core features splined ridges moulded on the core for minimal contact between the liner and core. This design allows the core to glide freely, for minimal lost motion and smoother, easier steering. The resulting reduction in cable friction not only improves performance, it keeps the entire steering system running smoother, longer. The new system is also easier to install than other jet boat steering systems. Ease of installation combined with decreased driver fatigue make Mini Rack unmatched by other mechanical jet steering systems
- ◆ Utilising proven rack and pinion gear design mated with Xtreme cable technology, the Mini-Rack has been rigorously validated through both laboratory and on-water testing. The system is fully approved and compliant with ABYC P-23 and NMMA
- ◆ This competitively priced system is available in both standard-helm and tilt-helm options

Applications:

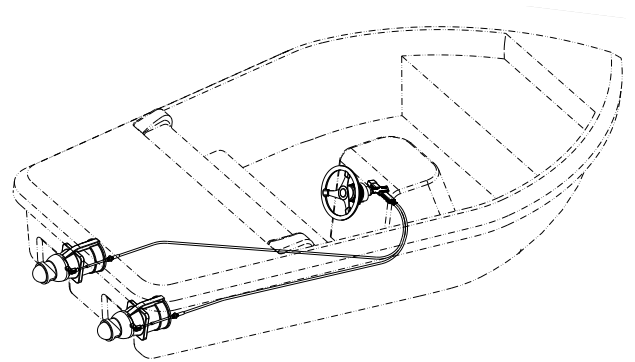
- ◆ SeaStar Solutions jet boat mini rack is recommended for inboard jet boats that meet ABYC P-23 specifications. Not for use with larger jet pumps using V8 engines or outboards using lower unit jet pumps. Minimum dash space is 19 1/2". Accepts steering wheels up to 16" diameter maximum

Features:

- ◆ 1 1/2 turns lock-to-lock travel with four turn mechanical advantage
- ◆ 90° dash mount (Tilt steering option available)
- ◆ Standard 3/4" round taper steering shaft, 3.5" cable travel
- ◆ Stainless steel cable output ends
- ◆ Fast, easy installation: back mount design allows quick placement in dash, PLUS mounting hardware fits industry-standard SeaStar Solutions rack mounting holes
- ◆ Meets ABYC standards
- ◆ Meets NMMA certification requirements

Steering Cables

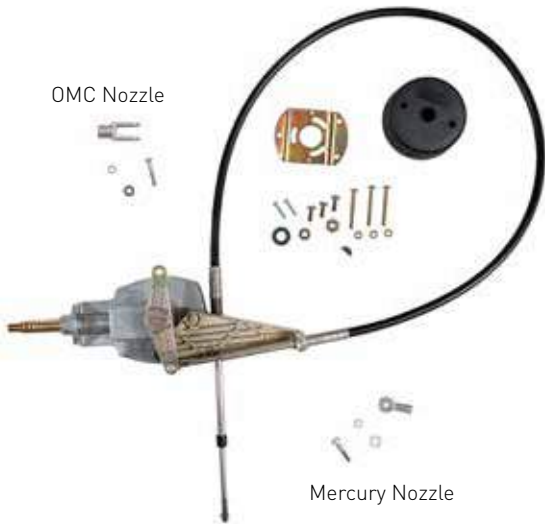
Length (ft)	Length (m)	Seastar Part No	No
8.5	2.60	SSC14768	TXSSC14768
12	3.64	SSC14812	TXSSC14812



Helms

Description	Seastar Part No	No
Tilt Steering Helm SJ340, 35°	SH91808P	TXSH91808P
Back Mount Rack Bezel	SB39526P	TXSB39526P
Sport Tilt Mechanism	SH91800P	TXSH91800P
Sport Plus Tilt Mechanism	SH91900P	TXSH91900P

JBS Jet Boat steering system



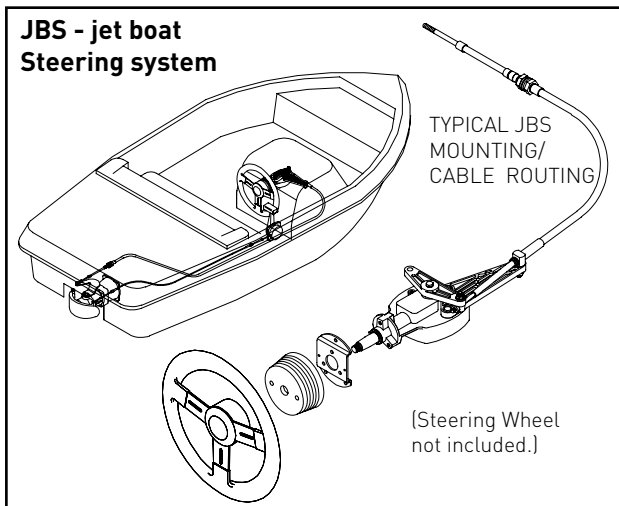
- ◆ Just for Jets! JBS™ by SeaStar Solutions means Jet Boat Steering! Designed exclusively for jet boats, JBS features a choice of two steering arcs, a special steering cable (not a control cable) plus an assortment of mounting options for virtually any boat! Nobody knows steering like SeaStar Solutions!

Applications:

- ◆ SeaStar Solutions JBS is recommended for use in all jet boat applications powered by Mercury® Sport Jet or OMC® Turbo Jet drives that meet ABYC P-23.

Features:

- ◆ Ultra-compact helm with stylish 4.4" bezel is easy to install and very rugged
- ◆ 135° or 270° turning arc lock-to-lock.
- ◆ Uses a special steering cable
- ◆ 90° dash mount. (Tilt Steering option available)
- ◆ 90° or 180° cable entry into helm allows alternate cable routing. (Looking at dash, options are 9:00, 12:00 or 3:00 routing positions)
- ◆ Built-in steering stops prevent additional cable stress in hard over positions
- ◆ Standard 3/4" round tapered steering shaft, 3.5" total allowable cable travel
- ◆ Mercury® & OMC® nozzle/gate connection kits
- ◆ Stainless steel cable output ends
- ◆ Meets ABYC/NMMA requirements
- ◆ Made, designed and assembled in the USA



Steering Cables

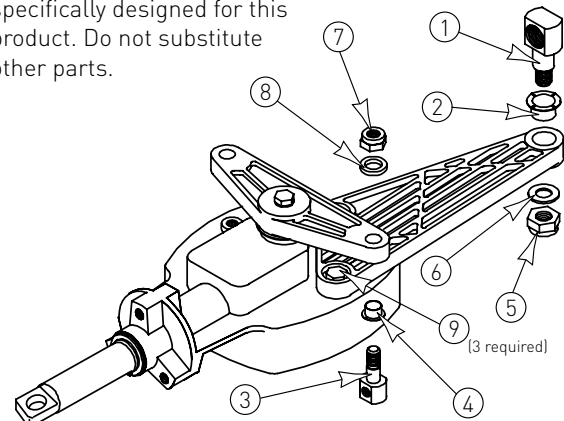
Length 'Y	Seastar	No
(ft)	Part No	
7	SSC21907P	TXSSC21907
8	SSC21908P	TXSSC21908
8.4	SSC219803	Q019964
10	SSC21910P	TXSSC21910
11	SSC21911P	TXSSC21911
12	SSC21912P	TXSSC21912
14	SSC21914P	TXSSC21914

Helms

Description	Seastar Part No	No
JBS Helm (135° turning arc)	SH5087	TXSH5087
JBS Helm (270° turning arc)	SH5088	TXSH5088
JBS Bezel & Mounting Hardware Kit	SB39452	TXSB39452
Nozzle Connection Kit (Mercury)	SA27591	TXSA27591
Nozzle Connection Kit (OMC)	SA27590	TXSA27590
JBS Tilt Steering Helm (270° arc) Sport Tilt Mechanism inc.	SH91692	TXSH91692
Hardware kit for 270° jet boat tilt helm	SH91441B	TXSH91411
Helm Parts (see diagram below)		
1. Pivot – cable conduit fitting	3941615	TX3941615
2. Bushing for cable conduit fitting pivot	3604811	TX3604811
3. Pivot – cable terminal end	3941117	TX3941117
4. Bushing for cable term. end pivot	3828412	TX3828412
Helm Cable Bracket - Kit	3962715	TX3962715
Contents:		
5. Locknut (3/8-24) – conduit fitting pivot		
6. Lock Washer for 3/8-24 Locknut		
7. Locknut (1/4-20) – cable terminal end pivot		
8. Lock Washer for 1/4-20 Locknut		
9. 3 x Hex Bolts (anti-vibratory patch) – bracket		

If you are replacing a jet boat steering cable, you must determine the part number of the existing steering cable.
*Note: SSC219XX replaces SSC229XX cables.

Use only genuine SeaStar Solutions replacement hardware specifically designed for this product. Do not substitute other parts.





C200 Replacement Rack Cables

- ◆ Rack replacement cable for the Morse® 300619 cable used on the Command 200 rack steering system
- ◆ This system used the following helms: 300252, 300853, 310992, 310993, 910994, 310995 these helms are now obsolete

Length (ft)	Length (m)	Seastar Part No	No
10	3.05	SSC13010P	TXSSC13010
12	3.66	SSC13012P	TXSSC13012
13	3.96	SSC13013P	TXSSC13013
14	4.27	SSC13014P	TXSSC13014
15	4.57	SSC13015P	TXSSC13015
16	4.88	SSC134016P	TXSSC13016
17	5.18	SSC13017P	TXSSC13017
18	5.49	SSC13018P	TXSSC13018
19	5.79	SSC13019P	TXSSC13019
20	6.10	SSC13020P	TXSSC13020
22	6.71	SSC13022P	TXSSC13022
23	7.01	SSC13023P	TXSSC13023
24	7.32	SSC13024P	TXSSC13024
25	7.62	SSC13025P	TXSSC13025
26	7.92	SSC13026P	TXSSC13026
27	8.23	SSC13027P	TXSSC13027
28	8.53	SSC13028P	TXSSC13028
29	8.84	SSC13029P	TXSSC13029
30	9.14	SSC13030P	TXSSC13030
32	9.75	SSC13032P	TXSSC13032
34	10.36	SSC13034P	TXSSC13034
36	10.97	SSC13036P	TXSSC13036

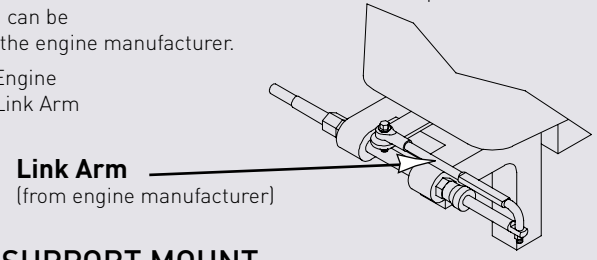
Steering Connection Kits

There are four basic types of connections for mechanical steering.

TILT TUBE MOUNT

This is the most popular steering cable-to-engine connection method for outboards with an ABYC standard tilt tube. This installation requires the use of a link arm which can be purchased from the engine manufacturer.

Parts required: Engine Manufacturer's Link Arm

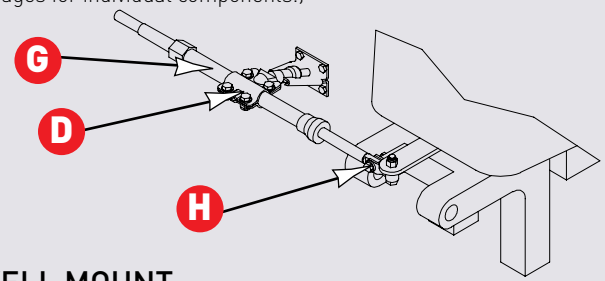


TRANSOM SUPPORT MOUNT

This cable connection is used for older model outboards without tilt tubes, low HP outboards or applications where transom design interferes with standard tilt tube mounting.

Parts required: D, G & H, Master Kits (Include D, G & H):
Stainless Steel Transom Mount Kit - SA27255P or
Corrosion Resistant Transom Mount Kit - SA27256P
(See following pages for individual components.)

*In salt or brackish water only use Stainless Steel kit

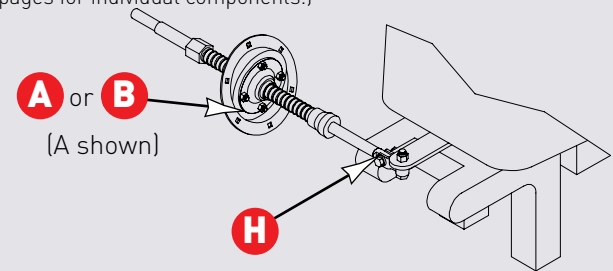


SPLASHWELL MOUNT

This cable connection is used on boats where standard tilt tube or transom support mounting methods are precluded by a splashwell box or lack of engine tilt tube. The mounting surface is usually near perpendicular to the transom and between 12 and 16" from the centre line of the boat and/or tiller (25-33" total splashwell width).

Parts required: B, H (90°) or A, H (15°)
Master Kits (Include H & A/B):
90° Splashwell Mount Kit - SA27254P or
15° Splashwell Mount Kit - SA27253P
(See following pages for individual components.)

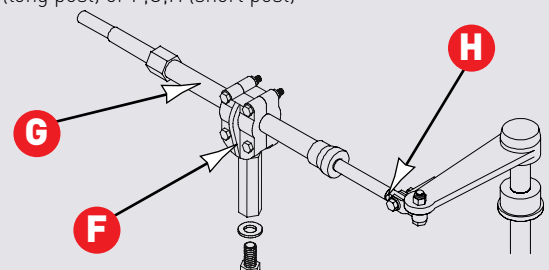
NOTE: Not for thru hull applications.



INBOARD STRINGER SUPPORT MOUNT

This connection is used on inboards and is attached to a stringer or suitable mounting bracket below deck. The cable is perpendicular to the centred tiller and in half stroke for proper operation. An additional bracket may be needed to support the ball post. Available in heavy duty "Ski Boat" versions, with either long (4.5") or short (2.25") post standoff to centre of support tube.

Parts required: E,G,H (long post) or F,G,H (short post)
(See following pages for individual components.)



Connection Kits *steering system*

NOTE: Parts shown on this page are available in kit form **ONLY**.



A Splashwell Mount Kit

- ◆ 15°
- ◆ Corrosion resistant

TXSA27253

**Not for through-transom use

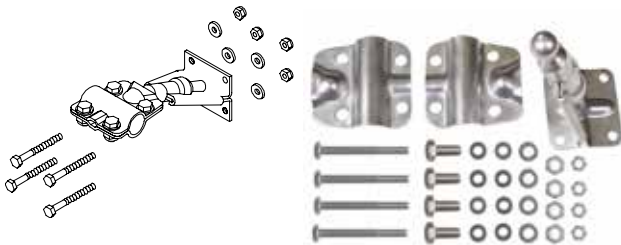


B Splashwell Mount Kit

- ◆ 90°
- ◆ Corrosion resistant

TXA27254

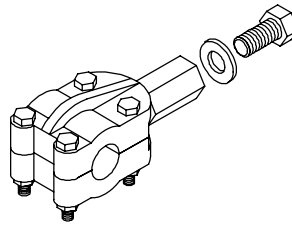
**Not for through-transom use



D Clamp Block - Outboard

- ◆ Corrosion resistant

TXSA27055



F Clamp Block - Ski Boat Inboard

- ◆ 2-1/4" stand-off
- ◆ (Heavy duty with black metal flake finish)

TXSA27578



G Support Tube

Aluminum - **TXSA27274**



H Clevis Kit

- ◆ Stainless steel

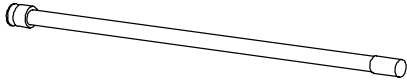
With short bolt - **TXSA27314**



I Rod End Kit (1/2-20 THD.)

Steel - **TXSA27276**

Connection Kits steering system



M Spent Travel Tubes for Rotary Helms

- ◆ NFB 4.2 / NFB SAFE-T II / HPS Rotary Helms

TXSA38603P



M Cable Guard

- ◆ For most outboards with tilt tube

TXSA39329

(Helps to keep the tilt tube clean.)



P Steering Wheel Hardware Kit

TXSA27454P (Old #2745417P)

(For All SeaStar Solutions Mechanical Helms with standard marine round 3/4" Tapered Shaft.)



TXSA27620

Q QC II Helm Converter

- ◆ For helms with threaded spigots

TXSA27620

(Upgrades older SeaStar Solutions rotary helms to Quick-Connect cable interface, allowing use of SSC62 QC cables.)



R Hitch Pin for Quick Connect Helm & QC II Helm Converter

TX001354

(Replacement hitch pin for all SeaStar Solutions helms with the Quick Connect cable attachment port and for all SeaStar Solutions SA27620P QC II Helm Converters.)



Support Tube

Aluminum - **TX064480**

Grooved Old Morse® Style

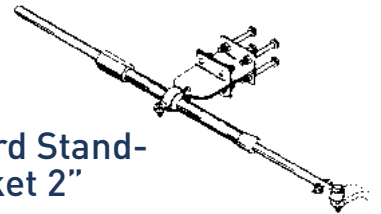


Hookup, Inboard Stand-off Tall Bracket

TX300616

Hookup, Inboard Stand-off Short Bracket 2"

TX300617



Bellows Tilt Helm Cover

- ◆ For New Sport Tilt Helms
- ◆ 6 per kit

TXHP6046

TFX806 (Volvo) Helm NEW QC Steering Cable Adaptor	SA88303	TXSA88303
Port Side Cable Mounting Kit for QC Helms	224598	TX224598
Morse D290 Helm NEW QC Steering Cable Adaptor	SA88304	TXSA88304
Long Transom Support Bracket	SA88310P	TXSA88310
Short Transom Support Bracket	SA88311P	TXSA88311
Link Arm for OMC/Mercury, 245x70mm	001265	TX001265
Link arm for OMC/Mercury	SA27361P	TXSA27361
Small splashwell kit	SA88312P	TXSA88312

Motor Splashwell Grommets/ Witches Hats – for steering cables



- ◆ A range of grommets in different designs
- ◆ Ideally suited for mounting on the transom to splash seal the exit of steering cable from transom

Small straight cone type for neat single cable applications

- ◆ Nylon glass reinforced ring with Dryflex SEPS gaiter
- ◆ Outer mounting ring diameter 79mm
- ◆ Inner diameter 51mm, height 30mm



AQM10104

Medium ridged cone type for neat single cable applications

- ◆ Nylon glass reinforced ring with Dryflex SEPS gaiter
- ◆ Outer mounting ring diameter 119mm
- ◆ Inner diameter 86mm, height 41mm



AQM10106

Large ridged cone type for neat single/dual cable applications

- ◆ Nylon glass reinforced ring with Dryflex SEPS gaiter
- ◆ Outer mounting ring diameter 139mm
- ◆ Inner diameter 103mm, height 90mm



AQM10109

Motor Splashwell Grommets/ Cable Outlets - for multiple cables



- ◆ A range of grommets / witches hats designed for use with multiple cables, wires etc
- ◆ Ideally suited for mounting and routing multiple lines to outboards

Small flat type with 3 nipples

- ◆ Nylon glass reinforced ring with Dryflex SEPS gaiter
- ◆ Outer mounting ring diameter 79mm
- ◆ Inner diameter 51mm, height 10mm



AQM10103

Medium drawstring type with cable tie



- ◆ Nylon glass reinforced ring with Dryflex SEPS gaiter
- ◆ Outer mounting ring diameter 107mm
- ◆ Inner diameter 73mm



AQM10120

Large drawstring type with cable tie

- ◆ Made from flexible PVC – with outer nylon attachment ring
- ◆ Outer mounting ring diameter 120mm
- ◆ Draw sleeve diameter 55mm
- ◆ Height 72mm



Q004245

Large drawstring type with cable tie

- ◆ Made from heavy duty flexible PVC – does not need outer ring
- ◆ Outer mounting ring diameter 145mm
- ◆ Inner diameter 115mm
- ◆ Draw sleeve diameter 75mm
- ◆ 8 mounting holes pre punched in mounting flange



Q039000

Motor Splashwell Conduit System



- ◆ Designed for use as a 3 part system , this enables really neat installations to be made and allows cables, wires and hoses to be hidden from sight in a really neat convoluted tube. This tube allows flex and free movement as the outboard is steered. Tube is designed to screw into the transom socket and then is cut to length with the rubber reducer slipped on the end of the tube
- ◆ Supplied in individual parts and as a kit



Transom socket for screwing tube to the transom. Black - **AQM10130**



Convoluted tube for steering, control, wires etc. Black 15 metre reel - **AQM10135**



Tube end fitting for terminating cables at outboard – push on in Dryflex SEPS material Black - **AQM10140**

Complete Splashwell Conduit Kit

- ◆ Includes
- ◆ 1 x AQM10130 Transom Socket
- ◆ 1 metre of AQM10135 Convoluted tube
- ◆ 1 x AQM10140 tube end fitting



AQM10141

Steering Wheels



Description	Dia: mm	Finish	Part No
Como steering wheel	320	Black	Q070321
Como steering wheel	320	White	Q070328
Como steering wheel	360	Black	Q070351
Como steering wheel	360	White	Q070358



Description	Dia: mm	Finish	Part No
Stealth steering wheel, including centre cover	356	Black	Q059401



Description	Dia: mm	Finish	Part No
Champion steering wheel including centre cap	343	Black	Q059291



Description	Dia: mm	Finish	Part No
Stealth steering wheel including centre cap	356	Black	Q059491



Description	Dia: mm	Finish	Part No
Champion steering wheel, including centre cover	343	Black	Q059201





Description	Dia: mm	Finish	Part No
Garda Steering wheel, hard grip	335	Black	Q080041
Garda steering wheel, hard grip	335	White	Q080048



Description	Dia: mm	Finish	Part No
Sunbird steering wheel	350	White	Q093050
Sunbird steering wheel, soft grip	350	Black	Q093010



Description	Dia: mm	Finish	Part No
Falcon Sports wheel	330	Black	Q006514



Description	Dia: mm	Finish	Part No
Steering wheel, 5 x stainless steel spokes	350	Black	Q002144
Steering wheel, 5 x stainless steel spokes	350	Grey	Q002142

Pro Trim steering wheel controls



- ◆ Trim control the way it's meant to be... at your fingertips. With Pro Trim from SeaStar Solutions, you can keep both hands on the wheel and concentrate on your driving. Its clean, modern design looks at home in any cockpit and there are no cords to tangle around the steering wheel, a big plus for boats with hydraulic steering! The Pro Trim single-switch controls one function (engine trim or jackplate). Pro Trim Dual controls two functions (trim and jackplate)

Application:

- ◆ Engine trim control — single or dual function. Control any one of these functions: Engine Trim/Tilt, Jackplate, Horn, or any two with Pro Trim Dual! Pro Trim is a "bolt-on" for most SeaStar Solutions steering systems and is attractively packaged, with everything you need. Also suitable for use with Command 200 rack and pinion steering, and it's the only trim switch recommended for SeaStar® and SeaStar PRO® hydraulic steering systems!

Features:

- ◆ Momentary-on switch is off in its centre "at-rest" position; actuates in up and down directions
- ◆ UV-stabilised ABS switch cover blends with dash
- ◆ Strong stainless steel bracket fits most steering systems and adjusts for regular or deep-dish wheels
- ◆ Heavy duty marine wiring harness, colour-coded to match existing trim and jackplate wiring
- ◆ Durable Mylar® decals allow labelling of switch functions
- ◆ All mounting hardware and complete, user-friendly instructions included
- ◆ 15 Amp switch capable of handling most tilt and trim applications

Pro Trim Fits:

- ◆ Any boat using one of the following SeaStar Solutions steering systems:
- ◆ Safe-T mechanical steering
- ◆ Rack & Pinion mechanical steering
- ◆ NFB No FeedBack steering (all helms)
- ◆ Baystar (HH4314-3)
- ◆ SeaStar hydraulic steering 1991 to date
- ◆ SeaStar PRO hydraulic steering
- ◆ Command 200 Rack & Pinion

Description	Seastar Part No	No
Pro Trim Single Function	PT1000-1P	TXPT1000
Pro Trim Dual Function	PT2000-1P	TXPT2000



MECHANICAL STEERING IDENTIFICATION GUIDE

ORIGINAL SYSTEM NAME (VERSION)	DATES USED & CABLE COLOUR(S)	REPLACEMENT (NON-POWER-ASSIST OUTBOARDS & I/OS)	REPLACEMENT (POWER-ASSIST & SMALL INBOARDS)
Teleflex® and Morse® Traditional-Technology ROTARY Steering Systems To SeaStar Solutions			
Big-T® (older) SSC72XX/SC69XX Cable	1963-1972 White, Blue or Black	Big-T (components) (Page 24)	SeaStar (components)
Big-T® (current)	1972-date White, Blue or Black	Big-T (components) (Page 24)	SeaStar (components)
Easy-T SC89XX Cable	1968-1972 Silver	Safe-T II (SS132XX)† or NFB 4.2 (SS147XX) XTREME (SSX176XX)	HPS Rotary (components) or Safe-T QC (SS137XX)
HPS Rotary SC63XX Cable	1999-date Black	(HPS not recommended for non-power-assist steering)	HPS Rotary (components)
Midi-T** SC75XX Cable	1969-1972 Green	Safe-T II (SS132XX)† or NFB 4.2 (SS147XX) XTREME (SSX176XX)	HPS Rotary (components) or Safe-T QC (SS137XX)
Mini-T SC74XX Cable	1969-1972 Black	Safe-T II (SS132XX)† or NFB 4.2 (SS147XX) XTREME (SSX176XX)	HPS Rotary (components) or Safe-T QC (SS137XX)
Morse® Command 2 Rotary 300622/300623/300624	OBSOLETE Red	Safe-T II (SS132XX)† or NFB 4.2 (SS147XX) XTREME (SSX176XX)	HPS Rotary (components) or Big-T (components)
Morse® Command 290 304411-00-XXX.0	TO DATE	Safe-T II (SS132XX)† or NFB 4.2 (SS147XX) XTREME (SSX176XX)	HPS Rotary (components) or Safe-T QC (SS137XX)
Morse® Command 250 300962/312020	Red or Black OBSOLETE	Safe-T II (SS132XX)† or NFB 4.2 (SS147XX) XTREME (SSX176XX)	HPS Rotary (components) or Safe-T QC (SS137XX)
Morse® Command 290 Dual Cable Systems (2) 304411 Cables	TO 2000 Red or Black	NFB 4.2 NFB Dual † or SeaStar (components)	4.2 Non-NFB (components)
	SeaStar Solutions Direct	Replacement Cable for these systems is SSC290XX	
Safe-T® (Version 1) SC89XX Cable	1968-1972 White or Black	Safe-T II (SS132XX)† or NFB 4.2 (SS147XX) XTREME (SSX176XX)	HPS Rotary (components) or Safe-T QC (SS137XX)
Safe-T® "TS" (Version 2)*	1972-date White or Black	Safe-T II (SS132XX)† or NFB 4.2 (SS147XX) XTREME (SSX176XX)	HPS Rotary (components) or Safe-T QC (SS137XX) Cable Adapter Required
SC69XX/SSC72XX	SeaStar Solutions Direct	Replacement Cable for these systems is SSC62XX	
Safe-T® QC (Quick Connect)	1990-1996 Black	Safe-T II (SS132XX)† or NFB 4.2 (SS147XX) XTREME (SSX176XX)	HPS Rotary (components) or Safe-T QC (SS137XX)
SSC62XX	SeaStar Solutions Direct	Replacement Cable for these systems is SSC62XX	
Safe-T® QC (Quick Connect)*	1996-date Black	Safe-T II (SS132XX)† or NFB 4.2 (SS147XX) XTREME (SSX176XX)	HPS Rotary (components) or Safe-T QC (SS137XX)
SSC62XX	SeaStar Solutions Direct	Replacement Cable for these systems is SSC62XX	
Safe-T® Dual Cable systems SSC62XX	1975-date White or Black	NFB 4.2 Dual Cable or SeaStar (components)	4.2 Non-NFB (components)
	SeaStar Solutions Direct	Replacement Cable for these systems is SSC62XX	

* ** † For footnotes indicated by these symbols, please See Page 40.

MECHANICAL STEERING IDENTIFICATION GUIDE

ORIGINAL SYSTEM NAME (VERSION)	DATES USED & CABLE COLOUR(S)	REPLACEMENT (NON-POWER-ASSIST OUTBOARDS & I/OS)	REPLACEMENT (POWER-ASSIST & SMALL INBOARDS)
Teleflex® NFB™ NO-FEEDBACK™ & Morse® NFS™ ROTARY Steering Systems To SeaStar Solutions			
Morse® NFS 304415 Cable	To 2001 Red or Black	NFB 4.2 (SS147XX) XTREME (SSX176XX)	(NFB not for power steering or inboard)
Morse® NFS Dual Cable (2) 304415 Cable	To 2001 Red or Black	NFB 4.2 Dual Cable (Components)	(NFB not for power steering or inboard)
NFB 4.2 SSC62XX Cable SeaStar direct Replacement Cable for these systems is SSC62XX	1990-date Black	NFB 4.2 (SS147XX) XTREME (SSX176XX)	(NFB not for power steering or inboard)
NFB 4.2 Dual Cable (2) SSC62XX Cable SeaStar direct Replacement Cable for these systems is SSC62XX	1990-date Black	NFB 4.2 Dual Cable (SS148XX) XTREME (SSX176XX)	(NFB not for power steering or inboard)
NFB Safe-T II SSC62XX Cable SeaStar Solutions direct Replacement Cable for these systems is SSC62XX	1996-date Black	Sate-T II (SS132XX)	(NFB not for power steering or inboard)
Morse® Command 200 Rack 300619XX	To 2001 Red or Black SeaStar Solutions direct Replacement Cable for these systems is SSC130XX	NFB Rack (SS151XX)	HPS Rack (components) or The Rack (SS141XX)
Morse® Rack Dual Cable (2) 300619XX	To 2001 Red or Black SeaStar Solutions direct Replacement Cable for these systems is SSC130XX	NFB Pro Rack (SS152XX)	The Rack dual (components)
TR211 (Rack & Pinion) SC98XX Cable	1973-1975 Blue	NFB Rack (SS151XX)	HPS Rack (components) or The Rack (SS141XX)
TR188 (Rack & Pinion) SC54XX Cable	1975-1978 Brown	NFB Rack (SS151XX)	HPS Rack (components) or The Rack (SS141XX)
TR188 (Rack & Pinion) SC105XX Cable	1978-1986 Black	NFB Rack (SS151XX)	HPS Rack (components) or The Rack (SS141XX)
“The Rack” (Rack & Pinion) SSC124XX Cable	1984-1996 Black SeaStar Solutions direct Replacement Cable for these systems is SSC124XX	NFB Rack (SS151XX)	HPS Rack (components) or The Rack (SS141XX)
“The Rack” (Back Mount) SSC134XX Cable	1996-date Black SeaStar Solutions direct Replacement Cable for these systems is SSC134XX/SSC154XX	NFB Rack (SS151XX)	HPS Rack (components) or The Rack (SS141XX)
“The Rack” Dual Cable System (2) SSC124XX Cable - SeaStar Solutions direct Replacement Cable for these systems is SSC124XX	To 1996 Black	NFB Pro Rack (SS152XX)	The Rack dual (components)
“The Rack” Dual (Back Mount) 2 Cable SSC135XX Cable	1996-date Black SeaStar Solutions direct Replacement Cable for these systems is SSC135XX	NFB Pro Rack (SS152XX)	The Rack dual (components)

* ** † For footnotes indicated by these symbols, please See Page 40.

NOTE: Morse® Rack Cable 300620XX cannot be replaced by SSC130XX.

MECHANICAL STEERING IDENTIFICATION GUIDE

ORIGINAL SYSTEM NAME (VERSION)	DATES USED & CABLE COLOUR(S)	REPLACEMENT (NON-POWER-ASSIST OUTBOARDS & I/OS)	REPLACEMENT (POWER-ASSIST & SMALL INBOARDS)
Teleflex® NFB™ NO-FEEDBACK™ RACK & PINION Steering Systems To SeaStar Solutions			
NFB Rack (Back Mount)* SSC134XX Cable	1996-date Black SeaStar Solutions direct	NFB Rack (SS151XX) Replacement Cable for these systems is SSC134XX/SSC154XX	(NFB not for power steering or Inboard)
NFB Pro Rack (Back Mount)* Dual Cable System SSC135XX	1996-up Black SeaStar Solutions Direct	NFB Pro Rack (SS152XX) Replacement Cable for these systems is SSC135XX	(NFB not for power steering or Inboard)
Competitive Brand ROTARY Steering Systems To SeaStar Solutions			
ACCO® Steermaster® MK II 56-8226 (Morse® ARC 305396)	Obsolete	Big-T (components)	Big-T (components) (Page 24)
ACCO Steermaster® MK III Mercury® Ride Guide®	Obsolete Obsolete	Big-T (components) Big-T (components)	Big-T (components) Big-T (components)
Morse® Command 290® Morse® Command 290 Cable Only		Safe-T II NFB (SS132XX)† or NFB 4.2 (SS147XX)† SSC290XX	HPS or Safe-T QC (SS137XX) SSC290XX
Morse® TRC Cable 304415	Obsolete	SSC62XX (Big-T/Safe-T TS)	SSC62XX (Big-T/Safe-T TS)
OMC® (not Tru-Course)	Obsolete	Safe-T II (SS132)† or NFB 4.2 (SS147XX)†	HPS or Safe-T QC (SS137XX)
OMC Tru-Course® Drumstyle 2 Cables	Obsolete	SeaStar	SeaStar
OMC Thru-Transom I/O	Obsolete	N/A	N/A
U-Flex® OLD style Cable M47 Cable	TO DATE	SS132XX or SS147XX XTREME (SSX176XX)	SS137XX HPS Big-T (components)
U-Flex NEW style Cable M66 Cable	TO DATE	SS132XX or SS147XX XTREME (SSX176XX)	SS137XX HPS Big-T (components)
U-Flex Single Cable M47/M66 Cable	TO DATE	Safe-T II (SS132XX/SS147XX)† XTREME (SSX176XX)	HPS or Safe-T QC (SS137XX)
U-Flex Tilt Single Cable M47/M66 Cable	TO DATE	Safe-T II Tilt†/SSX177 XTREME Tilt (components)	HPS or Safe-T QC Tilt (components)
U-Flex Dual Cable M47/M66 Cable	TO DATE	SeaStar 4.2 NFB (components)	4.2 Non NFB (components)
U-Flex Tilt Dual Cable M47/M66 Cable	TO DATE	NFB 4.2 Dual Tilt† (components)	4.2 Non NFB Dual Tilt (components)
U-Flex NR Single Cable M47/M66 Cable	TO DATE	Safe-T II (SS132XX)† or NFB 4.2 (SS147XX)† XTREME (SSX176XX)	(NFB not for power steering)
U-Flex NR Tilt Single Cable M47/M66 Cable	TO DATE	Safe-T II Tilt (components)† or NFB 4.2 Tilt (Components)†	(NFB not for power steering)
U-Flex NR Dual Cable M47/M66 Cable	TO DATE	NFB 4.2 Dual Cable (Components)†	(NFB not for power steering)
U-Flex NR Tilt Dual Cable M47/M66 Cable	TO DATE	NFB 4.2 Dual Cable Tilt† (components)	(NFB not for power steering)

* ** † For footnotes indicated by these symbols, please See Page 40.



