NEW

2020-2021

## V SERIES Hydraulic Tools PURE HYDRAULIC POWER





### Hydraulic Tools

### **STANLEY V SERIES: VERSATILITY FOR GLOBAL APPLICATIONS**

Stanley Hydraulic Tools is the global leader of hydraulic tools offering a wide range of products, and is proud to introduce the **V SERIES** line of hand held hydraulic tools. Stanley **V SERIES** are versatile, high performing tools designed specifically for applications found in the global infrastructure market.

### **INFRASTRUCTURE TOOLS**

Stanley **V SERIES** offers several tools for infrastructure applications, whether it's water municipalities, road maintenance, mining or search and rescue operation, **V SERIES** tools provide the performance and versatility that the industry has come to expect from Stanley.

### **STANLEY QUALITY POLICY**

"Stanley Hydraulic Tools is committed to exceeding our customers' expectations in regard to our products, services, and all interactions. Our dedication to continuously improve Safety, Quality, Delivery, Inventory, and Cost is the key to realizing that commitment."

All Stanley tools, accessories, parts and allied equipment are subject to design improvements, specification and price changes at any time without notice and with no obligation to units already sold. Weights, dimensions and operating specifications listed herein are subject to change without notice. Where specifications are critical to your application, please consult the factory.





Professionals turn to hydraulic tools when they need to get the job done. Nothing matches the performance of hydraulic tools as compressed oil transfers energy more efficiently than compressed air. The inherent efficiencies result in longer life of the tool along with increased power and reliability.

### **Advantages of Hydraulic Tools**

|                             |  |   | 1   |   |
|-----------------------------|--|---|---|---|
|                             | Hydraulic  |   | Pneumatic   |   |
| Durability                  | Small engine power unit is<br>easy to maintain                                 | V | Large compressor<br>engine requires high<br>maintenance                     | X |
| Versatility                 | Several tools can be run off<br>of same power source                           | ∢ | Limited tools can be ran  | X |
| Cost                        | Power units starting at a<br>few thousand dollars, cost<br>of ownership is low | V | Air compressors are<br>much higher price<br>and require more<br>maintenance | X |
| Cold Weather<br>Performance | Operates in sub-zero<br>temperatures   | ∢ | Air lines freeze  | X |
| Enclosed<br>Spaces          | Zero exhaust, easier to operate in confined areas                              | V | Comressed air exhaust spreads dust and debris                               | X |
| Portability                 | Small and lightweight<br>power units are easy to<br>move to jobsite            | ∢ | Large tow behind<br>compressor cannot<br>access remote areas                | X |

## **STANLEY**

### **V** SERIES

### Power Units

One of the key advantages of hydraulic tools is the power source. Unlike pneumatic tools requiring a large pull-behind air compressor, hydraulic tools can be ran off of a smaller more portable power unit. Hydraulic power units can run any tool in this catalog and can be maneuvered to remote locations where air compressors cannot access.

#### Features:

- Versatile dozens of tools can be operated from the same power source
- Air Cooled no winter freezing
- Fuel efficient smaller engine results in lower fuel consumption
- **Quiet Operation**
- Compact Size fits easily into a small truck or van
- Serviceability can be serviced by small engine dealers



| Model                    | <b>GPV09*</b>   | GPV13*          |                 | GPV18           |                 |
|--------------------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| Part Number              | GPV09H02        | GPV135H02       | GPV138H02       | GPV18B02        | GPV182B02       |
| Weight (kg)              | 60              | 75              | 75              | 120             | 120             |
| Dimensions (mm)          | 620 x 500 x 600 | 780 x 510 x 600 | 780 x 510 x 600 | 900 x 590 x 740 | 900 x 590 x 740 |
| Flow (Ipm)               | 20              | 20 - 24         | 30              | 20 / 30         | 30 / 40         |
| Operating Pressure (bar) | 140             | 140             | 140             | 140             | 140             |
| Engine                   | Honda 9 hp      | Honda 13 hp     | Honda 13hp      | B & S 18 hp     | B & S 18 hp     |

