



**Moving  
Water  
Industries**



**HYDRAFLO™**  
HYDRAULICALLY DRIVEN PUMPS

LARGE AXIAL FLOW AND MIXED FLOW PUMPS

# Hydraflo™ Pumps

## Large Axial Flow and Mixed Flow Pumps

*The Hydraflo™ is a patented, submersible pump that uses the power of hydraulics to drive the impeller via flexible hoses. This replaces a fixed motor, a long, rigid shaft and the supporting structure common to most pumps that can move very large quantities of water. The unique design allows the pump to be set up in hours – not months – usually eliminates most of the civil works necessary for installation – saving a lot of money and time, allows the pump to be portable and provides variable speed control. The Hydraflo was the pump of choice for rapid response to the Army Corps of Engineers draining the floodwaters of Hurricanes Katrina and Rita in New Orleans.*

- Variable Speeds
- Indefinite Run-dry Capability
- Environmentally Friendly
- Rugged, Reliable Design and Construction
- Pumping Capacities to 134,000 GPM
- Quick Installation - Set Up and Running in Hours
- Easily Accommodates Fluctuating Water Levels
- Highly Versatile and Flexible - Can be used for temporary or permanent stations
- Very portable - Relocate as needed
- Minimal Civil Works - Save Up to 80% of Overall Project Costs
- Hundreds in Use - US, Africa, Middle East, Asia, Latin America
- Mobile Units Available - Pump Massive Amounts of Water in Minutes

## Hydraflors™ Help Dry Out New Orleans



*Four 42" Hydraflors, each capable of 70,000 gpm, at the Pump Station 15 Canal pump out Hurricane Katrina floodwaters.*

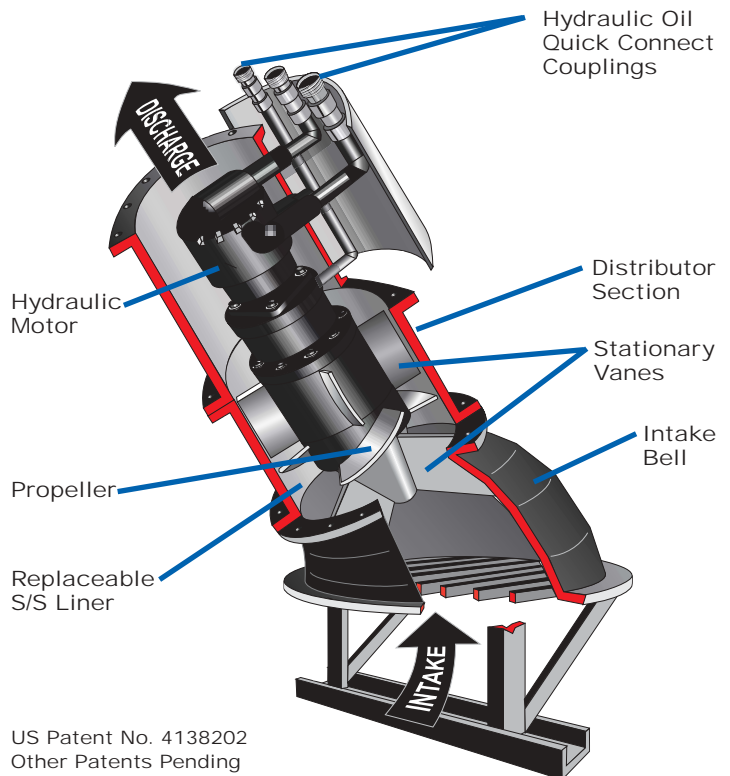
## Axial Flow Pumps

*An axial flow pump consists of a propeller in a bowl containing stationary vanes above and below the propeller. Liquid enters the pump through the intake bell and is discharged into the distributor section and out the discharge column. The stationary vanes straighten the flow of water inside the bowl. The flow is essentially in a straight line along the pump axis. Axial Flow describes the manner in which water moves through the pump. This straight water movement holds water friction to a minimum, resulting in the most efficient means yet devised for high volume, low to medium head pumping.*