MECHANICAL STEERING IDENTIFICATION GUIDE

ORIGINAL SYSTEM NAME (VERSION)	DATES USED & CABLE COLOUR(S)	REPLACEMENT (NON-POWER-ASSIST OUTBOARDS & I/OS)	REPLACEMENT (POWER-ASSIST & SMALL INBOARDS)
Competitive Brand Rack & Pinion Steering Systems To SeaStar Solutions			
ACCO 58-8724 (Morse® ARC Cable 305396)	Obsolete	NFB Rack (SS151XX)† No Replacement Cable	HPS Rack (components) or The Rack (SS141XX)
DetMar® (Detroit Marine) Cables 4-200/4-400/4-600/DMS500 (Morse® DRC 305013)	Obsolete	NFB Rack (SS151XX)† No Replacement Cable	HPS Rack (components) or The Rack (SS141XX)
Mercury Ride Guide and Quicksilver®	Obsolete	NFB Rack (SS151XX)† No Replacement Cable	HPS Rack (components) or The Rack (SS141XX)
Morse® Command 200 Cable Only 300619-XXX		SSC130XX	SSC130XX
Morse® Command 401® 47209 Cable	Obsolete	NFB Rack (SS151XX)† No Replacement Cable	HPS Rack or The Rack (SS141XX)
OMC Rack & Pinion 1719/2805/200	Obsolete	NFB Rack (SS151XX)† (NOTE: Thru-transom cable not available)	HPS Rack or The Rack (SS141XX) (NOTE: Thru-transom cable not available)
U-Flex old style cable M86	TO DATE	SS151XX Single/SS152XX Dual	SS141XX
U-Flex Rack & Pinion	TO DATE	NFB Rack (SS151XX)†	HPS Rack (components) or The Rack (SS141XX)

FOOTNOTES TO PREVIOUS CHARTS

Mechanical Steering Identification - SeaStar Solutions & Morse® Brands

- * Since this may be relatively new, replacement of entire system may not be necessary. Please consult Bainbridge to determine which part of the system may need to be replaced. If engine is power-assisted, NFB steering cannot be used. Note that only difference between 1990-1996 and 1996-date Safe-T QC helms is shape of the helm housing castings.
- ** Slight dash modification required for installation of recommended new helm. If engine is power-assisted, NFB steering cannot be used.
- † Safe-T II is for engines up to and including V-4's. For manually steered outboards larger than V-4, use NFB 4.2 or XTREME NFB.

KEY TO CHART HEADINGS: Rotary Steering has a rounded diecast helm (steering gear case) behind dash; Rack & Pinion Steering has a long metal tubular rack housing behind dash; Hydraulic Steering has 2 or 3 hoses (or tubing sections) attached to helm behind dash.

Mechanical Steering Identification Competitive Brands

- * Cable only can be replaced if SeaStar Solutions helm is present.
- ** Some dashboard modifications required to install SeaStar Solutions helm.
- † No FeedBack steering is recommended for non-power-assisted engines only. Safe-T II is for engines up to and including V-4's. For manually steered outboards larger than V-4, use NFB 4.2 (single or dual cable) or NFB Rack (single or dual cable). If engine is power-assisted, NFB steering cannot be used.

NOTE: When a Rack system is being replaced by a Rotary system (or vice-versa), you must measure for the replacement system using measuring instructions in this catalogue. See steering cable measurement section for information on how to measure for replacement cables. The Morse® (P/N 312020) and U-Flex (P/N M66) "universal" replacement cables for rotary steering systems are not recommended for use with SeaStar Solutions helms. In accordance with ABYC recommended practices, SeaStar Solutions recommends that engine maker connection kits be used with all outboard motors.

Frequently Asked Questions

Are replacement gears available for SeaStar Solutions helms?

No. SeaStar Solutions does not offer repair parts for any steering helms or cables. All helms and cables must be replaced as units. If the helm in question is within the 2-year warranty period, Bainbridge will authorise a free replacement helm (not including labour). Attempting to repair a helm will void the warranty and can lead to steering failure, which may result in personal injury and property damage.

How do I know which length steering cable I need?

The cable part number and length can usually be found about 2 feet from one end of the cable, stamped into the plastic conduit (exterior jacket or casing). If you can't locate/read it, proceed to step a:

a. Is the cable you are replacing rotary?

Rotary is a spiral wrapped black core wire that sticks out at helm end of cable. The rack and pinion cable has long metal housing with rack [flat] gear inside (under the dash).

Measure the cable's plastic jacket (casing) in inches. If rotary, add 18" and round up to the next foot. If rack & pinion, add 30" and round up to the next foot.

Order that length cable.

b. Are you doing a first-time steering cable installation?

Measure cable routing path in boat as follows:

A = Centre line of wheel to gunwale (inches),

B = Dash to transom (inches),

C = Gunwale to cable connection at centred tiller (inches).

For Tilt Tube Mounting, add A, B & C + 6", and round up to the next foot. Order that length cable. For Transom/Splashwell/Stringer Support Mounting, add A, B & C, then subtract 6" and round up to the next foot. Order that length cable.

What do I need in order to add another steering station to my boat?

SeaStar Solutions Big-T is the only mechanical steering system with a version designed for dual station boats. This specialised product cannot be added on to any existing steering system.

SeaStar hydraulic steering is the preferred choice for dual station boats.

NOTE: Please see the Big-T Dual Station product pages, earlier in this catalogue. The cable for this system is special-order and non-returnable, so please take extra care when measuring.

I'm replacing a SeaStar Solutions rack & pinion cable in a 1985 boat. I ordered an TXSSC134 "The Rack" cable and it won't connect to the helm. What's the problem?

Note the old cable's rack housing colour. It is probably black or grey, meaning that the old cable is "The Rack (older) model (1984-2001). If the rack housing is green, it may be a TR188 model (1975-86). This is a SeaStar Solutions system, but the helm will not bolt up to the new TXSSC134XX cable. Replace the helm and bezel kit with 1996-date "The Rack" versions.

Note: Only the replacement cables for 1984-1995 SeaStar Solutions Rack systems are available (part number TXSSC124XX).

I need a link arm to connect the steering cable output ram to the tiller of a outboard. Can I get the link arm from SeaStar Solutions?

No. You should obtain this link arm from the engine maker. Link arms vary by engine, and the engine maker offers the correct link arm for your particular brand and model.

I just bought a steering kit and I would like to add a friction screw to the system, but none was included with the kit. What should I do?

Friction adjustment is not a standard item in steering kits and is not available for Rotary Systems. If you have installed a non-tilt "Back Mount Rack Helm," order Friction Kit part number TXSA39231.

NOTE: If you have any NFB system (Rack or Rotary), a friction adjustment device is not required nor recommended.

I just bought a steering kit and I would like the steering shaft to be at an angle to the dash. The bezel kit included in the steering kit only allows a 90° mount. Which parts do I need?

The standard Bezel (mount) Kit included with the steering system allows the helm to be installed at 90° (perpendicular) to the surface of the dash. Optional Bezel Kits for Rotary Steering systems provide the ability to mount the helm at 20° from perpendicular. The Rack and Pinion system uses "Wedge Kits" that provide 10° and 20° angles.

For Rotary Steering (Safe-T QC, NFB Safe-T II or 4.2), order 20° Bezel Kit part number TXSB27483.

For Rack and Pinion Steering (Infb, Non-nfb, and Pro Rack), order: 10° Wedge Kit part number TXSB27448 or 20° Wedge Kit part number TXSB27449.



I need to replace the steering system on my boat, but I looked at the back of the helm and saw it was not made by SeaStar Solutions. I want to install a SeaStar Solutions system, but how do I know which one I should get?

Generally, replace rotary with rotary, rack & pinion with rack & pinion and hydraulic with hydraulic. Rotary helm gearboxes are round in shape. Rack & pinion helms are tubular and connect to a long, thin metal rack housing. The following is a brief cross reference for the most popular non-SeaStar Solutions systems:

- Morse® Command 290™ Rotary: use SeaStar Solutions HPS or Safe-T QC for power-assisted or NFB 4.2 Rotary for non-power-assisted. (Some Morse® Command 290 products are still available.)
- Morse® Command 200™ Rack: use SeaStar Solutions Back Mount Rack for power-assisted or NFB Rack for non-power-assisted and The Pro Rack for dual cable boats.
- Morse® Command 2™ Rotary: use SeaStar Solutions HPS or Big-T for power-assisted or NFB Safe-T II or 4.2 for non-power-assisted.

A comprehensive steering interchange listing (with illustrations of helms and cables) for SeaStar Solutions, Morse® and other brands begins at the start of this catalogue.

What size steering wheel should I use?

SeaStar Solutions does not make specific recommendations regarding steering wheel size, except that the wheel be at or below the maximum wheel diameter noted for each type of helm and that the wheel is sized/located so it can be rotated freely by the boat operator through the entire steering arc with no obstruction or hindrance to movement. Wheels in the 14" diameter range are used widely with mechanical steering systems. Any size wheel may be used so long as the helm's recommended maximum wheel diameter is not exceeded and steering effort is acceptable.

An "equidistant-spoke" steering wheel is suggested for hydraulic steering systems since a certain amount of oil bypass in the helm will gradually result in the wheel becoming "not centred" when the engine/drive/rudder is in the straight ahead position. Again, please note the maximum wheel diameter recommended for the helm.

NOTE: For mechanical steering, please note the maximum wheel diameter listed for each product earlier in Mechanical Steering section of this catalogue. For Hydraulic systems, maximum wheel diameter is listed for each helm in the SeaStar/BayStar/section of this catalogue.

I just bought a NFB (No-FeedBack) helm and cannot turn the shaft by hand. Why?

Without the steering wheel on the shaft, NFB helms are very difficult to turn by hand. This reason is the No-FeedBack clutch is always on "standby" to grip the helm shaft and hold it steady against torque feedback from the engine (which can make the steering wheel turn on non-No-Feedback systems). Once the helm is mounted in the dash and the steering wheel is properly attached, you will be able to turn the shaft easily. Follow the installation instructions completely.

I want to install an autopilot on a boat with cable steering. What do I need?

SeaStar Solutions does not make adapters or interface parts to connect an autopilot to mechanical cable steering. This is left to the autopilot manufacturers. We do however strongly recommend that if you are installing an autopilot, upgrade your mechanical steering to a SeaStar hydraulic system. SeaStar is designed to interface with most autopilots and will give you superior all around performance. NOTE: Autopilots cannot be used with any type of mechanical NFB (No FeedBack) steering. In that case, you MUST upgrade to SeaStar.

How do I remove the steering cable from the engine's tilt tube?

Disconnect the link arm that attaches the output end of the cable (telescopic ram) to the tiller arm of the engine. Unscrew the large nut that attaches the cable to the tilt tube (support tube). If the cable was greased regularly, it should slide out through the tube. If the cable does not easily slide out, spray inside the tube with liberal amounts of penetrating oil. With care, use a small hammer and block of wood to tap the cable out (after the attachment nut has been removed from the tilt tube). Severe blows can damage not only the cable but the engine's tilt tube and other areas. This process requires care and patience. Do not try to drive the cable out by turning the steering wheel — this can damage the helm.

How do I measure steering cables for a vessel with two steering stations?

The only cable steering system available for dual station boats is the SeaStar Solutions Big-T. One cable with two outer jacket (casing) sections is used to make the run from the engine/rudder to the lower station helm and then to the upper station helm. NOTE: The cable for this system is special-order and non-returnable, so please take extra care when measuring.

The steering cable's "core wire" is broken. How can this be repaired?

Steering cables cannot be repaired.

If a steering cable inner core wire separates or breaks within the steering helm (gear box), the steering cable must be replaced with the correct one for the helm.

The helm may need to be replaced as well. Cable breakage within the helm may have caused damage to the gears. A helm cannot be repaired and must be replaced as a unit.

If the correct replacement cable and/or helm is no longer available, replace the helm, bezel and cable with an appropriate SeaStar Solutions steering kit.

My steering cable is stiff/stuck and won't move properly when I turn the wheel. What should I do?

The first step is to isolate the problem component(s) of the steering system. Several factors can lead to what feels like a "stiff" or "frozen" steering cable. If you do not have installation instructions for the system's cable and helm, contact Bainbridge (or other manufacturer, if appropriate) to obtain them. Also, have your engine and boat owner's manuals handy.

The following troubleshooting sequence is suggested, during which the steering wheel should remain on the helm.

a. Is the steering cable in fact "stiff/frozen"?

Carefully disconnect the steering cable from the link arm, tiller arm or rudder post arm. (Refer to installation instructions for that steering system and boat/engine owner's manual.) From the helm, attempt to turn the steering wheel in both directions by hand to ensure that it moves freely through its prescribed steering arc. Also, check the hardware that connected the cable to the engine/drive/rudder for signs of binding, excessive free play, corrosion, deterioration and/or incorrect assembly.

If everything does move freely and is in good working order, go to step c.

If the steering is still hard, continue to step b.

Steering cables cannot be repaired. If the steering cable is deteriorated, does not move or operates in any manner other than correctly, replace it with the correct one for the helm. If the cable for your helm is no longer available, replace the helm, bezel and cable with an appropriate SeaStar Solutions steering kit.

If any cable connection part is deteriorated, too stiff or too loose, replace it with the correct type of component. SeaStar Solutions offers most types of cable connection hardware, except link arms which should be obtained from the engine manufacturer. Note that locking fasteners are used on connection components. Do not substitute non-locking fasteners as this may lead to steering failure.

Measure the cable's plastic jacket (casing) in inches. If rotary, add 18" and round up to the next foot. If rack & pinion, add 30" and round up to the next foot.

Order that length cable.

b. Is the helm "stiff/frozen"?

With the steering cable disconnected from the link arm, tiller arm or rudder post arm, disconnect the cable from the helm. (Refer to installation instructions for that steering system at www.seastarsolutions.com.)

From the helm, attempt to turn the steering wheel in both directions by hand to ensure that it moves freely through its prescribed steering arc.

If everything does move freely and is in good working order, go to step c.

If the wheel does not move, replace the helm and bezel kit. If the helm and bezel are no longer available, replace helm, bezel and cable with an appropriate SeaStar Solutions steering kit.

c. Does the engine/drive/rudder pivot freely through its entire arc from port to starboard?

With the steering cable disconnected from the link arm, tiller arm or rudder post arm, move the engine/drive/rudder back and forth by hand to ensure that it moves freely through its prescribed steering arc.

If it does not move or is extremely stiff, have proper maintenance or repairs done. If it does move freely, then check for obstructions that may have been limiting engine movement and/or revisit steps a-b.

NOTE: To ensure maximum performance and service life for your mechanical steering system, please read and follow the procedures outlined in the next FAQ.

I've heard steering cables should be "maintained". How exactly is this done?

We suggest the following periodic maintenance at least twice a season:

1. Be certain the helm(s), cable(s), steering wheel and connection hardware are correctly assembled and in proper working order. Check for signs of stiffness, binding, excessive free play and/or wear. These items cannot be repaired; if any components are not in good working order, replace them. Disassembly of these items will void the warranty and can lead to steering failure. Always replace steering cables that are stiff in operation or have damage to the plastic jacket (outer casing).
2. Clean and lubricate the engine tilt tube or cable support tube and the steering cable telescopic output ram as follows:
 - a. Remove the steering cable(s) telescoping ram from the tilt tube.
 - b. Clean the tilt tube inside diameter thoroughly.
 - c. Remove corrosion in the tilt tube with a wire brush. Wipe until all loose material is removed.
 - d. Lubricate the tilt tube with a good water resistant marine grease.
 - e. Scour the steering cable telescopic ram with a brass wire brush and wipe until clean.
 - f. Lubricate the sliding parts of the telescopic ram with a high-quality, water resistant marine grease.
 - g. Reassemble, making sure all (correct) fasteners are tight and there is no binding or excessive free play in moving parts.

Note where locking fasteners are used. Do not use non-locking fasteners; vibration can loosen them, causing steering failure.

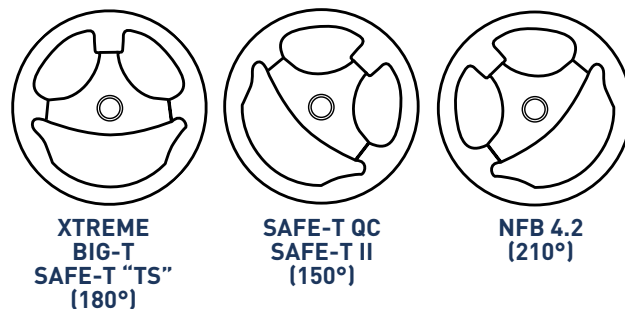
How do I install a steering wheel so it is centred when the engine is in the "straight-ahead" position?

There are several methods, depending on the type and model of steering:

For mechanical rack & pinion steering, attach the cable to the engine, then centre the engine and centre your steering wheel. Then bolt the Rack to the helm (you may have to wiggle the steering wheel to get the gears to mesh).

For mechanical rotary steering helms, the starting steering wheel position when you first feed the cable into the helm determines where it will be when the steering cable is "centred". To centre the steering wheel properly, we suggest orienting the wheel (depending on the rotary helm installed) in the positions depicted below. These starting positions assume the helm is mounted for an ordinary starboard cable exit.

You won't have to worry about centring a steering wheel when installing hydraulic steering. Due to a small amount of "slip" or "drift" inherent in any hydraulic system, the steering wheel will not remain centred. Use of a wheel with equidistant spokes is the best solution for hydraulic steering since that type of wheel has no natural "up", "down" or "sideways" position.



Degrees from normal centre position

I have a [model/year] boat and [model/year] engine. How do I hook up my steering cable to the engine?

There are many ways to connect a steering cable to an engine, drive unit or rudder. For outboards, the most common connection method is fastening the steering cable to the engine tilt tube and attaching a link arm from the engine's "tiller arm" to the cross-hole in the steering cable's "telescopic ram". Generally, it is best to replace what was originally installed with similar components whenever possible. When that is not feasible in a mechanical steering installation, consider upgrading to SeaStar.

NOTE: For an overview of the basic types of steering connections and available components from SeaStar Solutions, please see Steering Connection Kits.

I would like to upgrade the steering in my boat to Tilt Steering. What steps do I need to take?

First determine the brand of steering in your boat, then whether it is mechanical or hydraulic.

If you do not have SeaStar Solutions steering, either:

- a. Replace the helm and cable (or hoses and cylinder) with a SeaStar Solutions system or
- b. Contact the steering maker for options. Tilt steering is not available for all systems.

If you have SeaStar Solutions rotary steering that was made after 1991 or rack steering made after 1996, you probably only need to purchase a Tilt helm and Tilt mechanism.

Determine which kind of SeaStar Solutions steering you have, then refer to the appropriate section of this catalogue for Tilt Dash Module or Tilt Helm part number.

Tilt helms are offered for these SeaStar Solutions systems:

- Safe-T "QC" (1991-present)
- "The Rack" Rack & Pinion NFB Rack (1996-present)
- Big-T (no longer offered in tilt version)
- NFB Rotary (1991-present)
- HPS (2000-present)
- SeaStar & SeaStar PRO (1991-present)
- BayStar (2001-present)

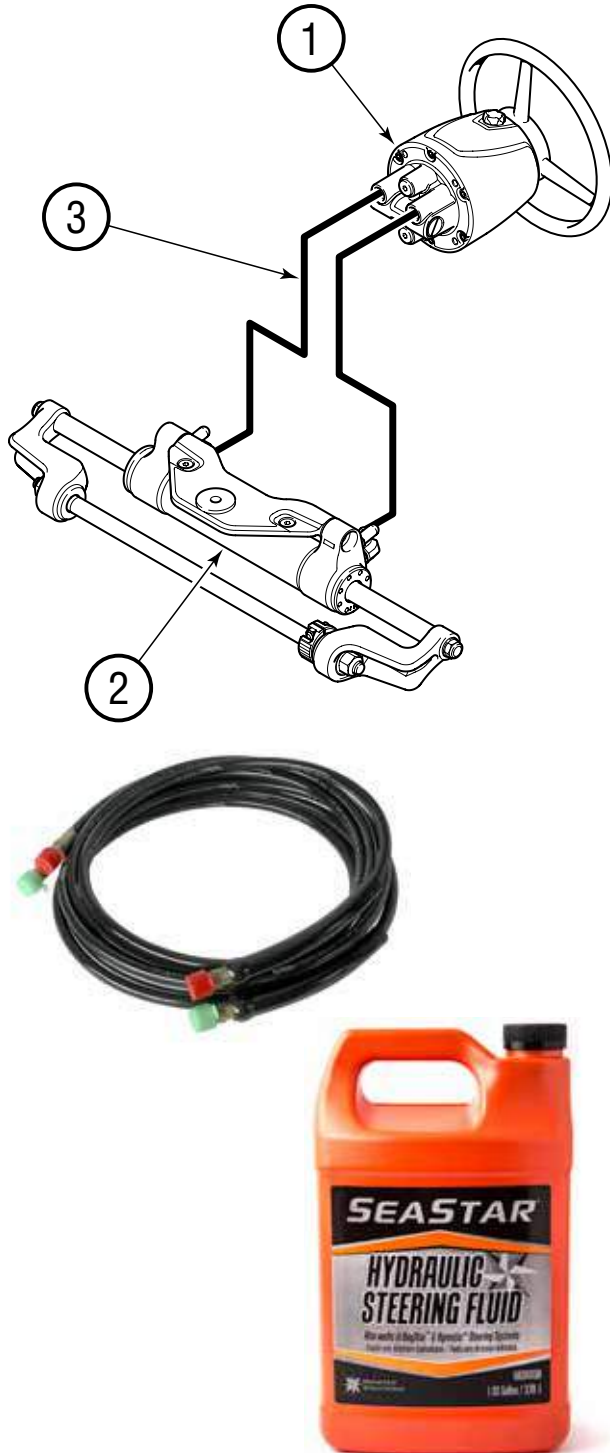
NOTE: Some pre-1991 Hydraulic, pre-1991 Rotary and pre-1996 Rack systems may require purchase of additional items and/or modification of the dash. Please see The Tilt Steering product pages, earlier in this catalogue or contact Bainbridge for assistance. (Tilt helms have a special shaft to engage the Tilt mechanism; a non-Tilt helm cannot be used.)

The steering cable is stuck in the engine's tilt tube. Now what should I do?

1. Sometimes a cable cannot be removed from an outboard engine tilt tube because the tube has rusted on the inside. The following method is suggested for those cases in which "gentle persuasion" won't prevail:
 - a. Fully loosen the large hex nut on the starboard side of the engine that secures the steering cable to the engine tilt tube.
 - b. Cut the cable's output ram close to the tilt tube.
 - c. Drive the cable out of the engine tilt tube. You may not want to hammer or heat the tilt tube in order to remove the jammed cable end. Heating and hammering may damage the engine mounting or pivot areas. You may have to replace the engine tilt tube. If so, consult your engine manufacturer's repair instructions.
2. When installing the new cable and tilt tube (if necessary), be sure the inside of the tilt tube is clean and well lubricated. Lubricate the external parts of the steering cable's telescopic (output) ram as well. Use a good quality, water resistant grease.
3. Be certain that all steering components are correctly assembled and in good working order. These items cannot be repaired; if any are not in good working order, replace them.
4. Note that locking fasteners are used to secure the steering wheel, helm, steering cable and link arm (drag link). Do not substitute non-locking hardware; engine vibration can loosen non-locking fasteners, causing loss of steering and personal injury and/or property damage.
5. Always remember: **GREASE, GREASE, GREASE!**

SeaStar hydraulic steering

- ◆ Our manual hydraulic steering systems are simple and efficient. The basic system consists of four main components:
 - 1) the helm pump
 - 2) the cylinder
 - 3) the hose or tubing required to connect the cylinder to the helm pump, and 4) genuine SeaStar Steering Fluid.
- ◆ These basic components are necessary in all applications. However, as the system variables increase (i.e. multiple engines, rudders, steering stations, power assist and autopilots), additional components may be required.



1. The Helm Unit

- ◆ The helm pump is an axial piston pump specifically designed for manual steering. It has a built-in lock valve to prevent the steering load from feeding back to the driver. The lock valve will not allow the rudder or drive unit to move until you move it with the steering wheel. The lock valve section of the helm also includes a relief valve. This relief valve provides over-pressure protection for mechanical components and hydraulic hoses and fittings

2. The Cylinder

- ◆ The most important differences between the variety of steering systems available is the cylinder selection. Both BayStar and SeaStar systems have a cylinder for most steering applications

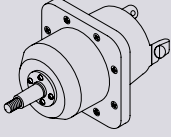
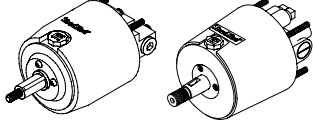
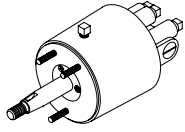
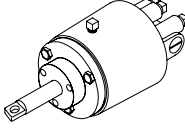
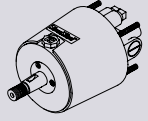
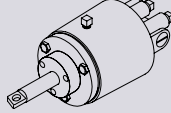

3. Hoses & Tubing

- ◆ Required to provide a path for the fluid to flow under pressure from the helm pump to the cylinder
- ◆ SeaStar hoses are a custom multi-layered composite design, engineered specifically for these systems. They are designed to exceed SAE and ABYC specifications and provide precise steering control not achievable with hydraulic industry standard hoses. Due to performance and safety concerns, SeaStar recommends that **ONLY** SeaStar or SeaStar Pro hoses be used in SeaStar steering systems

4. Hydraulic Steering Fluid

- ◆ SeaStar Solutions only recommends the use of SeaStar Steering Fluid in its hydraulic steering systems to ensure optimum safety and system performance. SeaStar steering systems have been engineered and validated using only proprietary SeaStar Hydraulic Steering Fluid. Engineered with a special additive package that contains anti-foaming and anti-corrosion agents, anti-oxidants, viscosity stabilisers, wear additives and water emulsification adders that have been formulated not to harm or degrade the systems components.

HYDRAULIC STEERING IDENTIFICATION GUIDE

Original System Name (version)	Date Used	Part Numbers &/Or Special Characteristics		
SeaStar® (Version 1)	1984-1990	Round black helm with square flange; HC5340, HC5370-3, HC5365, HC5380 cylinders used.		SeaStar or BayStar (see selection guide for best option)
SeaStar® (Version 2)	1990-Date	Round black helm with domed or flat shaft seal (3-screws); HC5340/ HC5342/ HC5345-3/HC5347-3/ HC5348-3/HC5358-3/ HC5365 (outboard front mount); HC5370-3 (outboard side mount), HC5380 (outboard splashwell mount); HC5343 HC5375-3 (catamaran/pontoon); and many stern drive/inboard cylinder models used.	 Front Mount  Rear Mount  Tilt	SeaStar or BayStar (see selection guide for best option)
SeaStar Pro®	1993-Date	Looks like SeaStar helm, has "SeaStar Pro" decal; HC5365, HC5345-3/47/48/58 cylinders used.	 	SeaStar Pro (see selection guide)
Competitive Brands	To Date	Hydraulic steering (including power steering by Hynautic & other brands) for boats up to 100 feet in length.	 SyTen® Identified by the stainless steel band that wraps around the base of the unit.	SeaStar or BayStar (see selection guide for best option)

BayStar steering kit



- ◆ With mechanical steering you sacrifice a degree of comfort. Traditional hydraulic systems may be more than is needed on lower horsepower outboard engines. Built in the tradition of SeaStar, BayStar brings the same efficiency and durability you would expect from SeaStar Solutions Hydraulic steering to smaller outboards up to 150 HP. Compact form and affordable price make it an ideal upgrade for mechanically steered boats up to 150 total HP

Applications:

- ◆ BayStar is for single-outboard powered boats rated up to 150 HP, including runabouts and inflatables — and outboard engines with ABYC standard engine tilt tubes up to 150 HP (total). For single station, single engine use only
- ◆ BayStar is not intended for high speed, high performance type boats, such as Bass Boats

Features:

- ◆ Designed just for smaller outboards
- ◆ Low friction hydraulic steering system
- ◆ 5 turns from lock-to-lock
- ◆ Balanced cylinder, featuring a compact design that fits most splashwells and provides full engine movement
- ◆ Optional five position tilt helm available
- ◆ Compact helm has only a 5" footprint; needs only 3" dash hole (standard or Tilt)
- ◆ Packaged complete with helm, cylinder, fittings, tubing, oil, fill kit and detailed instructions
- ◆ Standard 3/4" tapered steering shaft
- ◆ Fast, easy installation
- ◆ Meets ABYC standards
- ◆ Meets NMMA certification requirements

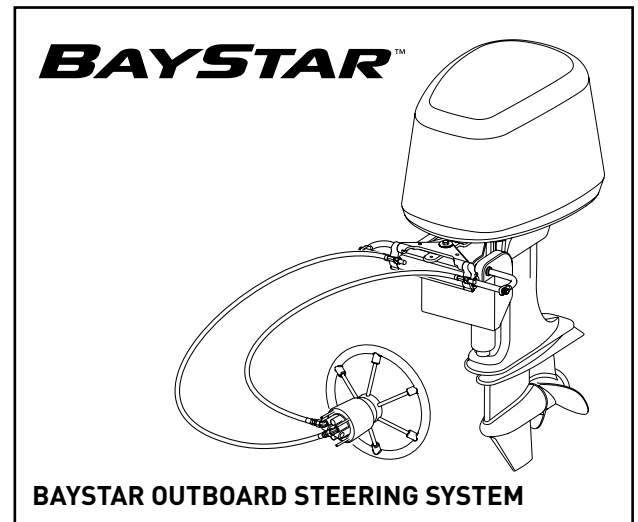


WE RECOMMEND

The use of SeaStar Steering Fluid ONLY in our hydraulic steering systems. See page 54

Kits

Description	Seastar Part No	No
BayStar Steering Kit (20' tubing run)	HK4200A-3	Q101126
BayStar 1.4 Front Mount Helm	HH4314-3	Q101124
BayStar Compact Cylinder	HC4645H	Q101120
HK4230 Tubing (2 x 30' lengths)	HT4430H	Q101129
SeaStar Oil (1 Quart)	HA5430 (x2)	Q101020
BayStar Filler Kit (Ships with Steering Kit)	HA5438	HYHA5438
Cylinder Support Rod Kit (ships with 2 rods, nut and clip)	HP6050	HYHP6050
Cylinder Tee/Bleeder Fitting	HF4202	HYHPF4202



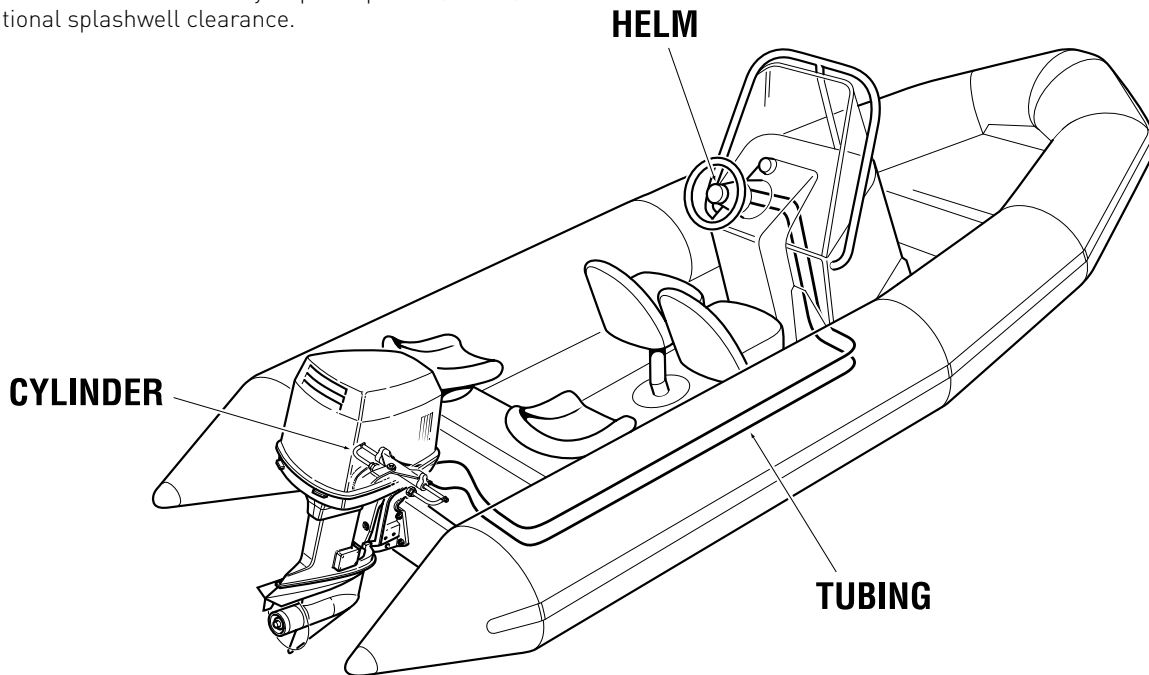
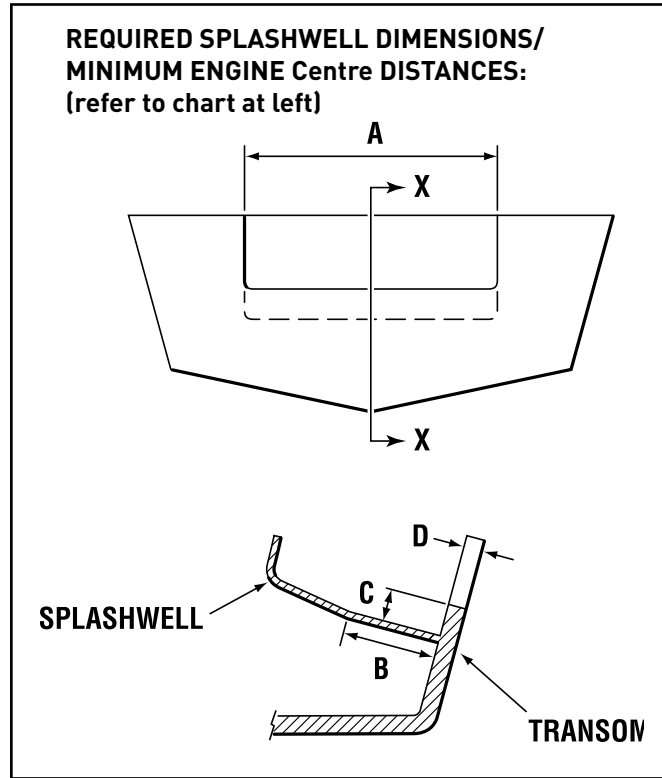
SPLASHWELL SIZE REQUIREMENTS:

CYL MODEL NO.	NO. OF ENG.	SPLASHWELL DIAG. DIM.			MINIMUM ENGINE Centre DISTANCE
		A	B	C	
HC4645H Q101120	1	21" (534mm)	6" (153mm)	5" (127mm)	N/A (N/A)
HC4647H Q101121	1	21" (534mm)	6" (153mm)	5" (127mm)	N/A (N/A)
HC4648H Q101155	1	21" (534mm)	6" (153mm)	5" (127mm)	N/A (N/A)
HC4658H Q101125	1	21" (534mm)	6" (153mm)	5" (127mm)	N/A (N/A)

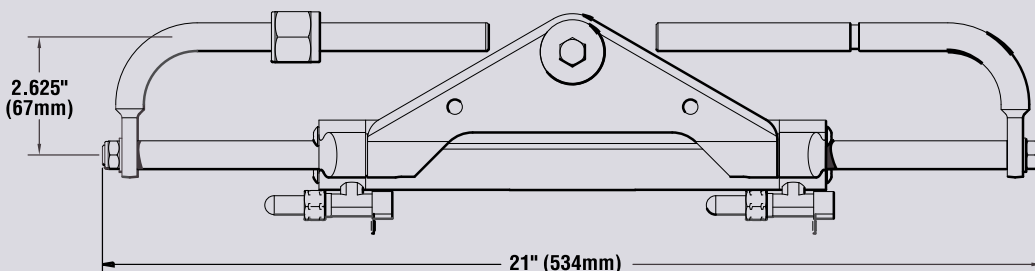
(Twin engine applications not available at this time.)

