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Aqua Power Ltd Catalog

Manufacturer of
Powerboat Mufflers

Aqua Power Ltd Powerboat Mufflers

Aqua Power Mufflers are of a patented design that offers unique features and advantages over other mufflers available in the boating industry. These features and advantages include a low loss flow through design and the ability to tune the exhaust which can result in higher output power than an open exhaust system. Another notable feature is the material. All Aqua Power Ltd products are made from 316L stainless steel which provides the best corrosion resistance affordable. Also the design is a full time muffler that (except for an internal flap) has no moving parts or controls to wear out. That can't be said about self-configuring or actuator controlled mufflers.

Aqua Power uses a flow through design that naturally provides low losses for all applications. A typical 454 with stock exhaust manifolds only loses about 25 rpms at the top end with In-tube mufflers or Clamp-Ons and Transom Mounts that use the basic In-tube core muffler. Smaller engines tend to do even better using these same mufflers. A 496 HO doesn't lose any power at all with these mufflers. That is because Aqua Power mufflers have the ability to tune the exhaust when the exhaust system allows it. Stock cast iron manifolds found on the 454 and smaller engines do not allow tuning so the low loss flow through design of the muffler becomes the dominant feature for these engines. The 496 however has well designed exhaust manifolds that allow exhaust system tuning to take place. Proper tuning adds just enough power to overcome muffler losses resulting in the same top end rpm and power as with an open exhaust. Most engines larger than the 496 are provided with headers or have well designed cast aluminum manifolds that allow tuning to occur. The 1075 SCi engine outfitted with -75 series Clamp-On mufflers provides another impressive example. This combination again shows no rpm loss at the top end according to Mercury Racing's field tests.

As for quieting most Aqua power mufflers reduce the noise level by about 9 db. That's a lot of quieting. Every 3 db quieting cuts the noise level in half so 3 db is like having two engines running then turning one of them off. 6 db is like having 4 engines running then turning 3 of them off and 9 db is like having 8 engines running then turning 7 of them off. 10 db is like having 10 engines running then turning 9 of them off. In the same way 12 db is 16 and 15.

The sound quality of these mufflers is another thing worth mentioning. They tend to do better for higher frequencies than for lower frequencies which results in a sound that retains a certain amount of that low rumble and at the same time allows normal conversation without having to raise the voice or shout. That is a very desirable feature for most boating applications.

Application Guide

Aqua Power mufflers must be selected correctly considering such things as the exhaust system diameter, type of engine aspiration, exhaust manifolds, engine power, tailpipe design, single or dual exhaust, and engine fuel (gas or diesel).

For the 496, 454, 350, 305 and smaller gasoline engines (including V-6s) with 4" exhaust the In-Tube based muffler is almost always the best choice. Mufflers included in this category are the 9075-PR In-Tube, 9065 series Transom Mounts and the 9047-PR Clamp-On mufflers.

For the 350, 305 and smaller gasoline engines with 3" and 3.5" exhaust the In-Tube based muffler is also the best choice. Mufflers included in this category are the 9073-PR In-Lines and the 9072-PR In-Lines. Aqua Power can design both clamp-on and transom mount variations on a special order basis if required. Also Aqua Power can adapt these designs to 2" and 2.5" systems upon request.

Limited testing has been done on turbocharged Yanmar 300 hp diesel engines. Indications are very promising but no actual data has been taken. APL mufflers may be suitable for turbocharged applications.

Mercury Racing does not allow exhaust systems with internal flaps to be used with their supercharged engines such as 600 SCi, 700 SCi and 1075 SCi.

APL mufflers work well with diesel applications but because diesel engines have much higher exhaust flow than gasoline engines, engine power ratings must be at least doubled prior to selection. In other words, if a diesel engine's maximum output power is 300 hp then mufflers rated to at least 600 hp must be selected.

