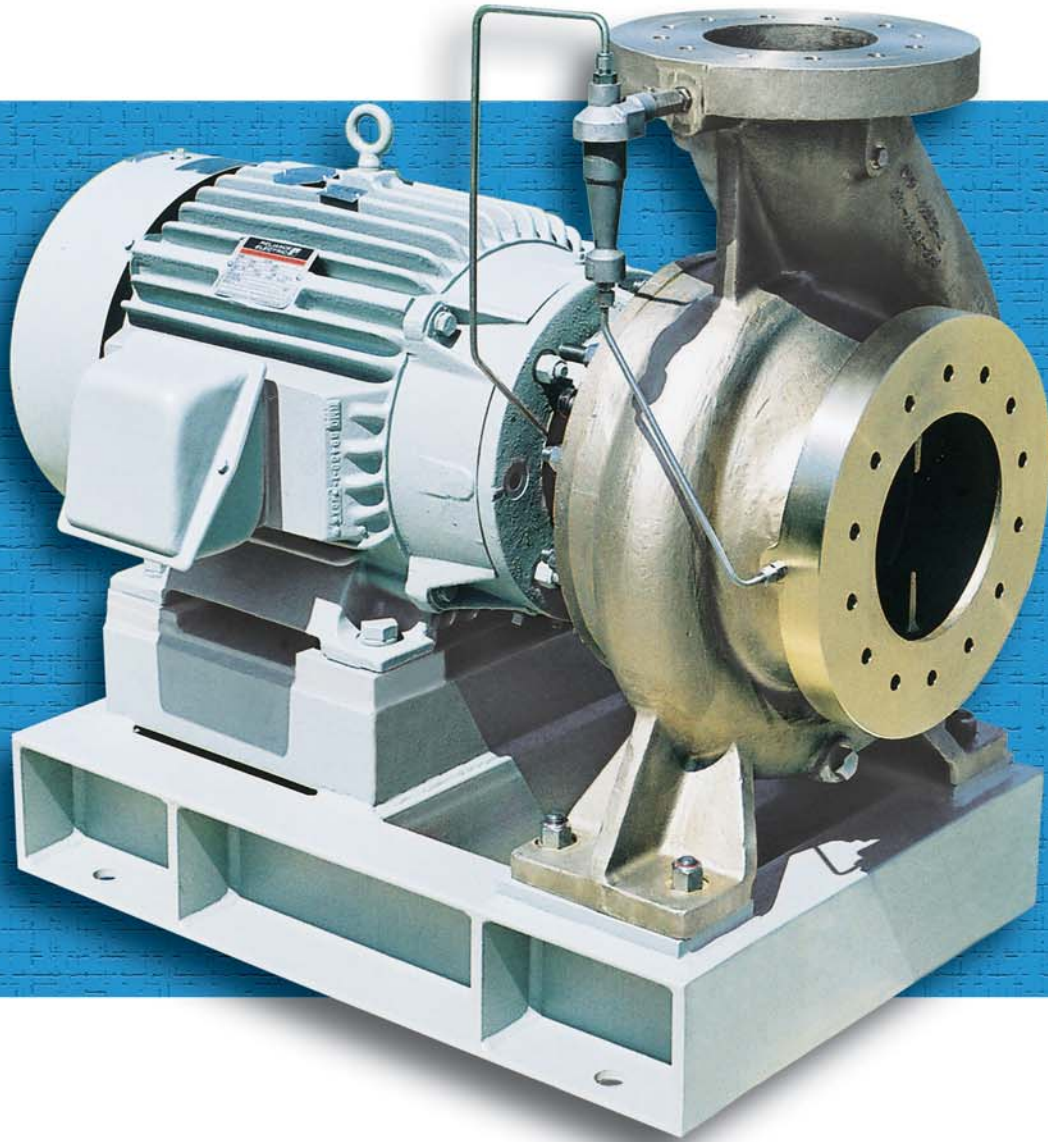


# ***M Series***

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*ASTM F 998 Marine Duty Pumps  
For Flows to 5,000 GPM*