NOTES:

1. Ensure there is no interference between the BayStar cylinder rod and the splashwell boot or engine controls AND cables.
2. Dimensional restrictions also apply to external motor mount brackets.
3. Ensure dimension "A" can be maintained at 32" (813mm) throughout the full trim/tilt range.
4. Maximum allowable transom thickness for BayStar cylinders is 3" (76mm).
5. Engines less than 70 HP may require up to 1" (25mm) of additional splashwell clearance.



BayStar Cylinder Dimensions: HC4645H/HC4647H/HC4648H/HC4658H



SeaStar steering kit



Front Mount Pivot Cylinder

- ◆ Unmatched comfort and control. Only with SeaStar steering. The world's most popular outboard hydraulic system offers smooth, super-efficient steering for today's high performance hulls with single or multiple outboards up to 700 HP combined. It's the OEM Choice for centre consoles, cruisers and more

Applications:

- ◆ Single and dual non-power-assisted outboard engines up to 350 HP (700 combined HP for counter-rotating duals) that have ABYC standard engine tilt tube
- ◆ Ideal for cruisers, runabouts, centre console boats, offshore fishing boats and many more. Suitable for speeds up to 60 MPH and dual station use (with purchase of extra helm, hose & fittings). Allows independent engine tilt in dual engine installations. Dual engines require purchase of a tie bar kit and extra hardware

Features:

- ◆ Patented steering lock valves
- ◆ Low friction hydraulic steering system
- ◆ 5 turns from lock-to-lock (single cylinder) when using 1.7 helms
- ◆ Compact helm has only a 4-7/16" footprint; needs only 3" dash hole (Tilt requires larger dash cut out)
- ◆ Packaged complete with helm, cylinder, fittings, oil, bleeder kit and detailed instructions
- ◆ Standard 3/4" tapered steering shaft
- ◆ Fast, easy installation
- ◆ Meets ABYC standards
- ◆ Meets NMMA certification requirements



WE RECOMMEND

The use of SeaStar Steering Fluid ONLY in our hydraulic steering systems. See page 54

Description	Seastar Part No	No
SeaStar 1.7 Steering Kit (no Hoses)	HK6400A-3	Q10105820
SeaStar 1.7 - Front Mount Helm	HH5271-3	Q101002
SeaStar 2.0 - Front Mount Helm	HH5273-1	Q101004
Pivot Mount Outboard Cylinder (Black)	HC5345-3/58-3	Q101031
SeaStar Oil (1 Quart)	HA5430 (x2)	Q101020
SeaStar 1.7 - Rear Mount Helm	HH5261-3	Q101001
SeaStar 1.7 - Classic Tilt Helm	HH6541-3	Q101008
SeaStar 2.0 - Tilt Helm	HH6145-3	Q101011
SeaStar 2.4 - Classic Tilt Helm	HH6542-3	Q101009



Q101002

BayStar steering kit



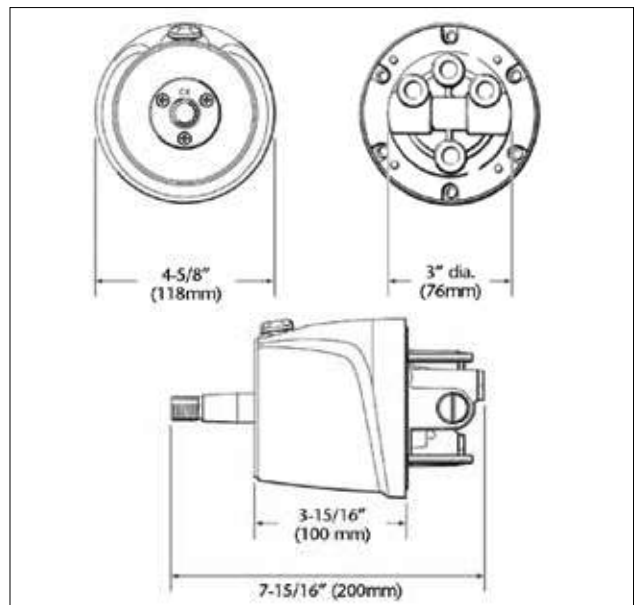
Kits

Description	Seastar Part No	No
BayStar 1.4 30kg/m (2600 in/lbs) Inboard Steering Kit (comprising: HH4314-3 helm + HC4461-3 cylinder + HT4420 tubing kit + 2 x HA5430 oil)	HK4401-3	HYHK44013
BayStar 1.4 52kg/m (4500 in/lbs) Inboard Steering Kit (comprising HH4314-3 helm + HC4460-3 cylinder + HT4420 tubing kit + 2 x HA5430 oil)	HK4400H-3	HYHK4400H3
BayStar 30 ft tubing kit	HT4430H	Q101129

- ◆ Built in the same tradition as SeaStar Inboard Steering, these BayStar Systems are designed for relatively low torque inboard applications, including inland waterway boats and other low speed displacement vessels. The systems are easy to install with "cut-to-length" tubing. Available in complete kits or by individual components.

Features:

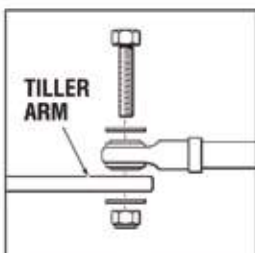
- ◆ Compact cylinder design
- ◆ HC4460-3 - 6.25" stroke
- ◆ HC4461-3 - 6.0" stroke
- ◆ Optional Tilt helm available
- ◆ Helm fits standard 3" dash cut outs
- ◆ Fast easy installation



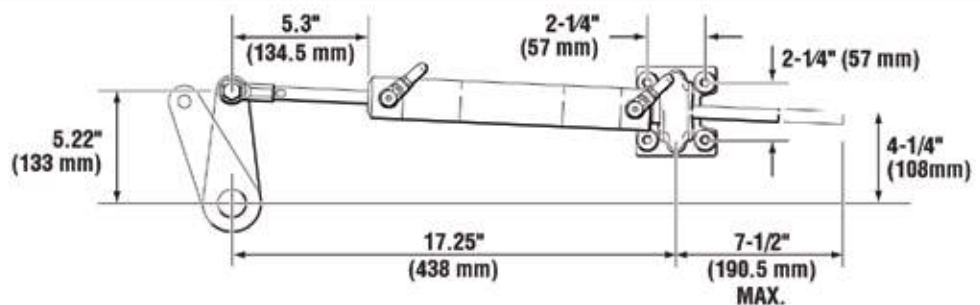
WE RECOMMEND

The use of SeaStar Steering Fluid ONLY in our hydraulic steering systems. See page 54

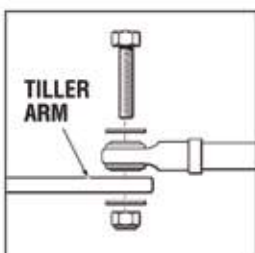
HC4461



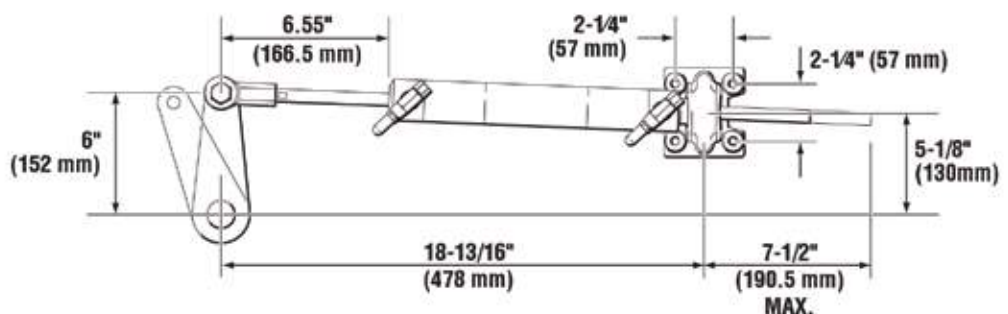
Attachment to Tiller Arm



HC4460H



Attachment to Tiller Arm



SeaStar inboard steering



SeaStar 2-Line Hydraulic Steering

- ◆ The most popular inboard hydraulic steering system offers unmatched comfort and control for today's inboards up to 50 feet. A wide range of helm and cylinder displacements covers most applications

Applications:

- ◆ Most inboard powered boats with single or dual engines: single engine planing/displacement hull craft from 26-44 feet; dual engine planing hull craft from 26-50 feet; dual engine displacement hull & sail craft from 26-44 feet. Suitable for dual station use with purchase of extra hardware

Features:

- ◆ Low friction hydraulic steering system
- ◆ Configurations for most inboards
- ◆ Compact helm has only a 4-7/16" foot print — needs only 3" dash hole (Tilt requires larger hole)
- ◆ Standard 3/4" tapered steering shaft
- ◆ Easy installation on single or dual rudders
- ◆ Cylinders supplied with bleeder fittings
- ◆ Regular duty aluminum or heavy duty brass cylinders. Two-axis articulation
- ◆ Meets ABYC standards
- ◆ Meets NMMA certification requirements
- ◆ Accepts steering wheels to 28" (20" for Tilt)

How to Spec a System:

1. From the application guide, select the System Number appropriate for the vessel based on:
 - a) hull type — displacement or planing;
 - b) length of vessel;
 - c) number of rudders; and
 - d) usage of vessel
2. From the ordering guide select the appropriate helm and accessory hardware for each steering station
3. Select fitting/hose kits required from the selection guide
4. Confirm that there is sufficient space available in the dash and engine compartment(s) for the steering components. Review helm and cylinder dimensions at the end of this section



WE RECOMMEND

The use of SeaStar Steering Fluid ONLY in our hydraulic steering systems. See page 54

Description	Seastar Part No	No
SeaStar 1.7 Helm	HH5271	Q101002
SeaStar 1.7 - Classic Tilt Helm	HH6541-3	Q101008
BA150-7ATM Inboard Type	HC5314-3	Q101142
BA175-7ATM Inboard Type	HC5319	Q101144
125-8EM Inboard Type	HC5328-3	Q101147
SeaStar Oil (1 Quart)	HA5430 (x2)	Q101020
SeaStar Oil (1 Gallon)	HA5440	Q101021



SeaStar Inboard Cylinders

- ◆ These cylinders are for single and dual rudder vessels with two axis articulation and easy autopilot interface. Cylinders are also supplied with bleeder fittings.

Features:











- ◆ All anodized aluminum construction
- ◆ Adjustable o-ring sealed ports
- ◆ Common components (i.e. end glands, pistons, seals)

New cylinders will be designated by HC53XX-3

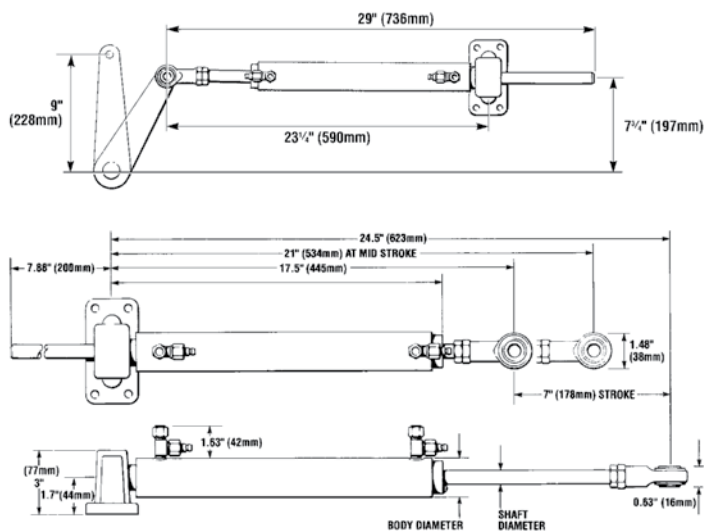
Description	Seastar Part No	No
BA 125 ATM, Inboard Type	HC5312-3	Q101140
BA 135 ATM, Inboard Type	HC5313-3	Q101141
BA 150 ATM, Inboard Type	HC5314-3	Q101142
BA 150-7TM, Inboard Type	HC5318	Q101143
BA 175-7TM, Inboard Type	HC5319	Q101144
BA150-9TM, Inboard Type	HC5369	Q101152

Application Guide: Seastar 2-Line Inboard Steering

◆ Use "System Numbers" in chart below to select the components required.

Boat type/ Length	System Numbers 1 engine		System Numbers 2 engines	
	Pleasure	Work	Pleasure	Work
Planing Hulls 				
To 26 Ft. (8m)	1	4	1	4
To 32 Ft. (10m)	2	4	1	4
To 38 Ft. (11.5m)	3	5	2	5
To 44 Ft. (13.5m)	5	—	3	5
To 50 Ft. (15m)	—	—	5	—
Displacement Hulls 				
To 26 Ft. (8m)	2	4	2	4
To 32 Ft. (10m)	3	4	3	4
To 38 Ft. (11.5m)	5	5	3	5
To 44 Ft. (13.5m)	—	—	5	—
To 50 Ft. (15m)	—	—	—	—
Sail 				
To 26 Ft. (8m)	4	4	—	—
To 32 Ft. (10m)	4	4	—	—
To 38 Ft. (11.5m)	4	5	—	—
To 44 Ft. (13.5m)	5	—	—	—
To 50 Ft. (15m)	—	—	—	—

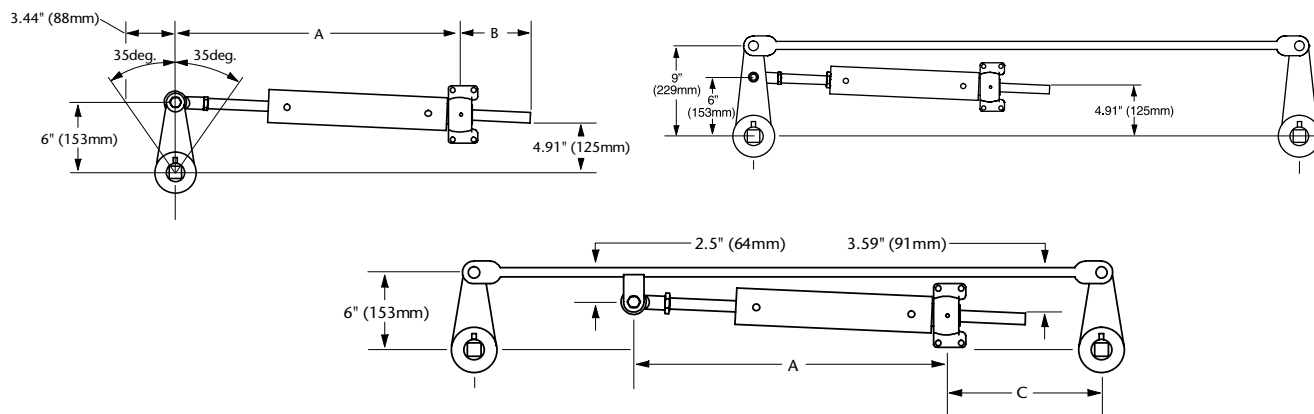
TM (Brass Body) Inboard Cylinders - P/N HC5318/HC5319 (Model BA1__-7TM):



Planing Hull: maximum hull speed normally exceeds 18 knots.
Displacement Hull: maximum hull speed does not normally exceed 18 knots.

Cylinder Dimensions & Mounting Configurations Specific to Model

Cylinder Model	Part No.	Body Diameter (See diagrams above)	Shaft Diameter	Dimensions A	Dimensions B	Dimensions C
BA125-7ATM	HC5312-3	1.375" (34.9mm)	.50" (12.7mm)	20" (508mm)	6.5" (165mm)	8.5" (216mm)
BA135-7ATM	HC5313-3	1.50" (38.1mm)	.625" (15.9mm)	20" (508mm)	6.5" (165mm)	8.5" (216mm)
BA150-7ATM	HC5314-3	1.75" (44.4mm)	.625" (15.9mm)	20" (508mm)	6.5" (165mm)	8.5" (216mm)
BA150-7TM	HC5318	1.75" (44.4mm)	.625" (15.9mm)	21" (534mm)	8.0" (204mm)	10.0" (254mm)
BA150-9TM	HC5369	1.75" (44.4mm)	.625" (15.9mm)	21" (534mm)	8.0" (204mm)	10.0" (254mm)
BA175-7TM	HC5319	2.00" (50.8mm)	.75" (19.0mm)	21" (534mm)	8.0" (204mm)	10.0" (254mm)





Outboard Two Hose Kits 100 P.SI

Length (ft)	Length (m)	Seastar Part No	No
4	1.2	H05104	Q101172
6	1.8	H05106	Q101174
8	2.4	H05108	Q101176
10	3.0	H05110	Q101178
12	3.6	H05112	Q101180
14	4.2	H05114	Q101182
16	4.9	H05116	Q101184
18	5.5	H05118	Q101186
20	6.1	HM3320/6.1 - H05120	Q101188
24	7.3	H05124	Q101192
26	7.9	H05126	Q101194
28	8.5	H05128	Q101196
30	9.1	H05130	Q101198

Nylon Tubing for BayStar OB Steering

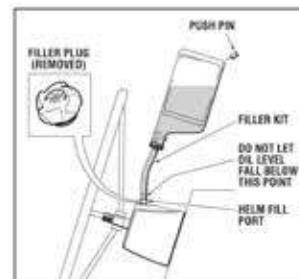
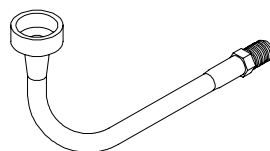
Description	Seastar Part No	No
HK4230 (2 x 30' lengths)	HT4430H	Q101129



Hydraulic Steering Fluid

- ◆ SeaStar Solutions only recommends the use of SeaStar Steering Fluid in its hydraulic steering systems to ensure optimum safety and system performance. SeaStar steering systems have been engineered and validated using only proprietary SeaStar Hydraulic Steering Fluid. Engineered with a special additive package that contains anti-foaming and anti-corrosion agents, anti-oxidants, viscosity stabilisers, wear additives and water emulsification adders that have been formulated not to harm or degrade the systems components.

Description	Seastar Part No	No
1 Litre	HA5430	Q101020
3.78 litre	HA5440	Q101021



Oil Filling Kit

- ◆ To be used at the helm for filling the system. Includes hose with screw cap which fits SeaStar Steering Fluid bottles. Includes push pin for venting / resealing bottle. Allows for a clean build when used correctly.

Description	Seastar Part No	No
Kit	HA5438	HYHA5438

Elbow Union Connector



- ◆ 3/8" O/D 1/4" NPTF 90° Elbow for use with BayStar and SeaStar helms.

Description	Seastar Part No	No
Kit	HM2246/6/4	HYHM2246/6/4

Horizontal Bleeder Tee Kit



- ◆ For BayStar systems only – supplied 2 per kit

Description	Seastar Part No	No
Horizontal Bleeder Kit	HF4202	HYPHF4202

Bleed Nipple Kit



- ◆ 1998 – to date cylinders
- ◆ For use with Front Mount cylinder ONLY. Includes O-ring seal on nipple – supplied 2 per kit

Description	Seastar Part No	No
Horizontal Bleeder Kit	HF5548	HYHF5548



Support Rod Kit with Nut & Collet

- ◆ Support rod – for BayStar cylinder only – supplied 2 per kit

Description	Seastar Part No	No
Support Rod Kit with Nut & Collet	HF6050	HYHP6050

Helm Vent Plug

- ◆ For SeaStar Helms – pack of 5.

Description	Seastar Part No	No
Helm Vent Plug	HP6126	Q101060



BayStar Helm Seal Kit

- ◆ For helm models HH4016 / HH4015 only
- ◆ Kit includes 3 x Screw for shaft seal cover, 1 x Nylon/Rubber shaft seal, 1 x O-ring

Description	Seastar Part No	No
BayStar Helm Seal Kit	HS5147	HYHS5147



BayStar Cylinder Gland Kit

- ◆ For BayStar Compact Cylinders : HC4645H, HC4647H, HC4648H & HC4658H
- ◆ Includes 2 x glands for each end of cylinder, 1 x gland seal guide, 4 x allen head bolts with thread locker

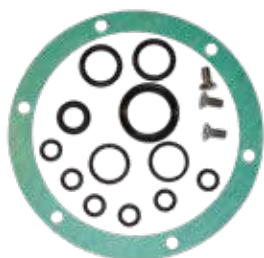
Description	Seastar Part No	No
BayStar Cylinder Gland Kit	HP4600	HYHP4600



SeaStar Helm Seal Kit

- ◆ For all SeaStar helms EXCEPT: BayStar type, and SeaStar models: HH5217, HH5218, HH5224, HH5225, HH5279, HH5280, HH5281, HH5282 and HH5283
- ◆ Includes 1 x Front Shaft Seal, 1 x Gasket Valve Cover & 11 assorted size O-rings

Description	Seastar Part No	No
BayStar Helm Seal Kit	HS5176	HYHS5176



SeaStar Cylinder Seal Kit

- ◆ Replacement front seal kit for SeaStar pivot/front mount cylinders.
- ◆ Includes 2 x seal glands for each end of cylinder, pin wrench for removal and replacement of seals and guide tool.

Description	Seastar Part No	No
BayStar Cylinder Seal Kit	HS5177	Q101307



* Frequently Asked Questions

Are there any “tricks” to installing a steering system? Is there anything I should definitely avoid doing?

If you have an outboard or sterndrive with non-power-assisted steering, we recommend you use either a No FeedBack (NFB) mechanical or hydraulic (SeaStar/BayStar/Hynautic) system. For boats with power-assisted steering, use HPS (mechanical) or SeaStar. If you have or plan to install an autopilot, use SeaStar.

Be sure you have the correct cable for the helm on the boat (or vice versa). There are several kinds of cables and helms that are not interchangeable; this is true whether the system is rotary or rack & pinion. See the Steering Identification guides in this catalogue.

Be sure you have measured properly and ordered the correct length of cable. (The #1 reason for cable returns is “wrong length ordered”.) See How to Measure, earlier in these FAQs.

Follow the installation instructions for steering products completely. This will ensure the maximum performance and reliability of the product. If the instructions are missing, contact the manufacturer. Handle the products with care and do not expose them to impact or external stress.

Allow for generous (large) cable bends, notably where the cable exits from the helm (or rack housing) and where the cable makes the bend to connect to the engine/drive/rudder. The tighter the bends, the stiffer the cable will tend to be in operation. Also, tight bends reduce cable life. Note; 8” is the minimum bend radius generally recommended for SeaStar Solutions steering cables. When using tie wraps to affix the cable along the gunwale area, allow some slack (do not cinch tight). Slack in the tie wraps allows for cable flex as it is actuated. This leads to smoother operation and longer life.

Replace all worn steering connection/mounting components with correct replacement parts that are designed for the application. Do not substitute parts. If you think parts are missing from a kit, contact your distributor or the kit manufacturer for replacements. When installing the cable at the engine end, be sure to lubricate the telescopic ram (output end that slides in and out) with liberal amounts of a good, waterproof Lithium-based grease. This is ESPECIALLY critical if the steering cable is connected through the engine tilt tube as this area tends to get very rusty. Avoid the use of add-on grease fitting products designed to lubricate cables. These units can in fact force old grease, dirt and rust onto the moving internal parts of a steering cable, shortening its life.

There is no substitute for proper cable maintenance procedures, as noted earlier in these FAQs. NOTE: The information in this section is a general guide. If you have questions about mechanical steering, please contact Bainbridge.



Why are equidistant wheels suggested for hydraulic steering?

Due to a small amount of internal hydraulic slip, a “master spoke” or “centred” steering wheel can’t be maintained with hydraulic steering. For best results, use an equal distance spoke steering wheel. Do not use a wire coil type trim switch with hydraulic steering. Wire coil can wind up tight around the steering wheel shaft and prevent further steering! SeaStar Solutions offers fingertip control with Pro Trim, a column-mounted switch, without the problem of wires wrapping around the steering column. Pro Trim TXPT1000 controls trim or jackplate only. Pro Trim Dual TXPT2000-1P controls both functions.

Is there anything special I need to know about SeaStar hoses and fittings?

When installing Hydraulic Hoses make sure that the bend restrictor is located at the Steering Cylinder. Use the shortest, most convenient path for routing hoses without exceeding a minimum bend radius of 2-1/2” (6 cm), but provide sufficient hose length to allow full, uninterrupted steering motion, including trim and tilt. Route hydraulic hoses with a gradual rise from SeaStar Helm to Cylinder(s) along gunwale or builder-installed conduit. Hydraulic hoses must be protected from chafing and should be secured wherever possible. Prevent hoses from hanging free in an area where they could become a safety hazard. Install hoses in such a way that they will not come in contact with sharp objects, such as fasteners or edges. Leave protective fitting caps on until connection of hose fitting to helm and cylinder is complete. Prevent mix-up in hose connections by marking one hose on both ends with tape or chalk. Do not use nylon tubing for outboard steering installations. Use the appropriate type of hose or tubing specified by SeaStar Solutions for your type of system. Use a pipe sealant, such as Loctite P.S.T. or equivalent, on all pipe threads. Do not use “tape” sealers. Replacing nickel plated brass fittings with brass or cad-plated fittings may cause cylinder threads to corrode. Refer to SeaStar installation illustrations for the correct connection of hoses from helm pump to cylinder. Note that in dual cylinder installations, hose connections to balanced cylinders are different than unbalanced models.

What kind of oil should I use in my SeaStar system?

ANY NON-APPROVED FLUID MAY CAUSE SERIOUS DAMAGE TO THE STEERING SYSTEM RESULTING IN POSSIBLE LOSS OF STEERING, CAUSING PROPERTY DAMAGE, PERSONAL INJURY AND/OR DEATH.

Due to recent upgrades in steering system components, SeaStar Solutions recommends use of SeaStar Steering Fluid ONLY in hydraulic steering systems. SeaStar Steering Systems have been engineered and validated using our proprietary SeaStar Hydraulic Steering Fluid. SeaStar Steering fluid is engineered with a special additive package that contains anti-foaming and anti-rusting agents, anti-oxidants, viscosity stabilisers, corrosion inhibitors, wear additives as well as water emulsification additives. It is highly recommended that SeaStar Steering Fluid be used to ensure optimum system performance and safety. Use of any non-approved fluid may result in the following;

- Higher steering effort, particularly at ambient or lower temperatures and/or over time due to oil degradation and breakdown
- Increased steering slip and/or drift resulting in lost motion
- Foaming or air entrainment causing a bumpy feel during steering
- High rates of moisture absorption causing internal component corrosion
- Scratched steering cylinder bores and shafts due to contamination or elevated wear rates
- Seal degradation – incompatibility with various proprietary seal compounds used in our products

How do I “check my oil?”

Unscrew the vent cap in your helm (upper station on dual station boats).

NOTE: Side mount cylinders are unbalanced. If you have a side mount cylinder, the oil level in the helm must be set with the cylinder rod fully retracted.

Failing to do so will result in an oil spill at the helm. Turning the wheel to port (left) will retract the cylinder rod.

Helms mounted with wheel shaft completely horizontal must be filled to bottom of filler hole at all times. Do not allow oil level to drop more than 1/4” (6.3mm). For helms mounted on a 20° angle or with wheel shaft vertical, oil level should be within 1/2” (12.7mm) of hole.

Check oil level periodically. At this time the steering system must be checked for proper connections of hose, tube and fittings, possible leaks and air removal. To do so, turn steering wheel (any on a multi-station) and pressurise very hard to port. Apply enough force to the wheel to overcome pressure relief valve. You will not harm the helm. While pressure is maintained on steering wheel, check all port (left) fittings and line connections for leaks. If no leaks are present, the system is ready for use. If leaks are found, correct before using. Failure to correct leaks will lower system oil level and could result in loss of steering.

Repeat procedure by turning wheel to starboard. Watch the oil level in the helm pump when the steering wheel reaches either hard over position. If there is no obvious drop in oil level, air was removed. If there is an obvious drop in oil level, you are compressing air — further filling/purging is required.

I’ve just installed a SeaStar steering system and am ready to water test the boat. What should I look for?

Before operating your boat, ensure that the following checklist is carried out:

- a. Perform system pressure test by turning helm all the way to hard over and then forcing the helm another 1/4 to 1/2 turn. This should be done in both directions. This will pressurise the system. Any weakness in the system should show up at this time
- b. Confirm that extruded nylon tubing has NOT been substituted for SeaStar Hydraulic Steering Hose
- c. Confirm that there is no interference between the steering cylinder and the transom, splashwell or jackplate or any combination of these parts by performing these steps:
 - With engine fully tilted, turn steering from hard over to hard over and confirm that no interference occurs. If you are using a hydraulic jack plate this also must be performed at the top and bottom position of the jack plate. (If interference is present, it must be eliminated with trim limiting switches and/or jack plate lift restrictors. Contact jack plate maker for advice if required)

- Confirm that the steering cylinder can be stroked fully in both directions as well as full tilt and trim without stretching and/or kinking the hydraulic hoses
- Make sure hoses are not subjected to chafing or rubbing. Stretched, kinked or chafed hose will fail over time

Failure to comply with this checklist may result in loss of steering, causing property damage and/or personal injury

Use only the self-locking fasteners provided; using non-locking fasteners can result in loosening or separation of equipment and loss of steering

Please read the manuals packed with the product and keep them handy

I am upgrading to SeaStar steering, but have discovered that the new helm won’t cover the holes left by the old one. What should I do?

That depends on what was in the boat originally:

- a. If you are upgrading from SeaStar Solutions rotary mechanical steering (Safe-T, Big-T or rotary NFB), pre-1991 SeaStar (with square mounting flange) or SyTen, you will need to purchase a HA5418 Back Plate Kit. This will cover the old holes and provide extra dash rigidity
- b. If you are upgrading from SeaStar Solutions’ Rack & Pinion or Morse® mechanical steering, you will have to enlarge the dash holes to accommodate the new helm. You may also need to purchase the HYHA5405 Backing Ring Kit to increase dash rigidity

PRODUCT RANGE CONTROLS



KEY:

- Standard
- Optional
- * Optional for ski version, CH2200

SINGLE FUNCTION



SERIES	NB	KB	SR	TWIN S	ST/STB	MJB
--------	----	----	----	--------	--------	-----

CONTROL FEATURES

START-IN-GEAR PROTECTION		○	○	○		
NEUTRAL INTERLOCK						
ENGINE WARM-UP PROVISION	•	•	•	•		•
ENGINE CUT-OFF SWITCH						
ADJUSTABLE THROTTLE BRAKE	•	•	•	•	○	•
TRIM & TILT SWITCH						
ADJUSTABLE TRAVEL STOPS	•	•	•	•		
MAX NUMBER OF ENGINES	1	1	1	1	1	1

CONTROL CABLES

33C/3300 UNIVERSAL TYPE	•	•	•	•	•	•
43 SERIES CABLES	•		○	○	•	
XTREME CABLES	○	○	○		○	○



GENERAL CONTROL CABLES



CC230XX



CC332XX



CC179XX

Gen II type cable designed specifically to be used with mercury 4000 series controls.



CC189XX



CC205XX

3300/33C (1ft increments)	COLOUR	PART NO
Standard	Black	CC230XX
Midrange	Red	CC332XX
Mercury/Mercruiser (1ft increments)		
Standard (600A type)	Black	CC179XX
Standard (Gen II type)	Black	CC189XX
BRP-OMC-Johnson/Evinrude 1979 to date (1ft increments)		
Standard (479 type)	Black	CC205XX

XX = Length in feet

DUAL FUNCTION



MT3 TOP

MT3 SINGLE

CH2200/
CH2300

CH2600
CH2700

MV3

CHX8000/
CHX8500

CHX8300/
CHX8800

CHX8100/
CHX8600

CHX8200/
CHX8700

I7700

•	•	•*	○	○	•	•	•	•	•
		•	•	•	•	•	○		•
•	•	•	•	•	•	•	•	•	•
				○	•	•			
		•	•		•	•	•	•	•
			○		○	○	○	○	•
2	1	1	1	1	1	1	1	2	2

•	•	•	•	•	•	•	•	•	○
	○			○					
○	○	○	○	○	○	○	○	○	○

*xtreme CONTROL CABLES



CCX633XX



CCX179XX



CCX630XX



CCX189XX



CCX205XX

3300/33CC (1ft Increments)	COLOUR	PART NO
Premium (Universal)	Black	CCX633XX
Mercury/Mercruiser (1ft increments)		
Premium *xtreme (600A type)	Black	CCX179XX
Premium *xtreme (3600 type)	Black	CCX630XX
Premium *xtreme (Gen II type)	Black	CCX189XX
BRP-OMC-Johnson/Evinrude (1ft increments)		
Premium *xtreme (479 type)	Black	CCX205XX

XX = Length in feet

*xtreme

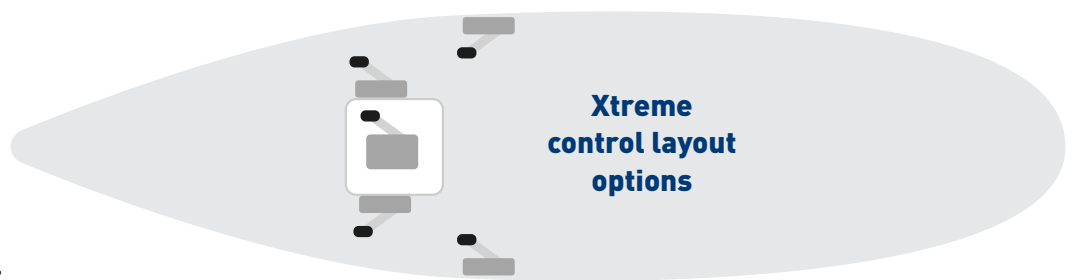
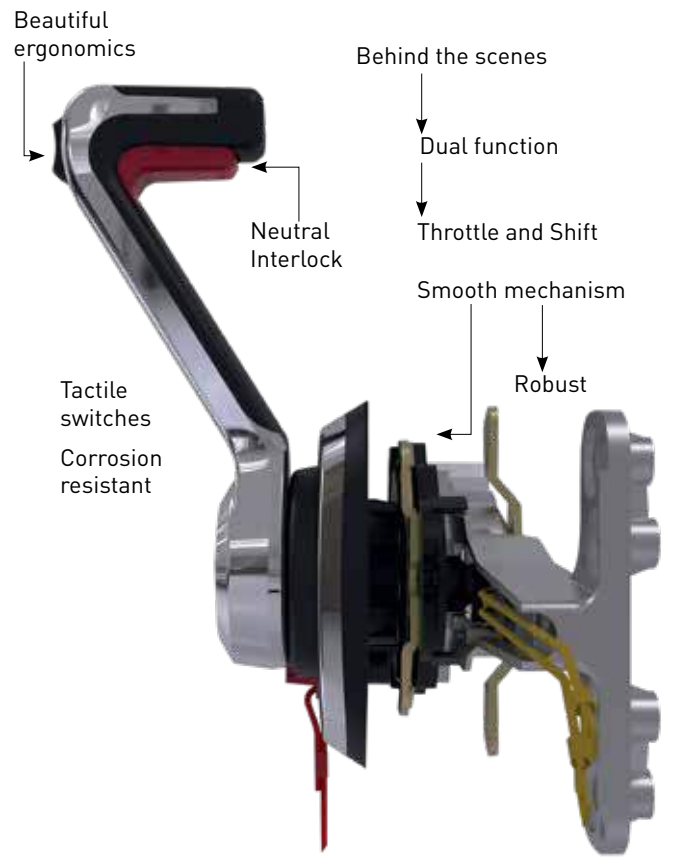
Control cables are simply the best cable in the business. Patent-pending unique splined-core design gives you maximum performance with no lost motion. Recommended for long cable runs.

xtreme dual function controls



With all of the following advanced features - incredibly smooth and positive actuation, ergonomically designed handles, common cable application and total flexibility of location make Xtreme Controls an ideal choice.