Most boats use dual exhaust systems but some use single exhaust systems. APL muffler power ratings assume dual exhaust. If a muffler is to be used on a single exhaust system then the engine power rating must be doubled. As an example, if a 300 hp gas engine exhaust Ys the output of two manifolds together into a single line and a muffler is to be used in that single line then the muffler should be rated for 600 hp or more. If the same thing is done on a 200 hp diesel then the muffler should be rated for 800 hp or more (see the paragraph on diesel applications).

Many boats have 4.5" and 5" exhaust systems. Presently the only choices are clamp-ons of the 9051 & 9053 series. Special mufflers can be designed for transom mount applications if required.

Stellings and CMI through transom pipes are designed to provide dry exhaust while still dumping cooling water into the exhaust stream. Muffler selection for these pipes is not changed at all. Since the water stream does not mix with the exhaust flow no quieting is gained when water begins to flow. When mufflers are added the water stream mixes with the air stream providing a certain amount of quieting otherwise not present with these pipes. As a result it has been found that Aqua Power mufflers attached to Stellings or CMI through transom pipes can provide up to 3 db more quieting than the muffler ratings shown. This effect also exists for any through transom pipe that dumps cooling water into the exhaust flow at the very end of the pipe resulting in little or no mixing of the water and exhaust flows.

Naturally aspirated and fuel injected engines over 625 hp are of special concern. These engines are very sensitive to any exhaust flow restriction. Because of this only -75 type clamp-ons should be considered for naturally aspirated engines from 650 to 850 hp. APL has no data for any naturally aspirated or fuel injected engines above 850 hp.

Customers should always verify changes in wide open throttle rpms when adding mufflers to an open exhaust system. Experience indicates that mufflers may safely drop wide open throttle by as much as 150 rpms below the maximum open system rpm. A 200 rpm drop is questionable and anything more should not be tolerated. Extreme rpm losses indicate high back-pressure which may cause predetonation resulting in severe engine damage. In the same way mufflers should not be allowed to increase wide open throttle by more than 150 rpms. Again 200 is questionable and anything more should not be tolerated. Extreme rpm increases may cause exhaust temperatures to increase which can lead to damaged exhaust valves.

Muffler selections are listed below for many common gas powered engine applications. See the paragraphs on diesel engines and single exhaust for those applications.

<u>Engine</u>	<u>Exhaust Manifold</u>	<u>Exhaust System Diameter</u>	<u>Aspiration Type</u>	<u>Muffler Selections</u>
496 & smaller	stock or header	4 inch	any	9075-PR, 9065-xxx, 9047-PR
HP500	header	4 inch 4.5 inch 5 inch	stock	9062-PR, 9055-PR, 9074-PR 9051-PR 9053-PR
525	header	4 inch 4.5 inch 5 inch	any	9060-PR, 9060-NF 9049-PR, 9070-PR, 9071-PR 9051-PR 9053-PR
600SCi EU662	header	4 inch 4.5 inch 5 inch	blower	9060-NF, 9049-PR 9070-PR, 9071-PR 9051-PR 9053-PR
650 to 800 hp	header	4 inch 4.5 inch 5 inch	Carburetor /fuel injected	9049-75, 9070-75 9051-75 9053-75
700SCi	header	4 inch 4.5 inch 5 inch	blower	9060-NF, 9049-75, 9070-75 9051-75 9053-75
850SCi and 1075SCi	header	4 inch 4.5 inch 5 inch	blower	9049-75, 9070-75 9051-75 9053-75
1200*	header	4.5 inch 5 inch	blower	9051-75 9053-75