 **Carver<sup>®</sup>**

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***Creating Value.***

## The M Series

The M Series is Carver's end suction pump for handling freshwater, seawater, and light hydrocarbons in commercial marine and naval applications. Conforming to the requirements of ASTM F 998, including the Navy supplement, hydraulic performance extends to 5,000 GPM and 700 feet of head. This range is covered by twenty-four sizes in 316 SS and CD4MCu duplex SS as the standard materials. Installation can be as either a horizontal close coupled or vertically mounted unit.

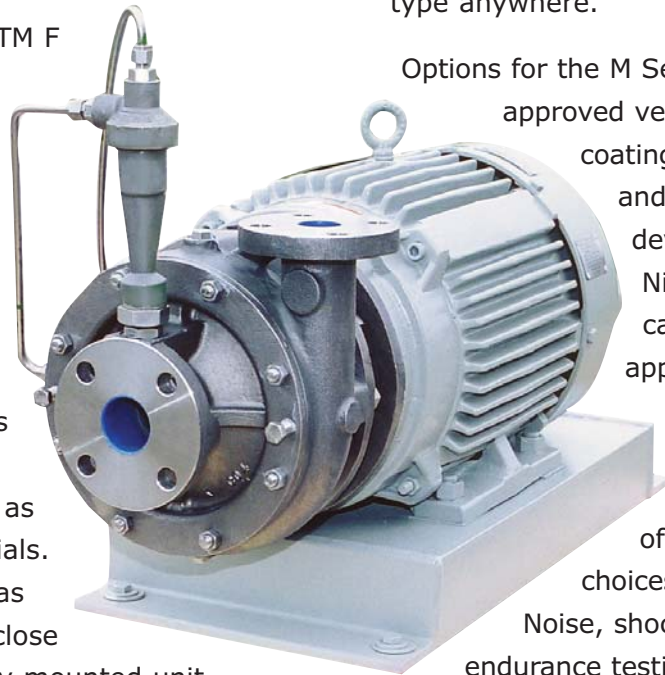
Designed to meet the military's needs for a commercial-off-the-shelf (COTS) pump, all models are back pull out designs with replaceable wear rings and enclosed impellers dynamically balanced to ANSI S2.19, Grade G6.3 guidelines.

These features combine to produce shaft deflections of less than 0.002" at shut off, and overall offer some of the most efficient hydraulics to be found in a pump of this type anywhere.

Options for the M Series include a shock-approved version, polymeric casing coatings, cyclone separators, and vibration detection devices. Along with these, Ni-Al-Br and 70/30 CuNi casings, U.S. Navy approved composite impellers, shaft sleeves and wear rings, and a full range of motor and baseplate choices are also available.

Noise, shock, vibration, and endurance testing to U.S. military specifications are also offered.

Putting it all together, the M Series provides the reliability, affordability, low total life cost, and lasting value that has made Carver the world's most trusted name for mission-critical marine duty pumps.



### Hydraulics

- Flows to 5,000 GPM (1,100 m<sup>3</sup>/hr)
- Heads to 700 ft. (200 m)
- Efficiencies to 88%
- Power to 200 HP (150 KW)
- Speeds to 3,500 RPM
- Temperatures to 300°F (150°C)

### Applications

- Air conditioning chilled and seawater
- Bilge and gray water
- Ballast / emergency dewatering
- Central and auxiliary seawater
- Distilling plant systems
- Fire fighting
- Hot water circulation
- JP-5 transfer service
- Main and auxiliary propulsion cooling
- Potable water
- Radar systems cooling