- ◆ Lever/handle updated for aesthetics, ergonomics, and improved durability
- ◆ Multitude of control configurations to suit all boating types
- ◆ Minimal changes to mounting scheme or cable nesting from Osprey or SL-3
- ◆ Superior feel and function for most outboards, stern drives & inboards
- ◆ Dual function lever controls both throttle and shift of one engine
- ◆ Neutral interlock and start-in-gear protection (standard) for side mount controls
- ◆ Optional Trim in the handle
- ◆ Neutral engine warm-up feature (standard)
- ◆ Optional tilt switch available
- ◆ Standard lanyard-style cut-off switch for emergency engine shut down for side mount controls
- ◆ Friction adjustment feature include
- ◆ "Easy-On" cable design accepts virtually every type of OEM and 3300/33C tyle cable
- ◆ Easily adapted to push or pull cable actuation mode
- ◆ Mechanical advantage 2.38:1
- ◆ Meets/exceeds all applicable standards





Xtreme Side Mount

- ◆ XTREME side mount controls are the most sure handling and comfortable you can buy. The shapely, balanced grip provides a very smooth yet solid feel. This side mount control is designed for Starboard (right side) gunwale mounting only. These controls come with the standard features of neutral safety switch, neutral lock out, neutral warm up and the safety stop switch with lanyard. You can also get the optional trim switch (most outboards) or trim and tilt (most stern drives). These controls can not only use the 3300/33C style control cables, they can also use Mercury style cables from 1965 to date, including the Gen II, OMC/Johnson/Evinrude/BRP control cables from 1979 to date. This makes it one of the most desirable replacement controls in the market today.

Applications:

- ◆ Dual-function control — one lever controls throttle AND shift. For nearly any engine.

Features:

- ◆ Superior feel and function for most outboards, stern drives & inboards.
- ◆ Dual function lever controls both throttle and shift of one engine.
- ◆ Neutral interlock and start-in-gear protection (standard).
- ◆ Optional Trim in the handle.
- ◆ Neutral engine warm-up feature (standard).
- ◆ Optional tilt switch available.
- ◆ Standard lanyard-style cut-off switch for emergency engine shutdown.
- ◆ Friction adjustment feature included.
- ◆ "Easy-On" cable design accepts virtually every type of OEM and 3300/33C type cable.
- ◆ Easily adapted to push or pull cable actuation mode.
- ◆ Mechanical advantage 2.38:1.
- ◆ Meets/exceeds all applicable standards.
- ◆ Made in the U.S.A.

Description	Seastar Part No	No
Chrome with kill switch	CHX8050P	TXCHX8050P
Chrome with kill switch and trim	CHX8051P	TXCHX8051P
Chrome with kill switch and trim + tilt	CHX8052P	TXCHX8052P
Black with kill switch	CHX8550P	TXCHX8550P
Black with kill switch and trim	CHX8551P	TXCHX8551P
Black with kill switch and trim + tilt	CHX8552P	TXCHX8552P
Black	CHX8553P	TXCHX8553P
Black with trim	CHX8554P	TXCHX8554P
Black with and trim + tilt	CHX8555P	TXCHX8555P

NOTE: When properly installed, these engine controls will connect to outboard, stern drive and inboard engines, Utilising Mercury/Mariner® and OMC® OEM type control cables as well as universal 3300/33C type cables and engine connection kits.



xtreme dual function controls



NOTE: When properly installed, these engine controls will connect to outboard, stern drive and inboard engines, Utilising Mercury/Mariner® and OMC® OEM type control cables as well as universal 3300/33C type cables and engine connection kits.

Xtreme Centre Console

- ◆ The ergonomics and features of Xtreme controls are advanced beyond those of any other control on the market. A shapely, balanced handle design provides an incredibly smooth yet positive feel. Neutral interlock, throttle warm-up, and start-in-gear protection features are standard, with power trim/tilt, emergency cut off switches offered as an option. In addition, the cosmetics of these controls can be configured to suit many tastes on centre console or port side mounted boats.
- ◆ Xtreme centre console controls are suitable for use with both 3300/33C universal or OEM type control cables without adaptation at the control.

Applications:

- ◆ Dual-function control — one lever controls throttle AND shift. For nearly any engine.

Features:

- ◆ Superior feel and function for most outboards, stern drives & inboards.
- ◆ Dual function lever controls both throttle and shift of one engine.
- ◆ Neutral safety offers start-in-gear protection
- ◆ Optional Trim in the handle for each model.
- ◆ Neutral engine warm-up feature (standard).
- ◆ Optional tilt switch available.
- ◆ Friction adjustment feature included.
- ◆ "Easy-On" cable design accepts virtually every type of OEM and 3300/33C type cable.
- ◆ Easily adapted to push or pull cable actuation mode.
- ◆ Mechanical advantage 2.38:1
- ◆ Meets/exceeds all applicable standards.
- ◆ Made in the U.S.A.

Description	Seastar Part No	No
Chrome with kill switch	CHX8350P	TXCHX8350P
Chrome with kill switch and trim	CHX8351P	TXCHX8351P
Chrome with kill switch and trim + tilt	CHX8352P	TXCHX8352P
Black with kill switch	CHX8850P	TXCHX8850P
Black with kill switch and trim	CHX8851P	TXCHX8851P
Black with kill switch and trim + tilt	CHX8852P	TXCHX8852P





Xtreme Top Mount

- ◆ Xtreme top mount controls offer options that most top mount controls in the market do not. Options include trim (most outboards), trim and tilt (most stern drives) or the neutral lock out button. The lock out button is great for centre console boats where there is a possibility the control can be bumped while passing by knocking it into gear. The standard items on these controls are the shapely and balanced hand grip that gives you a very smooth yet solid feel, the neutral safety switch, and the neutral warm up button. These controls can not only use the 3300/33C style control cables they can also use Mercury style cables from 1965 to date including the Gen II, OMC/Johnson/Evinrude/BRP control cables from 1979 to date. This makes it one of the most desirable replacement controls in the market today.

Applications:

- ◆ Dual-function control — one lever controls throttle AND shift. For nearly any engine.

Features:

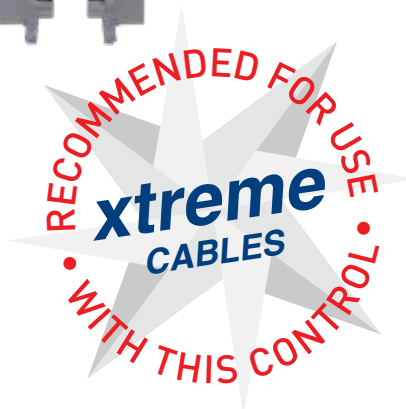
- ◆ Superior feel and function for most outboards, stern drives & inboards.
- ◆ Dual function lever controls both throttle and shift of one engine.
- ◆ Neutral safety offers start-in-gear protection (standard).
- ◆ Optional Trim in the handle for each model.
- ◆ Neutral engine warm-up feature (standard).
- ◆ Optional tilt switch available.
- ◆ Friction adjustment feature included.
- ◆ "Easy-On" cable design accepts virtually every type of OEM and 3300/33C type cable.
- ◆ Easily adapted to push or pull cable actuation mode.
- ◆ Mechanical advantage 2.38:1.
- ◆ Meets/exceeds all applicable standards.
- ◆ Made in the U.S.A.

Description	Seastar Part No	No
Chrome	CHX8140P	TXCHX8140P
Chrome with trim	CHX8141P	TXCHX8141P
Chrome with trim and tilt	CHX8142P	TXCHX8142P
Chrome with neutral inter-lock switch	CHX8150P	TXCHX8150P
Chrome with neutral inter-lock and trim	CHX8151P	TXCHX8151P
Chrome with neutral inter-lock and trim + tilt	CHX8152P	TXCHX8152P
Black	CHX8640P	TXCHX8640P
Black with trim	CHX8641P	TXCHX8641P
Black with and trim + tilt	CHX8642P	TXCHX8642P
Black with neutral inter-lock	CHX8650P	TXCHX8650P
Black with neutral inter-lock and trim	CHX8651P	TXCHX8651P
Black with neutral inter-lock and trim + tilt	CHX8652P	TXCHX8652P

NOTE: When properly installed, these engine controls will connect to outboard, stern drive and inboard engines, Utilising Mercury/Mariner® and OMC® OEM type control cables as well as universal 3300/33C type cables and engine connection kits.



xtreme dual function controls



Xtreme Dual Top Mount

- ◆ The ergonomics and features of our controls are the most advanced available and are suitable for most types of boat with dual engine applications. The shapely, balanced handle provides a very comfortable feel and the state of the art mechanism guarantees a smooth yet solid action, assuring you have maximum control at all times. This control is designed for twin engine applications. XTREME dual top mount controls are suitable for use with both universal type (3300) or OEM type control cables without the need for adaptation.
- ◆ These controls not only use the 3300/33C style control cables they can also use Mercury style cables from 1965 to date including the Gen II, OMC/Johnson/Evinrude/BRP control cables from 1979 to date. This makes it one of the most desirable replacement controls in the market today.

Applications:

- ◆ Dual-function control — one lever controls throttle AND shift. For nearly any engine.

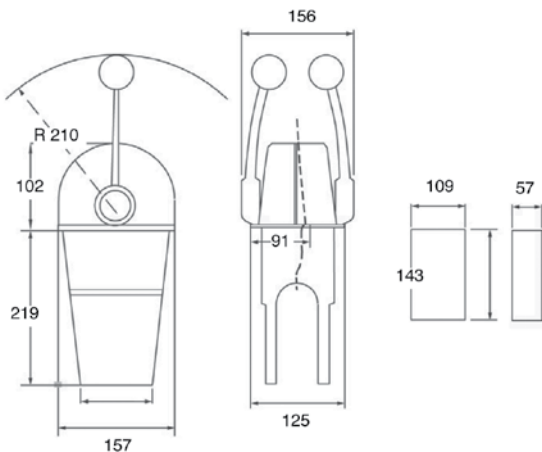
Features:

- ◆ Superior feel and function for most outboards, stern drives and inboards.
- ◆ All controls include start in gear protection.
- ◆ Designed for use with both universal and OEM shift and throttle cable connections.
- ◆ Suitable for most boat/dual engine combinations.
- ◆ Dual action levers (throttle and shift control in each handle).
- ◆ Trim, Tilt, options available.
- ◆ Drag adjustment on all models.
- ◆ Easy installation and set up.
- ◆ Throttle friction adjustment is included for each handle.

Description	Seastar Part No	No
Chrome	CHX8240P	TXCHX8240P
Chrome with trim	CHX8241P	TXCHX8241P
Chrome with trim and tilt	CHX8242P	TXCHX8242P
Black	CHX8740P	TXCHX8740P
Black with trim	CHX8741P	TXCHX8741P
Black with trim and tilt	CHX8742P	TXCHX8742P
Neutral safety switch	051801-033	TX051801033

NOTE: When properly installed, these engine controls will connect to outboard, stern drive and inboard engines, Utilising Mercury/Mariner® and OMC® OEM type control cables as well as universal 3300/33C type cables and engine connection kits.

mt-3 dual function controls



Mt-3 Dual Top Mount

- ◆ Ideal for inboards, stern drives and outboards, MT-3 combines classic binnacle control styling with dual function levers, a neutral safety switch and an engine warm-up feature! Control throttle and shift with one lever instead of two. MT-3 Twin can control two engines using the 3300/33C cables.

Applications:

- ◆ Dual-function control — each lever controls throttle AND shift. Great for single station inboards stern drives and outboards, single or dual engine. Perfect for applications in which a binnacle control appearance is desired, but one-lever throttle/shift control is preferred. Also a great choice when space is at a premium. This control uses 3300/33C type cables (single and dual lever) and 4300/43 type cables (single lever version only). Not suitable for use with Mercury® and OMC® OEM type control cables.

Features:

- ◆ Binnacle styling with the advanced features of a dual-function control: one-handle engine control, neutral warm-up.
- ◆ Neutral safety switch to help prevent starting in gear
- ◆ Mechanical advantage - shift 2.77:1/throttle 3.57:1.
- ◆ Can be used in a dual station application with DS unit.
- ◆ Meets/exceeds all applicable industry standards.

Description	Seastar Part No	No
Single Lever: pull shift/throttle, MT-3 Single (old No. 308731, 309077)	CH5330P	TXCH5330P
Twin Lever: pull shift/throttle, MT-3 twin (old No. 308732, 309078)	CH5320P	TXCH5320P
Optional neutral safety switch	305499	TX305499
Hand lever	032778-002	TX032778-002
Chrome side plate, MT-3	308598-001	TX308598-001
Ball knob, red	4009912	TX035232-001
Ball knob, black	035232-004	TX035232-004
SS knob (red-grooved)	CA69052P	TX CA69052
Hardware kit single lever	308599	TX308599
Hardware kit twin lever	308727	TX308727
43 Cable heavy duty connection kit (Must be used when connecting a 4300/43CC or 4300/43BC cable to the control. 43 series cables can only be used with the single-lever model.)	308742	TX308742
Black pivot - gear cable	304919	TX304919
Red pivot - throttle cable	300646	TX300646
FWD-NET-REV decal	038853	TX038853
Drive gear bearing	032786	TX032786
SS 33C cable clamp	032010	TX032010

NOTE: 4300/43 type cables cannot to be used on MT-3 Twin, as interference will occur.

★ 700 series dual function controls

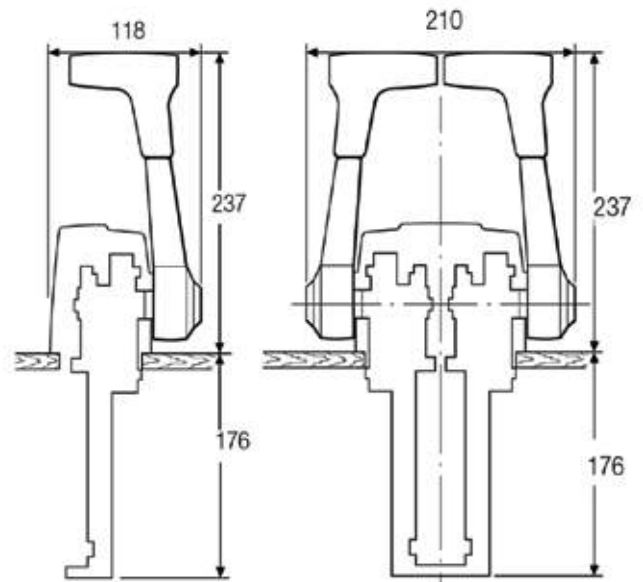


700 Top Mount Controls

- ◆ Top mount controls suitable for applications with single/twin engines - single/twin lever. When used with the DS unit, they can also be coupled to offer two different helm stations. With more than 1 million sold worldwide this dual action control is one of the worlds most popular controls. Available with trim and tilt and/or neutral interlock.
- ◆ Suits 3300/33C control cables.

Features:

- ◆ Top mounted single or twin engine control
- ◆ For power boats with one inboard, I/O or outboard engine with one or two helm stations
- ◆ Single dual action lever
- ◆ Available with power trim, neutral lever interlock or Power trim and neutral lever interlock
- ◆ Standard control suits 3300/33C control cables
- ◆ Neutral "warm up" button for throttle only operation



Description	Seastar Part No	No
Single lever 700TS top mount	172107	TX172107
Single lever 700TST top mount with power trim	172135	TX172135
Twin lever 700TD top mount	172109	TX172109
Twin lever 700TDT top mount with power trim	172149	TX172149
Neutral safety switch	178000	TX178000



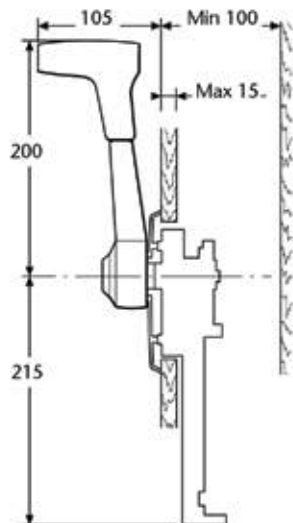
700 Motor Boat Side Mount Control

- ◆ Side mount control suitable for power boats with single engines and one or two helm stations. More than 1 million sold worldwide. Dual action design available with trim and tilt and/or neutral interlock.
- ◆ Suits 33C type cables.

Features:

- ◆ Flush mounted single lever control
- ◆ Single dual action lever
- ◆ Available with power trim
- ◆ Standard control suits 33C type cables
- ◆ Neutral "warm up" button for throttle only operation

Description	Seastar Part No	No
Single lever 700SM side mount	172105	TX172105
Single lever 700SMT side mount with power trim	172133	TX172133
Neutral safety switch	178000	TX178000



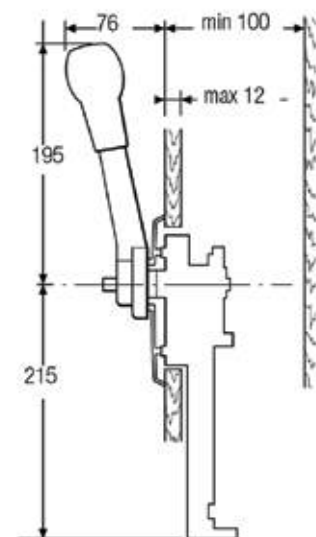
700 Sail Boat Side Mount Control

- ◆ Dual action side mount control designed for sail boats. More than 1 million sold worldwide. This control is the first choice of all premium sail boat manufactures. Suits 33C type cables.

Features:

- ◆ Dual action (throttle and shift in one lever).
- ◆ Heavy duty lever in black polyester powder coated finish.
- ◆ Flush mount design.
- ◆ Neutral safety switch option (prevents starting in gear).
- ◆ Standard control suits 33C type cables.
- ◆ Neutral "warm up" button for throttle only operation.

Description	Seastar Part No	No
Single lever 700SS side mount	172103	TX172103
Neutral safety switch	178000	TX178000
Replacement lever	007380	TX007380
Replacement red button	000094	TX000094
Replacement cover	003099	TX003099



✦ 700 series dual function controls

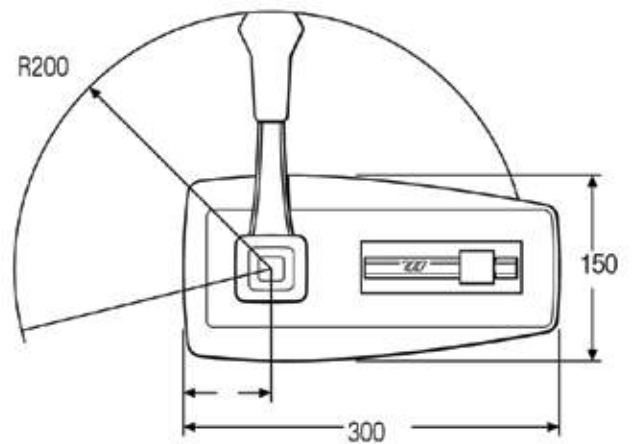


700 Surface Mount Controls

- ◆ Single engine surface mount control for powerboats. More than 1 million sold worldwide. Dual action design available with trim and tilt and/or neutral interlock. Suits 33C type cables.

Features:

- ◆ Surface mounted dual action single lever control
- ◆ For power boats with outboard motors
- ◆ Available with power trim
- ◆ Optional neutral safety switch
- ◆ Standard control suits 33C type cables
- ◆ Neutral "warm up" button for throttle only operation



Description	Seastar Part No	No
Single lever 700SO side mount - less than 25hp	172100	TX172100
Single lever 700SO side mount - more than 25hp	172101	TX172101
Single lever 700SOT side mount - more than 25hp with power trim	172131	TX172131
Neutral safety switch	178000	TX178000
B700B mechanism only - for TX172101 only	172152	TX172152



★ CH2800/50 dual function controls

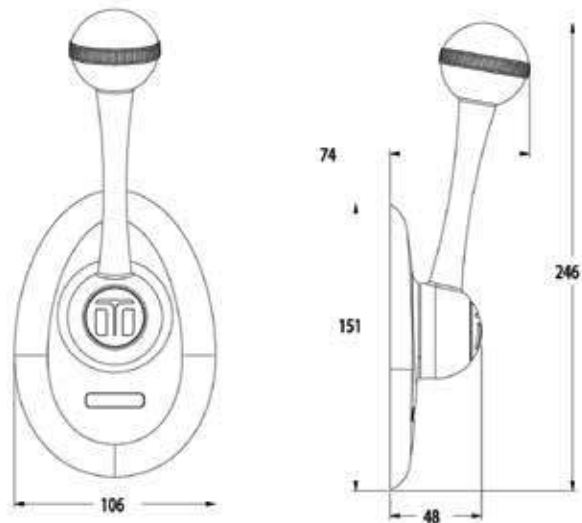


CH2800 & CH2850 Side Mount Controls

- ◆ CH2800 features unique twistgrip switch for control of Bow thruster or windlass. Designed for steering pedestal or cockpit well mounting. Polished stainless steel lever. Dual action design. Suits 33C type cables.

Features:

- ◆ Stainless Steel lever / Composite knob.
- ◆ Momentary switch to control Bow Thruster or Windlass.
- ◆ Suitable for power or sail.
- ◆ Can be mounted with or without cover plate.
- ◆ Drop in replacement for popular 700 SS control.
- ◆ Standard control suits 33C type cables.
- ◆ Neutral "warm up" button for throttle only operation.



Description	Seastar Part No	No
Side mount with twistgrip switch	CH2800	TXCH2800
Side mount	CH2850	TXCH2850
Neutral safety switch	178000	TX178000
CH2850 service kit includes: top knob, O-Ring, screw, centre neutral warm up button	CA76251P	TXCA76251P
Replacement lever for CH2850	009641	TX009641
Replacement warm up button for CH2800 and CH2850	009607	TX009607



mv-3 dual function controls



MV-3 Series

- ◆ The MV-3 offers style and incredible versatility in a dual-function, single-lever control. Several models are offered for outboards, stern drives, inboards, ski boats and jet boats, including versions with a lanyard-type emergency cut-off switch.

Applications:

- ◆ Dual-function control — the lever controls throttle AND shift. Ideal for many outboards, stern drives and inboards, with specialised versions for ski and jet boats. Single lever, dual action units control throttle and shift with one lever, using 3300/33C or 4300 type control cables. Not suitable for use with Mercury® and OMC® OEM type control cables.

Features:

- ◆ Specially styled for today's integrated cockpit.
- ◆ Fits most popular outboards, inboards and stern drives.
- ◆ Emergency cut-off feature available.
- ◆ Crisp, positive detents.
- ◆ Pullout clutch disengagement feature for engine warm-up with automatic disengagement.
- ◆ Neutral interlock feature to prevent accidental shifting.
- ◆ Mechanical advantage - Shift 2.9:1 / Throttle 3.20:1.
- ◆ Uses 3300 and 4300 type cables.
- ◆ Can be used for Berkeley Jet (with 4300 type cables) and Mercury 175 HP Sport Jet (with special cable).
- ◆ Meets/exceeds all applicable industry standards.

Description	Seastar Part No	No
MV-3 Competition Ski Boat, right hand Orientation, forward cable entry (old No. 311335)	CH2900P	TXCH2900
MV-3 Competition Ski Boat with I/O cut-off switch, forward cable entry (old No. 311335-001)	CH2910P	TXCH2910
MV-3 Standard for Outboard, stern drive or inboard, MV-3 standard control, right hand orientation, AFT cable entry, Neutral Safety Switch (Old No. 311364)	CH2920P	TXCH2920
Ball Knob, Black	4009819	TX4009819



CH22/2300 dual function controls



CH2200 Ski Boat & CH2300 Jet Boat

- ◆ Considered the best by boat builders, these controls feature superior styling, a compact design, positive lockout and smoothest feel available — and they're standard equipment on ski and jet boats. The ski boat unit includes superior neutral warm-up action, while the jet boat version features a waterproof neutral safety switch.

Applications:

- ◆ Dual-function control — each lever controls throttle AND shift. Ski version: inboard ski boats and other single station craft requiring super smooth, precise throttle control. Jet version: jet boats powered by Mercury® Sport Jet 90 & early 120, OMC® Turbo Jet, or similar propulsion systems. Single lever, dual action design controls both throttle and shift with one lever using 3300/33C type cables.

Features:

- ◆ Single lever, dual action for throttle & shift.
- ◆ Superior neutral engine warm-up control (ski version).
- ◆ Flush mount design for quick, tidy installation.
- ◆ Includes hardware for two 3300/33C type cables.
- ◆ Crisp shifting ball grip for a solid, sure feel.
- ◆ Neutral safety switches are standard on the CH2300P and optional on the CH2200P.
- ◆ Meets/exceeds all applicable industry standards.

Please note that while the CH2200P and CH2300P are similar in appearance, they have different neutral safety switches and internal mechanisms.

They are NOT interchangeable. Do not substitute CH2200P for CH2300P or vice-versa.

Description	Seastar Part	
	No	No
Ski Boat Control single lever, dual action	CH2200	TXCH2200
Side Mount CH2200 electronic control	CH2200ENCP	CH2200ENCP
Jet Boat Control single lever, dual action	CH2300P	TXCH2300
Jet Boat Control - restricted cam, single lever, dual action	CH2305P	TXCH2305
Neutral safety switch for CH2300P	CA27100P	TXCA27100
Stainless Steel Knob (red-grooved)	CA69052P	TXCA69052
Stainless Steel Knob (smooth)	CA69051P	TXCA69051
Cable Connection Kit	190008	TX190008



Outboard DS Unit

- ◆ The DS unit is designed for those boaters that like using one lever to do both throttle and shift in their dual station boat. The Station Selector allows smooth operation of dual function controls in a dual station application.

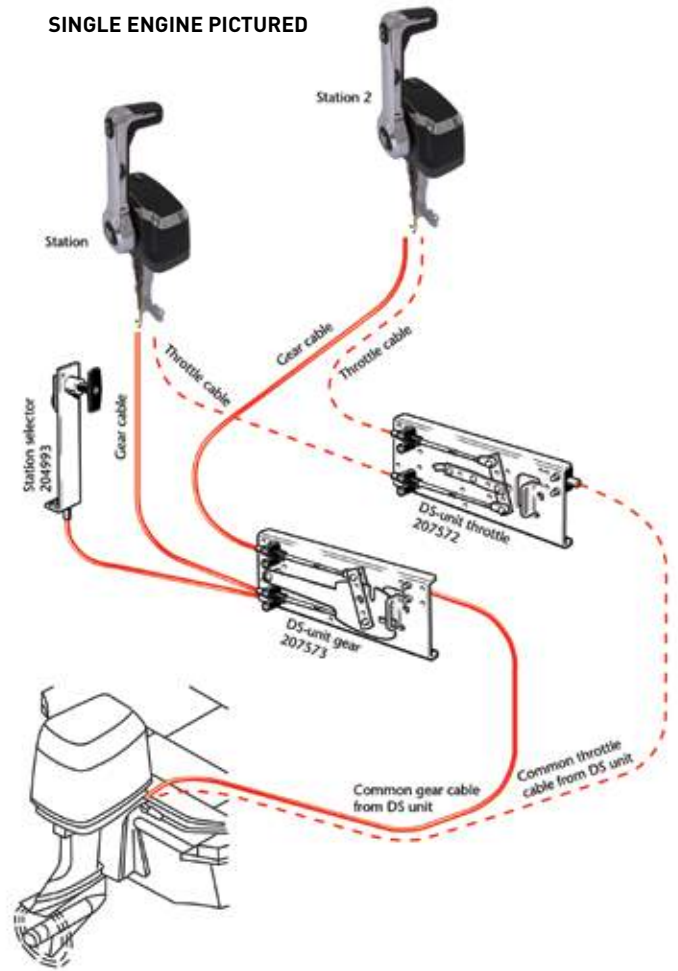
Application:

- ◆ The dual function DS unit is great for dual station boats without a lot of room on the dash or if you wanted to use side mounted controls in two stations. Just put both levers in neutral, turn the selector switch and you have changed stations.
- ◆ SeaStar Solutions recommends that you only use the **xtreme** 33C cable part number CCX633XX with the DS unit.

Features:

- ◆ Allows dual function mechanical controls to be used in a dual station boat.
- ◆ Side mount controls can now be used in dual station boats.
- ◆ You only require one station selector for both a single engine or dual station boats.
- ◆ Using the recommended **xtreme** control cables allow smooth control operation.

SINGLE ENGINE PICTURED



SINGLE ENGINE OUTBOARD			
QTY	Part Number	Description	Notes
1	TX207573	DS gear unit	Two cables in one cable to shifter
1	TX204993	Station selector unit	One cable from unit to gear DS unit
1	TX207572	DS throttle unit	Two cables in one cable to throttle
1	TXCCX633XX	Cable to go from selector to gear DS unit	XX = cable length in feet
1	TXCCX633XX	Cable from station 1 to gear DS unit	XX = cable length in feet
1	TXCCX633XX	Cable from station 2 to gear DS unit	XX = cable length in feet
1	TXCCX633XX	Cable from gear unit to transmission	XX = cable length in feet
1	TXCCX633XX	Cable from station 1 to throttle DS unit	XX = cable length in feet
1	TXCCX633XX	Cable from station 2 to throttle DS unit	XX = cable length in feet
1	TXCCX633XX	Cable from throttle unit to engine	XX = cable length in feet

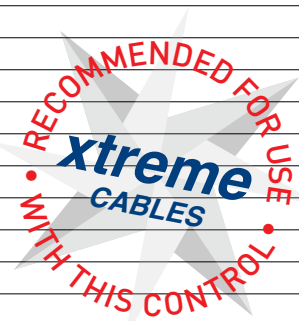
1 engine adapter kit for the control cables unless provided by the engine manufacturer

1 dual action control per station = 2 total controls that must use 3300/33C xtreme style control cables CCX633XX

DUAL ENGINE OUTBOARDS		
QTY	Part Number	Description
2	TX207573	DS gear unit
1	TX204993	Station selector unit
2	TX207572	DS throttle unit
2	TXCCX633XX	Cable to go from selector to gear DS units
1	TXCCX633XX	Cable from port station 1 to gear DS unit
1	TXCCX633XX	Cable from starboard station 1 to gear DS unit
1	TXCCX633XX	Cable from port station 2 to gear ds unit
1	TXCCX633XX	Cable from starboard station 2 to gear DS unit
2	TXCCX633XX	Cable from gear ds unitS to transmissions
1	TXCCX633XX	Cable from port station 1 to throttle DS unit
1	TXCCX633XX	Cable from starboard station 1 to throttle DS unit
1	TXCCX633XX	Cable from port station 2 to throttle DS unit
1	TXCCX633XX	Cable from starboard station 2 to throttle DS unit
2	TXCCX633XX	Cable from throttle DS units to engines

2 engine adapter kit for the control cables unless provided by the engine manufacturer

1 dual action twin lever control per station = 2 total controls that must use 3300/33C xtreme style control cables CCX633XX



Inboard or sterndrive DS Unit

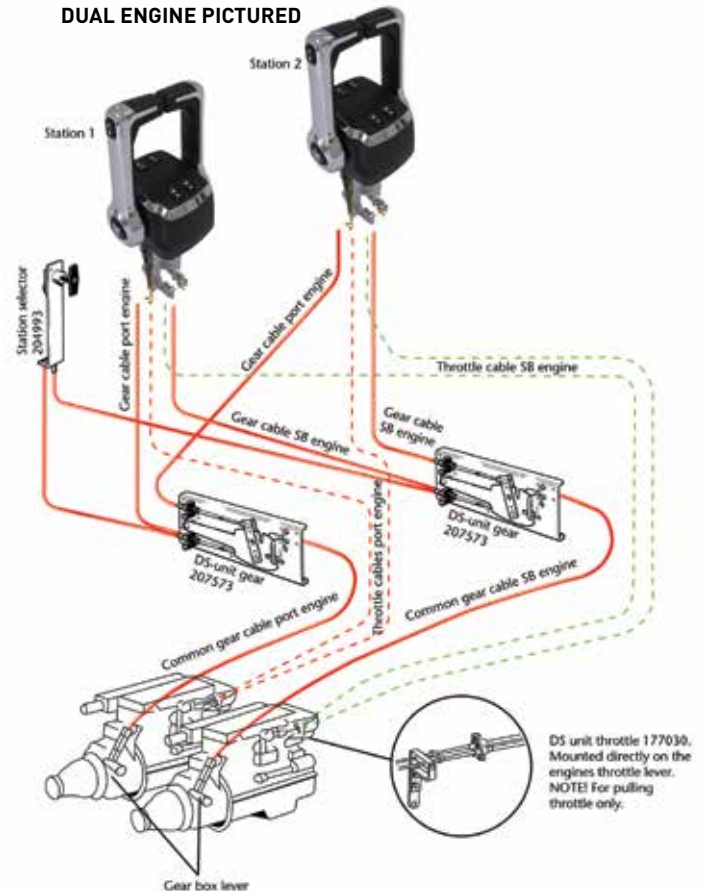
- ◆ The DS unit is designed for those boaters that like using one lever to do both throttle and shift in their dual station boat. The Station Selector allows smooth operation of dual function controls in a dual station application.

Application:

- ◆ The dual function DS unit is great for dual station boats without a lot of room on the dash or if you wanted to use side mounted controls in two stations. Just put both levers in neutral, turn the selector switch and you have changed stations.
- ◆ SeaStar Solutions recommends that you only use the **xtreme** 33C cable part number CCX633XX with the DS unit.

Features:

- ◆ Allows dual function mechanical controls to be used in a dual station boat.
- ◆ Side mount controls can now be used in dual station boats.
- ◆ You only require one station selector for both a single engine or dual station boats.
- ◆ Using the recommended **xtreme** control cables allow smooth control operation.
- ◆ This DS throttle unit is a pull only set up. For a push throttle use the outboard DS throttle unit.



SINGLE ENGINE DUAL STATION INBOARD OR STERNDRIVE

QTY	Part Number	Description	Notes
1	TX207573	DS gear unit	Two cables in one cable to shifter
1	TX204993	Station selector unit	One cable from unit to gear DS unit
1	TX177030	DS Throttle Unit	Two Cables in one Cable to Throttle
1	TXCCX633XX	Cable to go from selector to gear DS unit	XX = cable length in feet
1	TXCCX633XX	Cable from station 1 to gear DS unit	XX = cable length in feet
1	TXCCX633XX	Cable from station 2 to gear DS unit	XX = cable length in feet
1	TXCCX633XX	Cable from gear unit to transmission	XX = cable length in feet
1	TXCCX633XX	Cable from station 1 to throttle DS unit	XX = cable length in feet
1	TXCCX633XX	Cable from station 2 to throttle DS unit	XX = cable length in feet

The throttle cables should be a pull to advance throttle set up or use the outboard throttle ds unit

1 engine adapter kit for the control cables unless provided by the engine manufacturer

1 dual action control per station = 2 total controls that must use 3300/33C xtreme style control cables CCX633XX

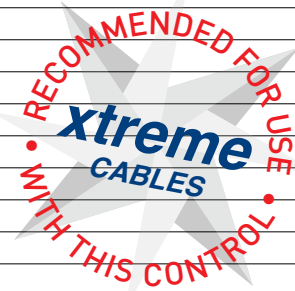
DUAL ENGINE DUAL STATION INBOARD OR STERNDRIVE

QTY	Part Number	Description
2	TX207573	DS gear unit
1	TX204993	Station selector unit
2	TX177030	DS throttle unit
2	TXCCX633XX	Cable to go from selector to gear DS units
1	TXCCX633XX	Cable from port station 1 to gear DS unit
1	TXCCX633XX	Cable from starboard station 1 to gear DS unit
1	TXCCX633XX	Cable from port station 2 to gear DS unit
1	TXCCX633XX	Cable from starboard station 2 to gear DS unit
2	TXCCX633XX	Cable from gear ds units to transmissions
1	TXCCX633XX	Cable from port station 1 to throttle DS unit
1	TXCCX633XX	Cable from starboard station 1 to throttle DS unit
1	TXCCX633XX	Cable from port station2 to throttle DS unit
1	TXCCX633XX	Cable from starboard station 2 to throttle DS unit

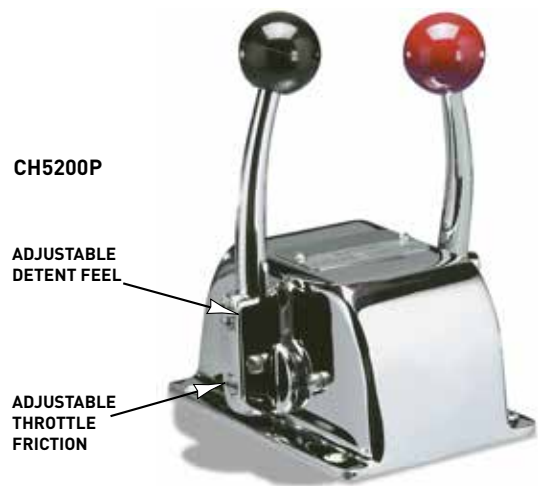
The throttle cables should be a pull to advance throttle set up or use the outboard throttle DS unit

2 engine adapter kit for the control cables unless provided by the engine manufacturer

1 dual action twin lever control per station = 2 total controls that must use 3300/33C xtreme style control cables CCX633XX



✦ S Type single function controls



CH5210 Single & CH5200 Twin

- ◆ This classic control is great for inboards, single or dual station. The time-proven design of Twin S means years of reliable operation. Accepts universal control cables. Optional lever extension, detent kits and neutral safety switch available. Additional hardware is required for twin station use.