| Model                    | GPV25                | GPV27           | <b>GPV28</b>     | MPS80                                      |
|--------------------------|----------------------|-----------------|------------------|--|
| Part Number              | GPV25B02             | GPV27B02        | GPV28B02         | MPS80                                      |
| Weight (kg)              | 135                  | 163             | 200              | 180  |
| Dimensions (mm)          | 1020 x 610 x 770     | 953 x 654 x 762 | 1165 x 560 x 880 | 1100 x 630 x 853                           |
| Flow (Ipm)               | 2 x 20, 1 x 30 or 40 | 2 x 20, 2 x 30  | 2 x 20, 2 x 30   | 1 x 76, 2 x 30, 2 x 38                     |
| Operating Pressure (bar) | 140                  | 140             | 140              | 172 (single circuit)<br>140 (twin circuit) |
| Engine                   | B&S 23Hp             | B&S 27Hp        | B&S 35Hp         | B&S 35Hp                                   |

\* CE Model available





The DPV13 power unit is an extremely lightweight and highly portable unit designed for light to medium duty applications. The DPV13 is a diesel power unit with a 9 hp Winsun engine. With a balance of portability and power allows easy access in and out of job sites with minimal equipment management. With 20 lpm flow the DPV13 is an ideal choice for small to medium duty construction and demolition.

### Features:

- Compact and portable
- Stainless steel frame with fold up handles, wheels and top bar for lifting
- Large hydraulic oil tank for improved cooling
- 20 lpm output capacity
- 13 hp diesel engine

The DPV19 is a heavy duty diesel power uint designed for continuous duty operation of 30 / 40 lpm hydraulic tools. The DPuses a 19 hp Winsun diesel engine for increased peformance and durability.

#### Features:

- Stainless steel frame with fold up handles, wheels and top bar for lifting
- Large hydraulic oil tank for improved cooling
- 30 / 40 lpm output capacity
- 19 hp diesel engine



| Model                       | DPV13       | DPV          | /19          |
|-----------------------------|-------------|--------------|--------------|
| Part Number                 | DPV13E02    | DPV19K02     | DPV19K03     |
| Output Capacity (Ipm)       | 20          | 30           | 40           |
| Operating Pressure (bar)    | 155         | 155          | 155          |
| Weight (kg)                 | 130         | 170          | 170          |
| Dimensions (mm)             | 910×620×555 | 1020×610×800 | 1020×610×800 |
| Fuel Tank Capacity (L)      | 6.6         | 6.6          | 6.6          |
| Hydraulic Tank Capacity (L) | 12          | 12           | 12           |
| Engine                      | Winsun 13hp | Winsun 19p   | Winsun 19p   |

## **STANLEY**

### Power Units

DPV13E02

### V SERIES

### Power Units

High efficiency, low noise, high reliability and good economy, the electric power unit is the reliable power source while providing equal power to all the hydraulic tools.

#### Features:

- Big oil tank, stronger air-cooler which makes the cooling system more efficient longer the working time with no overheat problem.
- External hydraulic filter easier changing.
- Advanced original high-pressure gear pumps imported
- Simple to operate



#### **Electric Engine Power Units**

| Model                    | EPV10                  | EP'                   | <b>V15</b>            |
|--------------------------|------------------------|-----------------------|-----------------------|
| Part Number              | EPV10E02               | EPV15E02              | EPV15E44              |
| Weight (kg)              | 90                     | 120                   | 160                   |
| Dimensions (mm)          | 825 x 620 x 555        | 975 x 590 x 655       | 975x590x655           |
| Flow (Ipm)               | 20                     | 30                    | 30                    |
| Operating Pressure (bar) | 90 - 155               | 90 - 155              | 90-155                |
| Engine                   | Electric Motor (7.5kW) | Electric Motor (11kW) | Electric Motor (11kw) |
| Volt                     | 380V / 50HZ            | 380V / 50HZ           | 440V/50HZ             |



The CHV08 Chipping Hammer is a small, highly portable solution for light duty chipping applications. It is commonly used for manhole and utility vault modifications or masonry repair and demolition. When in confined spaces the CHV08 offers power and performance in a small package.