*see paragraph customer verification of rpm changes

Transom Mount Mufflers



9060-PR / -NF



9062-PR



9065-ANG



9065-STB



9065-STR

Power Range	Pipe OD	Internal Flap	Case Diameter	Extension Aft Of Transom	Extension Fwd of Transom	Noise Reduction	Item #
Standard							
500-700hp	4.0"	yes	6.0"	9.5"	4.0"	8.0 db	9060-PR
500-700hp	4.0"	no	6.0"	9.5"	4.0"	8.0 db	9060-NF
HP500 *							
375-500hp	4.0"	yes	5.0"	7.4"	4.0"	10.0 db	9062-PR
In-Tube Based							
200-500hp	4.0"	no	4.0"	1.5"	4.0"	8.8 db	9065-STB
200-500hp	4.0"	yes	4.0"	5.5"	4.1"	8.8 db	9065-STR
200-500hp	4.0"	no	4.0"	6.0"	4.0"	8.8 db	9065-ANG

* Note: The 9062-PR is specifically designed for the HP500 engine and is not normally used for other applications. This muffler cannot be used with cast iron exhaust manifolds.

CLAMP-ON MUFFLERS



9047-PR



9055-PR



9049-PR / 75



9051-PR / 75



9053-PR / 75

<u>Power Range</u>	<u>Pipe Size</u>	<u>Internal Flap</u>	<u>Case Diameter</u>	<u>Extension Aft of Pipe</u>	<u>Noise Reduction</u>	<u>Item #</u>
In-tube based						
200-500hp HP500 *	4.0"	no	4.0"	5.5"	8.8 db	9047-PR
375-525hp Standard	4.0"	no	5.0"	8.0"	9.7db	9055-PR
500-662hp	4.0"	no	5.5"	8.8"	9.2 db	9049-PR
500-662hp	4.5"	no	5.5"	8.9"	10.4 db	9051-PR-S
500-662hp	5.0"	no	5.5"	8.7"	11.0 db	9053-PR-S
High Power **						
662-1075hp	4.0"	no	5.5"	8.8"	8.0 db	9049-75
662-1075hp	4.5"	no	5.5"	8.9"	9.3 db	9051-75-S
662-1075hp	5.0"	no	5.5"	8.7"	9.7 db	9053-75-S

* Note: The 9055-PR is specifically designed for the HP500 engine and is not normally used on other applications. This muffler cannot be used with cast iron exhaust manifolds.

* Note: These units are frequently used on 1200 hp supercharged engines. 9053-75-S has been chosen for 1500 and 1550 hp Sterling engines.

IN-LINE MUFFLERS



9070-PR / 75



9073-PR



9074-PR

<u>Power Range</u>	<u>Hose ID</u>	<u>Internal Flap</u>	<u>Case Diameter</u>	<u>Length</u>	<u>Noise Reduction</u>	<u>Item #</u>
In-Tube Based						
200-500hp	3.0"	no	4.0"	11.2"	9.1 db	9073-PR
200-500hp	3.5"	no	4.0"	10.1"	9.1 db	9072-PR
HP500						
375-525hp	4.0"	no	5.0"	10.5"	10.0 db	9074-PR
Standard						
500-662hp	4.0"	no	5.5"	11.25"	9.6 db	9070-PR
500-662hp	4.0"	yes	5.5"	13"	9.6 db	9071-PR
High Power						
662-1075hp	4.0"	no	5.5"	11.25"	8.4 db	9070-75
662-1075hp	4.0"	yes	5.5"	13"	8.4 db	9071-75

* Note: The 9074-PR is specifically designed for the HP500 engine and is not normally used on other applications. This muffler cannot be used with cast iron exhaust manifolds.

IN-TUBE MUFFLERS



9075-PR

Power Range	Hose ID	Internal Flap	Case Diameter	Length	Noise Reduction	Item #
In-Tube Based 200-425hp	4.0"	no	4.0"	4.85"	9.1 db	9075-PR

