

AUTOPILOT REFERENCE TABLE

Steering Type	Vessel Size/Type and Overall Use	Recommended Core Pack	Drive Unit Type	Components Included in Core Pack	Required Components not Included in Core Pack
Hydraulic	Cruising applications only; for single engine outboard (150hp and below) vessels less than 25' long. Up to 150 cc	Compact Reactor 40 Hydraulic Autopilot Starter Pack	1.0L Pump	Reactor 40 Compact ECU 1.0L Pump	<ul style="list-style-type: none"> 3 or 5 ORB Male to 1/4" NPT female adapters Hydraulic hose - machine-cripped or field replaceable fittings. Minimum 1000psi Hydraulic T-connectors - varies by vessel Hydraulic Shut-off valves - varies by vessel
Hydraulic	Cruising applications only; for single engine outboard (150hp and below) vessels less than 25' long. Up to 150 cc	Compact Reactor 40 Hydraulic Autopilot with GHC 20 Pack	1.0L Pump	Reactor 40 Compact ECU 1.0L Pump Shadow Drive	<ul style="list-style-type: none"> 3 or 5 ORB Male to 1/4" NPT female adapters Hydraulic hose - machine-cripped or field replaceable fittings. Minimum 1000psi Hydraulic T-connectors - varies by vessel Hydraulic Shut-off valves - varies by vessel
Hydraulic	Cruising applications only; for single engine outboard (150hp and below) vessels less than 25' long. Up to 150 cc	Compact Reactor™ 40 with Pump, GHC 20™ and Shadow Drive Technology Pack	1.0L Pump	Reactor 40 Compact ECU 1.0L Pump Shadow Drive GHC 20	<ul style="list-style-type: none"> 3 or 5 ORB Male to 1/4" NPT female adapters Hydraulic hose - machine-cripped or field replaceable fittings. Minimum 1000psi Hydraulic T-connectors - varies by vessel Hydraulic Shut-off valves - varies by vessel
Hydraulic	Single-cylinder applications. Up to 200 cc	Reactor 40 Hydraulic Autopilot	GHP 1.2L Pump	Reactor 40 ECU 10 Shadow Drive GHC 20	<ul style="list-style-type: none"> 010-00705-64: GHP 1.2L Pump 3 or 5 ORB Male to 1/4" NPT female adapters Hydraulic hose - machine-cripped or field replaceable fittings. Minimum 1000psi Hydraulic T-connectors - varies by vessel Hydraulic Shut-off valves - varies by vessel
Hydraulic	Dual-cylinder applications. 200 - 300 cc	Reactor 40 Hydraulic Autopilot	GHP 2.0L Pump	Reactor 40 ECU 10 Shadow Drive With / Without GHC 20	<ul style="list-style-type: none"> 010-00705-63: GHP 2.0L Pump 3 or 5 ORB Male to 1/4" NPT female adapters Hydraulic hose - machine-cripped or field replaceable fittings. Minimum 1000psi Hydraulic T-connectors - varies by vessel Hydraulic Shut-off valves - varies by vessel
Hydraulic	Premium, recommended option for most hydraulic steering installations, including Verado®, power assist, and total cylinder volumes 100 - 370 cc. Recommended for high use, rougher waters, high performance, and slow speed applications. Also recommended for Evinrude G2 Dynamic Power Steering systems.	Reactor™ 40 Hydraulic Core Pack with SmartPump™ v2	SmartPump v2	Reactor 40 SmartPump v2 Shadow Drive With / Without GHC20	<ul style="list-style-type: none"> 3 or 5 ORB Male to 1/4" NPT female adapters Hydraulic hose - machine-cripped or field replaceable fittings. Minimum 1000psi Hydraulic T-connectors - varies by vessel Hydraulic Shut-off valves - varies by vessel
Mechanical Steering	Total vessel displacements up to 28,500 pounds, with very low backdrive force required	Reator 40 Mechanical/Solenoid/ Retrofit Core Pack	Class A Linear Actuator	Reactor 40 ECU 12 GHC 20	010-11572-00: Class A linear actuator; has rudder feedback included
Mechanical Steering	Total vessel displacements up to 48,400 pounds	Reator 40 Mechanical/Solenoid/ Retrofit Core Pack	Class B Compact Linear Actuator	Reactor 40 ECU 12 GHC 20	010-12029-00: Class B linear actuator; has rudder feedback included
Mechanical Steering	Total vessel displacements from 48,000 to 79,000 pounds	Reator 40 Mechanical/Solenoid/ Retrofit Core Pack	Class B Linear Actuator	Reactor 40 ECU 12 GHC 20	010-11573-00: Class B linear actuator; has rudder feedback included
Mechanical Steering	Sailboats with non-Garmin drive units	Reator 40 Mechanical/Solenoid/ Retrofit Core Pack	Third-party Drive Unit	Reactor 40 ECU 12 GHC 20	Third-party drive unit 010-11533-00: Actuator Motor Cable, 010-11829-00: GRF 10 Rudder sensor; or 010-11532-00 + third party rudder sensor.
Steer by Wire	SeaStar Optimus, ZF Pod Drive, Yanmar, Evinrude G2 Intelligent Piloting System (including iDock)	Reactor 40 Steer-by-wire Standard Core Pack		Reactor 40 GHC 20	
Steer by Wire	Yamaha Helm Master	Reactor 40 Steer-by-wire Core Pack for Yamaha Helm Master	Gateway Included	Reactor 40 Autopilot Gateway GHC 20	
Steer by Wire	Volvo IPS or Sterndrive (C3 or newer Volvo EVC Systems) Aquamatic Sterndrive DPI	Reactor 40 Steer-by-wire Core Pack for Volvo-Penta	Gateway Included	Reactor 40 Autopilot Gateway GHC 20	
Steer by Wire	Viking VIPER	Reactor 40 Steer-by-wire Core Pack for Viking Viper		Reactor 40 GHC 20	
Solenoid	Constant running hydraulic pump systems with solenoid autopilot control	Reator 40 Mechanical/Solenoid/ Retrofit Core Pack	Third-party Solenoid Required	Reactor 40 ECU 12 GHC 20	010-11533-10: Solenoid Cable 010-11829-00: GRF 10 rudder sensor or 010-11532-00 plus third-party rudder sensor
Cable Steer	Most cable steered vessels	Reator 40 Mechanical/Solenoid/ Retrofit Core Pack	Third-party 12VDC Brushed Motor Actuator Required	Reactor 40 ECU 12 GHC 20	010-11533-10: solenoid cable 010-11829-00: GRF 10 rudder sensor or 010-11532-00 plus third-party rudder sensor
Auxillary Gas Engine (Kicker)	Up to 25HP auxiliary gas engines from most major manufacturers	Reactor 40 Kicker	Steering Actuator Included	CCU ECU Steering Actuator Throttle Actuator Wireless Remote	