### Features:

- Heat insulated front handle
- Independent nitrogen chamber for easy maintenance
- Ergonomic two hand design







| Model                    | <b>CHV08*</b>     |
|--------------------------|-------------------|
| Part Number              | CHV08100          |
| Weight (kg)              | 8                 |
| Flow (Ipm)               | 26 - 34           |
| Operating Pressure (bar) | 40 - 140          |
| Bit Size (Hex)           | 0.58 Round Collar |
| Handle Type              | D Handle          |

\* CE Model available

## **STANLEY**

### Chipping Hammers

## V SERIES

### Hydraulic Breakers

For breaking concrete, asphalt, or rock; professionals turn to hydraulic breakers to get the job done safely and effectively. With several weight classes to choose from it's easy to select the right breaker for the job and because it's hydraulically powered high levels of performance can be reached when compared to other tool types.

### Compared to other tool platforms, hydraulic breakers offer the following advantages:

- Higher impact than comparably sized alternative platforms
- Zero tool exhaust offers ease of use in confined spaces
- Quieter operation than pneumatic tools allows for use in sensitive areas
- Longer service life due to hydraulic oil continuously lubricating internal parts

### Features:

- T-Handle or Anti-Vibration handles to meet application needs
- Several models to choose from, designed for work in concrete between 2" 8"
- Full selection of breaker bits
- High durability





## **STANLEY**<sub>®</sub>

### Hydraulic Breakers

| Model                          | BR       | V18                | BR        | /20*               | BR       | 24*                | BR        | V26                |
|--------------------------------|----------|--------------------|-----------|--------------------|----------|--------------------|-----------|--------------------|
| Part Number                    | BRV18150 | BRV18155           | BRV20150  | BRV20155           | BRV24150 | BRV24155           | BRV26150  | BRV26155           |
| Weight (kg)                    | 18       | 19                 | 20        | 21                 | 24       | 25                 | 26        | 27                 |
| Flow (lpm)                     | 15 - 24  | 15 - 24            | 26 - 34   | 26 - 34            | 15 - 24  | 15 - 24            | 26 – 34   | 26 – 34            |
| Operating<br>Pressure<br>(bar) | 90 - 140 | 90 - 140           | 105 - 140 | 105 - 140          | 90 - 140 | 90 - 140           | 103 – 140 | 103 – 140          |
| Bit Size (mm)                  | 1 in     | 1 in               | 1 in      | 1 in               | 1-1/8 in | 1-1/8 in           | 1-1/4 in  | 1-1/4 in           |
| Handle Type                    | T-Handle | Anti-<br>Vibration | T-Handle  | Anti-<br>Vibration | T-Handle | Anti-<br>Vibration | T-Handle  | Anti-<br>Vibration |

| Model                          |          | BR             | /28*     |                |
|--------------------------------|----------|----------------|----------|----------------|
| Part Number                    | BRV28120 | BRV28125       | BRV28250 | BRV28255       |
| Weight (kg)                    | 28       | 29             | 28       | 29             |
| Flow (Ipm)                     | 26       | 26             | 26       | 26             |
| Operating<br>Pressure<br>(bar) | 26 – 34  | 26 – 34        | 26 - 34  | 26 - 34        |
| Bit Size (mm)                  | 1-1/8 in | 1-1/8 in       | 1-1/4 in | 1-1/4 in       |
| Handle Type                    | T-Handle | Anti-Vibration | T-Handle | Anti-Vibration |

\* CE Model available



## V SERIES

### Sinker Drill

SKV20 hydraulic sinker drill is designed for blast hole drilling, leak detection for gas utilities, and dowel hole drilling. The Sinker drill is equipped with integrated air flushing compressor, which eliminates use of connecting with external air source to clear holes of debris.

| 14:7 | Model                    | SKV20     |
|------|--------------------------|-----------|
|      | Part Number              | SKV20130A |
|      | Weight (kg)              | 20        |
| 1 ST | Length (cm)              | 508       |
|      | Width (cm)               | 350       |
|      | Flow (Ipm)               | 20-25     |
| AL   | Operating Pressure (bar) | 90-140    |
|      | Drilling depth (m)       | 3         |



The APCV42 Auto Pipe Cutter is designed specifically for cutting large pipe up to 1600 mm for municipal water repair. It is capable of cutting cast iron, ductile iron, and steel tube. The design allows for automatic cutting of the pipe with remote operation.

