Mercury Marine and Brunswick Corporation Comments to Australia DEWHA Regarding Consultation Regulation Impact Statement for Reducing Emissions From Non-Road Spark Ignition Engines and Equipment

Submitted by Mercury Marine and Brunswick Corporation

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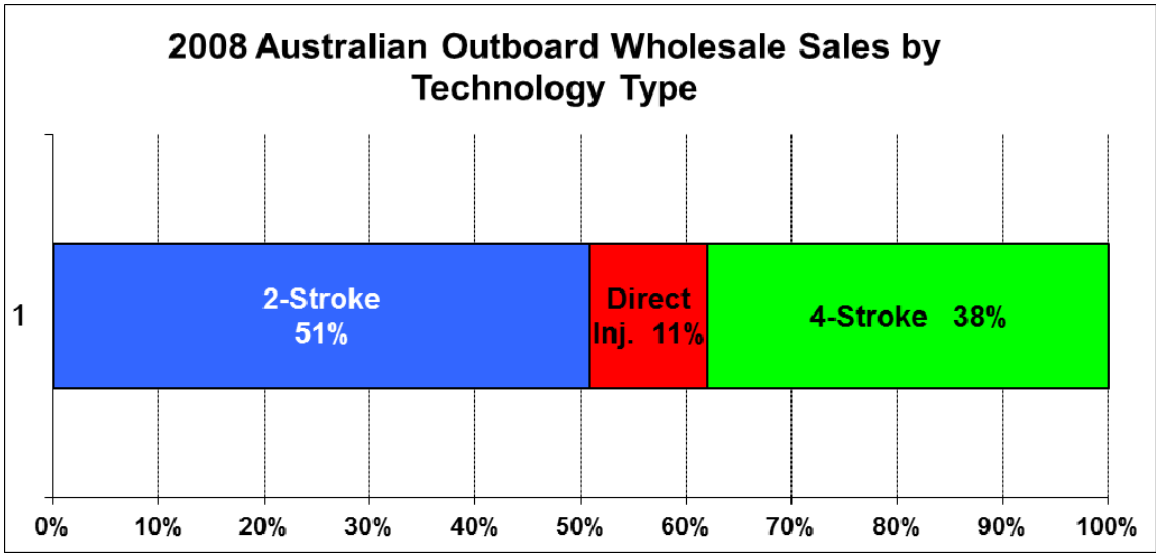
Mercury Marine and Brunswick Corporation fully endorse DEWHA's efforts to reduce emissions from marine engines and vessels. Our company and our customers are people who enjoy the outdoors, have a strong belief in preserving the environment, and are committed to long term sustainability.

We also believe that the marine market, as small as it is in comparison to other engine and vehicle sectors, must strive towards global harmonization of regulations, standards, and requirements, while also considering unique conditions in local markets. Therefore, our comments will be structured to address all of these issues in a constructive manner that supports the needs of DEWHA, the Australian Environment, the Australian marine market, the recreational and commercial boater, dealers, distributors, manufacturers and the unique needs of some customers in Australia.

General Comments Regarding Data in the Consultation RIS

Much of the data regarding sales and product mix in the RIS is out of date and, therefore, inaccurate. You will find in our attachments newly updated data on:

- 2008 Australian Market Mix of Outboard Engine Technologies which shows a much higher percentage of market for cleaner, 4 Stroke and DI 2 Stroke engines (Appendix A)



- 2008 Australian Market Mix of Outboard Technologies by engine power range that shows the 2 Stroke market over 90 Hp is virtually non-existent (Appendix B)
- The positive effects of the Voluntary Emissions Labeling Scheme (VELS). (Appendix C)
- The sales, by engine type, for the Australian Market through 2008 which shows that in a declining market the percentage of 4 Stroke and DI 2 Stroke engines has continued to rise. (Appendix D)

Note that the product mix between conventional 2 Stroke engines and cleaner technology engines has changed significantly, especially on the larger engine sizes. This is partially due to consumer awareness driven by the Voluntary Emissions Labeling Scheme (VELS) that was cited in the RIS. **Also, in reviewing our comments, we would like to point out that since emissions and standards are listed as g/kW-hr, removing a higher power, high emitting engine from the market has much more effect on total mass emissions than removing a lower power engine. A 200 Hp engine may have the total mass emissions of 15 – 20 engines at the 10 Hp range.**

We would also like to dispel one major misconception that was likely caused by statements made by uninformed people speaking through various media outlets. There has been the assertion made that 2 Stroke outboard engines cause water pollution. There are 6 studies attached (Appendices E) which all confirm that 2 Stroke marine engines, and marine engines in general, have a negligible impact on water quality.