## Mixed Flow Pumps

*A mixed flow pump is similar to an axial flow pump except that it uses an impeller which imparts more spin on the water gaining significantly in the head that can be achieved. A mixed flow pump is, by far, the most efficient tool for moving large quantities of water in the 25 to 100 foot total dynamic head range.*

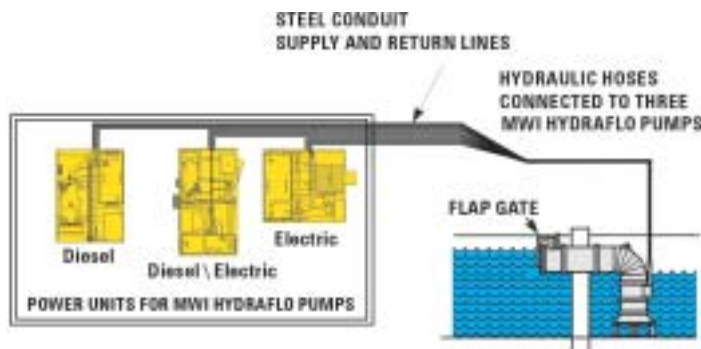
## Hydraflo™ Pump Design



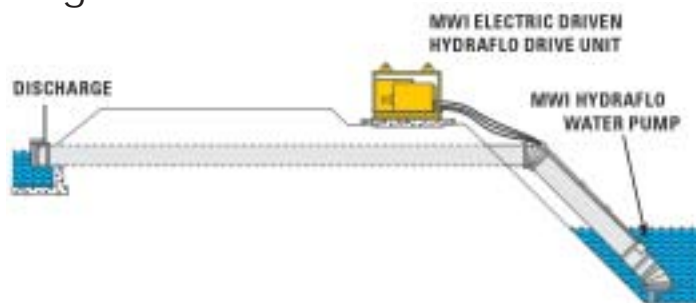
US Patent No. 4138202  
Other Patents Pending

# Installation Options

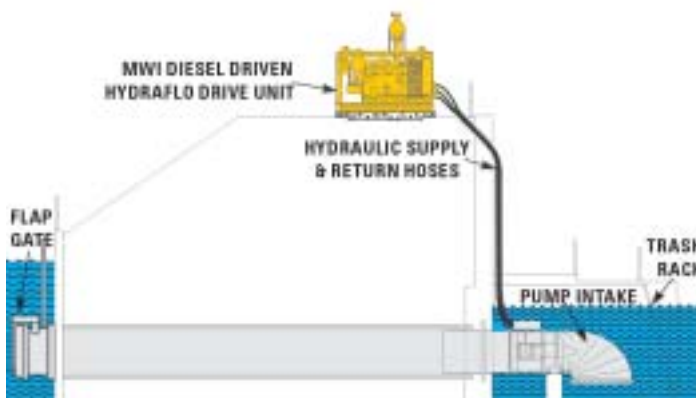
## Vertical



## Angled



## Horizontal



# Typical Applications

- Flood Control
- Emergency Pumping
- Agricultural
- Industrial
- Municipal
- Construction Dewatering

# Hydraflo™ Advantages

## Versatility

Hydraflo pumps can be installed at any angle - vertical, horizontal or any angle in between, by simply changing the intake bell. They can pump in both directions for a two-way operation. For higher head applications, two Hydraflos can be staged together by bolting one on top of the other. In addition, one prime mover might also be used to drive several different pumps which provides even more versatility and convenience.

## Fast Installation

Hydraflo Pumps can be installed within a fraction of the time of conventional lineshaft pumps. A typical installation can be done in hours, because they do not require any critical alignment or the extensive civil works required by other high capacity pumps. Hydraflos are very portable and especially well suited for installation in severe settings.

## Designed for Longer Life

Hydraflos are designed for a very long life. All components are picked for ruggedness and durability. Many Hydraflos over 25 years old are still in daily use. Propeller blades are manufactured from ASTM A304 corrosion and abrasion-resistant stainless steel. A stainless steel wear liner is standard.

## Less Submergence Required

Because the standard design of MWI Hydraflo pumps have large intake passages and low speeds, they can be installed and operated continuously at minimal submergence.