Applications:

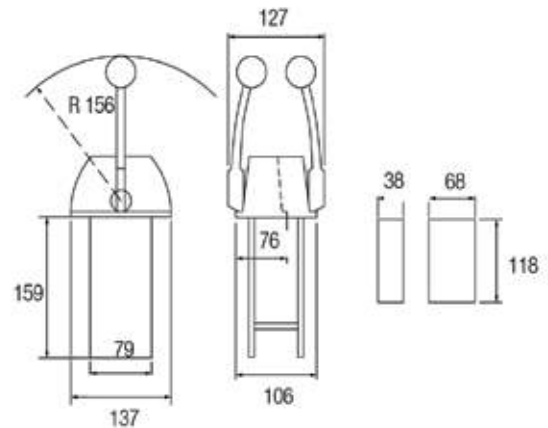
- ◆ Single-function control — each lever controls throttle OR shift. Ideal for inboards, stern drives and outboards. The S controls are suitable for single or dual station use. These single function engine controls are available in both one or two-lever models. Both S controls use 3300/33C and 4300 type cables. Not suitable for use with Mercury® and OMC® OEM type control cables. 4300 cables require the additional 40 series hardware kit.

Features:

- ◆ Highly polished stainless steel cover.
- ◆ Simple, rugged, compact design.
- ◆ Easily adjustable throttle friction and shift detent feel.
- ◆ Optional neutral safety switch to prevent starting in gear.
- ◆ Optional hand lever extension.
- ◆ Optional shift detent kit (if used in dual stations; use on main station only).
- ◆ Option throttle hold kit.
- ◆ Uses 3300/33C and 4300 type cables.
- ◆ Mechanical advantage - shift 2.77:1/throttle 2.77:1.
- ◆ Meets/exceeds all applicable industry standards.
- ◆ SeaStar Solutions recommends using **✦xtreme** cables with this control.

Options:

- ◆ The Dual Station Transfer Unit from SeaStar Solutions is recommended where long or difficult cable paths make parallel installations costly and/or difficult. When single function two lever controls are used in a parallel, dual station application, some installations may cause the clutch or throttle levers to operate "stiff". Adding a transfer unit can improve control performance in these cases.



Description	Seastar Part No	No
Control Twin S (Top Mount)	CH5200P	TXCH5200
Control Single S (Top Mount)	CH5210P	TXCH5210
Clutch Detent Kit S and Twin S	22328	TX022328
Conversion Kit S and S to HD	42152	TX042152
Housing Replacement Kit for Twin	CA67865P	TXCA67865P
Bearing & Hardware Kit for Twin	CA67869P	TXCA67869P
In-Series Dual Station Kit, 3300/33C (2 required for twin)	039489-002	TX 039489-002
In-Series Dual Station Kit, 30 Series (2 required for twin)	039490-002	TX039490-002
In-Series Dual Station Kit, 40 Series (2 required for twin)	042152	TX042152
Neutral Safety Switch Kit	047307	TX047307
Throttle Hold Kit (one per lever, prevents throttle creep)	306997	TX306997
Ball Knob, Red	035232-001	TX035232-001
Ball Knob, Black	035232-004	TX035232-004
SS Throttle Knob (grooved)	CA69052P**	TXCA69052
SS Shift Knob (smooth)	CA69051P**	TXCA69051P
Cable Mounting Hardware Kit 3300, Twin	061001	TX061001

** Fits most controls with 3/8-24 threaded levers.

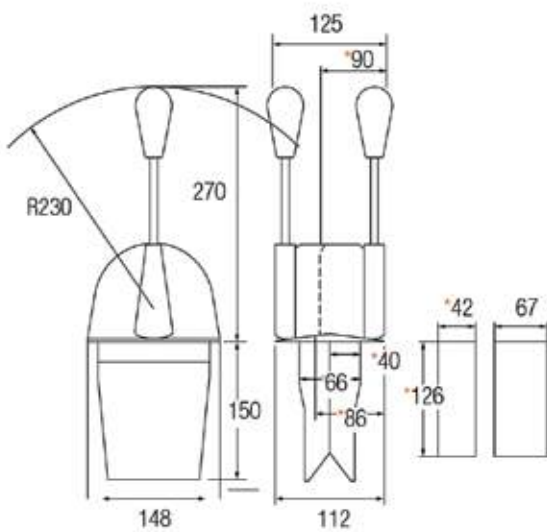


NB/KB single function controls



NB Single Function, Single or Twin

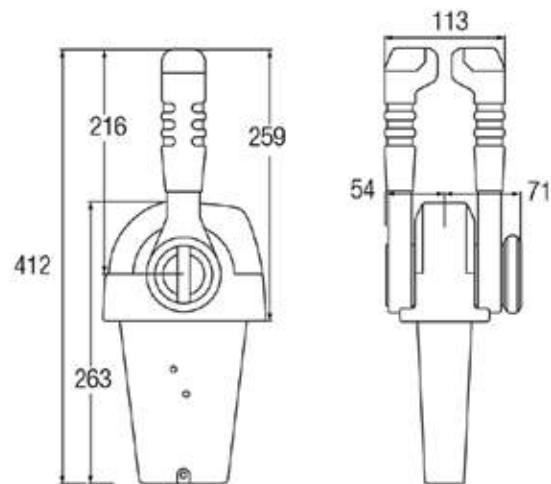
- ◆ Top mount, heavy duty control.
- ◆ Each control is supplied for a specific purpose be it throttle control or gear selection.
- ◆ The NB throttle control has a positive damper which is applied by twisting the lever when the desired setting has been reached.
- ◆ Use with 33C type cables (will also accept 43C cables).



* Dimensions for NB single

KB Single Function, Single or Twin

- ◆ Top mount control ideal for use with diesel engines equipped with hydraulic transmissions or clutch units.
- ◆ KB controls are available with two levers for throttle and gear operation. Neutral switch, interlock and dual station kits are available as optional extras.
- ◆ Suitable for use in exposed positions.
- ◆ Adjustable throttle brake and cable stops.
- ◆ Use with 33C type cables.



Description	Seastar Part No	
	No	No
NB Single Control (D303028) Throttle Only	NB0124-00	TXNB0124-00
NB Single Control (D303102) Shift Only	NB0125-00	TXNB0125-00
NB Twin Control Both Throttle	NB0233-00	TXNB0233-00
NB Twin Control (D303029)	NB0239-00	TXNB0239-00
43C fitting kit	-	TXNB0100-P05
33C Fitting Kit	-	TXNB0100-P03

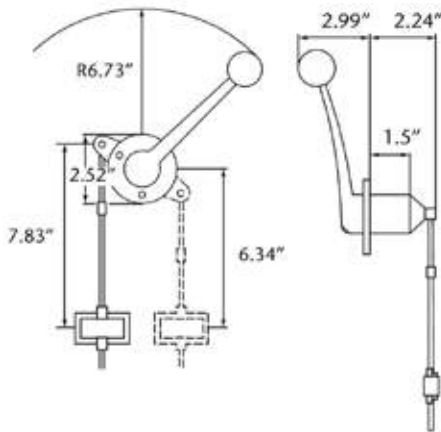
Description	Seastar Part No	
	No	No
KB Twin Control Standard -211800	NB0801-00	TXNB0801-00
KB Twin Control/Both Throttle	NB0810-00	TXNB0810-00
KB Control Neutral S/ Switch Kit	NB0715-00	TXNB0715-00



STB/MJB single function controls



**ADJUSTABLE
THROTTLE
FRICTION**



STB - CH2410P

- ◆ STB is economical and durable - a simple, classic design. Single-function lever moves one cable only.

Applications:

- ◆ Single-function control — The lever controls throttle OR shift. The STB control includes a throttle brake and can shift Berkeley® or similar type jets when a foot throttle is used. ST/STB controls are for single-station use only and are not suitable for use with Mercury® and OMC® OEM type control cables.

Features:

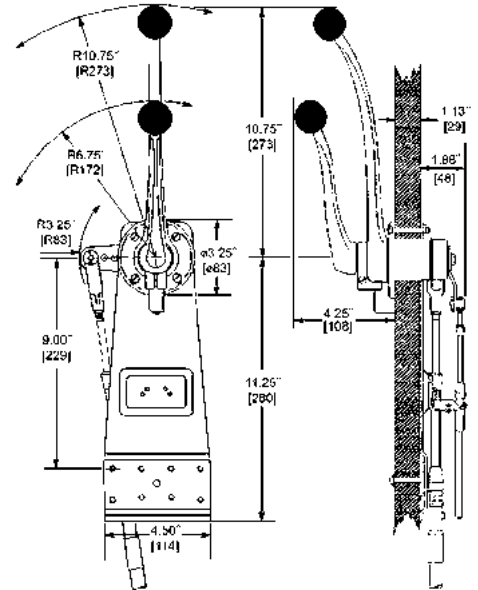
- ◆ Compact, rugged with classic traditional styling.
- ◆ Durable heavy chrome finish.
- ◆ Uses 3300/33C or 4300/43C type cables.
- ◆ Mechanical advantage - 3.20:1.

Description	Seastar Part	
	No	No
STB with external throttle friction (old No. 044777 or 045978)	CH2410P	TXCH2410P
Hand lever assembly, chrome	031046-002	TX031046-002
Ball knob, black (replaces 035232-044)	4009819**	TX4009819
SS shift knob (smooth)	CA69051P**	TXCA69051P
Throttle cable brake (goes on cable)	044386	TX044386



**ADJUSTABLE
DETENT FEEL**

**ADJUSTABLE
THROTTLE FRICTION**



MJB - CH2500P

- ◆ The MJB control is ideal for sailboats and inboards with hard to shift transmissions. An extra long shift handle provides ample leverage. The shorter handle controls the throttle.

Applications:

- ◆ Single-function two-lever control. A great choice for inboards, stern drives, sailboats and Berkeley® or similar type jets. For single-station use only and are not suitable for use with Mercury® and OMC® OEM type control cables.

Features:

- ◆ Compact, rugged design and classic traditional styling.
- ◆ Long shift lever for optimal leverage of hard-to-shift transmissions.
- ◆ Accepts 3300/33C type cables for throttle and 6400/64 type cables for shift only.
- ◆ Durable heavy chrome finish.
- ◆ External brake for throttle friction adjustment.
- ◆ Has detent for positive neutral feel.
- ◆ Right or left hand installation.
- ◆ Mechanical advantage - Shift 3.63:1, Throttle 3.20:1.

Description	Seastar Part	
	No	No
MJB control (old No. 044716-001)	CH2500P	TXCH2500
Hand lever assembly, chrome	031046-002	TX031046-002
Ball knob, red	035232-001**	TX035232-001
Ball knob, black (replaces 035232-044)	035232-004**	TX035232-004
SS throttle knob (grooved)	CA69052P**	TXCA69052P
SS shift knob (smooth)	CA69051P**	TXCA69051P

★ D2/DC single function controls



DC Control - Single Function Bulkhead/Panel Mounting

- ◆ Covers a standard 3300/33C cable into a utility push/pull control.
- ◆ Install through a panel, or mount neary anywhere with optional bulkhead bracket TX048210



TX048210

D2 Heavy Duty Rotary Control

- ◆ Unique heavy duty rotary operation.
- ◆ 6" of travel available.
- ◆ Ideal for use on old mechanical type gearboxes.
- ◆ Uses unique UD617 cable with 5 – 16 UNF stainless steel rod end

Description	Seastar Part No	No
D2 heavy duty rotary control	D0002	TXD0002
Replacement control hub	203688	TX203688

Description	Seastar Part No	No
DC single function control	301916	TX301916
Stop cable bulkhead bracket (as DC control bracket)	48210	TX048210
Stop collar	37693	TX037693
Black T-Handle kit (includes nuts and washers)	61342	TX061342
Clamp and stop collar assembly	203463	TX203463
Bulkhead adaptor	300673	TX300673
Chrome T-Handle only	301555	TX301555
Bulkhead Kit - bulkhead adaptor clamp stop collar pivot	317587	TX317587



Trem Venus Twin Lever Control Box

- ◆ Housing in white ABS plastic
- ◆ Light aluminium levers and clutch
- ◆ Ideal for replacing Morse A26 controls.

Trem Part No	No
L5374228	Q007821

i7700 electronic control system



- ◆ The simple to install i7700 electronic control system replaces the existing mechanical control system. Why wrestle with your mechanical controls when you can have the benefits of electronic controls for a fraction of the cost of a new engine.
- ◆ The smooth movement of the electronic controls enables much greater handling of the throttle and a fluid transition between gears. This translates into better control of the boat in all applications ranging from sport fishing and cruisers to commercial vessels. You will find it hard to go back to mechanical controls after the smooth and reliable response you get from the i7700 electronic controls. Regardless of the type of engine and drive, i7700 can provide precise control and comfort for your boating application.

Single Lever Operation

- ◆ The ability to synchronize the engines and control cruise with one lever is incredibly useful. This feature enhances your boating experience by making it easier to control your boat regardless of the speed.

Control Head Styling

- ◆ The control heads are ergonomically designed for maximum comfort and control. Available with or without universal trim switches, they each also include easily adjustable drag and detent adjustment pins to suit the operator's preference.

Trolling mode

- ◆ The trolling mode is a unique feature that is built into the control system and does not require additional components. Imagine you are trolling and trying to find that perfect speed to catch that big fish. When placing the control into trolling mode by simply selecting the mode, you now have greater resolution of the throttle from 0-50%. You no longer have to fight the controls to be at that perfect speed.

Applications

- ◆ Suitable for all engines with mechanical shift and mechanical throttle.
- ◆ Single or twin engine applications.
- ◆ Inboard, IO and Outboard.
- ◆ Supports up to three stations.



Features:

- ◆ Mechanical override "get home" feature
- ◆ Trolling mode
- ◆ Add a station kits available - total of 3 stations
- ◆ Meets: ABYC P-24, CE, EN 60945
- ◆ Neutral warm-up
- ◆ Dual engine RPM synchronization for single handle operation
- ◆ Incorporates neutral start protection
- ◆ Adjustable control lever drag and detent settings
- ◆ Works on 12v systems
- ◆ Programmable shift delay
- ◆ Comes with 30' of harness to connect actuators to control head
- ◆ Utilises standard CCX633xx type control cables - Xtreme type recommended
- ◆ Optional independent trim switches (HA5491)

NOTES:

- Control cables ordered separately.
- Requires EST Display setup tool for configuration (EPSK1207).
- Additional CAN cable lengths are available.
- Compatible with Optimus 360, Contact SeaStar Solutions for Information on upgrading.
- Please refer to i7700 Electronic Control datasheet for specifications.

Optional Trim Switch

This will enable the engines to be trimmed individually when the situation calls for it.



Shift and Throttle Actuators

The NEW i7700 actuator contains both the shift and throttle actuator within one compact housing and are not only powerful enough to manage the shift and throttle functions on the most extreme applications, they are also exceedingly responsive and robust. The actuators are linked to the control heads via a single 1/4" (6mm) CANbus cable, making cable routing incredibly easy. In addition, the i7700 actuators have a mechanical back up "get home" feature which allows simple manual control should the need arise.



Base Systems – Single Station Kits

Kit Part # **i7711** **i7751** **i7712** **i7752**

Single Engine Single Engine with Trim Dual Engine Dual Engine with Trim

ACTUATORS

Actuator, i7700 Universal **TXAC7700** 1 1 2 2

CONTROL HEAD KITS

Single Top Mount, Control Head Kit **TXCH6810NT** 1 - - -

Single Top Mount, Control Head Kit, with Trim **TXCH6810** - 1 - -

Dual Top Mount Control Head Kit **TXCH6800NT** - - 1 -

Dual Top Mount Control Head Kit, with Trim **TXCH6800** - - - 1

HARNESSES/TEES

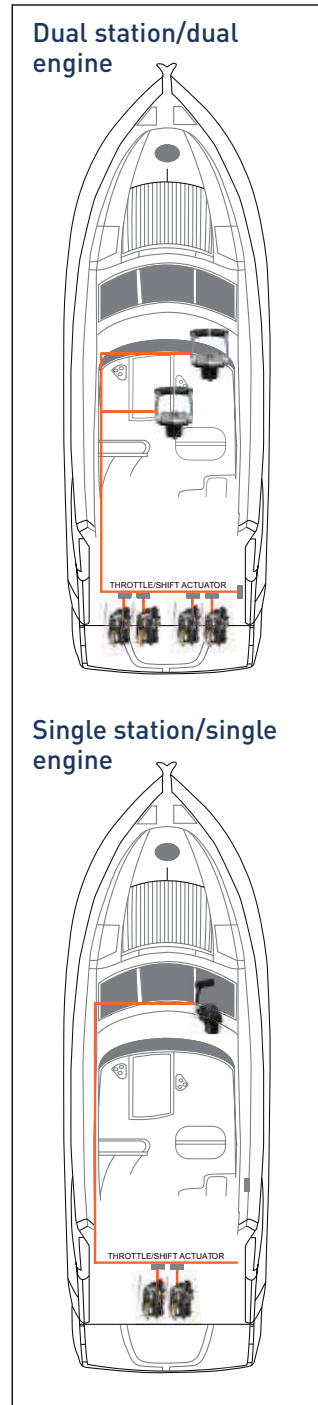
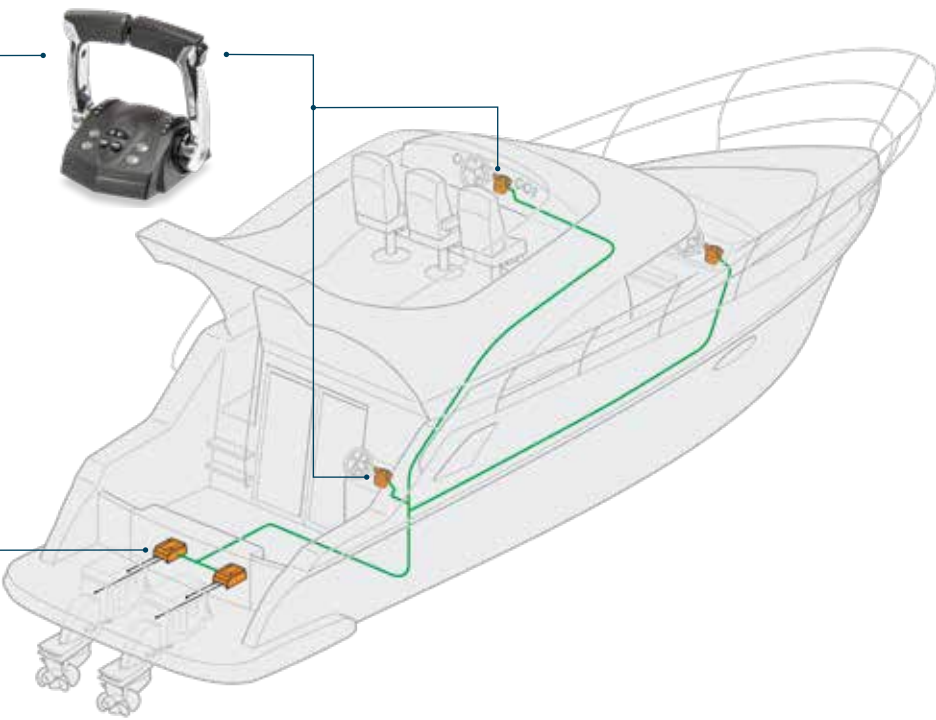
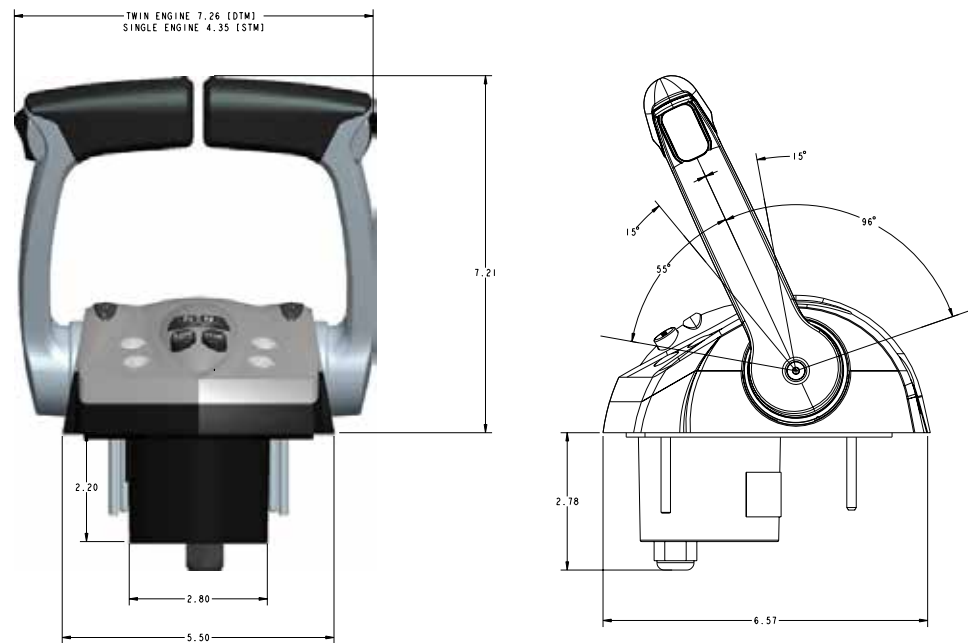
NMEA Communication Kit (2 tees, 1 male and 1 female terminator) **TXCM20001** 1 1 1 1

Single CanBus Tee **TXCM10060** 1 1 1 1

Micro C Ext, M-F (30ft CAN bus harness) **TXCM10030** 1 1 1 1

OPTIONAL ACCESSORIES

Dual trim switch panel for independent operation **TXHA5491** - - - -





**ELECTRONIC
ENGINE
CONTROLS**



**Outboard /
Flybridge**

KE4 Series - for boats with mechanical shift and throttle
KE5 Series - for boats with electronic shift and throttle
KE6 Series - for boats with mechanical shift and electronic throttle
KE7 Series - for boats with electronic shift and mechanical throttle

- ◆ Shift - Forward / Neutral / Reverse
- ◆ Throttle - Acceleration & Deceleration
- ◆ Neutral Throttle - for engine throttle warm up only
- ◆ Station Select - take control at any station
- ◆ Sync - For Multi engine boats - allows you to synchronise the shift and throttle control through one handle
- ◆ SIGP - Start in gear protection - inhibits engine starting when controls are not in neutral position
- ◆ Actuator Settings - allows for specific actuator setup to match engine/cable movement requirements
- ◆ Designed for new installation or retrofit.
- ◆ 12/24v DC common mode.
- ◆ Up to 4 station capability.
- ◆ Sync supplied as standard, 1 lever/2 lever selections.
- ◆ Neutral warm up function.
- ◆ Complete self diagnostic system.
- ◆ Optional mechanical backup.
- ◆ Start in-gear protection.
- ◆ Outboard levers feature PTT- Power Trim & Tilt Switch
- ◆ Outboard Control available without PTT
- ◆ SST = Inboard style
- ◆ Alarm Codes - displayed at head byx flashing LED's

Control	Mechanical Throttle	Mechanical Shift	Electronic Throttle	Electronic Shift
KE-4 Series	✓	✓		
KE-5 Series			✓	✓
KE-6 Series		✓	✓	
KE-7 Series	✓			✓

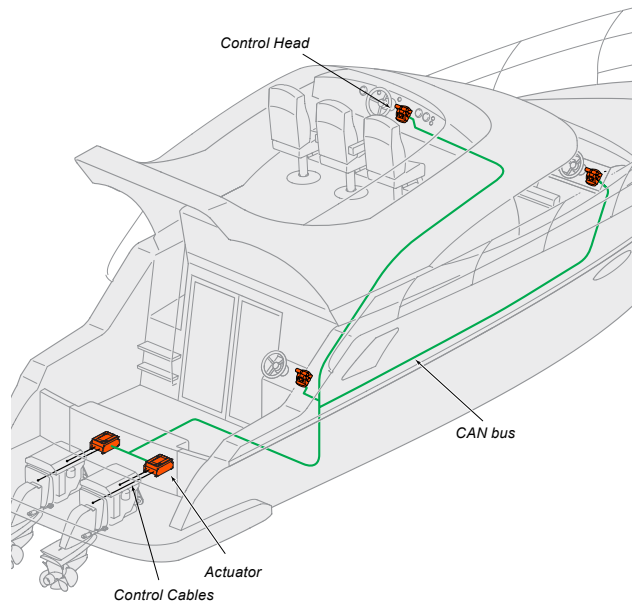
Note: for KE-5/6/7 please contact Bainbridge for further information.

Specifying an Electronic Control

Useful information required to generate a quote:

1. Number of engines - Number of control stations (helms) - Trim / Tilt control - Remote control requirements - Distance between: Control Stations, Master Control Station & Engine
2. Boat Engine Actuation - Mechanical / Electronic / Combination

NOTE: Electronic Cabling Distance across the whole system cannot exceed 80 metres



Configuration Options:

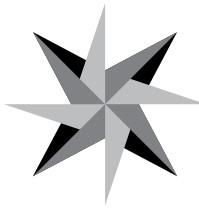
Single Station - Single Engine

Single Station - Dual Engine

Single Station - Triple Engine

Add-A-Station to any of these configurations based on your boats layout

Description	Seastar Part No	No	Quantity Required - Single Engine				Quantity Required - Twin Engine			
			1st	2nd	3rd	4th	1st	2nd	3rd	4th
Control Head (Single LH) Chrome (with PTT)	NM1001-00	TXNM1001-00	1	2	3	4	-	-	-	-
Control Head (Single LH) Chrome (without PTT)	NM1002-00	TXNM1002-00	1	2	3	4	-	-	-	-
Control Head (Single LH) Chre (without PTT) (SST)	NM1003-00	TXNM1003-00	1	2	3	4	-	-	-	-
Twin Control Head Chrome (with PTT)	NM1051-00	TXNM1051-00	-	-	-	-	1	2	3	4
Twin Control Head Chrome (without PTT)	NM1052-00	TXNM1052-00	-	-	-	-	1	2	3	4
Twin Control Head Inboard Chrome (SST)	NM1053-00	TXNM1053-00	-	-	-	-	1	2	3	4
Control Unit 12/24 Volt DC	NM1475-00	TXNM1475-00	1	1	1	1	2	2	2	2
KE-4+ Actuator	NM0183-00	TXNM0183-00	1	1	1	1	2	2	2	2
Power Supply Harness (5m)	NM0414-28	TXNM0414-28	2	2	2	2	4	4	4	4
Power Supply Harness (10m)	NM0414-33	TXNM0414-33	2	2	2	2	4	4	4	-
T-Harness (R/C-1) With Terminator	NM0647-09	TXNM0647-09	1	1	1	1	-	-	-	-
T-Harness (R/C)	NM0647-10	TXNM0647-10	-	1	2	3	-	1	2	3
T-Harness (Single) With Terminator	NM0647-11	TXNM0647-11	1	1	1	1	-	-	-	-
T-Harness (Port) With Terminator	NM0647-12	TXNM0647-12	-	-	-	-	1	1	1	1
T-Harness (STBD)	NM0647-13	TXNM0647-13	-	-	-	-	1	1	1	1
T-Harness (Centre)	NM0647-14	TXNM0647-14	-	-	-	-	-	-	-	-
T-Harness (Centre STBD)	NM0647-15	TXNM0647-15	-	-	-	-	-	-	-	-
Bus Harness 2m	NM0649-02	TXNM0649-02	1	2	3	4	2	3	4	5
Bus Harness 4m	NM0649-04	TXNM0649-04	1	2	3	4	2	3	4	5
Bus Harness 6m	NM0649-06	TXNM0649-06	1	2	3	4	2	3	4	5
Bus Harness 8m	NM0649-08	TXNM0649-08	1	2	3	4	2	3	4	5
Bus Harness 10m	NM0649-10	TXNM0649-10	1	2	3	4	2	3	4	5
Bus Harness 12m	NM0649-12	TXNM0649-12	1	2	3	4	2	3	4	5
Bus Harness 14m	NM0649-14	TXNM0649-14	1	2	3	4	2	3	4	5
Bus Harness 16m	NM0649-16	TXNM0649-16	1	2	3	4	2	3	4	5
Bus Harness 18m	NM0649-18	TXNM0649-18	1	2	3	4	2	3	4	5
Bus Harness 22m	NM0649-22	TXNM0649-22	1	2	3	4	2	3	4	5
Bus Harness 24m	NM0649-24	TXNM0649-24	1	2	3	4	2	3	4	5
Bus Harness 30m	NM0649-30	TXNM0649-30	1	2	3	4	2	3	4	5
Bus Harness 40m	NM0649-40	TXNM0649-40	1	2	3	4	2	3	4	5
Bus Harness 50m	NM0649-50	TXNM0649-50	1	2	3	4	2	3	4	5
Triple Engine Switch	NJ0767-00	TXNJ0767-00	-	-	-	-	-	-	-	-
Quad Engine Switch	NJ0768-00	TXNJ0768-00	-	-	-	-	-	-	-	-
Circuit Breaker (20A)	NJ0514-00	TXNJ0514-00	2	2	2	2	4	4	4	4
Buzzer (24V)	NJ0515-00	TXNJ0515-00	1	2	3	4	2	4	6	8
Buzzer (12V)	NJ0596-00	TXNJ0596-00	1	2	3	4	2	4	6	8
Idle Switch	NJ0765-00	TXNJ0765-00	1	2	3	4	1	2	3	4
Idle Switch Extension Harness	NM0647-08	TXNM0647-08	1	2	3	4	1	2	3	4



SEASTAR
SOLUTIONS™

Seastar Stop Cables

- ◆ An easy-to-install, easy to operate, flexible push-pull cable for remote control of choke, throttle, shut off, fuel valves, vents and many other applications.
- ◆ Available with both knob and T-handle.
- ◆ Solid stainless steel core wire resists corrosion, moves easily in HDPE liner.
- ◆ HDPE outer casing for durability and best resistance to UV and chemicals.
- ◆ Universal for most outboard, outdrive and inboard units
- ◆ Stainless steel end fitting and cable wire
- ◆ Standard rod 10 – 32 UNF threaded ends
- ◆ Nominal 75mm travel
- ◆ Can be cut to the required length

Length (ft)	Length (m)	Seastar Part No	No
10	3.03	CC34310	TXCC34310
15	4.55	CC34315	TXCC34315
20	6.06	CC34320	TXCC34320
25	7.58	CC34325	TXCC34325



TX0301916



TX048210

DC Control - Single Function Bulkhead/Panel Mounting

- ◆ Converts a standard 3300/33C cable into a utility push/pull control.
- ◆ Install through a panel, or mount neary anywhere with optional bulkhead bracket TX048210

Description	Seastar Part No	No
DC Control	301916	TX301916
Uses CCX633XX * 3300/33C Type Cable		
Mounting Bracket (stainless steel)	048210	TX048210

* CCX633 is the recommended 3300/33C cable for use with the DC control



Bulkhead adaptor
kit 300673

Conduit Fitting Kits: Use these (formerly known as Hub Adapter Kits) to mount utility cables to mount in either bulkhead or clamp type applications.

Description	Seastar Part No	No
Bulkhead Adaptor Kit	300673	TX300673

Stop Collar – 3300/33C





TX037693







UNIVERSAL CONTROL CABLE SELECTION CHART

Universal Type Cables





(**) Indicate the cable length you require in feet - **TXCC2300(08)** = **TXCC2300** (8ft cable)

		TXCC2300**		
	Type F2003 - Light Duty	Cable Travel 3"	Bend Radius 8"	





Light duty cable for short runs

		TXCC330**		
	Type 33C Black & Red Jacket - Standard Duty	Cable Travel 3"	Bend Radius 8"	





Mid range cable for longer more complicated routes

		TXCCX633**		
	Type 33C Black Jacket - Xtreme Duty	Cable Travel 3"	Bend Radius 4"	

For short and long runs with difficult routing has a unique "Splined core" to reduce friction like a skater on ice!

		TXCCX632**		
	Type 33C Supreme Red Jacket - Xtreme Duty	Cable Travel 3"	Bend Radius 4"	

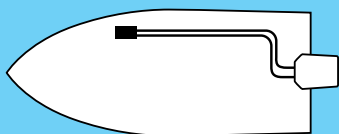
For short and long runs with difficult routing has a unique "Splined core" to reduce friction like a skater on ice!

		TXCCX43**		
	Type 43C Type - Heavy Duty	Cable Travel 3"	Bend Radius 5"	

Heavy duty applications

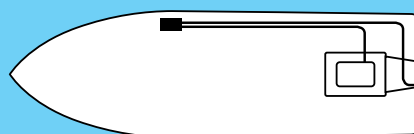
Note: Red Jacket cable - Historic Morse, Black Jacket cable - Historic Teleflex (cables are identical - same Thread, same Travel, same Bend Radii)

How to measure for a Replacement Control Cable Control cable length in feet. Round up up to next even foot.



For new installation Outboards

Cable length: measure cable path, add 3ft for engine loop. Round up to next even foot.

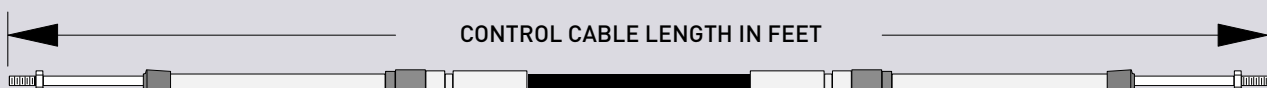


For new installation Sterndrive Inboards

Typical stern drive inboard control cable routing. Cable length: measure cable path and round up to next even foot.