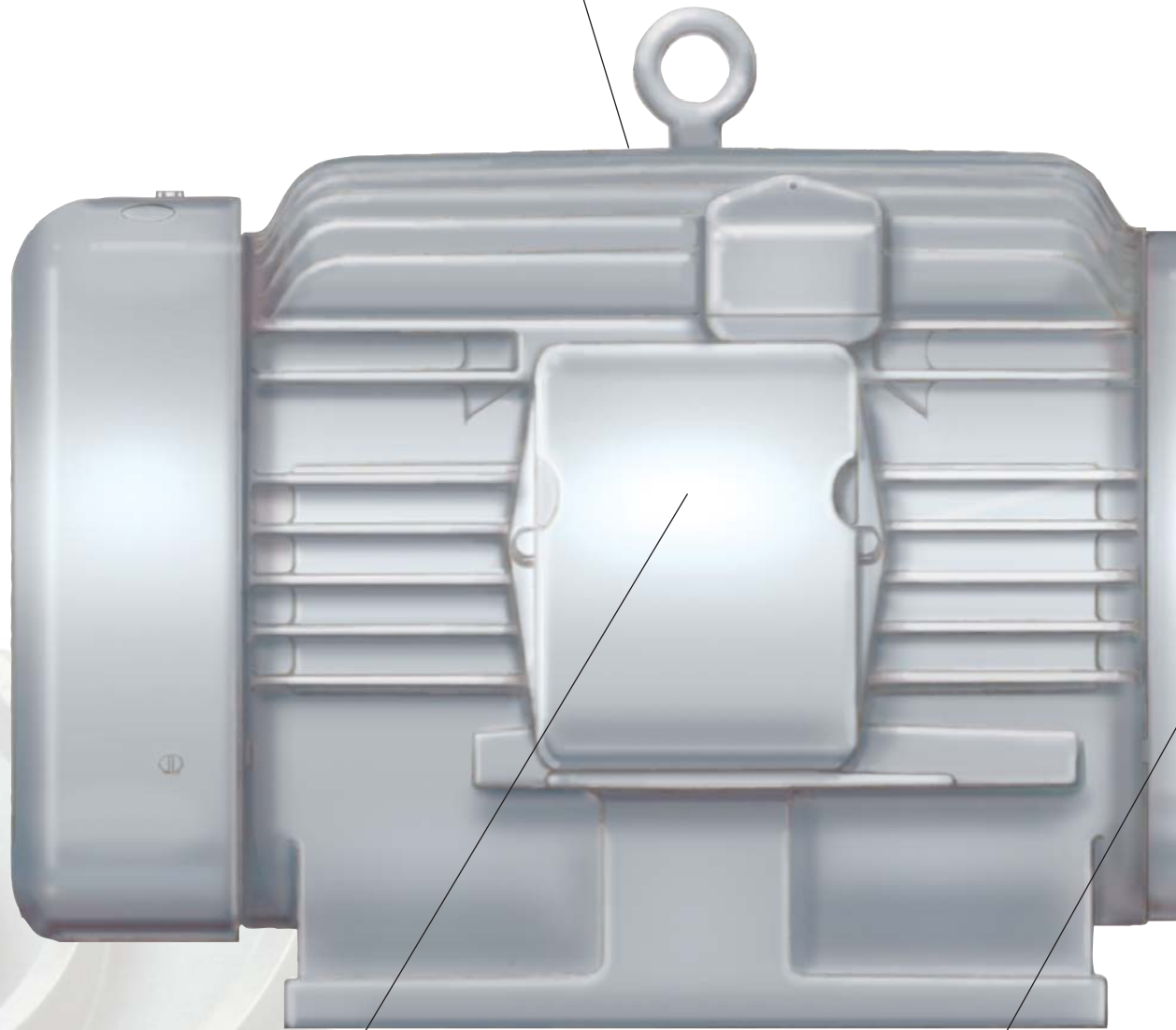
## Features & Benefits

### Close Coupled Design

Smaller and lighter envelope than traditional split case or frame mounted designs that totally eliminates pump bearing, shaft couplings, and pump/motor alignment issues.

