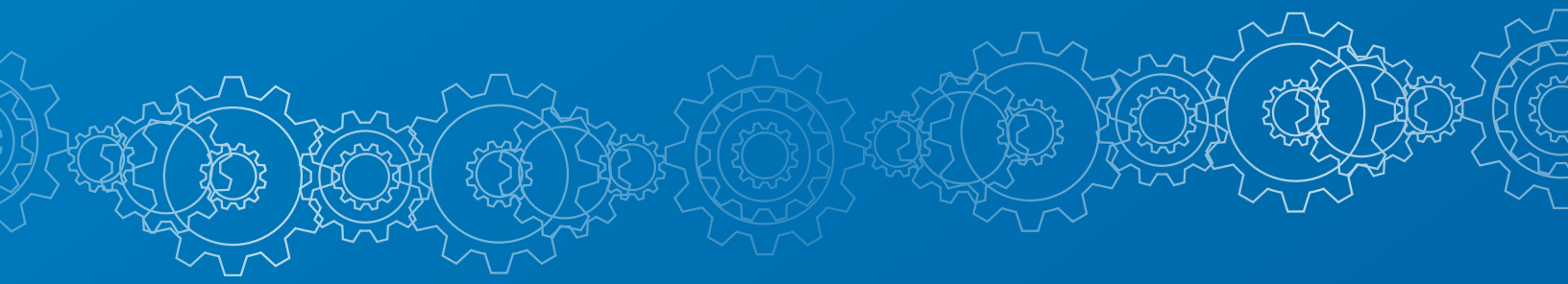
MTS SilentFlo™ 525 Hydraulic Power Units

Efficient and reliable power generation

RELIABLE POWER FROM A PROVEN SOURCE. TRUST ONE OF THE WORLD'S LEADING PROVIDERS OF SERVOHYDRAULIC TEST SYSTEMS TO CREATE OPERATIONALLY EFFICIENT AND SAFETY-ENGINEERED HYDRAULIC POWER GENERATION. MTS HYDRAULIC POWER UNITS SET THE STANDARD FOR QUIET AND EFFICIENT OPERATION AND ENHANCED TEST SYSTEM PERFORMANCE.



Powered by Knowledge

Designed with the knowledge gained through decades of experience in servohydraulic power generation, the reliable MTS SilentFlo™ 525 Hydraulic Power Unit (HPU) can help you reduce energy use, increase uptime and improve overall lab efficiency for a lower total cost of ownership.

Energy Conservation

The MTS SilentFlo 525 HPU delivers significant improvements in energy efficiency. With patented hybrid technology, the MTS SilentFlo 525 HPU reduces energy use by 35% or more compared to older HPUs. This substantial savings lowers energy costs and helps labs meet decarbonization goals.

Performance Reliability

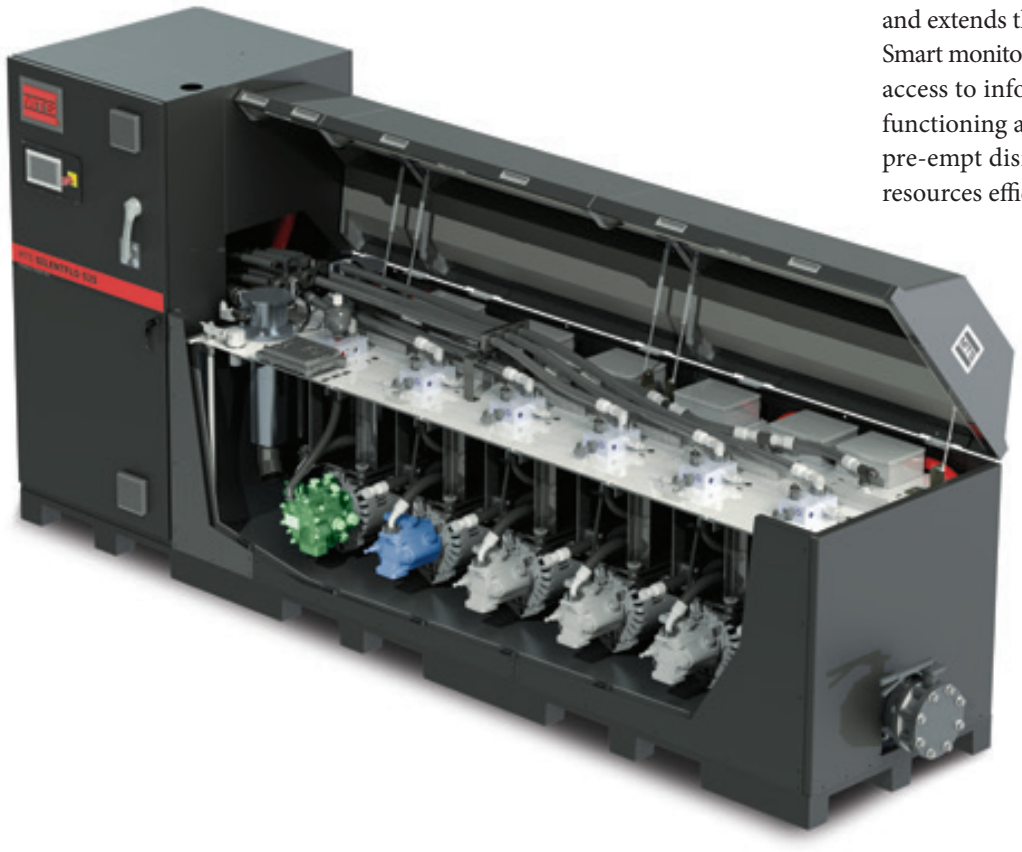
These HPUs combine two different pump technologies to amplify the benefits of both. With Digital Displacement® Pump (DDP) and swash plate module options, the optimal mix can provide the greatest lab efficiency while extending pump module and HPU life.