The Wireless Remote with gesture control is an optional accessory compatible with all Garmin autopilots listed; requires GHC20 or supported chartplotters.

HYDRAULIC PUMPS

Recommended Pump Size for the GHP Hydraulic Autopilots

Garmin offers a number of different size pumps for our marine autopilot systems. The boats configuration will determine which pump is best suited for the application.

Pump Model	Cylinder Type	Vessel Size/Type and Overall Use	Maximum Cylinder	Pump Type
1.0L Pump	Single-cylinder applications	<p>Cruising applications only; for single engine outboard (150hp and below) vessels less than 25' long.</p> <p>Not recommended for fishing or applications that require holding heading while trolling at low speeds or operating in rough waters. For applications that require precise heading control, our higher-performance Reactor 40 models are recommended.</p> <p>Compact Reactor uses a gear pump design with limited performance relative to similar flow piston pumps. Not recommended for power assist installs, engines above 150 horsepower, or boats with more than 12 degree deadrise. Mount pump within 6 feet of the steering cylinder for best results</p>	Up to 150 cc	Gear Pump
GHP 1.2L Pump	Single-cylinder applications	A low-cost option for single-cylinder applications.	Up to 200 cc	High Pressure / Low Volume pump (HPLV)
GHP 2.0L Pump	Dual-cylinder applications	A low-cost option for dual-cylinder applications.	200 - 300 cc	Low Pressure / High Volume pump (LPHV)
SmartPump v2	Single or multiple cylinder applications	<p>Premium, recommended option for most hydraulic steering installations, including Verado®, power assist.</p> <p>Recommended for high use, rougher waters, high performance, and slow speed applications. Also recommended for Evinrude G2 Dynamic Power Steering systems.</p>	100 - 370 cc	Adaptable pressure and volume pump

REACTOR 40 KICKER ENGINE COMPATIBILITY

The outboard motors listed below are compatible only if:

- **The outboard has a tiller handle.** Outboards without a tiller handle may work with custom installation not supported by Garmin.
- **The outboard has a tilt tube.** Outboards without a standard tilt tube are not compatible. Aftermarket “bolt-on” tilt tubes are not supported (incorrectly positions steering actuator).

Manufacturer	Motor HP	Year	Required Accessories
Yamaha	EFI 20, 25	19-newer	Yamaha EFI linkage parts (010-12826-05), Sold separately. If factory tilt tube is too short, must replace with Tilt Tube (010-12826-03)
Yamaha	Carbureted T8, T9.9, F9.9	08-newer	Bag #1 included with R40 Kicker ¹
Yamaha	Carbureted 15, 20	07-newer	Bag #2 included with R40 Kicker ¹
Honda	Carbureted 8, 9.9 Only motors with factory tilt tube	01-newer	Bag #5 included with R40 Kicker ¹ Compatible only with outboards with a factory tilt tube.
Honda	Carbureted 15, 20	03-newer	Bag #5 included with R40 Kicker ¹
Mercury	Carbureted 8, 9.9, 9.9 Bigfoot & Pro	06-newer	Bag #3 included with R40 Kicker
Mercury	EFI 15, 20	17-newer	Bag #4 included with R40 Kicker
Suzuki	EFI 9.9, 15, 20	14-newer	Suzuki Linkage Parts (010-12826-04), Sold separately
Tohatsu	Carbureted 8hp (MFS08A and up), Carbureted 9.8 (MFS9.8A and up)	Not Compatible	These outboards are not supported. They do not have tilt tubes.
Tohatsu	Carbureted 9.9 (MFS9.9C and up)	08-newer	Bag #3 included with R40 Kicker ² Compatible only with outboards with a factory tilt tube.
Tohatsu	EFI 9.9, 15, 20, 25	17-newer	Bag #4 included with R40 Kicker ²

¹Consider replacing the mild steel tilt tubes supplied by Yamaha and Honda with our stainless steel tilt tube (see accessories on Garmin.com).
Yamaha and Honda tilt tubes will be more susceptible to corrosion and require more frequent cleaning and lube, especially when used in saltwater.
Reactor 40 Kicker is designed for freshwater and saltwater use.

²For the purposes of Reactor 40 Kicker installation, consider Mercury and Tohatsu outboards to be the same.