### Back Pull Out

Allows inspection, maintenance, and overhaul of all rotating elements, including the shaft, impeller, and mechanical seal, without disturbing system piping.



### Motors

Close coupled IEEE 45 / 841 cast iron commercial-off-the-shelf motors as standard with labyrinth seals for added reliability. Shock and vibration resistant motors also available.

### Bearings

Motor bearings are grease lubricated for shipboard pitch and roll applications. Optional sealed-for-life bearings also available.



### Connections

ANSI 150 lb. flanges satisfy all ASTM F 998 shock and vibration requirements. Most sizes rotatable in 90° increments for added flexibility in meeting shipboard piping configurations.

### Impellers

Enclosed type with balance holes and replaceable casing wear rings reduce axial thrust loads and provide longer component life.

### Casings

Short impeller overhangs and dual volute casings on larger units maintain shaft deflections of less than 0.002". All drain, vent, and gage connections are straight thread, o-ring type for positive fluid sealing.

### Composite Internals

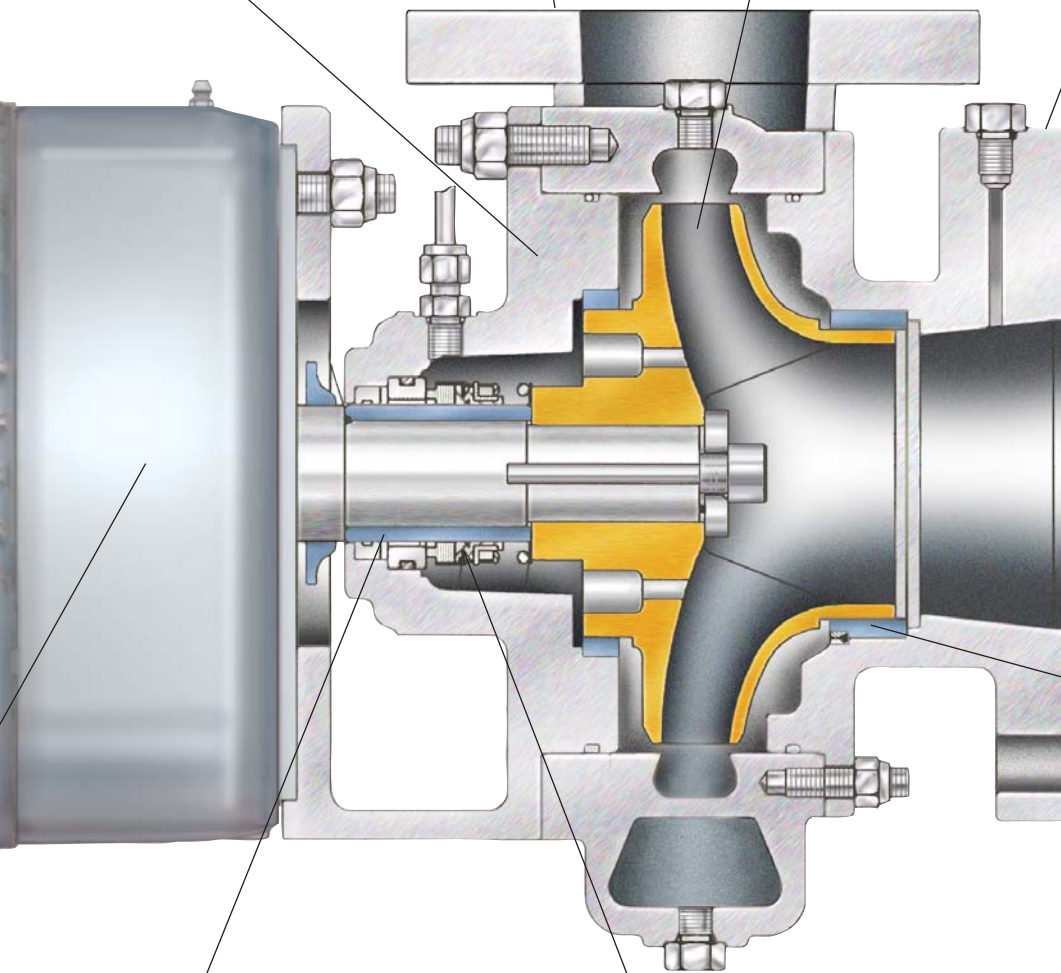
Composite impellers, wear rings and shaft sleeves in accordance with NAVSEA drawing 803-7226047 reduce corrosion, increase component life, and greatly reduce pump weight.