| Model                    | APCV42     |
|--------------------------|------------|
| Part Number              | APCV42     |
| Weight (kg)              | 90         |
| Cutting Speed (rpm)      | 110-160    |
| Cutting Capacity (mm)    | 500 - 1600 |
| Flow (Ipm)               | 30 - 45    |
| Operating Pressure (bar) | 70-140     |





## V SERIES

### Cut-Off Saw

The COV10 Cut-Off Saw is designed for cutting metal or masonry materials such as concrete, brick, structural steel, pipe and guardrail. The COV10 offers versatility accepting both abrasive wheels and diamond blades.

### Features:

- Built in flow control for increased ease of use
- Rotation axis brake
- Counterclockwise blade rotation to suppress dust
- Available in two handle types to fit operational preferences
- Walk behind cart available for accurate scoring of concrete (COV10C)





| Model                    |           | <b>COV10*</b> |        |
|--------------------------|-----------|---------------|--------|
| Part Number              | COV10141  | COV10141E     | COV10C |
| Weight (kg)              | 9         | 10            | 70     |
| Length (mm)              | 530       | 1000          | 800    |
| Width (mm)               | 280       | 280           | 500    |
| Flow (Ipm)               | 26 - 34   | 26 - 34       | NA     |
| Operating Pressure (bar) | 105 - 140 | 105 - 140     | NA     |
| Diameter Blade (mm)      | 355       | 355           | NA     |
| Cutting Depth (mm)       | 125       | 125           | NA     |

\* CE Model available

The DSV10 Diamond Chain Saw is a heavy duty chain saw ideal for fast cutting of concrete, reinforced concrete, conduit, brick, stone and other masonry. Plunge cut capability allows for quick and precise cutting of window, door, conduit and duct openings in walls or concrete pipe. With different bar and chain options the cutting depth can reach 500 mm.

#### Features:

- Wall Walker<sup>™</sup> provides leverage for fast and accurate cuts
- Mud flap to block water spray
- Multi position handle for easy operation in horizontal and vertical cutting





| Model                    | DS                      | SV10                             |  |
|--------------------------|-------------------------|----------------------------------|--|
| Part Number              | DSV103000               | DSV103000S                       |  |
| Weight (kg)              | 12.4                    | 12.4                             |  |
| Length (mm)              | 585                     | 585                              |  |
| Width (mm)               | 240                     | 240                              |  |
| Height (mm)              | 265                     | 265                              |  |
| Cutting Depth (mm)       | 380/500                 | 380/500                          |  |
| Flow (lpm)               | 26-34                   | 26-34                            |  |
| Operating Pressure (bar) | 70-140                  | 70-140                           |  |
| Cutting material         | Concrete/PVC/PE/Plastic | Ductile iron pipe/PVC/PE/Plastic |  |



Pipe clamp (optional)

| Model      | PCV300 | PCV500 |
|------------|--------|--------|
| Capability | 300mm  | 500mm  |



## **STANLEY**

### Diamond Chain Saw



### Trash Pump

The **V SERIES** line of trash pumps are capable of pumping volumes of liquids, sand slurries, gravel and sludge in a highly portable and durable package. Hydraulic pumps are commonly used in municipal and rescue applications where reliability and performance are critical.

### Features:

- Capable of pumping up to 3000 lpm
- Can run dry without damage to the unit, unlike electric pumps
- Pumps solids up to 100 mm in diameter
- Self priming

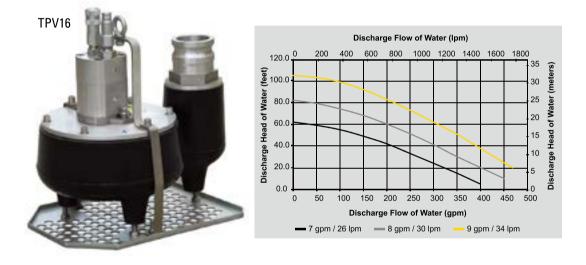




## **STARLEY**

| Model                    | <b>TPV16</b> * |          | <b>TPV30*</b> |
|--------------------------|----------------|----------|---------------|
| Part Number              | TPV16501       | TPV16801 | TPV30801      |
| Weight (kg)              | 14             | 14       | 30            |
| Length (cm)              | 440            | 440      | 485           |
| Width (cm)               | 304            | 304      | 380           |
| Flow (lpm)               | 15-24          | 26-34    | 30-40         |
| Operating Pressure (bar) | 70-140         | 105-140  | 105-140       |
| Output Capacity (m³h)    | 101            | 101      | 180           |
| Discharge (mm)           | 75             | 75       | 100           |