EPA Regulations

In general the US EPA, and in some cases the California Air Resources Board (CARB), have led the way in developing new emissions regulations that have become models for the other countries. This is certainly the case in SI Marine Engines and Vessels. The most recent EPA rulemaking in 2008 set fleet emissions standards for Outboard Engines

(OB), Sterndrive/Inboard Engines (SD/I), and Personal Watercraft (PWC). These are the most stringent standards in the world and have reduced emissions from OB/PWC by up to 90% and SD/I by 75% (which were already very low). For OB/PWC this was accomplished by introducing 4 Stroke and Direct Injected 2 Stroke (DI) engines. For SD/I engines, which were already automotive based 4 Stroke engines, moving to 3 way catalytic converters and closed-loop engine controls. In addition, for the first time, evaporative emissions controls are required for marine vessels. It should be noted that EPA gave the marine industry through 2015 to phase-in all of the requirements (Appendix F), recognizing that technologies needed to be developed, and new products designed, validated, tooled and put in to production. Also, they recognized the needs of the industry to adapt, allow the boat builders to adapt, and introduce the new products to the customers in a way that helped ensure customer acceptance. It should also be noted that this was the second stage of OB regulations, the first beginning in 2000.

In the RIS there are statements that the Australian Emissions Regulations would apply the EPA 2010 levels in 2012. Per Appendix F, several of the EPA requirements do not phase-in until after 2012. If these become requirements earlier in Australia than the US, there will be virtually no engines available meeting the Australian requirements. There are also statements in the RIS that the Australian regulation would never be more stringent than the EPA regulations, but that Australia would not accept Averaging, Banking, or Trading (ABT). These two concepts are directly contradicting as removing ABT most certainly makes the Australian regulation more stringent.

EPA Flexibilities

EPA correctly recognizes that manufacturers, distributors, dealers, and customers need some flexibilities in meeting these new regulations. EPA utilizes a strategy called Averaging, Banking, and Trading (ABT) to provide manufacturers with a way to comply with the regulation and still maintain a complete product line. Engines and equipment that can be certified below the standard generate emissions credits and engines that are over the standard consume credits. The manufacturer must maintain a positive credit

balance. **In addition, there are caps on the emissions levels of any given engine family to prevent high polluters from being placed on the market. For Outboards the cap is at the equivalent of the CARB 1 Star Standard. (Appendix G) There are no actual engines certified to the 1 Star level, so the ABT program is simply averaging 2 and 3 Star level engines and the fleet average is the 3 Star level or better. This is important because of statements that have been made that large numbers of high polluting engines could be dumped on the Australian Market if ABT was allowed in Australia. With the caps are in place, this simply is not true.** For the SD/I engines the cap is at the 3 Star level and the Standard is at the 4 Star level, or 5 g/kW-hr. This approach has been very successful in many engine and vehicle categories over the years. It actually has been shown to reduce emissions over a rigid cap on all engines, as manufacturers must target meeting a positive credit balance and develop their ABT programs with a compliance margin to allow for some changes in product mix from what was forecast. A regulation with firm limits means that manufacturers will certify all engines to the limit. In addition, the lack of an averaging approach will remove clean engines from manufacturer's product line that are slightly above the standard and limit consumer's choice, even though those products are 90% cleaner than many engines in the legacy fleet that are candidates to be replaced. In many cases, these engines are only a couple grams above the standard, and recalibrating them below the standard would increase fuel consumption and increase Greenhouse Gas Emissions. As an example, Mercury's 6 cylinder Verado Outboards ranging from 200 – 300 Hp are certified to 22 g/kW-hr for 10% improved fuel economy. The standard is 16.4 g/kW-hr and the engine actually runs about 18g/kW-hr. Other Mercury engines generate sufficient credits to offset this. The administrative burden to manage and report ABT belongs to the engine manufacturer, not the government. Another, much simpler approach, about to be implemented by Canada, is to simply accept an EPA Certification, recognizing the model mix will be similar.