These modular HPUs are easy to operate and maintain with accessible panels and advanced control of pressure, flow and cooling. In addition, many design features improve response and pressure stability.

Whole Lab Productivity

Expanded standard capabilities allow the SilentFlo 525 HPU to address a wider range of applications. The DDP technology provides a remarkable improvement in step response with a power-managed capability to increase per module flow by 25% over conventional swash plate modules. And harmonizing the two pump technologies into one hybrid solution offers exceptional versatility to adapt to challenging use cases.

Compatibility with existing SilentFlo HPUs and new smart monitoring capabilities increase overall lab productivity. A common interface between legacy and new MTS SilentFlo HPUs protects your current investment, enables seamless integration of all units and extends the operating life of the lab. Smart monitoring capabilities give greater access to information about HPU functioning and provide the ability to pre-empt disruptions and manage resources efficiently.



The hybrid SilentFlo 525 Hydraulic Power Unit provides extraordinary heat transfer efficiency and cleanliness with per-module polishing filtration. This filtration system minimizes energy consumption related to system cooling for the given running condition.

Digital Displacement Pump (DDP) modules are exceptionally efficient, particularly when idling. When combined with conventional swash plate modules, the hybrid controls maximize efficiency.

Known for their unmatched quiet and clean operation, MTS SilentFlo hydraulic power units (HPUs) help you power your test systems with superior flexibility and cost-efficiency. SilentFlo HPUs are specifically designed to handle the rigors of extreme, continuous-duty servohydraulic applications, and they perform reliably, year after year.

FEATURES

- Intuitive interface
- TÜV certified*
- Energy efficient hybrid design
- Exceptional step response (DDP modules)
- Power-managed to increase per module flow
- Integrated cooling options
- Remote monitoring capability

**The SilentFlo product family is certified by TÜV Rheinland, a Nationally Recognized Testing Laboratory (NRTL). The "cTUVus mark" accredited test mark is proof of compliance with U.S. National and Canadian National standards in accordance with Occupational Safety and Health Administration (OSHA) and the Standards Council of Canada (SCC).*

Energy efficient

SilentFlo HPUs conserve valuable resources. The hybrid module technology ensures maximum hydraulic efficiency, most evident during times of reduced flow demand. And an innovative water-cooling system maintains the proper hydraulic fluid operating temperature with integrated bypass and/or water shutoff valves to minimize water consumption.

Remote monitoring and control

The SilentFlo 525 HPU comes equipped to integrate monitoring options for easier access to HPU control and information about HPU condition. The Digital Displacement Pump (DDP) modules provide direct health diagnostic and unique setpoint control of flow and pressure. This information is easily accessed via the familiar HMI screen. MTS Echo® Health Monitoring options allow you to monitor your HPU's operational and health status from your control room, office or mobile device.