\* CE Model available





Trash Pump



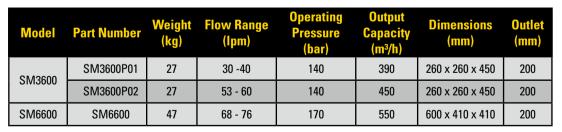
### Large Flow Submersible Pump

### SM3600 Features:

- Innovative hydraulic technology, safe for operator
- Large water pumping capacity to significantly increase pumping efficiency.
- Outlet size: 200mm, Outlet capacity:390m<sup>3</sup>/h
- Vertical designed flush face quick disconnect couplers to ease mounting
- Specialized designed for emergency rescue with compact size and light weight (27 kg)
- Equipped with two handles for easy handling
- Stainless steel pump body to increase the durability and lifespan
- Integrated designed joint fittings to reduce time of pipe connection

### SM6600 Features:

- Large water pumping capacity to significantly increase pumping efficiency
- Split-type designed pedestal to ease the installation and maintenance
- Vertical designed flush face quick disconnect couplers to ease mounting & dismounting of hydraulic hoses
- Equipped with carrying handle to improve its convenience of handling& transportation
- Stainless steel pump body to increase the durability and lifetime
- Integrated designed joint fittings to reduce time of pipe connection.







SM3600



SM6600

## **STANLEY**<sub>®</sub>

**V SERIES** Tampers are suitable for soil compaction or backfilling in narrow areas. different shaped tamping shoes are available to meet different applications.

### Tampers



| Model                    | TAV12                           |
|--------------------------|---------------------------------|
| Part Number              | TAV12103                        |
| Weight (kg)              | 12                              |
| Length (mm)              | 1500                            |
| Width (mm)               | 100                             |
| Flow (Ipm)               | 15 - 23                         |
| Operating Pressure (bar) | 70 - 140                        |
| Impact Rate (bpm)        | 1600                            |
| Valve Switch             | In Line                         |
| Tamping Shoe             | Kidney Shaped,<br>Round, Square |





### Core Drill

The CDV08100/08200 hydraulic handheld core drill, can be used for drilling rock core samples in concrete, reinforced concrete, asphalt, rock and other masonry. The "D" size handle can drill horizontally and vertically.

| Model                   | CD       | V08      |
|-------------------------|----------|----------|
| Part Number             | CDV08100 | CDV08200 |
| Weight(kg)              | 10       | 10       |
| Length(mm)              | 560      | 560      |
| Width(mm)               | 260      | 260      |
| Flow(Ipm)               | 15-24    | 15-24    |
| Operating Pressure(bar) | 70-140   | 70-140   |
| Drill Speed(rpm)        | 600      | 900      |
| Drill Diameter(mm)      | 50-200   | 50-200   |







## **STANLEY**<sub>®</sub>

The VFV09 is a heavy duty ventilating fan used to blow high volumes of air for ventilating large spaces such as vaults or gas and water mains ensuring workable job site conditions.



#### Features:

- Designed for heavy duty service
- Quiet operation
- Accepts standard heaters and coolers
- High impact plastic case

| Model                    | VFV09    |
|--------------------------|----------|
| Part Number              | VFV8000  |
| Weight (kg)              | 8.6      |
| Displacement             | 48000    |
| Output Flow (Ipm)        | 15 - 40  |
| Operating Pressure (bar) | 70 - 140 |
| Length (mm)              | 400      |
| Width (mm)               | 490      |



### Ventilating Fan



### Earth Auger

The EAV21 is a powerful and lightweight earth auger for fast boring of holes for posts, poles or trees.