## Requires Less Maintenance and Costs Less to Operate

The Hydraflo is a simple, straightforward design that requires very little maintenance. When used in the portable mode, pumps more water for less money and has a smaller footprint than the many centrifugal pumps that would be required to take its place. The hydraulic motor and bearings are sealed to operate maintenance free under water. There are no priming problems and no need to worry about the pump running dry. Hydraflo pumps are designed to run dry without damage to their components. There are no belts to align, tighten or replace and no open shafts with the Hydraflo pumps.

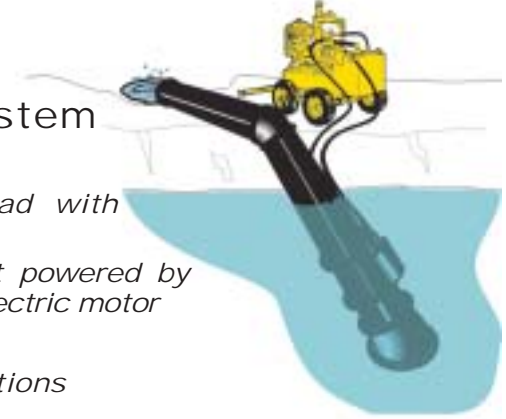
## Variable Speed Pumping

Pump speed can be varied manually by regulating engine speed. An automatic variable speed option is also available. These features make the Hydraflo ideal for varying flow or head conditions. Level sensing can be keyed to automatically match pump capacity and speed to incoming system flows.

## Environmentally Friendly

We offer several hydraulic fluid options which are readily biodegradable and meet the EPA toxicity limits. Hydraflo hydraulic tanks are small and have an engine shut down switch activated by small amounts of fluid loss. Hydraflo pump stations are also less likely to disturb the environment because the pumps require minimal civil works, have a very small footprint and a low profile.

# The Hydraflo™ System

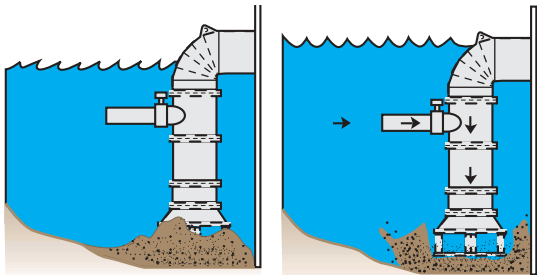


A complete system consists of:

- Hydraflo™ pumphead with intake bell
- Hydraulic drive unit powered by a diesel engine or electric motor
- Hydraulic hoses
- Discharge pipe sections

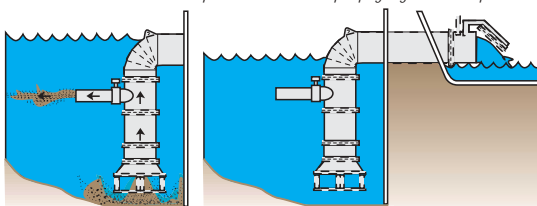
MWI offers a Two Way Desilting Option with its Hydraflo Pump. In some climates, as the rainy season begins, the body of water adjacent to the pump station starts to rise and the current strengthens, stirring up loose sediment along the way. The muddy water often deposits silt in the sump and can even cover the inlet channel of the pump. Once irrigation from the pump is required again, water can't be pumped because of impacted silt deposits that have settled around the sump and the pump's intake. With a regular pump, the silt would need to be removed by taking out the pump and dredging the sump and intake area.

With the Two Way Desilting Option, pumps can be put into full operation without delay. The operator hydraulically actuates a butterfly valve to open on a side inlet allowing water to enter an area above the impeller. The pump is then turned on in the reverse mode forcing water down into the sump area, where silt is agitated and suspended in the water. When it is apparent that the compacted silt is loosened, the reverse action is stopped and with the side intake valve remaining in the open position, the pump is turned on in the forward pumping direction. The suspended silt is now pumped out the same side inlet and forced out of the sump area and intake channel out into the current. After the cycle is complete, the hydraulically actuated valve is closed and the pump is ready for normal operation. This process results in a clear sump and intake channel. The costly and time consuming process of removing the pump and dredging the area is eliminated.