Not to Exceed Zone (NTE)

In the EPA rule, they require engines to be certified to the NTE Zone requirement. This measures emissions off-cycle and compares these values to the certification on the 5 Mode ICOMIA Cycle. This requirement goes into effect in 2013. Early analysis indicates that some engines certification levels may have to be raised to comply with NTE. Because of this, some engines that are currently at the 3 Star level may find themselves at the 2 Star level with NTE. This further demonstrates the need for ABT.

Certification of Engines Not Certified and Sold in the United States

DEWHA must recognize that there are engines either imported that are not sold in the US or are actually manufactured or marinized in Australia. A clear certification procedure is required to deal with these situations. Certainly, EPA test procedures can be cited, but there will need to be a certification procedure along with direction on labeling, in-use testing (in situations EPA requires it), emissions warranty, emissions recall procedures, etc. It is important to note that the engines must be actually dynamometer tested at a qualified emissions testing laboratory. Past proposals of design based certification have never been proven to be at all accurate.

Repower/Replacement Engines

The EPA regulations allow for an engine to be replaced with a non-current emissions level engine when a new, certified, engine can not reasonably be installed in the vessel. This includes issues with wiring harnesses, physical size, weight, etc.
DEWHA needs a similar provision in their regulations to avoid placing an unreasonable burden on boat owners that need to replace their engine and to avoid a situation where a heavier new engine creates a weight/balance/flotation issue.

Regulations in Other Countries

It appears that there is some confusion as to where SI Marine Emissions Regulations are actually in place. There are currently only emissions standards for marine engines in the United States and in the European Union. Canada never finalized their proposal from 4 years ago, although they are in the process of finalizing it now. Their approach is to align with US EPA and, if the product is certified to EPA standards, and sold in both countries, it is deemed to be certified in Canada with no further ABT requirements. This is an approach that Australia can certainly consider. Canada does have a separate certification and reporting requirement for engines unique to Canada and Australia is encouraged to develop a similar approach. The European Union is planning to adopt US EPA requirements without ABT, but they have mitigated the lack of ABT by not requiring compliance to the Not to Exceed Zone (NTE) which will be discussed later, and the new standards would not become effective until 2015 at the earliest. There are no other emissions regulations for SI Marine engines anywhere in the world. A stated position of all engine manufacturers in IMEC (ICOMIA Marine Engine Committee) is that global alignment of emissions requirements is absolutely critical to the future of this industry as the industry is too small to develop unique products for different markets and the engine manufacturers have little control over product distribution as boat builders can install engines in boats and ship them anywhere in the world without our knowledge.

Market Effects of Transitioning to Newer Technology Engines – Outboard

In markets where this transition has been made, primarily the US and the EU, the transition resulted in an increase of 15 to 60% in the average cost of an outboard engine and a reduction in sales of 20%. This occurred during a phase-out of 2 Stroke engines over several years. The RIS proposes essentially a “cliff” event where 2 Stroke engines are removed from the market all in one year. This is likely to exacerbate a reduction in sales. The marine market is trying to recover from its largest downturn in history and many dealers, distributors and manufacturers are financially stressed to the point of

bankruptcy and liquidation. This will only make this situation worse with the resulting loss of jobs and businesses.

Outboard Engine Weight Issues

As stated in the RIS, the National Marine Safety Committee (NMSC) has indicated there may be safety issues with replacing 2 Stroke engines with DI 2 Stroke and 4 Stroke engines due to weight and buoyancy. Statements were made that some modern 4 Stroke and DI 2 Stroke engines are lighter than 2 stroke engines. Appendix H shows that this is, in fact, not true, and most are between 25% and 45% heavier. This is also an issue for engine use by Indigenous Populations as will be discussed later.