### Shaft Sleeve

Dry shaft design uses shaft sleeve to seal the shaft from the pumped fluid. Provides longer shaft life while enabling the use of less costly shaft materials.

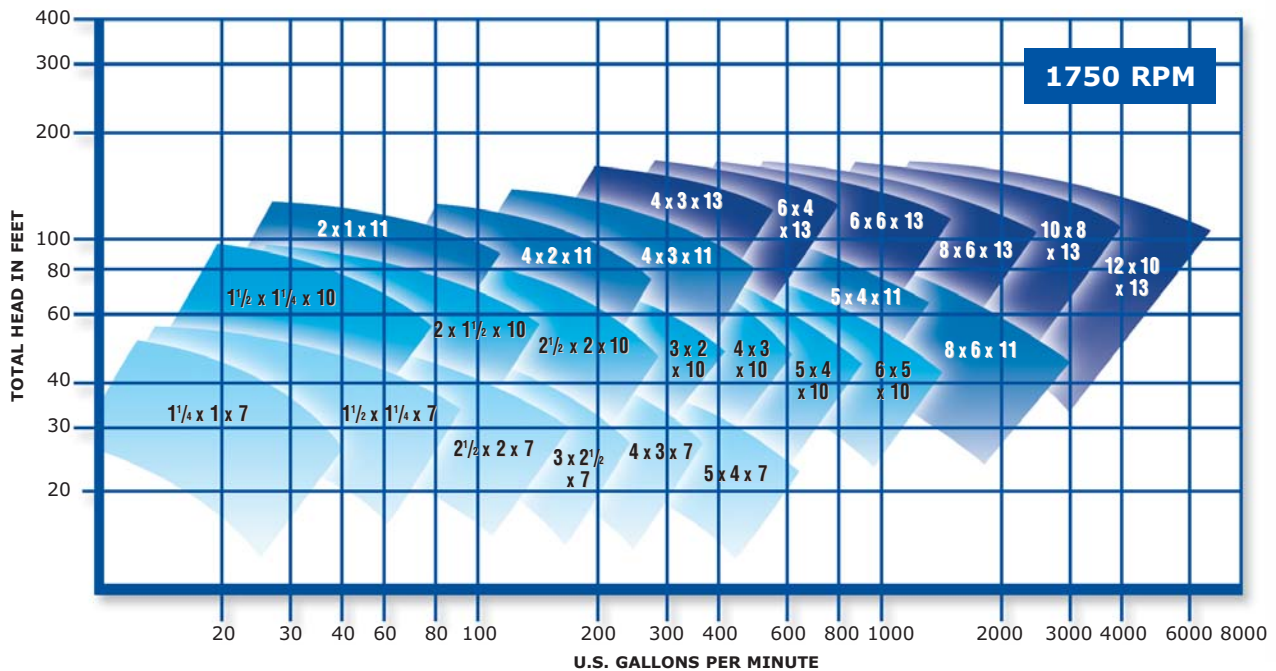
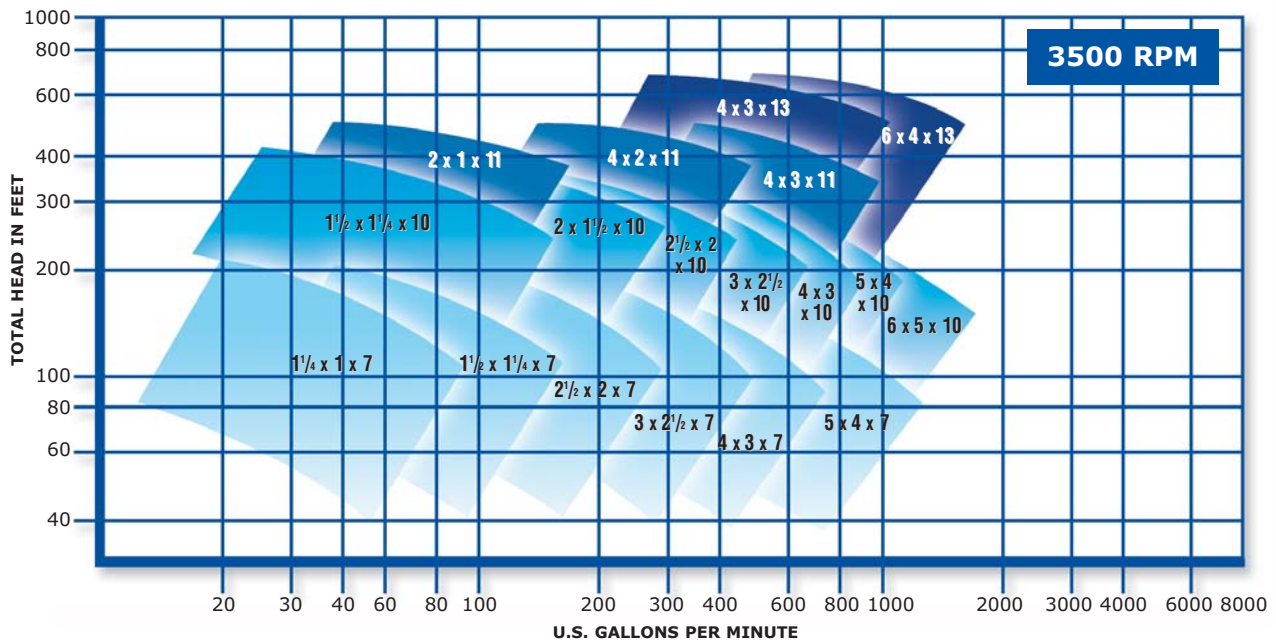
### Mechanical Seals