Water current causes silt deposits

Reverse pumping begins to loosen packed silt



Floating silt is pumped out of sump through valve

Sump is cleaned out and normal pumping can resume

## Performance Axial Flow

Hydraflo Model Number	Discharge Diameter (Inches)	Max. Capacity GPM @ 10 Ft. TDH	Max Capacity GPM @	Head TDH (Feet)
HAC308	8	2,550	2,000	25
HAC312	12	5,700	4,500	25
HAC316	16	10,200	7,900	25
HAC320	20	16,000	12,500	25
HAC324	24	22,900	16,500	25
HAC330	30	35,500	28,000	25
HAC336	36	51,500	46,000	20
HAC342	42	70,000	65,000	17
HAC348	48	79,000	66,000	15
HAC354	54	95,500	77,000	18
HAC360	60	134,000	115,000	15

## Mixed Flow

Hydraflo Model Number	Discharge Diameter (Inches)	Max Capacity GPM @ 20 Ft. TDH	Max Capacity GPM @	Head TDH (Feet)	Max Capacity GPM @	Head TDH (Feet)
HMF12	12	5,300	2,400	60		
HMF16	16	9,400	4,300	60		
HMF18	18	10,600	7,000	45		
HMF20	20	12,900	8,300	45		
HMF24	24	17,500	14,000	45	10,000	60
HMF30	30	33,000	25,500	45	15,000	60
HMF36	36	35,500	25,000	40		

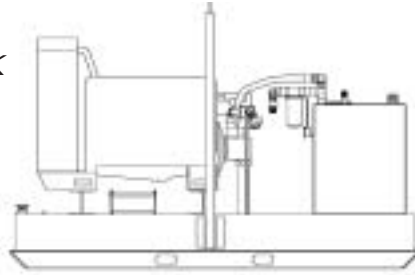
## High Head Axial Flow

Hydraflo Model Number	Discharge Diameter (Inches)	Maximum Capacity GPM @	Head TDH (Feet)	Maximum Capacity GPM @	Head TDH (Feet)
HH506	6	1,450	18	700	50
HH512	8	4,000	25	2,500	45
HH518	12	9,000	18	5,000	42
HH524	24	18,000	18	10,000	35

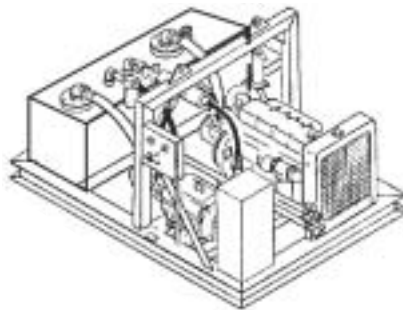
# Hydraflo™ Drive Units

MWI Hydraulic Drive Units are perfectly matched for the Hydraflo™ pumphead and your application. Power and configuration required for each unit will vary based on the specifics of the intended use and environment. Let our engineers help you determine the right drive unit for you. Hydraflo™ drive units share the same rugged, robust, reliable design and manufacturing approach as the pumpheads they support. Drive units are all configured to use readily biodegradable hydraulic fluid. Power is provided by diesel engines mounted on skids with integral fuel tanks (up to 300HP) or mounted on a skid using an external fuel tank or from electric motors mounted on a skid. We also offer auto start-stop units controlled by floats. In short, we tailor each unit to you and your requirements.