Market Effects of Transitioning to Newer Technology Engines – Sterndrive/Inboard

EPA only recently regulated Inboard/Sterndrive, due to the fact that they were already extremely clean engines at the CARB 3 Star level. However, they also recognized that taking them to a 4 Star level, which requires catalytic converters, and closed-loop fuel injection control, is a huge cost, in the range of $3500 AUD per engine. While this could be better absorbed on the larger boats with larger engines it amounts to a 10 – 20% increase on a smaller, entry level, boat. Since these smaller, entry level, boats use smaller 4 cylinder and 6 cylinder engines, their contribution to total emissions inventory is much smaller. EPA correctly recognized this and allowed ABT so that manufacturers could apply the new technologies to the larger V8 engines, and if they were able to develop credits from them, not have to burden the entry level boat market with this added cost. If we lose the entry level boat market, we lose new boaters who usually move up to larger boats at some future date, it therefore impacts the entire boat market.

High Performance and Racing Engines

EPA correctly recognized that high-performance (over 500 Hp) engines and competition racing engines needed to be handled differently.

- For high performance recreational engines, the manufacturers of catalytic converters acknowledged that they had no such products for these classes of engines. In addition to that, the full useful life of these engines is considerably shorter. DEWHA should ensure that these engines, which comprise a very small percentage of engines in the world, are regulated as a separate category as is done by EPA. Failure to do so will create a category of engines that could not meet a regulation and would encourage non-compliant products to be brought in illegally.
- For competition use engines EPA created an exemption that allows for engines being used in sanctioned racing events to not be certified if they had performance and operating characteristics that were substantially different from recreational engines. DEWHA should include a like provision.

Lead Time and Model Years

If one carefully reads the EPA regulations, there are some items that are regulated based on calendar year and some are regulated on model year. EPA defines model year as being able to start January 2 of the previous calendar year, or later, and can end as early as January 1 of the designated model year. A model year cannot include more than one January 1. The RIS states that DEWHA proposes that these regulations take effect in 2012. For some manufacturers, the 2012 model year could actually start less than 6 months from now. Considering that the Decision RIS has not been written, the Ministers have not agreed to move forward, no text of a regulation has been written, no regulation has been adopted, and marine manufacturers will need lead time to comply with whatever the regulation looks like, it is hard to fathom how this implementation schedule could possibly be achieved. Engine manufacturers and distributors will need sufficient time to make sure that they have the correct product mix to support their customer's needs. Manufacturing volume and model mix is fairly firm 24 months out. Boat builders will need time to evaluate installation of new and heavier engines, possibly reinforce transoms, rebalance boats for safe and comfortable operation, reevaluate their market,

engine powers and pricing structures, and make this transition. EPA has never forced a major change in less than 2 – 3 years AFTER a rule is final.

EPA, the EU, and Environment Canada have all met with the manufacturers once their regulations were drafted, and before they are finalized, to ensure that all of the regulatory language is correct and the regulation has no unintended consequences. Mercury strongly recommends this approach to DEWHA as there are many complex issues in the EPA regulation and a thorough review of any proposed Australian regulation by the manufacturer's technical representatives could prevent problems with implementation.

Distributor Operations in Australia

The engine distributors in Australia distribute products within Australia and also to New Zealand and the Pacific Islands, including markets that will not be regulated in the foreseeable future. DEWHA must ensure that the regulation is written such that non-regulated product can be brought into Australia, pass through Customs, be warehoused and sold outside of the country. Further, non-regulated product must be able to be sold to boat builders and dealers within Australia if it is clearly intended that the boat is going to be shipped out of the country.

Boat Evaporative Emissions

This is clearly one of the most misunderstood items in the RIS. First and foremost this is a boat issue. The engine manufacturers DO NOT supply any of this equipment or these systems. Appendix I is an EPA summary of the requirements. The only evaporative emissions components that the engine manufacturer is responsible for is the engine mounted, low permeation fuel lines, and in the case of smaller outboards, if the engine manufacturer supplies a portable fuel tank, lines, and primer bulbs. All other equipment, and the highly complex requirements for boats with built in fuel tanks, is the responsibility of the boat builder and, potentially the boat dealer. DEWHA appears to have made no attempt to engage the boat builders in these discussions. The boat builders

and dealers that Mercury have contacted have absolutely no idea that this regulation is being considered and have no understanding of the requirements, or how to meet them. The start of the 2012 boat model year for most boat builders is July 1, 2011, which is less than 12 months from now. The following new components are going to be required:

- Low permeation fuel lines
- Low permeation fuel tanks
- New, anti-spitback, fuel deck fill
- Anti-siphon Valve
- Inlet Valve
- Vent Valve
- Grade Valve
- Carbon Canister(s)
- P Trap
- Fuel Demand Valve

These products are just now getting designed, tested, validated, and getting their EPA certification so that this part of the EPA rule can be implemented in the US. None of these new components are currently on the market and NONE of them are in Australia. Appendix J is a PowerPoint presentation by Attwood of the design requirements and components needed to build a compliant system.