### Features:

- Powerful and lightweight
- Four handle design for easy two person operation
- Maximum boring diameter of 460 mm and depth of 1070 mm

| Model                    | EAV21    |
|--------------------------|----------|
| Part Number              | EAV21102 |
| Weight (kg)              | 21       |
| Output Flow (Ipm)        | 26 - 34  |
| Operating Pressure (bar) | 70 - 140 |
| Length (mm)              | 300      |
| Width (mm)               | 1190     |
| Max Diameter (mm)        | 460      |
| Max Depth (mm)           | 1070     |





## **STANLEY**

The VPV90 is a hydraulic vibratory impact plate designed for use on granular soils, hot or cold asphalt and paving blocks. These units are ideal for trenches, road construction, backfill and foundation work.

### Features:

- Inlet-outlet hose quick connection for easy 360 degree rotation
- Dust inhalation problems caused by engine exhaust are not an issue with hydraulically powered unit
- Quieter operation compared to gas units

| Model                    | VPV90    |
|--------------------------|----------|
| Part Number              | VPV9002  |
| Weight (kg)              | 90       |
| Impact Force (kn)        | 15       |
| Impact Frequency (hz)    | 100      |
| Rotating Speed (rpm)     | 3600     |
| Output Flow (Ipm)        | 26 - 34  |
| Operating Pressure (bar) | 70 - 140 |
| Length (mm)              | 850      |
| Width (mm)               | 500      |
| Height (mm)              | 915      |





Vibrating Impact Plate



### Valve Operator

VOV240 Valve operator is used for open /close pipeline valve, it is a special tool applied in natural gas, water and petrochemical industry .

#### Features:

- Adjustable rotating speed and torque , fast opening valve.
- Operable in narrow space, easy to carry.
- Only one operator needed.
- Circle record, handle auto-reset.



| Model             | VOV240      |
|-------------------|-------------|
| Weight(Kg)        | 16.3        |
| Dimensions(mm)    | 810x220x280 |
| Pressure(bar)     | 125         |
| Rated torque (Nm) | 235         |
| Revs range(rpm)   | 0-187       |
| Flow Range(Ipm)   | 18-40       |







Hydraulic impact wrench is used for tightening and loosing bolts. As It can be regarded as an impact drill and wrench, so it can drive wooden bolts. This tool, for removing and tightening bolts, is widely used in repairing water supply and gas leaking as well as railway line maintenance.

#### Features:

- 576 Nm Impact Wrest, Intensity Can Be Adjusted.
- Design Of Hammer Structure.
- Feather Switch.
- Rotate Valve Positive And Negative In A Second.

| Model            | IWV03       |
|------------------|-------------|
| Туре             | IWV03       |
| Weight(kg)       | 3.6         |
| Flow (Ipm)       | 15-30       |
| Pressure(bar)    | 70-140      |
| Dimension(mm)    | 218x68x218  |
| Impact Wrest(nm) | 576         |
| Drive Size(mm)   | 12.5 square |







### Impact Wrench



### Welder with Generator

Hydraulic welder with generator is used to weld metal parts, steel pipes, equipment maintenance and etc.

### Features:

- Adjustable DC welder and welding rod diameter 4mm
- Generator Max. output DC 220V 2KW and also providing for other equipment and lighting
- Light weight and small size and easy to move
- Connecting hydraulic power unit with quick-couples

| Model                 | WDV35                                       |
|-----------------------|---|
| Part Number           | WDV35002                                    |
| Weight (kg)           | 35  |
| Flow (lpm)            | 30 - 40                                     |
| Welding Current (A)   | 40 - 190                                    |
| Operating Voltage (V) | 80  |
| Welding Rod (mm)      | Ø1.6 -3.2 (flow 30l)<br>Ø1.6 – 4 (flow 40l) |
| Output Voltage (DC)   | 220   |
| Output Power (KW)     | 2   |





## **STANLEY**

The LTV80 Mobile Light is powered by battery that is charged by the hydraulic power unit. It can be used in the construction sites at night without an electric power source, especially effective in emergency rescue and urgent engineering recovery. It is easy controlled and operated to light a large visible area.