In addition, a Remote Human-Machine Interface (RHMI) lets you transfer tethered control of a single HPU to another location of your choice, with identical screens, functionality and full E-stop capability. Instead of leaving a test station and walking to the pump room to monitor or change HPU settings, test engineers can now perform such tasks from a far more convenient location, improving their productivity.

Designed for safety

Automatic interlocks protect against inadvertent damage due to high temperatures or high/low fluid levels. For added protection, there are user-selectable shutdown limit and alarms for both temperature and fluid levels. The insulated enclosure keeps SilentFlo HPUs completely cool to the touch on the outside, even after hours of operation. This design helps prevent injury, while eliminating the need for costly ventilation systems.

The DDP modules also have a fail-safe mode with instantaneous fluid power isolation whenever the removal or loss of 24VDC occurs. The SilentFlo 525 HPU is safety engineered to achieve EN ISO 13849-1 Performance Level-d (PLd) when operated in standalone mode and incorporates dump/isolation valves when multiple HPUs are commoned together and controlled via an MTS Multi-Pump Control Manager (MPCM).

300 Series

600 Series

Fits Your Needs Today and Tomorrow

The SilentFlo series supports a wide range of flow demands, with the largest HPU capable of flow rates of up to 681 lpm (180 gpm). These HPUs provide powerful performance in a clean, sleek design that is a welcome addition to any lab.

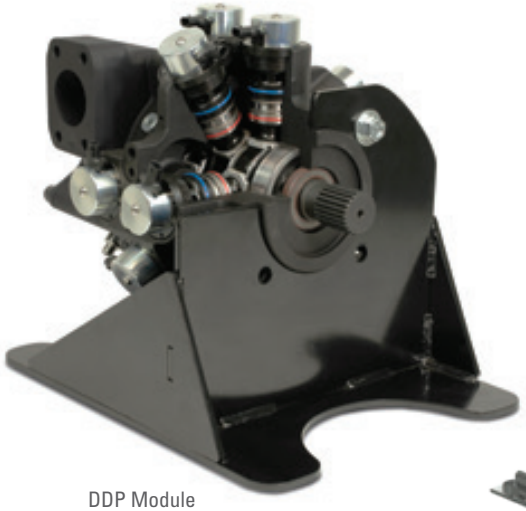
Patented hybrid technology

SilentFlo 525 HPUs feature an innovative hybrid approach to hydraulic power generation that employs highly efficient radial flow digital displacement pump modules (green) to modulate flow during typical demand, while engaging conventional axial flow swash plate pump modules (blue) as needed to achieve maximum energy efficiency during peak use.

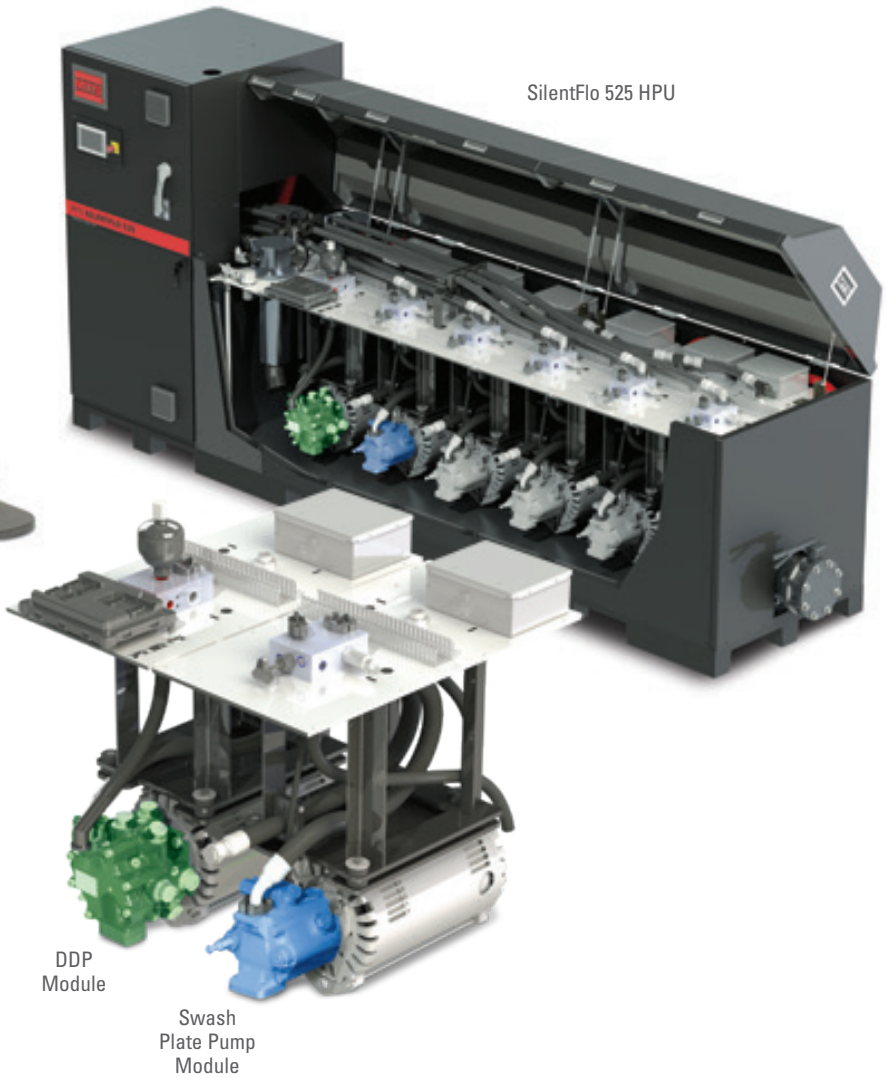
Digital Displacement Pump (DDP) radial flow technology optimizes energy efficiency by digitally controlling individual pump pistons. Each piston's motion is precisely adjusted, allowing the pump to adapt to changing flow demands. This highly responsive, dynamic operation dramatically reduces energy waste associated with traditional fixed-speed, swash plate (axial flow) pumps. By eliminating inefficient pressure controlling valves and reducing pressure losses, digital displacement pumps achieve precision flow control and maximum efficiency.