For Replacement of Existing Cable:

If you have removed the old cable, measure the cable as follows: from tip to tip and round up to the next foot. The control cable part number contains its length. SeaStar Solutions cables are usually listed as **TXCC????XX**, where **XX** = length in feet. FOR EXAMPLE: Part Number **TXCC63320** = 20 ft. **TXCC633**



Light Duty 33C Type Control Cables

- ◆ Black outer cable
- ◆ Recommended for short cable installations
- ◆ Universal for most outboards, inboard and sterndrive engines
- ◆ Stainless steel inner wire and rod end fittings
- ◆ Standard 33C rod end thread 10 – 32 UNF
- ◆ Standard 33C stroke 3"/75mm

Cable Travel  76mm/3"	Bend Radius  203mm/8"	Thread Size  10-32" UNF
--	--	--

Length (ft)	Length (m)	Seastar Part No	No
6	1.83	CC23006	TXCC23006
7	2.13	CC23007	TXCC23007
8	2.43	CC23008	TXCC23008
9	2.73	CC23009	TXCC23009
10	3.03	CC23010	TXCC23010
11	3.33	CC23011	TXCC23011
12	3.64	CC23012	TXCC23012
13	3.93	CC23013	TXCC23013
14	4.24	CC23014	TXCC23014
15	4.55	CC23015	TXCC23015
16	4.85	CC23016	TXCC23016
17	5.15	CC23017	TXCC23017
18	5.45	CC23018	TXCC23018
19	5.76	CC23019	TXCC23019
20	6.06	CC23020	TXCC23020
21	6.36	CC23021	TXCC23021
22	6.67	CC23022	TXCC23022
23	6.97	CC23023	TXCC23023
24	7.27	CC23024	TXCC23024

Note: above cable now only available from 6 to 24 feet, for longer cable lengths use Seastar TFXtreme cable TXCCX633/length or Supreme cable TXCCX632/length.






33C Miracable Standard Control Cables

Grade – Standard, Colour – Black.

Recommended for use in more vigorous control cable applications. Universal for most outboard, outdrive and inboard units

- ◆ Stainless steel end fitting and cable wire
- ◆ Standard rod 10 – 32 UNF threaded ends
- ◆ Nominal 75mm travel

Cable Travel  76mm/3"	Bend Radius  203mm/8"	Thread Size  10-32" UNF
---	--	--

Length (ft)	Length (m)	Seastar Part No	No
6	1.83	CC33006	TXCC33006
7	2.13	CC33007	TXCC33007
8	2.43	CC33008	TXCC33008
9	2.73	CC33009	TXCC33009
10	3.03	CC33010	TXCC33010
11	3.33	CC33011	TXCC33011
12	3.64	CC33012	TXCC33012
13	3.93	CC33013	TXCC33013
14	4.24	CC33014	TXCC33014
15	4.55	CC33015	TXCC33015
16	4.85	CC33016	TXCC33016
17	5.15	CC33017	TXCC33017
18	5.45	CC33018	TXCC33018
19	5.76	CC33019	TXCC33019
20	6.06	CC33020	TXCC33020
21	6.36	CC33021	TXCC33021
22	6.67	CC33022	TXCC33022
23	6.97	CC33023	TXCC33023
24	7.27	CC33024	TXCC33024
25	7.58	CC33025	TXCC33025
26	7.92	CC33026	TXCC33026
27	8.23	CC33027	TXCC33027
28	8.53	CC33028	TXCC33028
29	8.84	CC33029	TXCC33029
30	9.14	CC33030	TXCC33030
32	9.75	CC33032	TXCC33032
34	10.36	CC33034	TXCC33034
36	10.97	CC33036	TXCC33036
40	12.19	CC33040	TXCC33040
46	14.02	CC33046	TXCC33046




33C Standard Red Jacket Cables

Grade – Standard, Colour – Red.

Recommended for use in more vigorous control cable applications.

- ◆ Universal for most outboard, outdrive and inboard units
- ◆ Stainless steel end fitting and cable wire
- ◆ Standard rod 10 – 32 UNF threaded ends
- ◆ Nominal 75mm travel

Cable Travel  76mm/3"	Bend Radius  203mm/8"	Thread Size  10-32" UNF
--	--	--

Length (ft)	Length (m)	Seastar Part No	No
3	0.91	CC33203	TXCC33203
4	1.22	CC33204	TXCC33204
5	1.52	CC33205	TXCC33205
6	1.83	CC33206	TXCC33206
7	2.13	CC33207	TXCC33207
8	2.43	CC33208	TXCC33208
9	2.73	CC33209	TXCC33209
10	3.03	CC33210	TXCC33210
11	3.33	CC33211	TXCC33211
12	3.64	CC33212	TXCC33212
13	3.93	CC33213	TXCC33213
14	4.24	CC33214	TXCC33214
15	4.55	CC33215	TXCC33215
16	4.85	CC33216	TXCC33216
17	5.15	CC33217	TXCC33217
18	5.45	CC33218	TXCC33218
19	5.76	CC33219	TXCC33219
20	6.06	CC33220	TXCC33220
21	6.36	CC33221	TXCC33221
22	6.67	CC33222	TXCC33222
23	6.97	CC33223	TXCC33223
24	7.27	CC33224	TXCC33224
25	7.58	CC33225	TXCC33225
26	7.92	CC33226	TXCC33226
27	8.23	CC33227	TXCC33227
28	8.53	CC33228	TXCC33228
29	8.84	CC33229	TXCC33229
30	9.14	CC33230	TXCC33230
32	9.75	CC33232	TXCC33232
34	10.36	CC33234	TXCC33234
36	10.97	CC33236	TXCC33236
38	11.58	CC33238	TXCC33238
40	12.19	CC33240	TXCC33240

33C Premium Red Jacket Cables

Grade – Premium, Colour – Red.

A unique splined core wire to achieve the 'impossible'. Its ridges allow a close fit with the cables inner liner, but with minimum contact, so the core glides back and forth like a skater on ice. Particularly suitable for dual stations.

- ◆ Universal for most outboard, outdrive and inboard units
- ◆ Stainless steel end fitting
- ◆ Standard rod 10 – 32 UNF threaded ends
- ◆ Nominal 75mm travel

Cable Travel  76mm/3"	Bend Radius  100mm/4"	Thread Size  10-32" UNF
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

Length (ft)	Length (m)	Seastar Part No	No
6	1.83	CCX63206	TXCCX63206
7	2.13	CCX63207	TXCCX63207
8	2.43	CCX63208	TXCCX63208
9	2.73	CCX63209	TXCCX63209
10	3.03	CCX63210	TXCCX63210
11	3.33	CCX63211	TXCCX63211
12	3.64	CCX63212	TXCCX63212
13	3.93	CCX63213	TXCCX63213
14	4.24	CCX63214	TXCCX63214
15	4.55	CCX63215	TXCCX63215
16	4.85	CCX63216	TXCCX63216
17	5.15	CCX63217	TXCCX63217
18	5.45	CCX63218	TXCCX63218
19	5.76	CCX63219	TXCCX63219
20	6.06	CCX63220	TXCCX63220
21	6.36	CCX63221	TXCCX63221
22	6.67	CCX63222	TXCCX63222
23	6.97	CCX63223	TXCCX63223
24	7.27	CCX63224	TXCCX63224
25	7.58	CCX63225	TXCCX63225
26	7.92	CCX63226	TXCCX63226
27	8.23	CCX63227	TXCCX63227
28	8.53	CCX63228	TXCCX63228
29	8.84	CCX63229	TXCCX63229
30	9.14	CCX63230	TXCCX63230
32	9.75	CCX63232	TXCCX63232
34	10.36	CCX63234	TXCCX63234
36	10.97	CCX63236	TXCCX63236
38	12.19	CCX63238	TXCCX63238
40	14.02	CCX63240	TXCCX63240
42	12.80	CCX63242	TXCCX63242
44	13.41	CCX63244	TXCCX63244
46	14.02	CCX63246	TXCCX63246
48	14.63	CCX63248	TXCCX63248
50	15.24	CCX63250	TXCCX63250
54	-	CCX63254	TXCCX63254
56	17.07	CCX63256	TXCCX63256
58	-	CCX63260	TXCCX63260
66	-	CCX63266	TXCCX63266

33C Xtreme Control Cables

Grade – Super Premium, Colour – Black.

Xtreme™ uses a unique splined core wire to achieve the 'impossible'. Its ridges allow a close fit with the cables inner liner, but with minimum contact, so the core glides back and forth like a skater on ice. Particularly suitable for dual stations.

- ◆ Universal for most outboard, outdrive and inboard units
- ◆ Stainless steel end fitting and cable wire
- ◆ Standard rod 10 – 32 UNF threaded ends
- ◆ Nominal 75mm travel

Cable Travel	Bend Radius	Thread Size
 76mm/3"	 100mm/4"	 10-32" UNF

Length (ft)	Length (m)	Seastar Part No	No
5	1.25	CCX63305	TXCCX63305
6	1.83	CCX63306	TXCCX63306
7	2.13	CCX63307	TXCCX63307
8	2.43	CCX63308	TXCCX63308
9	2.73	CCX63309	TXCCX63309
10	3.03	CCX63310	TXCCX63310
11	3.33	CCX63311	TXCCX63311
12	3.64	CCX63312	TXCCX63312
13	3.93	CCX63313	TXCCX63313
14	4.24	CCX63314	TXCCX63314
15	4.55	CCX63315	TXCCX63315
16	4.85	CCX63316	TXCCX63316
17	5.15	CCX63317	TXCCX63317
18	5.45	CCX63318	TXCCX63318
19	5.76	CCX63319	TXCCX63319
20	6.06	CCX63320	TXCCX63320
21	6.36	CCX63321	TXCCX63321
22	6.67	CCX63322	TXCCX63322
23	6.97	CCX63323	TXCCX63323
24	7.27	CCX63324	TXCCX63324
25	7.58	CCX63325	TXCCX63325
26	7.92	CCX63326	TXCCX63326
27	8.23	CCX63327	TXCCX63327
28	8.53	CCX63328	TXCCX63328
29	8.84	CCX63329	TXCCX63329
30	9.14	CCX63330	TXCCX63330
32	9.75	CCX63332	TXCCX63332
34	10.36	CCX63334	TXCCX63334
36	10.97	CCX63336	TXCCX63336
38	12.19	CCX63338	TXCCX63338
40	14.02	CCX63340	TXCCX63340
42	12.80	CCX63342	TXCCX63342
44	13.41	CCX63344	TXCCX63344
46	14.02	CCX63346	TXCCX63346
48	14.63	CCX63348	TXCCX63348
50	15.24	CCX63350	TXCCX63350
54	-	CCX63354	TXCCX63354
56	17.07	CCX63356	TXCCX63356
58	-	CCX63358	TXCCX63358
60	18.25	CCX63360	TXCCX63360
72	-	CCX63372	TXCCX63372

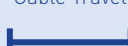




43C Xtreme Control Cables

Grade – Super Premium, Colour – Black.

Xtreme™ uses a unique splined core wire to achieve the 'impossible'. Ridges allow a close fit with the cables inner liner, but with minimum contact, so the core glides back and forth like a skater on ice. Particularly suitable for dual stations.

- ◆ Universal for most outboard, outdrive and inboard units
- ◆ Stainless steel end fitting and cable wire
- ◆ Standard rod 1/4" – 28" UNF threaded ends
- ◆ Nominal 75mm travel

Cable Travel	Bend Radius	Thread Size
 76mm/3"	 125mm/5"	 1/4"-28" UNF

Length (ft)	Length (m)	Seastar Part No	No
6	1.83	CCX43306	TXCCX43306
7	2.13	CCX43307	TXCCX43307
8	2.43	CCX43308	TXCCX43308
9	2.73	CCX43309	TXCCX43309
10	3.03	CCX43310	TXCCX43310
11	3.33	CCX43311	TXCCX43311
12	3.64	CCX43312	TXCCX43312
13	3.93	CCX43313	TXCCX43313
14	4.24	CCX43314	TXCCX43314
15	4.55	CCX43315	TXCCX43315
16	4.85	CCX43316	TXCCX43316
17	5.15	CCX43317	TXCCX43317
18	5.45	CCX43318	TXCCX43318
19	5.76	CCX43319	TXCCX43319
20	6.06	CCX43320	TXCCX43320
21	6.36	CCX43321	TXCCX43321
22	6.67	CCX43322	TXCCX43322
23	6.97	CCX43323	TXCCX43323
24	7.27	CCX43324	TXCCX43324
25	7.58	CCX43325	TXCCX43325
26	7.92	CCX43326	TXCCX43326
27	8.23	CCX43327	TXCCX43327
28	8.53	CCX43328	TXCCX43328
29	8.84	CCX43329	TXCCX43329
30	9.14	CCX43330	TXCCX43330
32	9.75	CCX43332	TXCCX43332
56	17.07	CCX43356	TXCCX43356
60	18.25	CCX43360P	TXCCX43360





SEASTAR
SOLUTIONS®

A COMPLETE FAMILY OF CABLES:



TXCCX189XX
Merc Gen II type
(4000 series controls)

TXCCX179XX
Merc type (600A)

TXCCX205XX
OMC type (479)

TXCCX630XX
3600 Merc type


TXCCX633XX
3300CC type
(10-32 threaded
end)

TXCCX430XX
4300/43BC type
(1/4-28 threaded
end)

TXCCX433XX
4300/43CC type
(1/4-28 threaded
end)

TXCCX640XX
6400/64BC type
(5/16-24 threaded
end)

TXCCX643XX
6400/64CC type
(5/16-24 threaded
end)

SeaStar Solutions  **xtreme** technology cables are the **ONLY** high performance cable family with a **FULL RANGE** of universal cables and **ALL** popular direct replacement OEM type cables.

OEM Cable Applications:

OEM direct-replacement type cables are designed to fit BRP®, Mercury®, Mariner®, OMC®, Volvo® and similar OEM engine control heads which use a proprietary control cable connection. ***xtreme** versions of the most popular cables are offered for demanding applications in which a smooth feel at the control is essential.

For These Controls:

Mercury®, MerCruiser®, Mariner®, Force®, OMC®, Evinrude®, Johnson®, Volvo®, SeaStar Solutions Osprey Series CH1700, CH7500, CH7600, CH7800 and SL-3 Series.

Mercury/Mariner/Force/U.S. Marine:

Mercury Gen II type (standard) TXCC189XX

Mercury Gen II type (premium) TXCCX189XX

Mariner®/Mercury®/MerCruiser® and other engines using Mercury 2003-date 4000 series controls. CCX189XX is a ***xtreme** cable.

Mercury 600A type (standard) TXCC179XX

Mercury 600A type (premium) TXCCX179XX

Mariner®/Mercury®/MerCruiser® (1965-date); Force® (1993-date) with Mercury controls. All Mariner engines with Mercury/Mariner controls (except pre-1993 40 HP & lower models). All 1993-date Force (US Marine) with Force/US Marine/Mercury controls. CCX179XX is a ***xtreme** cable.

Mariner 630 type (standard) TXCC210XX

Mariner® (pre-1993 40 HP & less) with Mariner/Mercury controls.

Mercury 3600 type (premium) TXCCX630XX

Mercury® products (1965-date); Force® (1993-date) using controls which accept 10-32 threaded ends or using most aftermarket controls. Mercury style engine end connection.

US Marine® L-Drive shift cable (std.) TXCC213XX

U.S. Marine "L-Drive" engines with original equipment controls.
Drop-in replacement for "L-Drive" shift cables.

Features:

- ◆ Drop-in replacement cables are engineered as replacements for original equipment cables.
- ◆ Cables use the existing connection components.
- ◆ Stainless steel and brass fittings.
- ◆ Standard cables use stainless steel Lubri-Core™ core wire for smooth operation and long life. [8" minimum bend radius.]
- ◆ Premium cables have a heavy jacket and the ***xtreme** splined, coated core element for maximum smoothness with minimal lost motion. [4" min. bend radius.]
- ◆ Black HDPE outer casing for durability and best resistance to UV and chemicals.
- ◆ Red conduit international only.

BRP, OMC, Johnson, Evinrude, Volvo/OMC:

400 type (standard) TXCC170XX

Pre-1979 OMC®/Johnson®/Evinrude® with BRP/OMC controls.
Exceeds engine manufacturer's specifications.

479 type (standard) TXCC205XX

479 type (premium) TXCCX205XX

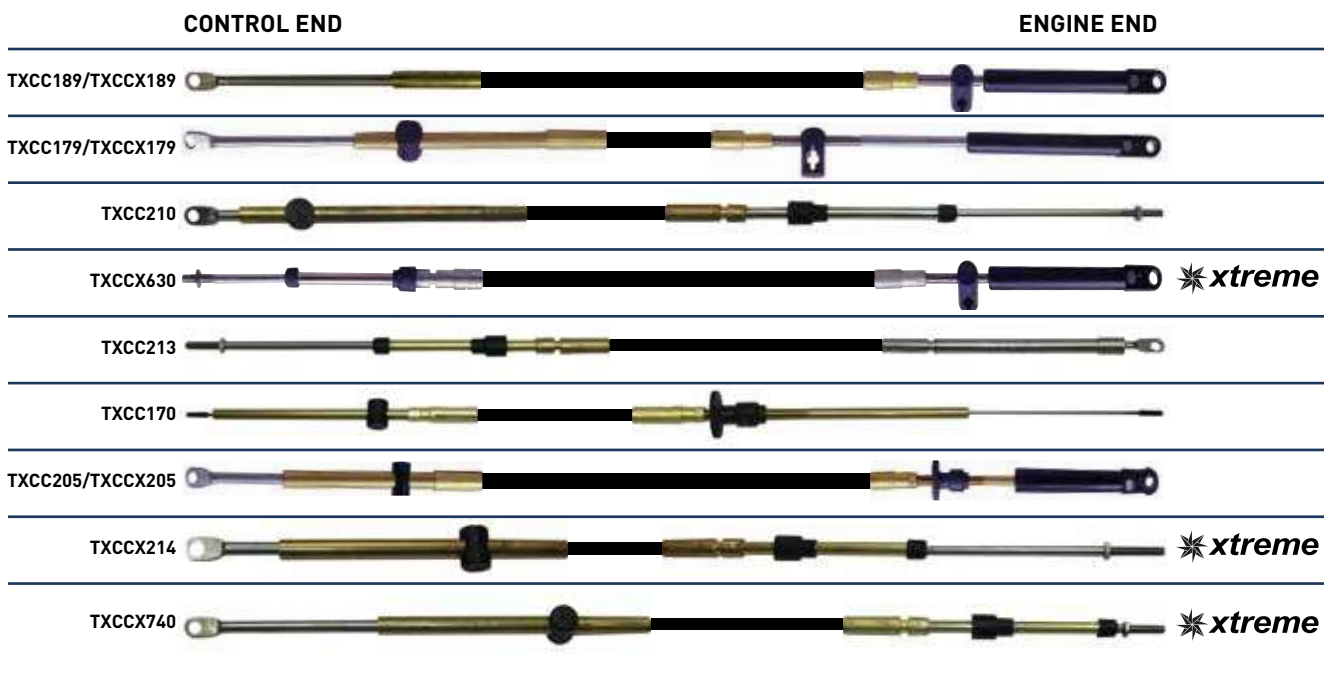
1979-date BRP®/OMC®/Johnson®/Evinrude®/Gale® with BRP/OMC controls. Exceeds engine manufacturer's specifications. CCX205XX is a ***xtreme** cable.

Volvo/OMC cable (premium) TXCCX214XX

Volvo engines using BRP/OMC side mount controls.

Volvo/OMC cable (premium) TXCCX740XX


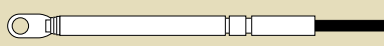




Volvo engines using top mount BRP/OMC controls.










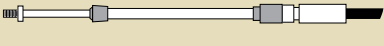
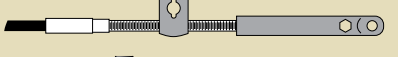



OEM TYPE REPLACEMENT CABLES SELECTION CHART


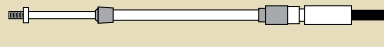
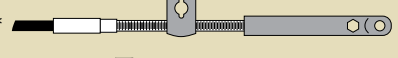



OEM Engine Cables



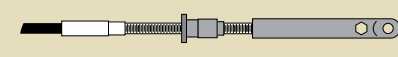



(**) Indicate the cable length you require in feet - **TXCC2300(08) = TXCC2300 (8ft cable)**



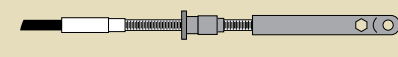



	 TXCC189** 2003 to date				Lengths available 10ft - 24ft
	TXCCX189 Xtreme Mercury Gen II	TXCCX189** 2003 to date			
Type TXCC189 Standard Mercury Gen II	Cable Travel 3"	Bend Radius 8"	Thread Size Engine Specific	Lengths available 10ft - 24ft	
TXCCX189 Xtreme Mercury Gen II	Cable Travel 3"	Bend Radius 4"	Thread Size Engine Specific	Lengths available 6ft - 24ft	

	 TXCC179** 1965 to date				Lengths available 10ft - 24ft
	TXCCX179 Mercury 600A Xtreme	TXCCX179** 1965 to date			
Type TXCC179 Mercury 600A Standard	Cable Travel 3"	Bend Radius 8"	Thread Size Engine Specific	Lengths available 10ft - 24ft	
TXCCX179 Mercury 600A Xtreme	Cable Travel 3"	Bend Radius 4"	Thread Size Engine Specific	Lengths available 6ft - 24ft	

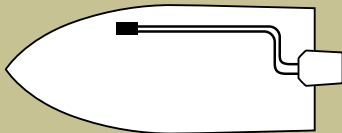
	 TXCC210** Pre 1993				Lengths available 10ft - 24ft
	TXCCX210 Mercury/Mariner 630 Xtreme	TXCCX210** Pre 1993			
Type TXCC179 Mercury/Mariner 630	Cable Travel 3"	Bend Radius 8"	Thread Size Engine Specific	Lengths available 10ft - 24ft	
TXCCX179 Mercury/Mariner 630	Cable Travel 3"	Bend Radius 8"	Thread Size Engine Specific	Lengths available 10ft - 24ft	

	 TXCCX630**				Lengths available 8ft - 24ft
	TXCC630 Mercury/Mariner 6300 Standard	TXCC630**			
Type TXCCX630 Mercury/Mariner 6300 Xtreme	Cable Travel 3"	Bend Radius 4"	Thread Size Engine Specific	Lengths available 8ft - 24ft	
TXCC630 Mercury/Mariner 6300 Standard	Cable Travel 3"	Bend Radius 4"	Thread Size Engine Specific	Lengths available 8ft - 24ft	

	 TXCC205**				Lengths available 6ft - 24ft
	TXCCX205 OMC 479 Xtreme	TXCC205**			
Type TXCC205 OMC 479 Standard	Cable Travel 3"	Bend Radius 8"	Thread Size Engine Specific	Lengths available 6ft - 24ft	
TXCCX205 OMC 479 Xtreme	Cable Travel 3"	Bend Radius 8"	Thread Size Engine Specific	Lengths available 6ft - 24ft	

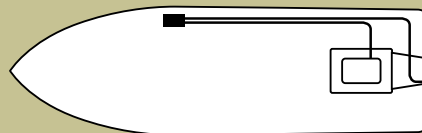
	 TXCC205**				Lengths available 6ft - 24ft
	TXCCX205 OMC 479 Xtreme	TXCC205**			
Type TXCC205 OMC 479 Standard	Cable Travel 3"	Bend Radius 4"	Thread Size Engine Specific	Lengths available 6ft - 24ft	
TXCCX205 OMC 479 Xtreme	Cable Travel 3"	Bend Radius 4"	Thread Size Engine Specific	Lengths available 6ft - 24ft	

How to measure for a Replacement Control Cable Control cable length in feet. Round up up to next even foot.



For new installation Outboards

Cable length: measure cable path, add 3ft for engine loop. Round up to next even foot.

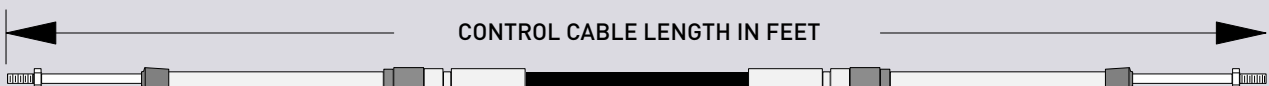


For new installation Sterndrive Inboards

Typical stern drive inboard control cable routing. Cable length: measure cable path and round up to next even foot.

For Replacement of Existing Cable:

If you have removed the old cable, measure the cable as follows: from tip to tip and round up to the next foot. The control cable part number contains its length. SeaStar Solutions cables are usually listed as **TXCC???XX**, where **XX** = length in feet. FOR EXAMPLE: Part Number **TXCCX63320** = 20 ft. **TXCCX633**



CONTROL CABLE OPTIONS BASED ON ENGINE TYPE:

Outboard Engines:	Standard Grade Using eng. mfr. controls	Standard Grade Using aftmkt. controls
Chrysler®	CC230XX + ball joint kit*	CC230XX + ball joint kit*
Force® pre-1993	CC230XX + ball joint kit*	CC230XX + ball joint kit*
Force® 1993-date	CC179XX (600A type)	CC230XX + CA27319P kit**
Johnson®/Evinrude® 1979-date	CC205XX (479 type)	CC230XX + CA27320P kit**
Johnson®/Evinrude® pre-1979	CC170XX (400 type)	CC230XX + CA27321P kit**
Mariner® 40 HP & below pre-1993	CC210XX (630 type)	CC230XX
Mariner® 40 HP & below 1993-date	CC179XX (600A type)	CC230XX + CA27319P kit**
Mariner® all above 40 HP	CC179XX (600A type)	CC230XX + CA27319P kit**
Mercury® 1965-date	CC179XX (600A type)	CC230XX + CA27319P kit**
Mercury® products 2003-date (4000 series Gen II controls)	CC189XX (Gen II type)	N/A
Honda®, Nissan®, Suzuki®, Tohatsu®, Yamaha®	CC230XX	CC230XX
Sterndrive (i/o) and some inboards:		
Chrysler® , All Inboards	CC230XX	CC230XX
MerCruiser® , All Stern Drives (except 4000 series controls)	CC179XX (600A type)	CC230XX + CA27319P kit**
MerCruiser® 2003-date (using 4000 series controls)	CC189XX (Gen II type)	N/A
Mercury® , All Inboards (except 4000 series controls)	CC179XX (600A type)	CC230XX + CA27373P kit**
Mercury® Inboards 2003-date (using 4000 series controls)	CC189XX (Gen II type)	N/A
OMC® 1979-date	CC205XX (479 type)	CC230XX + CA27320P kit**
OMC® pre-1979	CC170XX (400 type)	CC230XX + CA27321P kit**
Volvo® using Volvo® controls	CC230XX	CC230XX
Volvo® using OMC® controls	N/A	N/A
Volvo® Turbo, SX, new-gen OMC drives w/ OMC® controls	N/A	N/A
Others	CC172XX/CC230XX	CC172XX/CC230XX
Heavy duty applications, including some inboard and jet engines:		
1/4-28 terminal, 1 bulkhead, 1 clamp fitting (43BC)	(see Premium Grade)	(see Premium Grade)
1/4-28 terminal, 2 clamp fittings (43C)	(see Premium Grade)	(see Premium Grade)
5/16-24 terminal, 1 bulkhead, 1 clamp fitting (64BC)	(see Premium Grade)	(see Premium Grade)
5/16-24 terminal, 2 clamp fittings (64BC)	(see Premium Grade)	(see Premium Grade)
Jet Engines (Mercury Sport jJet®, OMC Turbo Jet® and similar):		
Mercury® Sport Jet 90 & 120 (throttle cable)	CC230XX + CA27319P kit**	CC230XX + CA27319P kit**
Mercury® Sport Jet 90 & early 120 (gate cable)	CC213XX	CC213XX
Mercury® Sport Jet 175 (gate cable)	N/A	N/A
OMC® Turbo Jet (throttle control cable)	CC205XX (479 type)	CC230XX + CA27320P kit**
OMC® Turbo Jet (gate control cable)	N/A	N/A

* Proprietary ball joint type cable adapter kit required to complete connection to the engine. This part (formerly SeaStar Solutions P/N CA27019P) is no longer available from SeaStar Solutions. Please consult with Mercury Marine for more information about Chrysler and early model Force engines using this type of cable connection.

** Cable adapter kits listed are required to complete connection to the engine. Consult engine manufacturer, dealer or distributor if kit is not listed.

*** Cable part numbers shown are for OMC side-mount controls (CCX214XX); OMC binnacle-top mount controls (CCX740XX).

NOTE: Most control cables are available in lengths from 6 to 50 feet. Where Part Numbers are indicated, XX = length in feet for SeaStar Solutions cables. Lengths above 30 feet are only available in two-foot increments (32, 34, 36, etc.)

General rule: use direct replacement type cable whenever possible; use ***xtreme** cables for difficult routings/multiple stations.



Midrange Grade Using eng. mfr. controls	Midrange Grade Using eng. mfr. controls	Premium Grade (*xtreme) Using eng. mfr. controls	Premium Grade (*xtreme) Using eng. mfr. controls
CC332XX + + ball joint kit*	CC332XX + ball joint kit*	CCX633XX + ball joint kit*	CCX633XX + ball joint kit*
N/A	CC332XX	CCX633XX + ball joint kit*	CCX633XX + ball joint kit*
	CC332XX + CA27319P**	CCX179XX (600A type)	CCX630XX
N/A	CC332XX + CA27320P**	CCX205XX (479 type)	CCX633XX + CA27320P kit**
N/A	CC332XX + CA27319P**	N/A	CCX633XX + CA27321P kit**
N/A	CC332XX	N/A	CCX633XX
N/A	CC332XX + CA27319P**	CCX179XX (600A type)	CCX630XX
N/A	CC332XX + CA27319P**	CCX179XX (600A type)	CCX630XX
N/A	CC332XX + CA27319P**	CCX179XX (600A type)	CCX630XX
N/A	N/A	CCX189XX (Gen II type)	N/A
CC332XX**	CC332XX**	CCX633XX/*xtreme**	CCX633XX**
CC332XX	CC332XX	CCX633XX	CCX633XX
N/A	CC332XX	CCX179XX (600A type)	CCX630XX
N/A	N/A	CCX189XX (Gen II type)	N/A
N/A	CC332XX	CCX179XX (600A type)	CCX630XX
N/A	N/A	CCX189XX (Gen II type)	N/A
N/A	CC332XX	CCX205XX (479 type)	CCX633XX + CA27320P kit**
N/A	CC332XX	N/A	CCX633XX + CA27321P kit**
CC332XX**	CC332XX**	CCX633XX	CCX633XX
N/A	N/A	CCX214XX*** or CCX740XX	N/A
N/A	N/A	CCX214XX*** or CCX740XX	N/A
CC332XX	CC332XX	CCX633XX	CCX633XX
(see Premium Grade)	(see Premium Grade)	CCX430XX (replaces Morse® 43BC)	CCX430XX (replaces Morse® 43BC)
(see Premium Grade)	(see Premium Grade)	CCX433XX (replaces Morse® 43CC)	CCX433XX (replaces Morse® 43CC)
(see Premium Grade)	(see Premium Grade)	CCX640XX (replaces Morse® 64BC)	CCX640XX (replaces Morse® 64BC)
(see Premium Grade)	(see Premium Grade)	CCX643XX (replaces Morse® 64CC)	CCX643XX (replaces Morse® 64CC)
CC332XX + CA27319P kit**	CC332XX + CA27319P**	CCX630XX	CCX630XX
N/A	N/A	N/A	N/A
CC400XX	CC400XX	N/A	N/A
N/A	CC332XX + CA27320P**	CCX205XX (479 type)	CCX633XX + CA27320P kit**
N/A	CC332XX	CCX214XX*** or CCX740XX***	CCX633XX

** (For connection kit number see premium grade listing at right for same engine/control.)

** (For connection kit number see premium grade listing at right for same engine/control.)

OMC® 400 (Pre 1979) Standard

- ◆ BRP, OMC, Johnson, Evinrude, Volvo/OMC
- ◆ 400 type (standard).
- ◆ Pre 1979 OMC®, Johnson®, Evinrude® with BRP/OMC controls
- ◆ Exceeds engine manufacturers specifications
- ◆ Cables use the existing cable components
- ◆ Stainless steel and brass fittings
- ◆ Stainless steel LubriCore™ core wire for smooth operation and long life
- ◆ Black HDPE outercasing for durability and best resistance to UV and chemicals

Cable Travel  76mm/3"	Bend Radius  200mm/8"	Cable end fittings exactly same as OEM
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Length (ft)	Length (m)	Seastar Part No	No
10	3.03	CCX17010	TXCC17010
11	3.33	CCX17011	TXCC17011
19	5.76	CCX17019	TXCC17019
20	6.06	CCX17020	TXCC17020



OMC® 479 (Snap On) Standard

- ◆ Like-for-like OEM replacement cable
- ◆ BRP, OMC, Johnson, Evinrude, Volvo/OMC
- ◆ 400 type (standard).
- ◆ Pre 1979 OMC®, Johnson®, Evinrude® with BRP/OMC controls
- ◆ Exceeds engine manufacturers specifications
- ◆ Cables use the existing cable components
- ◆ Stainless steel and brass fittings
- ◆ Stainless steel LubriCore™ core wire for smooth operation and long life
- ◆ Black HDPE outercasing for durability and best resistance to UV and chemicals

Cable Travel  76mm/3"	Bend Radius  200mm/8"	Cable end fittings exactly same as OEM
---	--	--

Length (ft)	Length (m)	Seastar Part No	No
6	1.83	CC20506	TXCC20506
7	2.13	CC20507	TXCC20507
8	2.43	CC20508	TXCC20508
9	2.73	CC20509	TXCC20509
10	3.03	CC20510	TXCC20510
11	3.33	CC20511	TXCC20511
12	3.64	CC20512	TXCC20512
13	3.93	CC20513	TXCC20513
14	4.24	CC20514	TXCC20514
15	4.55	CC20515	TXCC20515
16	4.85	CC20516	TXCC20516
17	5.15	CC20517	TXCC20517
18	5.45	CC20518	TXCC20518
19	5.76	CC20519	TXCC20519
20	6.06	CC20520	TXCC20520
21	6.36	CC20521	TXCC20521
22	6.67	CC20522	TXCC20522
23	6.97	CC20523	TXCC20523
24	7.27	CC20524	TXCC20524



OMC® 479 (Snap On) TFXtreme®

- ◆ Like-for-like OEM replacement cable
- ◆ BRP, OMC, Johnson, Evinrude, Gale
- ◆ 1979 – to date BRP®, Johnson®, Evinrude®, Gale® fitted with BRP/OMC controls
- ◆ Exceeds engine manufacturers specifications
- ◆ Cables use the existing connection components
- ◆ Stainless steel and brass fittings
- ◆ Xtreme splined, coated core element for maximum smoothness with minimal lost motion
- ◆ Heavy jacket outer casing for maximum durability and resistance to UV and chemicals


 Cable Travel 76mm/3"	 Bend Radius 100mm/4"	Cable end fittings exactly same as OEM
--	--	--

Length (ft)	Length (m)	Seastar Part No	No
7	2.13	CCX20507	TXCCX20507
8	2.43	CCX20508	TXCCX20508
9	2.73	CCX20509	TXCCX20509
10	3.03	CCX20510	TXCCX20510
11	3.33	CCX20511	TXCCX20511
12	3.64	CCX20512	TXCCX20512
13	3.93	CCX20513	TXCCX20513
14	4.24	CCX20514	TXCCX20514
15	4.55	CCX20515	TXCCX20515
16	4.85	CCX20516	TXCCX20516
17	5.15	CCX20517	TXCCX20517
18	5.45	CCX20518	TXCCX20518
19	5.76	CCX20519	TXCCX20519
20	6.06	CCX20520	TXCCX20520
21	6.36	CCX20521	TXCCX20521
23	6.97	CCX20523	TXCCX20523
27	8.23	CCX20527	TXCCX20527



Mercury®/Mariner® 600A Standard

- ◆ Like-for-like OEM replacement cable
- ◆ Mariner®, Mercury®, MerCruiser®(1965 – to date), Force® (1993 – to date) with Mercury controls.
- ◆ All Mariner engines with Mercury/Mariner controls (except pre-1993 40HP and lower models)
- ◆ All 1993 – to date Force (US Marine) with Force/US Marine/Mercury controls
- ◆ Exceeds engine manufacturers specifications
- ◆ Cables use the existing connection components
- ◆ Stainless steel and brass fittings
- ◆ Stainless steel LubriCore™ core wire for smooth operation and long life
- ◆ Black HDPE outercasing for durability and best resistance to UV and chemicals