Features:

LTV7002

- Wired and wireless remote control, easy to operate components
- Waterproof and dust proof
- Bright LED source with service life of 50,000 60,000 hours
- Extending 12.8 m high and an optional 2.4 m, vertical rotation angle 400 degrees
- Control device operated by air pressure in the operating system, sealed and continuously working

| Model           | LTV70        | LTV80            |
|-----------------|--------------|------------------|
| Part Number     | LTV7002      | LTV8002          |
| Weight (kg)     | 5.5          | 83               |
| Dimensions (mm) | 1220x320x110 | 1325 x 870 x 865 |
| Voltage (v)     | 12 DC        | 12 DC            |
| Power (w)       | 80           | 50 x 2           |
| Lumen (Plm)     | 7000         | 3500 x 2         |
| Elevation Way   | Manual       | Pneumatic        |
| Wind Resistance | 5-6 Level    | 6 - 8 Level      |





Mobile Light



## THE BASIC PRINCIPLE OF HYDRAULICS FOR TOOL OPERATION

The basic principle of hydraulics used for tool operation can be compared with a typical household water system.

The typical rotary car-wash brush tool, that is operated from water through a garden hose, is in actuality a hydraulic tool. Water rushing through the garden hose drives a small motor in the car-wash tool which, in turn, rotates the brush. However, it is not just the rushing water that is driving the motor. There is also pressure associated with the rushing water—about 60 pounds per square inch (psi). Without the pressure, the tool would have no power. Without pressure, any force applied to the tool, such as pushing down on the tool, would stall the tool.

Water rushing through the hose (or the flow of water) is measured in gallons per minute (gpm) and results in the speed of the tool (in the case of the car-wash tool, the speed of the brush). Pressure associated with the water provides power to the tool.

The same principle applies in one of our tools. In a breaker, for example, the flow results in the speed of the tool and the resistance to that flow creates a demand for pressure. If the system has the capacity to deliver the pressure, power is transmitted to the tool to do work.

Hydraulic tools actually use less flow (gpm) than that produced through a garden hose. The pressure, however, is considerably higher. Hydraulic tools require pressures up to 2000 psi / 140 bar but only need 5 to 10 gpm to operate effectively. Of course, a typical HTMA hydraulic system returns fluid to a reservoir for re-use as opposed to the household water system that spills fluid to waste.

#### **OPEN-CENTER AND CLOSED-CENTER SYSTEMS**

There are two basic types of hydraulic systems — Open-Center and Closed-Center.

#### **OPEN-CENTER IS CONSTANT FLOW — VARIABLE PRESSURE**

When a tool valve is in the OFF position, hydraulic oil flows through the ON/OFF valve ports of the tool and back to the reservoir. The system is constantly flowing oil through the tool valve ports and back to the reservoir at no pressure. When the tool valve is ON, oil circulates through the tool causing the tool to operate, and then returns to the reservoir. Pressure is created when resistance to flow is sensed by the system. This occurs when the tool is put to work. Pressure will increase as the tool needs it up to the relief setting in the hydraulic system.

#### **CLOSED-CENTER IS CONSTANT PRESSURE — VARIABLE FLOW**

When a tool valve is in the OFF position, hydraulic oil flow stops at the ON/OFF valve port of the tool. The system will build and hold pressure without returning oil to the reservoir. When the tool valve is ON, oil circulates through the tool causing the tool to operate, and then returns to the reservoir. Pressure tends to be constant in the system. Pressure will increase as the tool needs it up to the settings in the hydraulic

system. And if pressures higher than the system setting are demanded by the work, flow will decrease.

#### FLUID TEMPERATURE

The following information will serve to assist those installing hydraulics in mobile applications for handheld tools. While many hydraulic circuits can run upwards to  $200^{\circ}$  F /  $93^{\circ}$  C, temperatures over  $110^{\circ}$  F /  $43^{\circ}$  C are uncomfortable to human touch. Our desire is to hold oil temperature to a maximum of  $140^{\circ}$  F /  $43^{\circ}$  C.

In almost any hydraulic tool circuit, oil cooling methods will be required except for very short periods of operation or in underwater and extreme cold environments. If you are involved in the design of a hydraulic tool circuit, use the following as guidelines.