Completely scalable solution

To accommodate your needs over the next few decades, MTS provides easy ways to increase the flow capacity of your HPU. As your testing demands grow, you can add an easy-to-install pump/motor module to gain more capacity at a fraction of the cost of adding another HPU. Your MTS representative can help you select a solution that meets your needs today and in the future.



DDP Module (cutaway)



SilentFlo 525 HPU

DDP Module

Swash Plate Pump Module

Streamlined Operation and Maintenance

Ease of integration

The MTS SilentFlo 525 HPU is compatible with any previous generation SilentFlo HPU released in 1998 or later. With minor upgrades to legacy MTS HPUs, the new SilentFlo 525 HPU can be commoned with existing power units with controls provided by the MTS Multi-Pump Control Manager (MPCM). In addition, upgrades and direct replacements are available for older power units.

Designed for serviceability

The side panels of the new SilentFlo 525 HPUs can be easily removed for quick access during repairs and upgrades

Quiet, clean and compact

Depending on the model, SilentFlo HPUs run at 58 – 72 dB(A)—that's up to 30 dB(A) quieter than conventional HPUs—and are designed for extremely clean operation. SilentFlo HPUs require minimal floor space and are small enough to fit through standard doorways. With their quiet, clean and compact design, MTS SilentFlo HPUs can be placed directly on the test lab floor, eliminating the expenses associated with managing a separate pump room and transporting hydraulic fluid across the test facility.

Easy to access

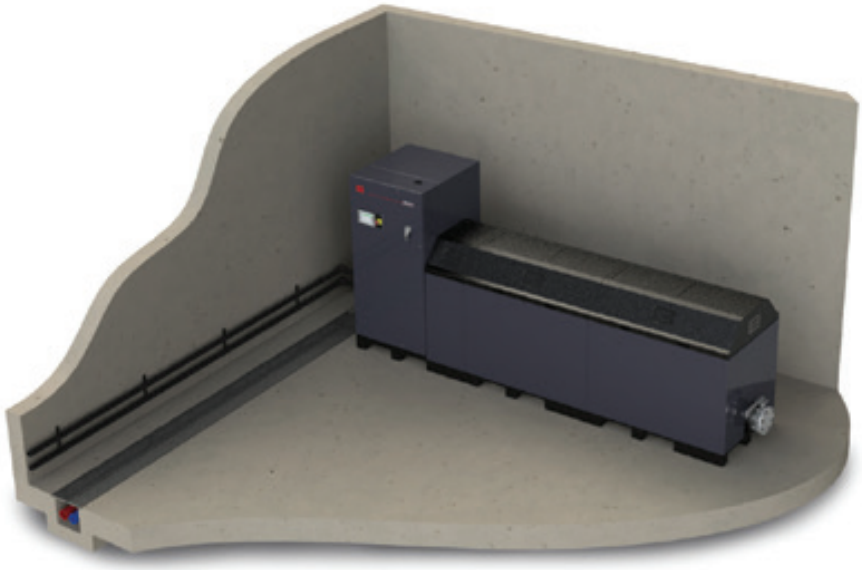
The covers provide better sound absorption and quieter operation, and the gas struts make it simple to raise the cover. These incredibly lightweight covers can be lifted with very little effort, yet can be locked down when the system is in use.