 Cable Travel 76mm/3"	 Bend Radius 200mm/8"	Cable end fittings exactly same as OEM
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Length (ft)	Length (m)	Seastar Part No	No
6	1.83	CC17906	TXCC17906
7	2.13	CC17907	TXCC17907
8	2.43	CC17908	TXCC17908
9	2.73	CC17909	TXCC17909
10	3.03	CC17910	TXCC17910
11	3.33	CC17911	TXCC17911
12	3.64	CC17912	TXCC17912
13	3.93	CC17913	TXCC17913
14	4.24	CC17914	TXCC17914
15	4.55	CC17915	TXCC17915
16	4.85	CC17916	TXCC17916
17	5.15	CC17917	TXCC17917
18	5.45	CC17918	TXCC17918
19	5.76	CC17919	TXCC17919
20	6.06	CC17920	TXCC17920
21	6.36	CC17921	TXCC17921
22	6.67	CC17922	TXCC17922
23	6.97	CC17923	TXCC17923
24	7.27	CC17924	TXCC17924
22	6.67	CC17922	TXCC17922
23	6.97	CC17923	TXCC17923
24	7.27	CC17924	TXCC17924



Mercury®/Mariner® 600A Xtreme®

- ◆ Like-for-like OEM replacement cable
- ◆ Mariner®, Mercury®, MerCruiser®(1965 – to date), Force® (1993 – to date) with Mariner/Mercury controls.
- ◆ All Mariner engines with Mercury/Mariner controls (except pre-1993 40HP and lower models)
- ◆ All 1993 – to date Force (US Marine) with Force/US Marine/Mercury controls
- ◆ Exceeds engine manufacturers specifications
- ◆ Cables use the existing connection components
- ◆ Stainless steel and brass fittings
- ◆ Xtreme splined, coated core element for maximum smoothness with minimal lost motion
- ◆ Heavy jacket outer casing for maximum durability and resistance to UV and chemicals


Cable Travel  76mm/3"	Bend Radius  100mm/4"	Cable end fittings exactly same as OEM
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Length (ft)	Length (m)	Seastar Part No	No
7	2.13	CCX17907	TXCCX17907
8	2.43	CCX17908	TXCCX17908
9	2.73	CCX17909	TXCCX17909
10	3.03	CCX17910	TXCCX17910
11	3.33	CCX17911	TXCCX17911
12	3.64	CCX17912	TXCCX17912
13	3.93	CCX17913	TXCCX17913
14	4.24	CCX17914	TXCCX17914
15	4.55	CCX17915	TXCCX17915
16	4.85	CCX17916	TXCCX17916
17	5.15	CCX17917	TXCCX17917
18	5.45	CCX17918	TXCCX17918
19	5.76	CCX17919	TXCCX17919
20	6.06	CCX17920	TXCCX17920
21	6.36	CCX17921	TXCCX17921
22	6.67	CCX17922	TXCCX17922
23	6.97	CCX17923	TXCCX17923
24	7.27	CCX17924	TXCCX17924
25	7.58	CCX17925	TXCCX17925
26	7.92	CCX17926	TXCCX17926
27	8.23	CCX17927	TXCCX17927
28	8.53	CCX17928	TXCCX17928
29	8.84	CCX17929	TXCCX17929
30	9.14	CCX17930	TXCCX17930



Mercury®/Mariner® 630 Standard

- ◆ Like-for-like OEM replacement cable
- ◆ Mariner® pre 1993 40HP or less with Mariner/Mercury controls.
- ◆ Exceeds engine manufacturers specifications
- ◆ Cables use the existing connection components
- ◆ Stainless steel and brass fittings
- ◆ Stainless steel LubriCore™ core wire for smooth operation and long life
- ◆ Black HDPE outer casing for durability and best resistance to UV and chemicals



Cable Travel  76mm/3"	Bend Radius  200mm/8"	Cable end fittings exactly same as OEM
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Length (ft)	Length (m)	Seastar Part No	No
8	2.43	CC21008	TXCC21008
10	3.03	CC21010	TXCC21010
11	3.33	CC21011	TXCC21011
12	3.64	CC21012	TXCC21012
13	3.93	CC21013	TXCC21013
14	4.24	CC21014	TXCC21014
15	4.55	CC21015	TXCC21015
16	4.85	CC21016	TXCC21016
17	5.15	CC21017	TXCC21017
18	5.45	CC21018	TXCC21018
19	5.76	CC21019	TXCC21019
20	6.06	CC21020	TXCC21020



Mercury®/Mariner® 360 TFXtreme®

- ◆ Like-for-like OEM replacement cable
- ◆ Mercury® (1965 – to date), Force® (1993 – to date) using controls which accept 10-32 threaded ends or using most aftermarket controls
- ◆ Mercury type engine end connections
- ◆ Exceeds engine manufacturers specifications
- ◆ Cables use the existing connection components
- ◆ Stainless steel and brass fittings
- ◆ Xtreme splined, coated core element for maximum smoothness with minimal lost motion
- ◆ Heavy jacket outer casing for maximum durability and resistance to UV and chemicals


Cable Travel  76mm/3"	Bend Radius  100mm/4"	Cable end fittings exactly same as OEM
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Length (ft)	Length (m)	Seastar Part No	No
8	2.43	CCX63008	TXCCX63008
10	3.03	CCX63010	TXCCX63010
11	3.33	CCX63011	TXCCX63011
12	3.64	CCX63012	TXCCX63012
13	3.93	CCX63013	TXCCX63013
14	4.24	CCX63014	TXCCX63014
15	4.55	CCX63015	TXCCX63015
16	4.85	CCX63016	TXCCX63016
17	5.15	CCX63017	TXCCX63017
18	5.45	CCX63018	TXCCX63018
19	5.76	CCX63019	TXCCX63019
20	6.06	CCX63020	TXCCX63020
21	6.36	CCX63021	TXCCX63021
22	6.67	CCX63022	TXCCX63022
23	6.97	CCX63023	TXCCX63023
24	7.27	CCX63024	TXCCX63024
26	7.92	CCX63026	TXCCX63026



Mercury®/Mariner®/ MerCruiser® GEN II® Standard

- ◆ Like-for-like OEM replacement cable
- ◆ Mercury® Mariner® MerCruiser® and other engines using 2003 – to date 4000 Series controls
- ◆ Exceeds engine manufacturers specifications
- ◆ Cables use the existing connection components
- ◆ Stainless steel and brass fittings
- ◆ Stainless steel LubriCore™ core wire for smooth operation and long life
- ◆ Black HDPE outer casing for durability and best resistance to UV and chemicals

Cable Travel  76mm/3"	Bend Radius  200mm/8"	Cable end fittings exactly same as OEM
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Length (ft)	Length (m)	Seastar Part No	No
10	3.03	CC18910	TXCC18910
11	3.33	CC18911	TXCC18911
12	3.64	CC18912	TXCC18912
13	3.93	CC18913	TXCC18913
14	4.24	CC18914	TXCC18914
15	4.55	CC18915	TXCC18915
16	4.85	CC18916	TXCC18916
17	5.15	CC18918	TXCC18918
18	5.45	CC18919	TXCC18919
19	5.76	CC18920	TXCC18920
20	6.06	CC18921	TXCC18921
21	6.36	CC18922	TXCC18922
22	6.67	CC18923	TXCC18923
23	6.97	CC18924	TXCC18924



Mercury®/Mariner®/ MerCruiser® GEN II® TFXtreme®

- ◆ Like-for-like OEM replacement cable
- ◆ Mercury® Mariner® MerCruiser® and other engines using 2003 – to date 4000 Series controls
- ◆ Exceeds engine manufacturers specifications
- ◆ Cables use the existing connection components
- ◆ Stainless steel and brass fittings
- ◆ Xtreme splined, coated core element for maximum smoothness with minimal lost motion
- ◆ Heavy jacket outer casing for maximum durability and resistance to UV and chemicals

Cable Travel



76mm/3"

Bend Radius



100mm/4"

Cable end fittings exactly same as OEM

Length (ft)	Length (m)	Seastar Part No	No
6	1.83	CCX18906	TXCCX18906
7	2.13	CCX18907	TXCCX18907
8	2.43	CCX18908	TXCCX18908
9	2.73	CCX18909	TXCCX18909
10	3.03	CCX18910	TXCCX18910
11	3.33	CCX18911	TXCCX18911
12	3.64	CCX18912	TXCCX18912
13	3.93	CCX18913	TXCCX18913
14	4.24	CCX18914	TXCCX18914
15	4.55	CCX18915	TXCCX18915
16	4.85	CCX18916	TXCCX18916
17	5.15	CCX18917	TXCCX18917
18	5.45	CCX18918	TXCCX18918
19	5.76	CCX18919	TXCCX18919
20	6.06	CCX18920	TXCCX18920
21	6.36	CCX18921	TXCCX18921
22	6.67	CCX18922	TXCCX18922
23	6.97	CCX18923	TXCCX18923
24	7.27	CCX18924	TXCCX18924
25	7.58	CCX18925	TXCCX18925
32	9.75	CCX18932	TXCCX18932



TX301074

TX304939

OEM Control-Specific Connection Kits for 3300/33C Cables

Description	Seastar Part No	No
Merc/Mariner Control Adapter - 3300/33C cable	301074	TX301074
OMC/J/E Control Adapter - 3300/33C cable	304939	TX304939



TXCA27247



Engine-Specific Connection Kits for 1973-1978 OMC OEM ("400" type) Cables with Bare Wire Ends

Description	Seastar Part No	No
Evinrude/Johnson O/B Kit (35HP and less)	CA27208P	TXCA27208
Evinrude/Johnson O/B Kit (over 35HP)	CA27247P	TXCA27247
OMC Stern Drive Kit (all)	CA27247P	TXCA27247

(NOTE: included clip is not used on stern drives.)



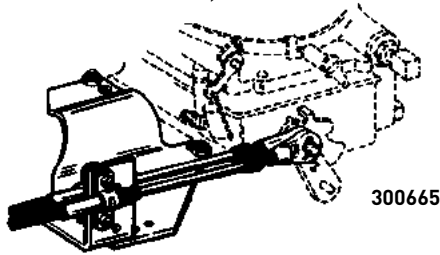
Engine-Specific Connection Kits for 3300/33C Cables

Description	Seastar Part No	No
Evinrude/Johnson O/B Kit (1979-date)	CA27320P	TXCA27320
Evinrude/Johnson O/B Kit (pre-1979)	CA27321P	TXCA27321
Mercury Outboard Kit (1965-date)	CA27319P	TXCA27319
Mercury Stern Drive Kit (all)	CA27319P	TXCA27319
OMC Stern Drive Kit (all)	CA27320P	TXCA27320

Connection Kits

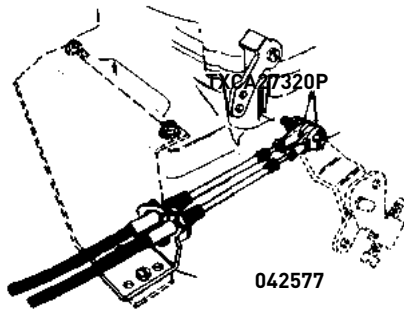
Pre-Engineered Clutch & Throttle Kits – by Engine Application

To convert from 3300/33C Dual Station to 4300/43C Dual Station, add



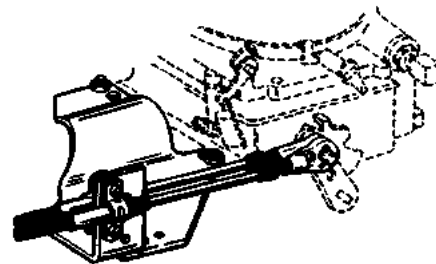
Description	Seastar Part No	No
Cummins (V, VT, KT, KTA 1975-up) 300665	300665	TX300665
GM (3,4 & 6-71 w/var. spd. Gov.)	300665	TX300665
GM (6, 8 & 12 V-71, 6 & 8 V-92 w/v.s.g.)	300665	TX300665

Pre-Engineered Clutch & Throttle Kits – by Transmission



For Dual Station 3300/33C Cables

Description	Seastar Part No	No
Twin Disc (MG, 508, 509, 510, 510A, 512)	042577	TX215301
Twin Disc (514C, 514CHP, 518, 521, 527)	042577	TX215301
Twin Disc (530 & 540)	042577	TX215301



To convert from 3300/33C Dual Station to 4300/43C Dual Station, add

Description	Seastar Part No	No
Borg-Warner (70, 71 & 72 inline-red gear)	300665	TX300665
Borg-Warner (71C & 72C drop centre)	300665	TX300665
Twin Disc (MG, 508, 509, 510, 510A, 512)	300665	TX300665
Twin Disc (514C, 514CHP, 518, 521, 527)	300665	TX300665
Twin Disc (530 & 540)	300665	TX300665
Twin Disc (MG502, 506 & 507)	300665	TX300665

For two cables, except where otherwise noted. [1] = for use with one cable.

Gear Shift Kit

For Newage PRM 310, 160 & 601 Gearboxes

- ◆ Cable enters from rear - push to forward detent
- ◆ For use with all SeaStar Controls with a 33C cable

Description	Seastar Part No	No
Includes: bracket x1, clamp bracket assembly x1, shim x1, clamp x1, screw 10-32 x2, washer x2, nut 10-32 x2, ball joint assembly x1	207299	TX207299



Conduit Fitting [Hub] Adapter Kits for Panel/Utility Cables

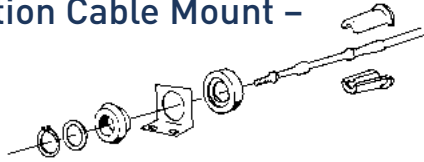


300673

Description	Seastar Part No	No
Bulkhead Adapter Kit – Panel Cables)	300673	TX300673

Anti-Vibration Cable Mount – 3300/33C

TX294200-001



Stop Collar – 3300/33C

TX037693



Cable Brake – 3300/33C, 4300/43 & 6400/64 Cables

TX044386



Eye Terminal Pin



38mm long, 8mm/ 5/16" diameter - **TX317413**



Cable Nest & Connection Kit

Description	Seastar Part No	No
Cable end options: 3300/33C (universal), BRP/OMC/Johnson/Evinrude, Mercury/Mercruiser, Mercury GEN II	212151-003	TX212151-003



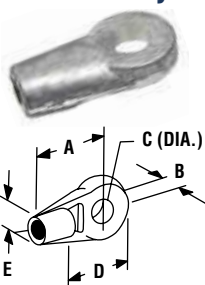
Dual Station Fitting Kit

TX207580

Mercruiser Sterndrive Kit

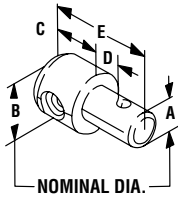
For 33C cables - **TX302123**

Terminal Eyes



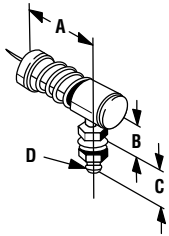
A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	Cable Type	Seastar Part No	No
25.4	6	7.9	9.1	12.7	40XL/43C	041134	TX041134
34.9	7.9	7.9	9.1	12.7	33C	317413	TX317413
-	-	-	-	-	40XL/43C	037639	TX037639

Pivots



A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	Cable Type	Seastar Part No	No
6.4	11.1	8.3	3.6	15.9	33C	031029	TX031029
6.4	11.1	8.3	7.5	19.8	33C	032392	TX032392
6.4	12.7	11.1	3.6	19.1	43C	036361	TX036361
6.4	12.7	12.7	6.7	23.8	43C	039110	TX039110

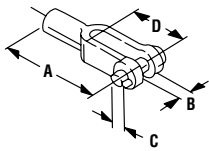
Ball Joints



A (mm)	B (mm)	C (mm)	D (mm)	Cable Type	Seastar Part No	No
24.6	11.9	14.3	1/4 - 28 UNF-2A	33C	031126	TX031126
23	11.9	11.1	10 - 32 UNF-2A	33C	031799-001	TX031799-001
28.6	13.5	22.2	5/16 - 24 UNF-2A	33C	035242	TX035242
-	-	-	1/4 - 28 UNF-2A	33C	CA37701P	TXCA37701
23	11.9	11.1	1/4 - 28 UNF-2A	43C	029104	TX029104
28.6	13.5	17.5	5/16 - 24 UNF-2A	64C*	038491	TX038491

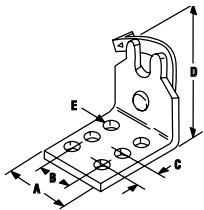
Cable - Universal Clevis Kits

For two cables, except where otherwise noted. (1) = for use with one cable.



A (mm)	B (mm)	C (mm)	D (mm)	Cable Type	Seastar Part No	No
39.7	4.8	4.8	25.4	33C	31800	TX031800
50.8	7.1	6.4	31.8	33C	31125	TX031125
57.2	8.7	7.9	36.5	33C	33395	TX033395
50.8	7.1	6.4	31.8	43C	29025	TX029025
57.2	8.7	7.9	36.5	43C	42212	TX042212

Cable Hook Clips

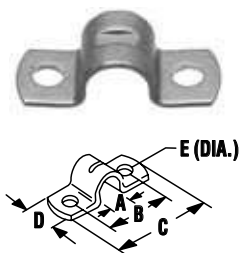


A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	Cable Type	Seastar Part No	No
25.4	12.7	9.5	38.1	5.1	33C	035531	TX035531
31.7	19	9.5	38.1	5.1	33C	036174	TX036174

TX035531 - Universal 3300/33C Inboard Connection Bracket (1) - (Old Morse® description: "Cable Hook Clip - Single")

TX036174 Univ. 3300/33C Cable Clip DS - (Old Morse® description: "Cable Hook Clip - Dual")

Cable Clamps



A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	Cable Type	Seastar Part No	No
9.5	25.4	38.1	12.7	5.1	33C	031509	TX031509
12.7	25.4	38.1	12.7	5.6	43C	031532	TX031532
14.3	31.8	44.5	15.9	7.1	64C	036733	TX036733

Univ. 3300/33C Clamp & Shim Kit (1) - **TXCA28020**
Shim for use with TX031523 43C clamp - **TX031538**

Installation Tips

Control cable routing paths should be chosen to minimise bends, kinks and obstructions.

Cable routing with a few gradual bends will result in better feel at the control than one with many sharp bends.

- a. Avoid tight or sharp bends in the cable routing.
- b. Take care not to kink the jacket (casing) or core wire.
- c. Handle cable with care during installation/maintenance.
- d. Keep cable away from excessive heat and moisture. (Do not route near exhaust manifolds or in a bilge, for example.)
- e. Don't lubricate core wire (moving wire inside the casing).
- f. Make sure cable moves freely before connecting to control and engine. Keep cable ends aligned correctly.
- g. Keep cable ends dirt and corrosion free.
- h. Lubricate pivot points and sliding parts of the cable with a good quality, water-resistant grease.

When connecting the THROTTLE control cable, ensure that cable travel and feel are properly adjusted:

- a. Adjust cable position so that throttle lever movement allows the full throttle range, from idle to full speed. This can be done at the engine end of OEM type cables and at either end of "universal" type cables.
- b. Adjust lever stops in control (if so equipped) to limit lever movement to slightly less than cable travel. This adjustment will help prevent cable damage if the lever is moved beyond the cable's range of travel.
- c. Adjust cable or lever brake (if so equipped) so that lever is easy to move, but does not creep due to vibration.
- d. In twin station applications, do not engage cable or lever brake at upper station control. This will create additional drag and make the control difficult to operate.
- e. In all cases, ensure that the cable end is aligned properly with the control lever arm (control end) and throttle arm (engine end). A control cable must swivel somewhat throughout its range of movement; ensure that the cable anchor points can swivel freely throughout its range of movement.

When connecting the SHIFT control cable, ensure that cable travel and feel are properly adjusted:

- a. Adjust cable position so that shift lever movement allows the full shift range, from neutral to forward and reverse, with full engagement of forward and neutral. Ensure that control detents (if so equipped) are synchronized with transmission detents, so that lever action matches the appropriate shift arm movement at the transmission. This can be done at the engine end of OEM type cables and at either end of "universal" type cables.
- b. Adjust lever stops in control (if so equipped) to limit lever movement to slightly less than cable travel. This adjustment will help prevent cable damage if the lever is moved beyond the cable's range of travel.
- c. Don't use a cable brake or lever brake on the shift cable. The cable must have some free movement to allow the transmission's shift detents to "centre" themselves.
- d. In twin station applications, do not engage the control's detents at upper station control. This will make it difficult to properly engage forward, neutral and reverse.
- e. In all cases, ensure that the cable end is aligned properly with the control lever arm (control end) and shift arm (engine end). A control cable must swivel somewhat throughout its range of movement; ensure that the cable anchor points can swivel freely throughout its range of movement.

Frequently Asked Questions

What kind of control cables go on my boat? The boat has a [brand name] engine.

There are several ways to determine this information by noting:

- appearance of the cable
- part number of the cable
- engine(s) and controls on which cable is used

Take a look at the existing cable.

Usually, the part number is stamped in white on the existing cable's plastic outer casing.

If you can't locate it or read the part number, check to see what brand of control and brand/year of engine is on the boat now.

With this information, you can determine which cable you need from identification/application charts in this catalogue. These charts will help you identify cables by appearance, part number, control type and engine brand/type.


In most cases, SeaStar Solutions offers three performance grades, called Standard, Midrange and Premium.

For maximum performance, we recommend our Premium  **xtreme** cables.

Once the part number of the replacement control cable is known, measure the one you have now if at all possible.

Please see "How to Measure Control Cables" in this catalogue and take special note of how measurements are made. The most frequent reason for the return of a new cable is that the incorrect length was ordered.

Can I use a dual function control in a dual station boat?

Yes, If you use the DS units shown on pages 72 & 73. If you do not use the DS units, the controls will bind up. Instead, use one single function dual lever control per engine at each station. There are several from which to choose, but recommend the CH5600P — a state-of-the-art mechanical control specifically designed to work smoothly in twin station boats. Single function controls for twin stations are set up with the cables "in series". This means that each cable is run from one lever of an upper station control to the corresponding lever of the lower station control. Another cable is then run from the lower station control to the engine. When the cables are properly connected, moving the levers at one station will move the levers at the other station in addition to actuating throttle and shift. Shift detents should be used in the lower station control(s) (closest to the engine) only. Do not install shift detents in the second station control. When mechanical controls are used in two stations, we always recommend  **xtreme** cables, which are also specifically designed to work smoothly in twin station applications. When combined with

CH5600 controls, these cables give you superior smoothness and response. Because of their unique construction, these cables have very little backlash, so a high-quality synchronization of the control head lever position and feel at each station (including shift detents) is possible.

If a mechanical control system cannot deliver acceptable feel or response, upgrade to an electronic control system.

I want to add a station to my boat. What do I need to do?

First determine the type of control system on your boat now. That will help you identify the options available to you.

Measure the distance between stations and approximately how you would route the cables from one station to another.

This will give you a starting point as to which components you may need and how long any cables might be.

Generally speaking, if the run between stations is relatively short and uncomplicated, mechanical controls will do.

(Please see previous FAQ for information about which kind of control is recommended and general installation parameters).

If the run between stations is long or complex, or there are more than two stations on the boat, mechanical controls are not recommended.

Use an electronic control system instead.

(Please see previous FAQ for options.)

When adding a station, a substantial amount of components will be required no matter which types of systems are selected.

If the boat has mechanical steering and controls, this is a good time to consider upgrading to SeaStar hydraulic steering and the SeaStar Solutions electronic controls.

I have a Teleflex® (SeaStar Solutions) control from 1989 and I need internal parts. Are any available?

There are no internal repair parts for any control components.

Proper field repair of these components is not possible.

The only service parts offered are those listed in this catalogue on the page with each control. Generally speaking, these are cable attachment hardware kits, neutral safety switches, handle knobs and other optional accessories.

For some control models, there are additional service parts.

If the repairs your control needs cannot be made, please replace it for safety reasons.

SeaStar Solutions offers the most comprehensive line of marine controls available — it is likely there



is one that is a drop-in replacement (or very close to one).

An overview of the controls and specifics on each model are shown earlier in this section.

My control used to work fine, but now one lever is hard to move. What should I do to fix this?

First, determine where the problem lies. There are three possible trouble areas: the control, the cable and the throttle or transmission connection. By isolating these one at a time, you will find the problem. Engine(s) must be OFF when performing these checks:

- a. Disconnect the cable at the throttle or transmission attachment point. Move the throttle or transmission arm through its arc to be certain there is no restriction or binding. If the arm is stiff or binding, clean and lubricate moving parts. If this does not solve the problem, make the appropriate repairs. Generally, the force required to move a throttle or shift arm should be no more than 5-10 pounds.
- b. With the cable disconnected at the engine end, try to move the control lever. If it moves freely, the problem was the throttle/transmission arm. If the control handle is still hard to operate, disconnect the cable from the control. If the lever operates smoothly, the control cable needs replacement. If the lever is still hard to move, lubricate the lever pivot point in the control with penetrating oil and a light grease.
- c. If the problem is with a throttle lever, you may have a cable brake installed to limit cable feedback to the handle. If this is the case, loosen or remove the brake. If throttle lever creep back is a problem on the boat, you should consider installing a SeaStar Solutions CH5600P SLT control. This unit will stop cable creep without sacrificing a smooth feel.

How do I know which control cable I need?

In order to determine that, you need to know what brand(s) of engine and control head are on the boat. Mercury/Mariner/Force and OMC/Johnson/Evinrude engines usually require an "OEM type" cable when using those engine makers' control heads. OEM type cables have special end fittings designed to connect to the control and engine with minimal hardware. Generally, all other engines and controls use a "universal" 3300/33C type control cable. Universal cables have 10-32 threaded ends and often require extra hardware to connect to the engine and control. Contact the engine manufacturer if you need details on the hookup. Diesels and twin station vessels may use larger diameter (4300/43 or 6400/64 type) universal cables; 4300/43 type cables have 1/4-28 threaded ends and 6400/64 cables have 5/16-24 threaded ends. Refer to the "Control Cables" section of this catalogue for more information.

How do I know which control cable length I need?

This depends on two things:

- a. Are you doing a first-time control cable installation?
Outboards: Measure from control along unobstructed cable routing to centre of outboard. Add four feet to allow for loop which provides unrestricted engine movement. Round up to next whole foot and order that length cable(s).
Stern Drives and Inboards: Measure from control along unobstructed cable routing to shift and/or throttle connection. Round this dimension off to the next whole foot and order that length cable(s).
- b. Are you replacing an existing cable?
Measure the Existing Cable as Follows: Measure the cable from tip to tip in inches, and round up to next even foot. Order that length cable.

What kind of ongoing maintenance do cables need? Can they be repaired?

We suggest the following periodic maintenance be performed at least twice a season:

- a. Check overall operation for proper gear engagement, full and idle throttle, and overall feel.
 - b. Visually inspect control head cable, as well as engine and transmission cable attachment points for proper tightness of fasteners, correct operation of all moving parts, worn or broken items, cable chafing or misalignment, etc.
 - c. Do not lubricate core wire (moving wire inside the casing). If the cable operates stiffly, replace it.
 - d. Keep cable ends dirt and corrosion free.
 - e. Lubricate pivot points and sliding parts of the cable with a good quality, water-resistant grease.
- When to replace a cable or connection hardware:
- a. Excessive free play felt at the control even after all cable connections have been verified as in good working order.
 - b. Visual inspection shows signs of chafing, breakage, bent, loose or worn parts.

Never attempt to repair a cable. Always replace a malfunctioning cable. A cable cannot be properly repaired in the field and must always be replaced as an assembly. Attempting to repair a cable can result in control system failure, leading to personal injury and/or property damage.



A	
AQM10103.....	33
AQM10104.....	33
AQM10106.....	33
AQM10109.....	33
AQM10120.....	33
AQM10130.....	33
AQM10135.....	33
AQM10140.....	33
AQM10141.....	33

H	
HYHA5438.....	54
HYHF5548.....	54
HYHK4400H3.....	51
HYHK44013.....	51
HYHM2246/6/4.....	54
HYHP4600.....	55
HYHP6050.....	54
HYHS5147.....	55
HYHS5176.....	55
HYPHF4202.....	5

Q	
Q002142.....	35
Q002144.....	35
Q004245.....	33
Q006514.....	35
Q007821.....	77
Q019964.....	29
Q039000.....	33
Q059201.....	34
Q059291.....	34
Q059401.....	34
Q059491.....	34
Q070321.....	34
Q070328.....	34
Q070351.....	34
Q070358.....	34
Q080041.....	35
Q080048.....	35
Q093010.....	35
Q093050.....	35
Q101001.....	50
Q101002.....	50
Q101004.....	50
Q101008.....	50
Q101009.....	50
Q101011.....	50
Q101020.....	48
Q101021.....	52
Q101026.....	48
Q101031.....	50
Q10105820.....	50
Q101060.....	55
Q101120.....	54
Q101121.....	54
Q101124.....	48
Q101125.....	49
Q101126.....	48
Q101129.....	48
Q101140.....	52
Q101141.....	52
Q101142.....	52

Q101143.....	52
Q101144.....	52
Q101147.....	52
Q101152.....	52
Q101155.....	49
Q101172.....	54
Q101174.....	54
Q101176.....	54
Q101178.....	54
Q101180.....	54
Q101182.....	54
Q101184.....	54
Q101186.....	54
Q101188.....	54
Q101192.....	54
Q101194.....	54
Q101196.....	54
Q101198.....	54
Q101307.....	55

T	
TX000094.....	67
TX001265.....	32
TX001354.....	32
TX003099.....	67
TX007380.....	67
TX009607.....	69
TX009641.....	69
TX0223019.....	71
TX022328.....	74
TX029025.....	99
TX029104.....	99
TX031029.....	99
TX031046-002.....	76
TX031125.....	99
TX031126.....	99
TX031509.....	99
TX031532.....	99
TX031538.....	99
TX031799-001.....	99
TX031800.....	99
TX032010.....	65
TX032392.....	99
TX032778-002.....	65
TX032786.....	65
TX033395.....	99
TX035232-001.....	65
TX035232-004.....	65
TX035242.....	99
TX035531.....	99
TX036733.....	99
TX037639.....	98
TX037693.....	77
TX038853.....	65
TX039489-002.....	74
TX039490-002.....	74
TX041134.....	98
TX042152.....	74
TX044386.....	76
TX047307.....	74
TX048210.....	77
TX051801033.....	64
TX061001.....	74
TX061342.....	77

TX064480.....	32
TX172100.....	68
TX172101.....	68
TX172103.....	67
TX172105.....	67
TX172107.....	66
TX172109.....	66
TX172131.....	68
TX172133.....	67
TX172135.....	66
TX172149.....	66
TX172152.....	68
TX178000.....	66
TX190008.....	71
TX203463.....	77
TX203688.....	77
TX204993.....	72
TX207299.....	97
TX207572.....	72
TX207573.....	72
TX207580.....	98
TX212151-003.....	98
TX215301.....	97
TX224598.....	32
TX292748.....	17
TX293945.....	11
TX294094.....	16
TX294200-001.....	98
TX300616.....	32
TX300617.....	32
TX300646.....	65
TX300673.....	77
TX300965.....	98
TX301074.....	96
TX301555.....	77
TX301916.....	77
TX302123.....	98
TX304919.....	65
TX304939.....	98
TX305499.....	65
TX306997.....	74
TX308598-001.....	65
TX308599.....	65
TX308727.....	65
TX308742.....	65
TX317413.....	98
TX317587.....	77
TX3604811.....	29
TX3828412.....	29
TX3941117.....	29
TX3941615.....	29
TX3962715.....	29
TX4009819.....	70
TX48676.....	65
TXAC7700.....	79
TXCA27100.....	71
TXCA27319.....	98
TXCA28020.....	99
TXCA37701P.....	99
TXCA67865P.....	74
TXCA67869P.....	74
TXCA69051.....	74
TXCA69052.....	65

TXCA76251P.....	69
TXCC17010.....	92
TXCC17011.....	92
TXCC17019.....	92
TXCC17020.....	92
TXCC17906.....	93
TXCC17907.....	93
TXCC17908.....	93
TXCC17909.....	93
TXCC17910.....	93
TXCC17911.....	93
TXCC17912.....	93
TXCC17913.....	93
TXCC17914.....	93
TXCC17915.....	93
TXCC17916.....	93
TXCC17917.....	93
TXCC17918.....	93
TXCC17919.....	93
TXCC17920.....	93
TXCC17921.....	93
TXCC17922.....	93
TXCC17923.....	93
TXCC17924.....	93
TXCC18907.....	95
TXCC18908.....	95
TXCC18909.....	95
TXCC18910.....	95
TXCC18911.....	95
TXCC18912.....	95
TXCC18913.....	95
TXCC18914.....	95
TXCC18915.....	95
TXCC18916.....	95
TXCC18918.....	95
TXCC18919.....	95
TXCC18920.....	95
TXCC18921.....	95
TXCC18922.....	95
TXCC18923.....	95
TXCC18924.....	95
TXCC20506.....	92
TXCC20507.....	92
TXCC20508.....	92
TXCC20509.....	92
TXCC20510.....	92
TXCC20511.....	92
TXCC20512.....	92
TXCC20513.....	92
TXCC20514.....	92
TXCC20515.....	92
TXCC20516.....	92
TXCC20517.....	92
TXCC20518.....	92
TXCC20519.....	92
TXCC20520.....	92
TXCC20521.....	92
TXCC20522.....	92
TXCC20523.....	92
TXCC20524.....	92
TXCC21008.....	94
TXCC21010.....	94
TXCC21011.....	94