Further, there was no proposed method in the RIS for certifying fuel system components that are not EPA certified in the US. If DEWHA does not provide a clear certification path that includes test methods, acceptance criteria, certification application procedures, documentation, etc. they will effectively block any Australian company from manufacturing any marine fuel system components and systems.

The idea that this would be an enforceable rule for 2012 boats in Australia is completely inconceivable. Boat builders and dealers are going to need training on the requirements,

time to redesign their fuel systems, access to fuel system designs, availability of components and systems, etc.

In the US, EPA held regional meetings with boat builders to explain these requirements. We believe that this is the only responsible way for an environmental regulatory agency to handle this and therefore strongly encourage DEWHA to follow this approach.

Further, the EPA utilized ABYC standards to develop some of the design requirements for fuel systems to ensure safe and reliable operation. Since ABYC Standards are not enforceable in Australia, how does DEWHA propose to address fuel system design and safety?

In addition, there is no mention of how to demonstrate compliance for an Australian boat builder or a boat builder who is not selling boats into the US market. Will there be a prescribed labeling scheme or means?

Based on all of the above, Mercury and Brunswick cannot see any way this rule can be implemented in anything less than 3 years AFTER publication of the final rule.

Hardship Relief tied to EPA

In the EPA rule, there was a diurnal control requirement for portable outboard fuel tanks, to be effective January 1, 2010. During development and testing of these tanks, major safety and environmental issues were discovered. As an industry, we approached EPA and showed them video evidence of what can happen in real world conditions. In addition, the United States Coast Guard had major concerns. EPA invoked their hardship provision to allow an additional year, with the understanding that they would also modify the rule once the final engineering solutions were identified and the ABYC standard was finalized. Had we gone forward with product that met the original standard, we have no doubt people would have been killed or seriously injured. Therefore, any rule from Australia that is tied to the EPA rule must have provisions that automatically provide

hardship relief if EPA grants it for an entire requirement (not a company specific issue), and picks up any new regulatory changes that may arise from such an occurrence.

Hardship Relief due to Operator and Operating Conditions

There are some unique types of operation and operators of Outboard Engines in Australia that need to be properly addressed. The chart previously shown, comparing the weights for 2 Stroke vs. DI 2 Stroke & 4 Stroke engines show important weight penalties on these new engines. There are special needs for 2 Stroke engines in Australia, and those have been identified to involve the following:

- Indigenous Population
- Elderly and Handicapped Persons
- Surf Rescue Boats
- Military Use

We believe that the final Australian regulation must address these needs and recommend that a general hardship provision must be included that permits sale of non-certified, lightweight 2 stroke engines to these categories of users. Distributors and dealers could be required to maintain documentation for each of these sales so that they can be audited and ensure that each sale was a legitimate hardship condition.
We will address each of these separately:

Indigenous Population (Appendix K)

Many of the Indigenous Population utilize small boats with small outboard motors for fishing to feed themselves and support themselves. This is the largest need for 2 Stroke engines. These are used on river, estuaries, and offshore fishing. The unique requirements for this group are:

- Lightweight – at the end of the day the engines must be removed from the boat and carried some distance back to the village. If this is not done, the engine will be stolen. (Appendix H)

- Easy to Repair and Service – There are no service facilities where these engines are being used. Most small 2 Strokes can be repaired with basic mechanical knowledge and basic hand tools. 4 Stroke engines and DI 2 Stroke have sophisticated electronics, complicated fuel systems, often require special diagnostic test equipment to diagnose problems, and well trained technicians to fix them.
- Oil Changes – 2 Stroke engines do not have oil sumps, so there are no oil changes. 4 Stroke engines require regular oil changes. There are no waste oil disposal facilities in these areas. We have experience in other parts of the world where this situation has occurred and the operators end up draining the used oil either onto the beach/ground or into the water, neither of which is a good environmental situation.
- Engine Storage – 4 Stroke engines have an oil sump filled with oil. If they could be removed from the boat for safe storage, they must be either stored upright (which most indigenous people would not have the capability of) or stored on one specific side. If they are placed on the wrong side, the cylinders will fill up with oil, rendering the engine inoperable. In some cases, the oil will ultimately run out of the carburetor. A 2 Stroke engine can be stored in any position, on any side.