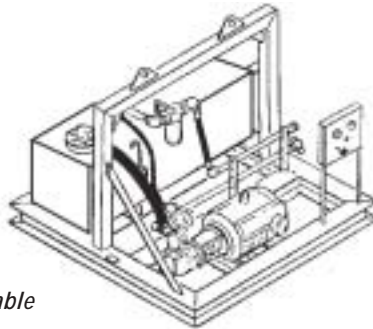
## Diesel Drive with Integral Fuel Tank



## Dual Electric and Diesel Engine



## Electric Driven



### Multiple Drive Unit Configurations Available

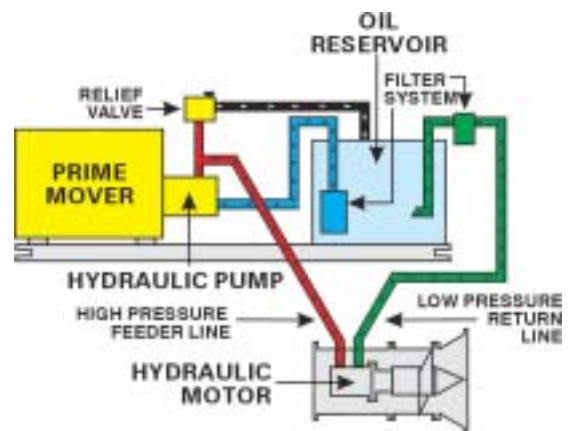
- Hydraulic Power Units are completely self contained
- Rugged, reliable units are in use all over the globe including remote locations
- Will work with any pumphead or hydraulic equipment using the hydraulic flow and pressure available
- Can vary pump speed by controlling engine speed. Variable displacement hydraulic pumps also available
- Portable units available with drawbars, axles, wheels, lights, fenders and braking systems
- Environmentally friendly with readily biodegradable hydraulic fluid available. Units have a fluid-activated shut down switch to minimize any spills
- Sound-attenuated units available



## Method of Operation

The schematic below shows how the hydraulic system works. Note that the prime mover can be a diesel engine, electric motor or a combination of both. It drives a hydraulic pump which in turn supplies oil to the hydraulic motor in the water pump. This spins the hydraulic motor which is directly connected to the propeller. The hydraulic oil is then returned to the oil reservoir through the return filter. Then, the hydraulic oil returns through a strainer and back to the hydraulic pump, completing the circuit.

A relief valve from the high pressure side to the oil reservoir, serves to by-pass the power transmission fluid and divert flow in the event that an object gets lodged in the propeller. This is a very important safety feature available only with Hydraflo systems which protects all components from shock loads. Where variable flows are needed (such as in sewage effluent or "piped in" stormwater pumping), the propeller speeds can be infinitely adjusted automatically through the hydraulic power transmission system to match up with any combination of water flows and head conditions.



## Hydraflo™ Pumps – Critical Help in Drying Out New Orleans after Katrina and Rita

Even before the storm ended, MWI Pump Rental had their Hydraflos in route to New Orleans. Over a period of several weeks Hydraflos™ were set up and shifted to wherever they were needed. Multiple 42" and 30" pumps were used to dry out areas. This tragedy demonstrates the value of Hydraflos in any kind of emergency scenario. They are extremely rugged (some of these pumps were over 20 years old), versatile, quick to set up and pump massive quantities of water. The 42" pump used here can pump 70,000 gpm at 10' TDH. In the photo on the right, a Hydraflo™ is airlifted in while the other two photos show Hydraflos™ with dramatic results.



## Hydraflo™ Pumps in Africa -Used to Resolve Irrigation Problems



The Nigerian Government spent two years constructing a conventional lineshaft pump station to supply irrigation for huge wheat and rice projects. During construction an extremely low water level period occurred, causing the main canal water level to drop four feet lower than anticipated. This left the lineshaft pumps inoperable since they were in a fixed structure, thus preventing any pump adjustment to reach the new sump level. The government asked MWI to help irrigate some 7,000 acres of already dying crops. MWI came to the rescue with a plane load of pumps and drive units in record time. An emergency double-stage 42" pump was operational in a week to revive the crops. Within 90 days all of the pumps were manufactured, transported, installed and operating at the project site. The versatility, lack of civil works required, quick installation and portability of the Hydraflos™ were key factors in responding to this emergency.

## Hydraflo™ Station Restores Egyptian Community's Crops

A leading pump manufacturer spent 3 years building an elaborate floating pump station for use by 1700 Egyptian farmers and their families for crop irrigation and water supplies. Due to water fluctuation, the pump station was built on a barge. In June 1999, the station, caught fire and sank killing 7 people. Needing nothing less than a miracle to save the farmers and their crops, the government of Egypt with the help of MWI used a series of three 42" Hydraflo™ pumps to achieve the required head of 105 ft. This station was put into operation within 2 weeks after the fire proving the cost and time advantages associated with the minimal civil works required by the Hydraflo and its ability to be easily moved to accommodate changing water levels.