Per ASTM F 1511 requirements with carbon on tungsten carbide faces and auxiliary throttle bushing for added protection. Integrally mounted cyclone separators standard on seawater applications.



Approval Certification Number 95-370

## Hydraulic Coverage



## Typical Materials of Construction

Service	Casing	Impeller	Shaft	Shaft Sleeve	Wear Rings
Freshwater	316 SS	Composite	416 SS	Composite	Composite
Seawater	CD4MCu	Composite	316 SS	Composite	Composite
Hydrocarbons	316 SS	316 SS	416 SS	316 SS	Bronze





Since we built our first pumps in 1938, the Carver name has become synonymous with value. Today we are recognized as one of the world's leading centrifugal pump companies, building pumps to the most demanding engineering specifications and military standards in the world.

Our company is located in Muscatine, Iowa, 25 miles southwest of the Quad Cities area. Our operations there include some of the most modern manufacturing equipment and pump development software available, and we are committed to the highest quality possible in our products and our people. Along these lines, Carver was also one of the first American pump companies to attain ISO 9001 certification—the most recognized standard for quality in the world.

From an applications standpoint Carver has traditionally built pumps for water, oil, and chemicals for both the public and private sectors. Our product line includes both horizontal and vertical end suction, multi-stage, axial split case, self-priming, API, and solids-handling pumps that all carry the same Carver trademark: lasting value from solid, straightforward designs engineered to provide many years of service.

These pumps are also backed by unparalleled aftermarket support. Our network of stocking distributors, manufacturer's representatives and certified service centers throughout the world means that no matter where your pump may be installed, there are local sales and service people ready to support your aftermarket needs.



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