Cooling Choices

System cooling is an important consideration because it can place significant demand on facility services. MTS SilentFlo 525 HPUs feature a highly efficient cooling system with cooling options for either site-supplied water or a chiller.

Water-cooled, site-supplied water

This option is one of the most common ways to cool your system. If you are using city or well water, you may want to include an optional positive shutoff valve that turns off the water when the HPU is not running. This water-saving valve will increase the pressure required to maintain flow rates during operation.

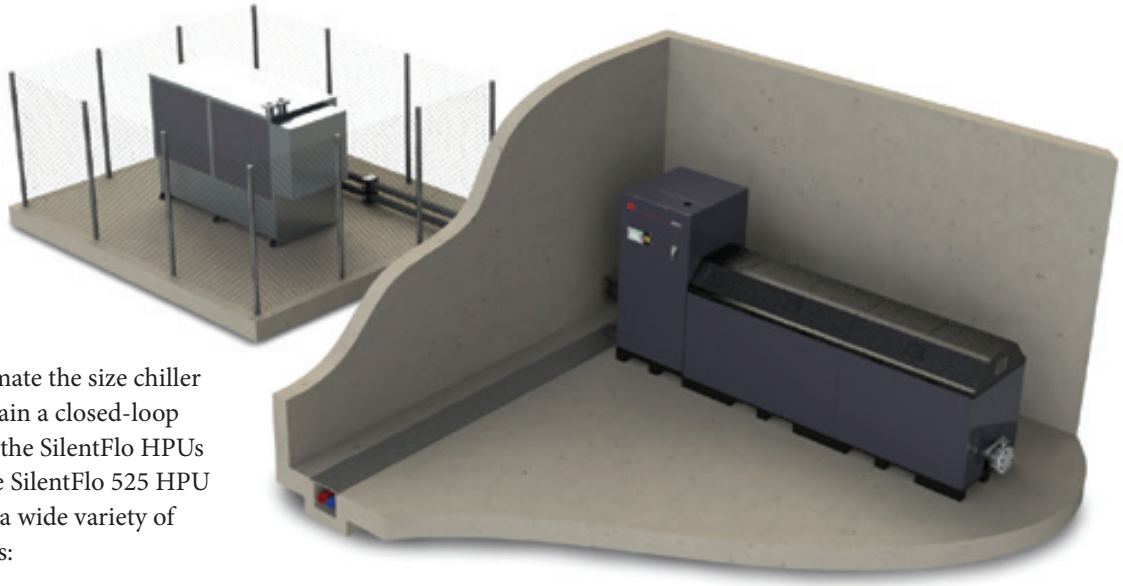


525 Water-Cooled with Site-Supplied Water

Water-cooled, chiller

MTS can help estimate the size chiller necessary to maintain a closed-loop cooling system for the SilentFlo HPUs in your facility. The SilentFlo 525 HPU is compatible with a wide variety of chiller system types:

- Refrigeration
- Cooling tower – closed-loop
- Cooling tower – open-loop
- Cooling tower – open-loop indirect



525 Water-Cooled with Chiller

Decisions regarding hydraulic fluid power and distribution have a profound impact on test lab productivity. MTS has vast experience across a wide range of industries, and can offer multiple solutions to maximize hydraulic power while minimizing energy use. How you use hydraulic power to start, halt, restart or shutdown safely during planned or unplanned events can greatly impact the amount of testing you can accomplish and the quality of results you receive. With several options for monitoring and proactive care of your hydraulic systems, you can detect threats to hydraulic system health and keep your distribution system operating in optimal condition.

Manage energy use

With MTS Fluid Power System Management, you can best manage day-to-day energy use and prolong equipment life. Various elements of this solution allow you to control and monitor the pump/motor module(s) within a single HPU, or use the Multi-Pump Control Manager to operate up to eight hydraulically-commoned HPUs as a single system. As a customized solution, more HPUs may be commoned and operated as a single system.