## Mobile Hydraflo™ Used For Temporary Irrigation



This 30" Mobile Hydraflo is being used in North Sinai Governorate, Egypt as temporary relief while a permanent pump station is being built. The piping connected to the discharge hose is being used to transport water over a mile across a construction site for irrigation purposes. This 3000M model can pump up to 35,000 gallons of water per minute.

## Hydraflo's™ Quick Installation and High-Volume Pumping Dewater Flooded Island



MWI supplied eight 42" and two 30" pumps to dewater the flooding in the Upper Jones Tract levee break in California's Sacramento River Delta. The island's 12,153 acres of low-lying farmland flooded after a June 3, 2004 levee break that washed away 400 feet of a levee along Middle River on the island's west side. Over 300 residents, farmers and farm workers were displaced from the flooding which was 18 feet deep in some areas. Restoring the island required the removal of over 100,000 acre-feet of water. Only MWI Hydraflos were capable of being moved long distances, set up quickly and pumping the massive amounts of water necessary to end the flooding. Recovery workers created a 500,000 gallon-per-minute pump station in less than a week. To build a permanent pump station of the same capacity, especially if the pumps were manufactured to order would take 6 months to a year under emergency conditions.

## Hydraflo™ Pumps Rescue Residents



On August 27, 2004 the Detroit Water and Sewerage Department's 11-foot-diameter sanitary and storm sewer interceptor in Macomb County failed. Storm flows were as high as 45,000 gallons per minute. The interceptor services approximately 600,000 people. Hydraflo pumps were brought in after other pumps were tried and removed from the site. Only the Hydraflos could pump the quantities of sewage and storm water necessary to avert disaster. Their high pumping capacity, ability to stack to increase head, great versatility and quick installation make them unique.

## Storm Water Runoff Stored in Everglades

This Florida station allows coastal storm water runoff into a drainage basin to be back pumped for storage into the Everglades instead of releasing it through coastal structures into the ocean. The additional water supply storage capability provided by the back pumping unit equals about 125,000 acre-feet of water annually - enough to meet the water supply needs of a city the size of Fort Lauderdale for two years. These four pumps are installed through the levee, while the pump house, containing the 200 horsepower electric drive units and transformer, is remotely located on firm ground. This installation costs a fraction of a traditional lineshaft pump station and has a much lower, less intrusive profile.

Four 42" Hydraflo™ Pumps, each with a pumping capacity of 70,000 GPM





# MWI Info



MWI's pump product line includes: lineshaft, submersible electric, hydraulically driven, centrifugal, self priming, trash, rotary lobe and solar powered borehole pumps.

*Moving Water Worldwide*

*Moving Water Industries (MWI) Corporation traces its roots back to 1926, when Hoyt Eller started a business in Deerfield Beach, Florida. The company grew over the years due to its reputation for customer service, quality and innovative designs. David Eller, the current CEO/President has over 20 US patents for his innovations in pump design. He is joined by his two sons, Dana and Daren and daughter Danielle, all graduate engineers.*

Today, MWI is focused on:

**INTERNATIONAL HEADQUARTERS**  
201 N. Federal Highway  
Deerfield Beach  
Florida 33441  
USA

- Axial and mixed flow pumps for drainage, irrigation, flood control and emergency pumping
- Pumps for rental companies and contractors for construction dewatering, sewage bypass and industrial applications.
- Renting pumps directly in Central and South Florida and nationwide when very large pumps are required.
- Solar powered pumps with water treatment capabilities for the developing world.

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*Our philosophy is simple: provide innovative, high-quality pumps at competitive prices and take care of each customer. Let us help you solve your water moving problems with our extensive engineering staff, years of experience and great products.*

*MWI's international headquarters and extensive manufacturing capabilities are located in Deerfield Beach, Florida, very close to the original business. The manufacturing facilities are spread over 4 city blocks and total nearly 300,000 ft<sup>2</sup>, to include a 10,000 ft<sup>2</sup> test lab. The company also has facilities in Egypt and Nigeria and representatives throughout the United States, Latin America, Middle East, Africa and Asia.*



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