#### **BASIC DON'TS FOR COOL OIL CONTROL**

- DON'T Rely on a large reservoir to control oil heating. Large reservoirs, even with good air circulation, do not adequately dissipate heat.
- DON'T Set relief pressure too low (open-center circuits) for percussion type tools (breakers, hammer drills, etc.). Pressure peaks may run up to 350 PSI over gauge pressure, popping the relief and causing heat as well as low tool performance.
- 3. DON'T Pump more oil than the tool should use and avoid flow controls if possible. Instead, size the pump for desired flow volume. Gear type flow dividers can be used to reduce flow more efficiently than valves, reducing heat.
- DON'T Use heavy oils such as 30W or 10W30 engine oils. These will cause resistance in lines and add to backpressure and heat.
- 5. DON'T Run return oil through control valves or other circuit components, except coolers and return line filters.

#### **DO THE FOLLOWING TO REDUCE HEAT GENERATION**

- 1. Operate pumps at moderate speed gear pumps usually generate less heat and are less prone to cavitation at speeds of 1,000-2,000 RPM.
- 2. Use generous line sizes Especially on pump suction and return from tool to tank.
- 3. Use oils in 130-225 SSU at 100° F / 38° C range with high viscosity index. (see hydraulic fluid recommendations at the end of this section)

#### **PROVIDE GOOD COOLING FOR HYDRAULIC OIL**

 Use an air-to-oil cooler of maximum size for space available. Use a shrouded, high capacity fan. Many vehicles do not cool well when parked with engine at low speed. Do NOT use a "thermal" viscous-drive fan because these fans do not draw air unless the engine is hot.





#### FLUIDS FOR MOBILE HYDRAULIC TOOL CIRCUITS

The specification listed here will provide good all season operation if your circuit is of proper design and normal maintenance is performed. (Periodic filter change, draining of condensate, etc.)

#### SPECIFICATIONS

| Item                                 | U.S.A.             | Metric                         |
|--------------------------------------|--------------------|--------------------------------|
| Viscosity (Fluid Thickness)          | 50° F 450 SSU Max. | 10° C 95<br>Centistokes Max.   |
| Viscosity (Fluid Thickness)          | 100° F 130-225 SSU | 38° C 27-42 Centistokes        |
| Viscosity (Fluid Thickness)          | 140° F 85 SSE Min. | 60° C 16.5<br>Centistokes Min. |
| Pour Point<br>(Min.for cold startup) | -10° F             | 23° C                          |
| Viscosity Index                      | (ASTM D2220)       | 140 Minimum                    |
| Demulsibility                        | (ASTM D1401)       | 30 Minutes Max.                |
| Flash Point                          | (ASTM D92)         | 340° F Min.                    |
| Rust Inhibition                      | (ASTM D665 A&B)    | Pass                           |
| Oxidation                            | (ASTM D943)        | 1000 Hours Min.                |
| Pump Wear Test                       | (ASTM D2882)       | 60 mg Max.                     |
| Biodegradability                     | CEC-L-33-A94       | >60%                           |

#### **RECOMMENDED FLUIDS**

The fluids listed here work well over a wide temperature range at start-up, allow moisture to settle out, and resist biological growth likely in cool-operating hydraulic circuits. These fluids are recommended by Stanley Hydraulic Tools for use in our tools. Other fluids that meet or exceed the specifications of these fluids may also be used. Biodegradable fluids listed are compatible with all tool seals and hoses.

#### **RECOMMENDED FLUIDS**

| Brand             | Biodegradable | Description        |
|-------------------|---------------|--------------------|
| CITGO             | No            | Hydurance All Temp |
| AMS Oil           | No            | HVH 32             |
| Exxon Mobil       | No            | Univis HVI26*      |
| Exxon Mobil       | No            | DTE 10 Excel       |
| Shell             | No            | S2 V 32            |
| Chevron           | No            | Rando HDZ 32       |
| Conoco Phillips   | No            | Unax AW-WR-32      |
| Clarion (CITGO)   | Yes           | Green Bio 32       |
| Exxon Mobil       | Yes           | EAL 224H           |
| Chevron           | Yes           | Clarity AW32       |
| RSC Bio Solutions | Yes           | Envirologic 132    |
| Shell             | Yes           | Naturelle HF-E-32  |

\*Recommended for extreme cold weather operation.



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Combined