Station Flow Manager (SFM)* – Allows test station operators to electronically request flow requirements for their station.

Station Flow Profiler (SFP)* – SFP leverages the power of SFM and MTS RPC to combine program drive files with collected flow histograms via the FlexTest® controller. This process provides anticipated flow markers to the MPCM prior to the actual flow demand.

Accelerated Run on Demand (AROD)* – Hybrid SilentFlo 525 HPU uses the high bandwidth Flex-Flow DDP modules harmonized with swash plate modules to provide extremely fast response to reactively stage modules.

**Please contact MTS for more information on customizing these solutions to your test lab.*

Monitor system condition

MTS offers several options that allow you to create a customized approach to proactively monitor your entire hydraulic distribution system. Combining onsite fluid sampling with sensor technology, MTS Routine Maintenance and MTS Echo Health Monitoring Services enable the remote measurement and trending of hydraulic system performance.

Optimize power generation

MTS Echo Health Monitoring can help you optimize power generation by protecting your hydraulic power unit from common failures. Early detection of potential issues prevents unplanned downtime for maintenance.

Multi-Pump Control Manager (MPCM)

Model 525 Specifications

Operating pressure: 21 MPa (3,000 psi)
Pump types: Digital Displacement and/or Swash Plate
Filtration: Full flow on the return side
Maximum ambient operating temperature: 40°C (104°F)
Minimum ambient operating temperature: 5°C (40°F)

	300 Series 2 Modules	300 Series 3 Modules	600 Series 4 Modules	600 Series 5 Modules	600 Series 6 Modules
Flow rates *(for 60 Hz models)*	227 lpm (60 gpm)	340 lpm (90 gpm)	454 lpm (120 gpm)	567 lpm (150 gpm)	681 lpm (180 gpm)
Flow rates *(for 50 Hz models)***	200 lpm (53.2 gpm)	300 lpm (80 gpm)	400 lpm (106.4 gpm)	500 lpm (133 gpm)	600 lpm (160 gpm
Noise level*	68 dB (A)	68 dB (A)	70 dB (A)	71 dB (A)	72 dB (A)
Reservoir capacity *(maximum)*	1,136 L (300 gal)	1,098 L (290 gal)	2,037 L (538 gal)	1,999 L (528 gal)	1,961 L (518 gal)
Unit dimensions					
Width	103.4 cm (40.7 in)	103.4 cm (40.7 in)	103.4 cm (40.7 in)	103.4 cm (40.7 in)	103.4 cm (40.7 in)
Height	199.4 cm (78.5 in)	199.4 cm (78.5 in)	199.4 cm (78.5 in)	199.4 cm (78.5 in)	199.4 cm (78.5 in)
Length	287.0 cm (113.0 in)	287.0 cm (113.0 in)	430.5 cm (169.5 in)	430.5 cm (169.5 in)	430.5 cm (169.5 in)
Weight with maximum oil	2,835 kg (6,250 lb)	3,289 kg (7,250 lb)	4,876 kg (10,750 lb)	5,330 kg (11,750 lb)	5,783 kg (12,750 lb)
Motor size	45 KW (60 Hp)	45 KW (60 Hp)	45 KW (60 Hp)	45 KW (60 Hp)	45 KW (60 Hp)
Number of Motor/pump units	2, max of 3	3	4, max of 6	5, max of 6	6

** Sound levels [dbA] are expressed as a free field value. Readings may vary with acoustic environment.*
*** Digital displacement pump modules in a 50 Hz model have a flow rate equivalent to the 60 Hz model.*
Specifications subject to change without notice. Please contact MTS for specifications critical to your application.

Model 525 Options

ELECTRICAL PACKAGE (FACTORY INSTALLED ONLY)

SilentFlo HPUs support your electrical requirements. Standard voltages from 380 – 575 V AC and frequencies of 50 or 60 Hz may be selected as a factory option (please specify at time of initial order).

AIR COOLING (FACTORY INSTALLED ONLY)

While water cooling is the standard method for maintaining proper hydraulic fluid operating temperature, an environmentally friendly air cooling option is also available. Please contact MTS for more information on customizing air cooling options.