For these reasons, the 2 stroke engine is currently the only technology that enables the indigenous population to utilize their boats in a safe manner, protect their property, and not cause environmental damage from waste oil. Denying them their livelihood would not be viewed as the right thing to do. Mercury has obtained further documentation on this subject and it is attached. The Indigenous Populations may not have access to computers or be aware of the RIS Consultation process. We strongly encourage DEWHA to contact Indigenous Populations that are involved in fishing and further understand their needs.

Elderly and Handicapped Persons

As a part of Australia's continued push towards elderly and handicapped accessibility to all activities and sports, the hardship provision should apply to these persons if the requirement to use a certified engine means that the person cannot participate in the desired activity. With the aging baby boomer population, this becomes even more of a priority.

Surf Rescue Boats

This class of boat uses small 2 Stroke outboards in the 25 Hp range. These boats are used for rescue of people in surf conditions and often capsize. A 2 stroke engine that is turned over and submerged can be restarted in a matter of minutes. 4 Stroke and DI 2 Stroke engines cannot without major service work. Also, heavier engines will reduce boat speed and increase response time to rescue. This is a situation where people's lives are at stake and any delay in rescue can mean loss of life.

Military Use

Military use can include submerging engines, air drop, and extreme conditions. Only a 2 Stroke can operate under these conditions and be restarted after submersion. They also need to be carried, sometimes long distance, need to be laid down on either side, and need to be able to be serviced quickly with minimal tools.

Questions Raised by DEWHA

In the covering email from DEWHA, four questions were raised and we will provide our answers to those questions in this section.

What is the likely impact of adopting US emissions standards on the purchase price for each type of relevant product?

Answer: The average price of a four stroke outboard over a two stroke outboard from 90 Hp on down will go up by about 40% ranging from 0% to 90%. Data is attached but a 15 Hp engine will go up by $1286 AUD, a 40 Hp engine will go up by $2607AUD and a 90 Hp engine will go up by $3267AUD. (Appendix L)

There is virtually no impact on engines over 90 Hp since we only sell 4 Stroke and DI 2 Stroke engines in the larger sizes in Australia. This answer assumes that DEWHA accepts some sort of averaging approach that allows the sale of 2 Star level engines. Otherwise there will be additional costs on the larger engines.

For Sterndrive and Inboard Engines the price increase will be about $3500AUD per engine. With an averaging approach this can be mitigated on entry level boats that use 4 and 6 cylinder engines.

What is the likely impact of adopting US emission standards on consumer demand for each type of relevant product?

Answer: In the near term, based on other markets, a drop of 10 – 20% in sales the first year can be anticipated.

What is the likely impact of adopting US emission standards on consumer choice for each type of relevant product, i.e., if US standards were adopted, which products would be removed from the market.

Answer: All 2 Stroke outboards would be removed from the market, with the exception of those that we believe should be allowed under our proposed hardship provision. If some version of ABT is allowed, all DI 2 Strokes and 4 Strokes would be available. Without some form of ABT many of our larger DI 2 Strokes would be removed from the market and our larger 4 Strokes would require a very undesirable recalibration. In all likelihood, not all would be recalibrated. Without ABT, consumer choice to replace older 2 Strokes would be severely curtailed.

What are impacts to manufacturers and distributors of meeting US Final Rule standards through a phased approach in comparison to a non-phased approach?
Answer: Some form of a phased or delayed approach is preferred. Since the timeline is such that a regulation cannot be finalized by the proposed implementation date, the entire timeline on this proposal needs to be reconsidered. Normal regulatory practice is that regulations do not take effect for at least 2 – 3 years after the regulation is finalized. Also, any phased approach would have to be based on the EPA regulation finalized in 2008, as there will be no engines certified to EPA 2006 by the time this regulation is finalized.

Thank you for the opportunity to provide comments to your Consultation Regulation Impact Statement. We are available to answer any questions you may have and are available to assist you going forward, should you decide to draft a regulation. For further information or questions please contact:

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