TXCC21012	94	TXCC33205	85	TXCCX18909	96	TXCCX63008	95
TXCC21013	94	TXCC33206	85	TXCCX18910	96	TXCCX63010	95
TXCC21014	94	TXCC33207	85	TXCCX18911	96	TXCCX63011	95
TXCC21015	94	TXCC33208	85	TXCCX18912	96	TXCCX63012	95
TXCC21016	94	TXCC33209	85	TXCCX18913	96	TXCCX63013	95
TXCC21017	94	TXCC33210	85	TXCCX18914	96	TXCCX63014	95
TXCC21018	94	TXCC33211	85	TXCCX18915	96	TXCCX63015	95
TXCC21019	94	TXCC33212	85	TXCCX18916	96	TXCCX63016	95
TXCC21020	94	TXCC33213	85	TXCCX18917	96	TXCCX63017	95
TXCC23006	84	TXCC33214	85	TXCCX18918	96	TXCCX63018	95
TXCC23007	84	TXCC33215	85	TXCCX18919	96	TXCCX63019	95
TXCC23008	84	TXCC33216	85	TXCCX18920	96	TXCCX63020	95
TXCC23009	84	TXCC33217	85	TXCCX18921	96	TXCCX63021	95
TXCC23010	84	TXCC33218	85	TXCCX18922	96	TXCCX63022	95
TXCC23011	84	TXCC33219	85	TXCCX18923	96	TXCCX63023	95
TXCC23012	84	TXCC33220	85	TXCCX18924	96	TXCCX63024	95
TXCC23013	84	TXCC33221	85	TXCCX18925	96	TXCCX63026	95
TXCC23014	84	TXCC33222	85	TXCCX18932	96	TXCCX63206	85
TXCC23015	84	TXCC33223	85	TXCCX20507	93	TXCCX63207	85
TXCC23016	84	TXCC33224	85	TXCCX20508	93	TXCCX63208	85
TXCC23017	84	TXCC33225	85	TXCCX20509	93	TXCCX63209	85
TXCC23018	84	TXCC33226	85	TXCCX20510	93	TXCCX63210	85
TXCC23019	84	TXCC33227	85	TXCCX20511	93	TXCCX63211	85
TXCC23020	84	TXCC33228	85	TXCCX20512	93	TXCCX63212	85
TXCC23021	84	TXCC33229	85	TXCCX20513	93	TXCCX63213	85
TXCC23022	84	TXCC33230	85	TXCCX20514	93	TXCCX63214	85
TXCC23023	84	TXCC33232	85	TXCCX20515	93	TXCCX63215	85
TXCC23024	84	TXCC33234	85	TXCCX20516	93	TXCCX63216	85
TXCC33003	84	TXCC33236	85	TXCCX20517	93	TXCCX63217	85
TXCC33004	84	TXCC33238	85	TXCCX20518	93	TXCCX63218	85
TXCC33005	84	TXCC33240	85	TXCCX20519	93	TXCCX63219	85
TXCC33006	84	TXCC34310	82	TXCCX20520	93	TXCCX63220	85
TXCC33007	84	TXCC34315	82	TXCCX20521	93	TXCCX63221	85
TXCC33008	84	TXCC34320	82	TXCCX20523	93	TXCCX63222	85
TXCC33009	84	TXCC34325	82	TXCCX20527	93	TXCCX63223	85
TXCC33010	84	TXCC34335	82	TXCCX43306	86	TXCCX63224	85
TXCC33011	84	TXCCX17907	94	TXCCX43307	86	TXCCX63225	85
TXCC33012	84	TXCCX17908	94	TXCCX43308	86	TXCCX63226	85
TXCC33013	84	TXCCX17909	94	TXCCX43309	86	TXCCX63227	85
TXCC33014	84	TXCCX17910	94	TXCCX43310	86	TXCCX63228	85
TXCC33015	84	TXCCX17911	94	TXCCX43311	86	TXCCX63229	85
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TXCC33017	84	TXCCX17913	94	TXCCX43313	86	TXCCX63232	85
TXCC33018	84	TXCCX17914	94	TXCCX43314	86	TXCCX63234	85
TXCC33019	84	TXCCX17915	94	TXCCX43315	86	TXCCX63236	85
TXCC33020	84	TXCCX17916	94	TXCCX43316	86	TXCCX63238	85
TXCC33021	84	TXCCX17917	94	TXCCX43317	86	TXCCX63240	85
TXCC33022	84	TXCCX17918	94	TXCCX43318	86	TXCCX63242	85
TXCC33023	84	TXCCX17919	94	TXCCX43319	86	TXCCX63244	85
TXCC33024	84	TXCCX17920	94	TXCCX43320	86	TXCCX63246	85
TXCC33025	84	TXCCX17921	94	TXCCX43321	86	TXCCX63248	85
TXCC33026	84	TXCCX17922	94	TXCCX43322	86	TXCCX63250	85
TXCC33027	84	TXCCX17923	94	TXCCX43323	86	TXCCX63254	85
TXCC33028	84	TXCCX17924	94	TXCCX43324	86	TXCCX63256	85
TXCC33029	84	TXCCX17925	94	TXCCX43325	86	TXCCX63260	85
TXCC33030	84	TXCCX17926	94	TXCCX43326	86	TXCCX63266	85
TXCC33032	84	TXCCX17927	94	TXCCX43327	86	TXCCX63305	86
TXCC33034	84	TXCCX17928	94	TXCCX43328	86	TXCCX63306	86
TXCC33036	84	TXCCX17929	94	TXCCX43329	86	TXCCX63307	86
TXCC33040	84	TXCCX17930	94	TXCCX43330	86	TXCCX63308	86
TXCC33046	84	TXCCX18906	96	TXCCX43332	86	TXCCX63309	86
TXCC33203	85	TXCCX18907	96	TXCCX43356	86	TXCCX63310	86
TXCC33204	85	TXCCX18908	96	TXCCX43360	86	TXCCX63311	86

TXCCX63312.....	86	TXCHX8241P.....	64	TXNM0649-16.....	81	TXSH91800.....	14
TXCCX63313.....	86	TXCHX8242P.....	64	TXNM0649-18.....	81	TXSH91808P.....	28
TXCCX63314.....	86	TXCHX8350P.....	62	TXNM0649-22.....	81	TXSH91900.....	14
TXCCX63315.....	86	TXCHX8351P.....	62	TXNM0649-24.....	81	TXSHX7606.....	25
TXCCX63316.....	86	TXCHX8352P.....	62	TXNM0649-30.....	81	TXSHX7626P.....	24
TXCCX63317.....	86	TXCHX8550P.....	61	TXNM0649-40.....	81	TXSHX97606P.....	14
TXCCX63318.....	86	TXCHX8551P.....	61	TXNM0649-50.....	81	TXSHX97626P.....	25
TXCCX63319.....	86	TXCHX8552P.....	61	TXNM1001-00.....	81	TXSS13207.....	21
TXCCX63320.....	86	TXCHX8553P.....	61	TXNM1002-00.....	81	TXSS13208.....	21
TXCCX63321.....	86	TXCHX8554P.....	61	TXNM1003-00.....	81	TXSS13209.....	21
TXCCX63322.....	86	TXCHX8555P.....	61	TXNM1051-00.....	81	TXSS13210.....	21
TXCCX63323.....	86	TXCHX8640P.....	63	TXNM1052-00.....	81	TXSS13211.....	21
TXCCX63324.....	86	TXCHX8641P.....	63	TXNM1053-00.....	81	TXSS13212.....	21
TXCCX63325.....	86	TXCHX8642P.....	63	TXNM1475-00.....	81	TXSS13213.....	21
TXCCX63326.....	86	TXCHX8650P.....	63	TXPT1000.....	36	TXSS13214.....	21
TXCCX63327.....	86	TXCHX8651P.....	63	TXPT2000.....	36	TXSS13215.....	21
TXCCX63328.....	86	TXCHX8652P.....	63	TXSA27055.....	31	TXSS13216.....	21
TXCCX63329.....	86	TXCHX8740P.....	64	TXSA27253.....	31	TXSS13217.....	21
TXCCX63330.....	86	TXCHX8741P.....	64	TXSA27254.....	31	TXSS13707.....	19
TXCCX63332.....	86	TXCHX8742P.....	64	TXSA27274.....	31	TXSS13708.....	19
TXCCX63334.....	86	TXCHX8850P.....	62	TXSA27276.....	31	TXSS13709.....	19
TXCCX63336.....	86	TXCHX8851P.....	62	TXSA27314.....	31	TXSS13710.....	19
TXCCX63338.....	86	TXCHX8852P.....	62	TXSA27361.....	32	TXSS13711.....	19
TXCCX63340.....	86	TXCM10030.....	79	TXSA27454P.....	32	TXSS13712.....	19
TXCCX63342.....	86	TXCM10060.....	79	TXSA27578.....	31	TXSS13713.....	19
TXCCX63344.....	86	TXCM20001.....	79	TXSA27590.....	29	TXSS13714.....	19
TXCCX63346.....	86	TXD0002.....	77	TXSA27591.....	29	TXSS13715.....	19
TXCCX63348.....	86	TXD0290.....	17	TXSA27620.....	24	TXSS13716.....	19
TXCCX63350.....	86	TXHA5491.....	79	TXSA38603P.....	32	TXSS13717.....	19
TXCCX63354.....	86	TXHP6046.....	31	TXSA39329.....	32	TXSS13718.....	19
TXCCX63356.....	86	TXNB0100-P03.....	75	TXSA88303.....	32	TXSS13719.....	19
TXCCX63358.....	86	TXNB0100-P05.....	75	TXSA88304.....	32	TXSS13720.....	19
TXCCX63360.....	86	TXNB0124-00.....	75	TXSA88310.....	32	TXSS138007.....	16
TXCCX63372.....	86	TXNB0125-00.....	75	TXSA88311.....	32	TXSS138008.....	16
TXCH2200.....	71	TXNB0223-00.....	75	TXSA88312.....	32	TXSS138009.....	16
TXCH2200ENCP.....	71	TXNB0239-00.....	75	TXSB27150.....	20	TXSS138010.....	16
TXCH2300.....	71	TXNB0715-00.....	75	TXSB27265.....	24	TXSS138011.....	16
TXCH2305P.....	71	TXNB0801-00.....	75	TXSB27449.....	26	TXSS138012.....	16
TXCH2410P.....	76	TXNB0810-00.....	75	TXSB27483.....	18	TXSS138013.....	16
TXCH2500P.....	76	TXNJ0514-00.....	81	TXSB27484.....	18	TXSS138014.....	16
TXCH2800.....	69	TXNJ0515-00.....	81	TXSB39452.....	29	TXSS138015.....	16
TXCH2850.....	69	TXNJ0596-00.....	81	TXSB39526.....	26	TXSS138016.....	16
TXCH2900.....	70	TXNJ0765-00.....	81	TXSBX76061.....	25	TXSS138017.....	16
TXCH2910.....	70	TXNJ0767-00.....	81	TXSBX76261.....	25	TXSS138018.....	16
TXCH2920.....	70	TXNJ0768-00.....	81	TXSH4910.....	22	TXSS138019.....	16
TXCH5200.....	74	TXNM0183-00.....	81	TXSH4951.....	23	TXSS138020.....	16
TXCH5210.....	74	TXNM0414-28.....	81	TXSH5000.....	24	TXSS13907.....	19
TXCH5320P.....	65	TXNM0414-33.....	81	TXSH5087.....	29	TXSS13908.....	19
TXCH5330P.....	65	TXNM0647-08.....	81	TXSH5088.....	29	TXSS13909.....	19
TXCH6800.....	79	TXNM0647-09.....	81	TXSH5094.....	18	TXSS13910.....	19
TXCH6800NT.....	79	TXNM0647-10.....	81	TXSH5150.....	20	TXSS13911.....	19
TXCH6810.....	79	TXNM0647-11.....	81	TXSH5210.....	26	TXSS13912.....	19
TXCH6810NT.....	79	TXNM0647-12.....	81	TXSH5230.....	27	TXSS13913.....	19
TXCH8050P.....	61	TXNM0647-13.....	81	TXSH5294.....	18	TXSS13914.....	19
TXCH8051P.....	61	TXNM0647-14.....	81	TXSH8050.....	16	TXSS13915.....	19
TXCH8052P.....	61	TXNM0647-15.....	81	TXSH91190.....	14	TXSS13916.....	19
TXCH8140P.....	63	TXNM0649-02.....	81	TXSH91441.....	29	TXSS13917.....	19
TXCH8141P.....	63	TXNM0649-04.....	81	TXSH91523.....	14	TXSS13918.....	19
TXCH8142P.....	63	TXNM0649-06.....	81	TXSH91526.....	14	TXSS13919.....	19
TXCH8150P.....	63	TXNM0649-08.....	81	TXSH91610.....	14	TXSS13920.....	19
TXCH8151P.....	63	TXNM0649-10.....	81	TXSH91630.....	14	TXSSC13010.....	30
TXCH8152P.....	63	TXNM0649-12.....	81	TXSH91650.....	14	TXSSC13012.....	30
TXCHX8240P.....	64	TXNM0649-14.....	81	TXSH91692.....	14	TXSSC13013.....	30





TXSSC13014.....	30	TXSSC13428.....	26	TXSSC6229.....	18
TXSSC13015.....	30	TXSSC13429.....	26	TXSSC6230.....	18
TXSSC13016.....	30	TXSSC13430.....	26	TXSSC6232.....	18
TXSSC13017.....	30	TXSSC14768.....	28	TXSSC6234.....	18
TXSSC13018.....	30	TXSSC14812.....	28	TXSSC6236.....	18
TXSSC13019.....	30	TXSSC21907.....	29	TXSSCX6410P.....	25
TXSSC13020.....	30	TXSSC21908.....	29	TXSSCX6411P.....	25
TXSSC13022.....	30	TXSSC21910.....	29	TXSSCX6412P.....	25
TXSSC13023.....	30	TXSSC21912.....	29	TXSSCX6413P.....	25
TXSSC13024.....	30	TXSSC21914.....	29	TXSSCX6414P.....	25
TXSSC13025.....	30	TXSSC29007.....	17	TXSSCX6415P.....	25
TXSSC13026.....	30	TXSSC29008.....	17	TXSSCX6416P.....	25
TXSSC13027.....	30	TXSSC29009.....	17	TXSSCX6417P.....	25
TXSSC13028.....	30	TXSSC29010.....	17	TXSSCX6418P.....	25
TXSSC13029.....	30	TXSSC29011.....	17	TXSSCX6419P.....	25
TXSSC13030.....	30	TXSSC29012.....	17	TXSSCX6420P.....	25
TXSSC13032.....	30	TXSSC29013.....	17	TXSSCX6421P.....	25
TXSSC13034.....	30	TXSSC29014.....	17	TXSSCX6422P.....	25
TXSSC13036.....	30	TXSSC29015.....	17	TXSSCX6423P.....	25
TXSSC13107.....	16	TXSSC29016.....	17	TXSSCX6424P.....	25
TXSSC13108.....	16	TXSSC29017.....	17	TXSSCX6425P.....	25
TXSSC13109.....	16	TXSSC29018.....	17	TXSSCX6426P.....	25
TXSSC13110.....	16	TXSSC29019.....	17	TXSSCX6427P.....	25
TXSSC13111.....	16	TXSSC29020.....	17	TXSSCX6428P.....	25
TXSSC13112.....	16	TXSSC29021.....	17	TXSSCX6429P.....	25
TXSSC13113.....	16	TXSSC29022.....	17	TXSSCX6430P.....	25
TXSSC13114.....	16	TXSSC29023.....	17	TXSSCX6432P.....	25
TXSSC13115.....	16	TXSSC29024.....	17	TXSSCX6434P.....	25
TXSSC13116.....	16	TXSSC29025.....	17	TXSSCX6436P.....	25
TXSSC13117.....	16	TXSSC29026.....	17		
TXSSC13118.....	16	TXSSC29027.....	17		
TXSSC13119.....	16	TXSSC29028.....	17		
TXSSC13120.....	16	TXSSC29029.....	17		
TXSSC13121.....	16	TXSSC29030.....	17		
TXSSC13122.....	16	TXSSC29032.....	17		
TXSSC13123.....	16	TXSSC29034.....	17		
TXSSC13124.....	16	TXSSC29036.....	17		
TXSSC13125.....	16	TXSSC29038.....	17		
TXSSC13126.....	16	TXSSC29042.....	17		
TXSSC13127.....	16	TXSSC29044.....	17		
TXSSC13128.....	16	TXSSC29046.....	17		
TXSSC13129.....	16	TXSSC6207.....	18		
TXSSC13130.....	16	TXSSC6208.....	18		
TXSSC13132.....	16	TXSSC6209.....	18		
TXSSC13408.....	26	TXSSC6210.....	18		
TXSSC13410.....	26	TXSSC6211.....	18		
TXSSC13411.....	26	TXSSC6212.....	18		
TXSSC13412.....	26	TXSSC6213.....	18		
TXSSC13413.....	26	TXSSC6214.....	18		
TXSSC13414.....	26	TXSSC6215.....	18		
TXSSC13415.....	26	TXSSC6216.....	18		
TXSSC13416.....	26	TXSSC6217.....	18		
TXSSC13417.....	26	TXSSC6218.....	18		
TXSSC13418.....	26	TXSSC6219.....	18		
TXSSC13419.....	26	TXSSC6220.....	18		
TXSSC13420.....	26	TXSSC6221.....	18		
TXSSC13421.....	26	TXSSC6222.....	18		
TXSSC13422.....	26	TXSSC6223.....	18		
TXSSC13423.....	26	TXSSC6224.....	18		
TXSSC13424.....	26	TXSSC6225.....	18		
TXSSC13425.....	26	TXSSC6226.....	18		
TXSSC13426.....	26	TXSSC6227.....	18		
TXSSC13427.....	26	TXSSC6228.....	18		

33C Cable Ball Joint	99
33C Miracable Control Cable	84
33C Red Jacket Control Cable	85
33C Red Jacket TFXtreme	85
4.2 Non NFB Helm	23
43C Black Jacket Control Cable	86
B	
Back Mount Rack Helm	26
Ball Joints	99
Baystar Compact Cylinder	49
BayStar Inboard Hydraulic Kits	51
Baystar Plus Helm	48
Baystar Seal Kit	55
Bellows Tilt Helm	31
Big-T Steering Helm	24
Bleed Nipple	54
C	
C200 Replacement Rack Cable	30
Clamps & Shims for Control Cables	99
Clip Bracket Double 33C	99
Control CH2500P MJB Side Mount	76
Control CH2800 Sd/Mnt and	69
Control CH2850 Sd/Mnt	69
Control Single S	74
Control Twin S	74
D	
D2 Hand Control	77
D290 Standard Helm	17
D290 Steering Cable	17
DC Single Function Control	77
Dual Station Kit	98
Dual Station Selector	72
Dual Station Unit Gear Box	72
Dual Station Unit Throttle	72
E	
Electronic Control i7700	79
F	
Friction Kit	74
G	
Gbox/Odrive Mounting kit Newage	97
Gen II Mercury Standard Cable	95
Grooved Support Tube	32
I	
i7700 Electronic Control	79

J	
Jet Boat Control	71
Jet Boat Steering Cable	29
Jet Boat Steering Helm 135	29
Jet Boat Steering Helm 270	29
Jet OMC Clevis Connecting Kit	29
K	
KB Control	75
KE-4+ Electronic Control	81
L	
Light Duty Steering Cable	16
Long Transom Support Bracket	32
M	
Mercury Assembly Kit	98
Mercury/Mariner 3600 TFXtreme Cable	95
Mercury/Mariner 600A TFXtreme Cable	94
Mercury/Mariner 630 Standard Cable	94
Mini Rack Cable	28
Mini rack tilt steering helm for Jet Boats	28
Morse A26 replacement control	77
Morse D290 Helm	32
Motorwell Grommets	33
Mounting Damper For Cable 33C	98
MT3 Control Right Hand Single	65
MT3 Control Twin Pull	65
MV-3 Comp Control Ski Boat	70
N	
NB Twin Control (D303029)	75
NFB Back Mount Helm	27
NFB Helm 4.2 Turns	22
NFB Safe T Steering Kits	21
NFB Safe-T II Helm 3 Turns	20
O	
O/B Front Mount Pivot Cylinder	50
O/B Hose Kit Two Hoses	54
OMC 400 Standard Cable	92
OMC 479 Standard Cable	92
OMC 479 TFXtreme Cable	93
OMC JE Control Adaptor	98
P	
Pivot For Use With 33C Cables	99
Port Side Cable Mounting Kit	32
Pro Trim Control Dual	36
Pro Trim Control Single	36





Q	
Q/C NFB Steering Cable	18
R	
R Clip (Pack 10)	32
Rack Cable Single	26
Rod End Kit	31
S	
Safe T QC Helm	18
Safe T QC Steering Kits	19
Safe T QC Twin Helm	18
Seal Kit for Seastar Pivot	55
SeaStar 2.0 Tilt Helm	50
SeaStar Cylinder	52
SeaStar Helm 1.7	50
SeaStar Helm 2.0 Front Mount	50
SeaStar Helm Seal Kit	55
SeaStar Hydraulic Oil	48
SeaStar I Tilt Wheel Helm Pump	50
SeaStar II Helm Rear Mount	50
Seastar Oil Filling Kit	54
Seastar Vent Plug	55
SeaStarII Tilt Wheel Helm Pump	50
SH8050 Steering System	16
Shim 40/60 STL	99
Short Transom Support Bracket	32
Ski Boat Control	71
Slender Seal Kit	55
Small Splashwell Kit	32
Splashwell Grommets	33
Splashwell Mounting Kit 15	31
Splashwell Mounting Kit 90	31
Stainless Steel Clevis Kit	31
Standard Mercury 600A Cable	93
STB Single Function Control	76
Steering Cable Adaptor QC2	24
Steering Kit Clamp Block	31
Steering Wheel Hardware Kit	32

Steering Wheels	34
Stop Cable	82
Stop Cable Bulkhead Bracket	77
Stop Collar	77
Support Rod Kit with Nut	54
T	
T Connector	54
Terminal Eye For 33C Cables	98
Terminal Eye For 40XL Cables	98
Terminal Eye Pin	98
TFX (F2003) Control Cable	84
TFX Cable Guard	32
TFX806 (Volvo) Helm	32
TFXtreme 633 Control Cable	86
Tilt Helms for Steering	14
Transom Clamp Block Kit	31
Transom Support Tube	31
Tubing (2 x 30' Lengths)	48
Twin Disc Connection Kit	97
U	
Union Connector	54
Universal Connection Kit	32
V	
Venus Control	77
W	
Wheels	34
Witches Hats	33
X	
Xtreme Dual Top Mount Control	64
Xtreme NFB Helm	25
Xtreme non NFB Helm	24
Xtreme Port Side Mount Control	62
Xtreme Q/C Steering Cable	25
Xtreme Side Mount Control	61
Xtreme Tilt Helm Non NFB	25
Xtreme Top Mount Control	63

TERMS & CONDITIONS

1. CONTRACTS

- Contracts are made and orders accepted only upon and subject to these Terms and Conditions of Sale. All other conditions are hereby excluded unless expressly accepted in writing by Bainbridge International Ltd or Aqua-Marine International Ltd (hereinafter called the "Seller").
- In entering into a contract with the Seller, the contracting party (hereinafter called the "Buyer") acknowledges that the contract has not been induced by any representations orally or in writing made by the Seller, its servants or agents.
- Any quotation, estimate or tender previously given or made by the Seller was not an offer but an intimation of the terms upon which the Seller was prepared to negotiate. The offer to contract with the Buyer made by these conditions may be accepted by the Buyer in a formal manner or may be inferred from the Buyer's acceptance of performance, in whole or in part, by the Seller. Any conditions contained in any purported acceptance by the Buyer shall be disregarded and the acceptance shall be construed as an unqualified acceptance of these conditions.
- Any typographical, clerical or other error or omission in any sales literature, quotation, price list, acceptance of offer, invoice or other document or information issued by the Seller shall be subject to correction without any liability on the part of the Seller.

2. PRICES

- Unless expressly stated otherwise by the Sellers, all prices quoted are ex works and exclude the cost of packing. Any applicable value added tax or any other sales tax or excise duties paid or payable by the Seller shall be added to the price and shall be payable by the Buyer.
- The Seller may, at their sole absolute discretion, accept or reject any order placed by the Buyer. The Seller may change the price of goods for future invoiced goods to the Buyer without notice.
- In the event of the Buyer cancelling a part of the order in accordance with the provisions of Clause 12, the Seller reserves the right to revise the price or prices quoted for goods already delivered.
- The contract price is, unless specifically agreed upon in writing by the Seller, payable in Pound Sterling. The Seller reserves the right to review the contract price(s) in the event of devaluation of the Pound Sterling or substantial change in the value of Pound Sterling in the foreign exchange markets.

3. CONDITIONS AND WARRANTIES

- Seller shall not be liable for the normal manufacturing defects nor any customary variations from quantities or specifications. A variance of not more than 15% either way from the total specified weight, quantity or length shall be deemed compliance with this contract.
- Where samples of goods or a colour chart are provided, these are submitted only as indicative of the class, size or colour of goods quoted for and sales of goods shall not be by reference to any such samples or colour charts.
- Whilst all description and illustrations of the goods in (interalia) catalogues, brochures, web sites and price lists provided by the Seller have been carefully prepared, they are intended nevertheless for general guidance only and do not form part of any contract for sale of goods and no responsibility is accepted for any errors or omissions therein or for any loss or damage resulting from reliance on such descriptions and illustrations.
- When the Seller agrees to provide a specially designed plan, the Buyer agrees that he is obliged to check the accuracy and suitability of the plan and that the Seller shall not be liable for any omissions or inaccuracies in the measurements given. The copyright in the plan drawn up by the Seller is, and remains, their property and may not be reproduced in whole or in part without written consent.
- If the Buyer claims or detects a defect in the goods, the Buyer will seek prior approval and return those goods to the Seller or, if the goods are retained by the Buyer, indemnify and keep the Seller indemnified against all liability and claims which may arise out of or incidental to the defect.
- The Seller has undertaken no responsibility for learning about the end purpose or use for which the goods are to be used, and the Buyer shall undertake to conduct whatever tests or examinations are necessary to confirm that goods are suitable for such end use.
- Any textile products that may be sold hereunder are sold subject to any imperfections that are typically regarded as acceptable in the textile trade resulting from the weaving and finishing thereof, and Seller shall have no liability in connection with any such imperfections. Buyer warrants that all merchandise covered by this contract is purchased for resale as tangible personal property, or to be incorporated as a component or part of other tangible property to be produced for sale by manufacturing, assembling or processing.

4. The Buyer shall not be entitled to accept part only of the goods.

4. DELIVERY BY THE SELLER

- Unless and except as otherwise expressly provided in writing by the Seller, delivery shall be ex works place of business.
- Any dates quoted for delivery of the goods are approximate only and the Seller shall not be liable for any delay in delivery of the goods howsoever caused. Time for delivery shall not be of the essence unless previously agreed by the Seller in writing.
- Where goods are offered for delivery to a site, the Seller's obligation is to deliver as near to the site as safe hard roads permit. The Buyer is to provide at its own expense the labour required for unloading and stacking.
- The Seller reserves the right to deliver goods by instalments and in such event each instalment shall be treated as a separate contract save that the delivery of further instalments may be withheld until goods contained in earlier instalments have been paid for in full.
- Where goods are held by the Seller awaiting delivery instructions, they may be subject to a storage charge. For account holding customers, payment for these goods must be made on or before the last day of the month following the month of the invoice; for non-account holding customers, payment must be made at the time of ordering.
- In the absence of shipping instructions, the issuing of an invoice shall constitute delivery to the Buyer.

5. COLLECTION BY THE BUYER

- Where goods are sold "ex-factory" the Buyer shall collect the goods at the Seller's premises within seven days of the Seller's notifying the buyers that the goods are ready for collection.

- If the Buyer fails to collect the goods within seven days of notification that they are ready for collection, then, without prejudice to any other right or remedy available to the Seller, the Seller may:

- Store the goods until actual delivery and charge the Buyer for reasonable costs (including insurance) of storage; or
- Sell the goods at the best price readily obtainable (after deducting all reasonable storage and selling expenses) account to the Buyer for the excess over the price under the contract or charge the Buyer for any shortfall below the price.

6. DAMAGE, LOSS, SHORT DELIVERY

- On delivery, the Buyer shall examine the goods for defects and completeness. Thereafter no claim for damage in transit, for shortage in delivery, or for loss of goods will be entertained except, in the case of damage, a separate notice in writing is given to the Carriers or to the Seller within three days of the receipt of the goods, followed within 14 days of the date of advice of despatch by a complete claim in writing; or, in the case of loss of goods, a separate notice in writing and a claim is given to the Seller and Carriers within 14 days of the date of the Seller's advice of despatch to the Buyer. In all cases a signature "unexamined" shall be deemed to be an unconditional acceptance of the goods.
- The Seller shall not in any circumstances be liable, whether in contract or tort, to the Buyer for any indirect or consequential loss or damage (including without limitation, loss of profits, loss of contracts or damage to property) or for any claim against the Buyer by any third party.
- The Seller's liability for damage or non-delivery of goods duly notified in accordance with the above shall in any event be limited to replacement of the goods within a reasonable time (or, at the Seller's option, refunding the price thereof) whether the damage or non-delivery is due to the Seller's negligence or otherwise.

7. ROLL LENGTHS

- Where goods are sold as a measured length there may be a variation in length of plus or minus 2%. In the event of a claim the seller reserves the right to insist that the roll be returned for measuring before a settlement is agreed.

8. CREDIT AGREEMENTS

- Where the Seller has granted the Buyer a credit facility, the price of goods and/or service shall be paid by the Buyer as per the payment terms specified on the invoice or, if the Seller shall so require under Clause (b) of this Clause 7, to be paid on demand without any period of notice.
- The Seller reserves the right to withdraw or vary credit facilities at any time to the Buyer without either giving any reason for doing so, or thereby incurring any liability to the Buyer.
- If the Buyer takes goods from the Seller in excess of the Buyer's credit limit, the Seller may require payment on delivery for such excess of goods.

9. TERMS OF PAYMENT

- Unless credit facilities have been granted to the Buyer or unless otherwise specifically provided in writing, the price for the goods shall be paid by the Buyer in cash on delivery and in default the Seller shall be entitled to withhold delivery until payment. In the case of non-cash sales, the Seller shall be entitled to charge and recover interest from the Buyer on the price of the goods calculated at whichever shall be the greater: the statutory interest payable under the Late Payment of Commercial Debts (Interest) Act 1998 or the rate of 4% per annum
- Unless otherwise expressly agreed upon in writing, no other discounts or commissions are to become due or allowable to the Buyer (any previous course of dealing between the parties notwithstanding).
- Where there is a term of contract that payment of any of the Seller's invoices is dependant upon the issues of the certificate of a third party, the due date for payment of the invoice is not later than 14 days after the issue of the relevant certificate.

10. LATE PAYMENT

- When payment of any of the Seller's invoices is overdue, the Seller may suspend their performance of the contracts to which the invoice relates and/or of any other contract then subsisting between the Seller and the Buyer.
- In the event of legal action being taken by the Seller against the Buyer for breach of payment obligations hereunder, the Buyer shall be responsible for all costs and disbursements incurred by the Seller on a full indemnity basis.

11. RISK AND LIABILITY

- b. c. Risk of damage to or loss of the goods shall pass to the Buyer at the time of delivery or, if the Buyer at the time of delivery of the goods, the time when the Seller has tendered delivery of the goods. For the purpose of this Clause 10, "delivery" shall mean the arrival of the goods at the place of delivery of the Buyer where delivery is by the Seller, or the safe loading of the goods into the Buyer's vehicles at the Seller's premises where delivery is through collection by the Buyer. In no event shall the Seller be liable for damages with respect to the sale or use of any product sold hereunder in any amount greater than the amount of the purchase price received by the Seller for that particular product. In addition, the Seller shall not be liable for any consequential, incidental, or special damages or costs or expenses in the event of any breach of warranty or in the event of any loss, damage injury or cost resulting from, or arising out of, or in respect of the goods being sold hereunder. When any goods are sold hereunder bear a particular label, trademark, or trade name, affixed at the request of the Buyer, it is the understanding of the parties that the Buyer warrants that he has the right to use said label trademark or trade name, and that he hereby agrees to indemnify and hold harmless the Seller against any loss, damage or claim by any person with respect thereto.
- The Buyer agrees to reimburse the Seller, and hold Seller harmless against liability for all expenses, including legal fees, incurred by the Seller that may arise in connection with Seller's enforcement of its rights under this contract.
- The Seller has undertaken no responsibility for learning about the end purpose for which the goods are to be used, and Buyer shall undertake to conduct whatever tests or examinations are necessary to confirm that goods are suitable for such end use.

12. RETENTION OF TITLE

- Notwithstanding delivery and the passing of risk in the goods or any other provision of these conditions, the property in the goods shall not pass to the Buyer until the Seller has received in cash (or cleared funds) payment in full of the price of the goods and all other goods agreed to

be sold by the Seller to the Buyer for which payment is then due.

- Until such time as the property in the goods passes to the Buyer, the Buyer shall hold the goods as the Seller's fiduciary agent and bailee, and shall keep the goods separate from those of the Buyer and third parties and properly stored, protected and insured and identified as the Seller's property. Until that time the Buyer shall be entitled to resell or use the goods in the ordinary course of its business, but shall account to the Seller for the proceeds of the sale or otherwise of the goods, whether tangible or intangible, including insurance proceeds, and shall keep all such proceeds separate from any monies or property of the Buyer and third parties and, in the case of tangible proceeds, properly stored, protected and insured.
- Until such time as the property in the goods passes to the Buyer (and provided the goods are still in existence and have not been resold), the Seller shall be entitled at any time to require the Buyer to deliver up the goods to the Seller and, if the Buyer fails to do so forthwith, to enter upon any premises of the Buyer or any third party where the goods are stored and repossess the goods.
- The Buyer shall not be entitled to pledge or in any way charge by way of security for any indebtedness any of the goods which remain the property of the Seller, but if the Buyer does so, all monies owing by the Buyer to the Seller shall (without prejudice to any other right or remedy of the Seller) forthwith become due and payable.

13. CUSTOMER CANCELLATION OF ORDERS

Contracts and orders and parts thereof may be cancelled only by the Seller's written acceptance of such cancellation. Where the Seller accepts such cancellation, the Seller reserves the right to charge the Buyer with the amount of any losses or expenses directly or indirectly resulting from such cancellation. Where the Seller does not accept such cancellation, the Seller, reserves the right to recover the invoice price from the Buyer and to charge the Buyer with additional losses both direct and indirect resulting from such cancellation. In any case where the Seller were required to place a deposit with a manufacturer or supplier in respect of an order, the Seller may require the Buyer to reimburse such sum in the event of cancellation.

14. CUSTOMERS RETURNING GOODS

- The Seller will only accept goods being returned by customers if prior consent has been given by the seller. In the event of wishing to return goods customers must contact the seller to obtain a 'goods return note number' that must then be attached in an appropriate manner to the goods. The seller reserves the right to refuse to accept goods being returned by a buyer. In cases where the seller does agree to accept a return the seller reserves the right to charge a handling fee not exceeding 50% based on the invoice price of the goods.
- Excluding circumstances where goods are being returned for the reason of damage or are subject to warranty claim, goods being returned to the seller must arrive in a condition that allows them to be re-sold. In the event that returned goods are not in good condition the seller reserves the right to withdraw any agreement for credit with the buyer or to charge a handling fee.

15. CONSENTS

The obtaining of any necessary consents for the installation of the goods, whether from local or other authorities or for ensuring that the installation of the goods is in accordance with the provisions of any by-laws, regulations or statutes shall not be the responsibility of the Seller.

16. FORCE MAJEURE

The Seller shall not be liable to the Buyer or be deemed to be in breach of contract by reason of any delay in performing, or any failure to perform, any of the Seller's obligations in relation to the goods, if the delay or failure was due to any cause beyond the Seller's reasonable control. Without prejudice to the generality of the foregoing, the following shall be regarded as causes beyond the Seller's control:

- Act of God, explosion, flood, tempest, fire or accident;
- War or threat of war, sabotage, insurrection, civil disturbance or requisition;
- Acts, restrictions, regulations, by-laws, prohibitions or measures of any kind on the part of any governmental, parliamentary or local authority;
- Import or export regulations or embargoes;
- Strikes, lock-outs or other industrial actions or trade disputes (whether involving employees of the Seller's or of a third party);
- Difficulties in obtaining raw materials, labour, fuel, parts or machinery;
- Power failure or breakdown in machinery.

17. INSOLVENCY

The Seller shall have the right to terminate the contract forthwith where the buyer becomes insolvent or bankrupt or makes arrangements with its creditors or suffers a receiver to be appointed or being a body corporate enters into liquidation (other than in connection with a reconstruction or amalgamation) in any of which cases the Seller shall have no further obligation hereunder and the price for all goods delivered and work done shall become immediately due and payable.

18. LAW APPLICABLE

These conditions shall be governed and construed in accordance with English law and all disputes arising in connection therewith shall be submitted to the jurisdiction of the English courts.

19. GENERAL

- No provision hereof shall be deemed waived and no breach or default excused unless such waiver or excuse is in writing signed by an authorised officer of the party making the writing.
- If any provision or part of a provision of this Agreement shall be, or found by any authority or court of competent jurisdiction to be, invalid or unenforceable, such invalidity or unenforceability shall not affect the other provisions or parts of such provisions of this Agreement, all of which shall remain in full force and effect.
- The headings in this document are inserted for convenience only and shall not constitute a part of or are referred to in its interpretation.

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