COMMONING

The SilentFlo 525 models can be installed with multiple power units (up to 16) supplying oil to the same hydraulic circuit. The commoning option includes a short extension pipe and valve allowing the reservoirs to be connected together so the fluid levels in all the units stays the same. This option is required for both units and does not include the piping between the two HPUs.

ACCUMULATORS

High pressure accumulators are available to help manage surges in flow demand.

RUN ON DEMAND (ROD)

The models may be ordered with MTS' run-on-demand (ROD) option which reduces electrical power and cooling water consumption when the system is not running at full capacity. The ROD automatically starts and stops individual pump/motor modules based on system flow requirements.

MIRROR IMAGE

The larger SilentFlo power units can be configured with the control panel and hydraulic connections positioned either on the left (standard) or right-hand sides to fit your facility.

Model 525 Order Guide

You can order a SilentFlo HPU by selecting the flow rating, supply voltage, operating pressure and the desired options. Note that some options are not available on all models.

525	**525 Large** *(required selections)*
HS	HPU Series
3	300 Series (up to 300 lpm / 90 gpm)
6	600 Series (up to 600 lpm / 180 gpm)
DDP	Digital Displacement Pump Modules
0	No DDP Modules
1	One DDP Module (100 lpm / 30 gpm)
2	Two DDP Modules (200 lpm / 60 gpm)
3	Three DDP Modules (300 lpm / 90 gpm)
4	Four DDP Modules (400 lpm / 120 gpm)
5	Five DDP Modules (500 lpm / 150 gpm)
6	Six DDP Modules (600 lpm / 180 gpm)
SW	Swash Pump Modules
0	No Swash Plate Modules
1	One Swash Plate Module (100 lpm / 30 gpm)
2	Two Swash Plate Modules (200 lpm / 60 gpm)
3	Three Swash Plate Modules (300 lpm / 90 gpm)
4	Four Swash Plate Modules (400 lpm / 120 gpm)
5	Five Swash Plate Modules (500 lpm/ 150 gpm)
6	Six Swash Plate Modules (600 lpm / 180 gpm)
QR	Orientation
R	Right-hand (Standard)
L	Left-hand (Mirror)
SP	System Pressure
3	20.7 MPa (3000 psi)
4	27.6 MPa (4000 psi)
5	34.5 MPa (5000 psi)
PF	Power Frequency
A	50 Hz
B	60 Hz
VP	Voltage (3-Phase)
380	380V (AC)
400	400V (AC)
415	415V (AC)
440	440V (AC)
460	460V (AC)
480	480V (AC)
575	575V (AC)
AC	Accumulator Certificate
N	No Accumulators
S	MTS Standard
E	CE
L	China Label
C	CRN
J	KHK

525	**525 Large** *(options)*
CV	Return Check Valve
C1	20.7 kPa (3 psi)
C3	172.3 kPa (25 psi)
C4	275.8 kPa (40 psi)
C6	448.2 kPa (65 psi)
PK	Outlet Port Adaptor
P1	-20 JIC
P2	-24 JIC
P3	-20 ORFS
P4	-24 ORFS
P5	-20 C61
P6	-24 C61
P7	-20 C62
P8	-24 C62
MP	RHMI / MPCM / Commoning
M1	Reservoir Commoning Ready
M2	MPCM Ready and Reservoir Commoning Ready
M3	Table RHMI
M4	Pedestal RHMI
M5	Wall RHMI
M6	Table RHMI and Reservoir Commoning Ready
M7	Pedestal RHMI and Reservoir Commoning Ready
M8	Wall RHMI and Reservoir Commoning Ready
RD	Energy Management
D1	Run On Demand
D2*	Energy Recorder
D3*	ROD and Energy Recorder
BA	Base Assembly
T1	Reservoir Integrity Testing – Leak Proof Validation
T2	Crimped Lug Option
T3	Crimped Lug and Reservoir Integrity Testing
CK	Caster Kit
W9	Caster Kit
RW	Remote Water
W1	Remote Water Shut-Off
W2	Remote Water Strainer
W3	Remote Water Shut-Off and Strainer
TW	Light Tower
L1	Light Tower
EES	External E-Stop
E1	Single E-Stop
E2	Daisy Chain (DC) Box with 2 E-Stops
E3	Daisy Chain (DC) Box with 3 E-Stops
E4	Daisy Chain (DC) Box with 4 E-Stops

** Please contact MTS for more information on customizing these solutions to your test lab.*

Regional Business Centers

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