TIPS



9031-STB



9031-STR

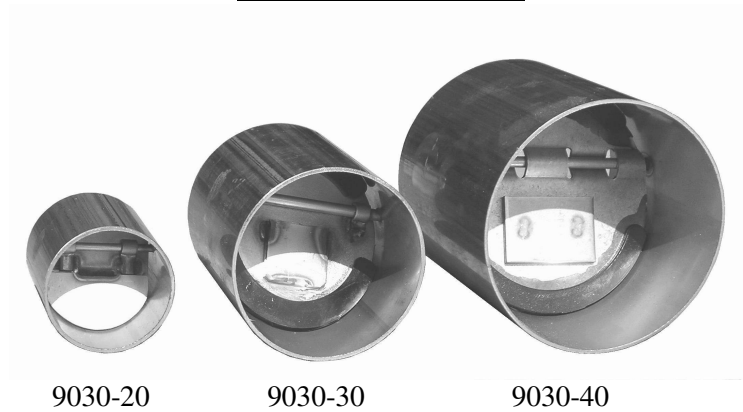


9031-ANG

Tips

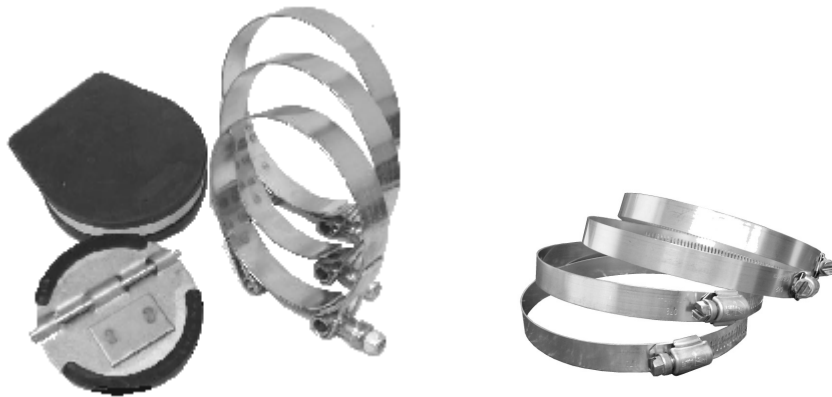
- 9031-FLU Flush Tip 4 inch inlet, extends .125" beyond transom
- 9031-STB Stub Tip 4 inch inlet, extends 1.5" beyond transom
- 9031-STR Straight Tip 4 inch inlet, extends 6" beyond transom
- 9031-ANG Angled Tip 4 inch inlet, extends 6" beyond transom

FLAP INSERTS



Description	Item #
2" Flap Insert fits inside 2" rubber hose, 2.25" Long	9030-20
3" Flap Insert fits inside 3" rubber hose, 3.375" Long	9030-30
4" Flap Insert fits inside 4" rubber hose, 4.08" Long	9030-40

ACCESSORIES



Description	Item #
4" External Rubber Flap	040001
4" sst Hose Clamp	040010
2" Internal Flap, 316L sst, metal to metal seal	101920
3" Internal Flap, 316L sst, 250 degree F polymer	101881
4" Internal Flap, 316L sst, 250 degree F polymer	101015
4" Heavy Duty T-Bolt Clamp	040240
4.5" Heavy Duty T-Bolt Clamp	040245
5" Heavy Duty T-Bolt Clamp	040250

Why Should You Consider Aqua Power Ltd for Your Silencing Needs?

- Mercury Racing has approved APL silencers for all of their current engines. When you choose an approved APL silencer for your Mercury Racing engine, Mercury stands behind its engine warranty. You can be as sure as Mercury is that back pressure and elevated exhaust temperature problems will not be caused by APL silencers.
- APL silencers are full time mufflers making them compliant with regulations in all states.
- The APL design was the first to exceed 6 dba noise reduction in the industry and is still the leader in marine silencing.
- APLs' patented technology provides the best combination of low loss and quieting for your high performance needs.
- Unlike switchables and self-configuring designs, APL silencers have no moving parts to wear out, no solenoids or switches to fail and no packing material to blow out. This makes APL silencers the most reliable on the market.
- All APL products are constructed from 316 stainless steel providing the best corrosion resistance available.
- APL clamp-ons stay on. To our knowledge there has never been a muffler lost that was installed to our current specifications.
- We stand behind our products. APL backs its products with a full one-year warranty.