

## HYDRAULIC AC POWER PACK

### Installation & Maintenance manual.

### UAXXXX part numbers

#### 1 General

Congratulations with purchasing this STONE® hydraulic power pack.

STONE® offers a wide range of DC and AC power packs for diverse industries. The power packs are designed to operate in a variety of applications. There are tens of thousands of STONE® units in service, serving markets around the globe. In fact, STONE® personnel are located in offices around the world to serve the global market.

STONE® is a brand of SPX Hydraulic Technologies, a division of SPX Corporation.

Each Hydraulic Unit has been performance checked to our customer's specification before delivery. It should require no further adjustment other than connecting to a proper electrical supply and the driven hydraulic equipment, like a hose with the correct pressure rate, and the correct couplers. It also needs to be filled with CLEAN hydraulic oil to the correct specifications.

#### 2 Safety Symbols and Definitions

The safety signal word, designates the degree or level of hazard seriousness.



##### **DANGER:**

Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.



##### **WARNING:**

Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.



##### **CAUTION:**

Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.

**CAUTION:** Used without the safety alert symbol indicates a potentially hazardous situation which, if not avoided, may result in property damage.

**IMPORTANT:** Important is used when action or lack of action can cause equipment failure, either immediate or over a long period of time.

#### 3 INTENDED USE

This UAXXXX STONE® hydraulic power pack is intended for use in industrial or mobile applications which use 230 or 400 VAC power.

It can be used for single and/or double acting applications, depending on the valving on the powerpack. Applications like, siccor lifts, car hoists, hose crimpers, compactors etc. (raise, hold, gravity lower/power raise hold powerdown).

The same unit may be used in other applications providing guidance from SPX has been approved in writing and the unit is built in to the application by trained technical personnel.

A risk analysis must always be carried out.

This unit can be used with a STONE® 12/24 volt control box, wired or wireless.  
Customer should use qualified trained personell to setup the electrical power supply.



**WARNING :** The Stone® hydraulic power pack does not have a safety function !



**WARNING :**

**THE HYDRAULIC POWER PACK MAY NOT BE USED:**

- For uses other than those listed in the 'Intended use" paragraph. (if in doubt, contact your local STONE® distributor)
- Without having connected the pressure port (P) and having filled the tank with the prescribed oil;
- In an ATEX environment;
- In aviation and space systems;
- In braking, stopping and parking systems;
- In military, medical and hospital systems and equipment; (contact your Local STONE® distributor)
- As a safety component.

#### **4 TECHNICAL SPECIFICATIONS AND SPARE PARTS**

Technical specifications (hydraulic, and electric schematics, flow, amps etc.) can be found on the actual drawing of the hydraulic power pack. Each power pack has a silver decal located on the tank which contains the power pack part number, serial number and pressure setting on it.  
Drawings and spare parts can be requested via your STONE® distributor. ([www.Stonehydraulic.com](http://www.Stonehydraulic.com).)  
Only use original STONE® spare parts!

#### **5 INSTALLATION OF THE UNIT**

##### **5.1 FASTENING AND PROTECTION**



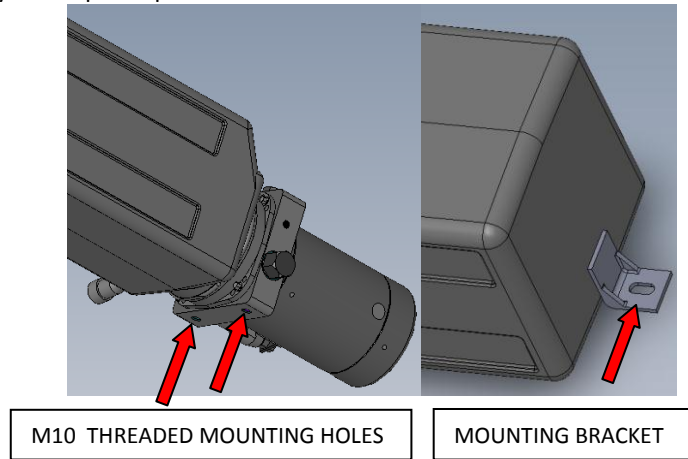
**CAUTION:**

The installation of the power pack must be done by qualified trained personnel. The installer is responsible for the correct power supply, and protection of the power pack.

SPX declines any responsibilities related to short circuits resulting from lack of proper protection of the electric circuit!

- Fit the power pack in its designated position and tighten the mounting bolts (2 x M10 thread holes at bottom or on the side of the valve block depending on orientation of the valve block) at a torque of **54Nm**.
- Depending on the orientation of the tank you can choose to mount the unit by using the 2 feet on the AC motor. (Use 4 x M6 with M71 frame motor or 4 x M8 when using M90 frame size motor.)

The powerpack can be mounted horizontally or vertically (tank down) depending on the partnumber of the unit. Tanks can have a mounting bracket (plastic or steel) at the back, which should always be used for extra stability of the powerpack.



- UAXXXX units are designed to be used in outdoor applications. Motors are IP54 designed.
- Protect the power pack from corrosive environments.

## 6 RECOMMENDED HYDRAULIC OILS

Mineral oil based hydraulic fluids suitable for hydraulic systems can be used. They should have physical lubricating and chemical properties as specified by:

- Mineral oil based hydraulic fluids HL (DIN 51524 part 1)
- Mineral oil based hydraulic fluids HLP (DIN51524 Part 2)

For use of other oils please contact factory.

### 6.1 FLUID VISCOSITY, TEMPERATURE RANGE OF THE OPERATING FLUID, AMBIENT TEMPERATURE.

The fluid viscosity should remain within the range 10 to 300 cSt (centistokes);

Recommended 15 to 120 cSt.

Permissible cold start viscosity is maximum 1000 cSt.

The fluid temperature should remain within the range -20° C and 80° C.

Ambient temperature -15° C and 40° C.

- Most common used oil is ISO Viscosity Grade 32, 46 or 68 depending on the ambient temperature.

**IMPORTANT:** In order to maximize the useful lifetime of the unit and the hydraulic oil, operating temperatures under the **-20 and above 80°C** are not recommended.

### 6.2 FLUID CLEANLINESS REQUIREMENTS AND MAINTENANCE

We recommend a cleanliness of the operating fluid according to ISO 4406 Class 20/18/14.

All components of the hydraulic circuit must be flushed and clean, before assembling, because the power pack has only a suction filter.

It's recommended to change the oil after the first 500 working hours and every 2000 hours after that, or at least once a year.

**IMPORTANT:** Fill up the unit with a fine filter, filtration rating 20 µm. Do not use a cloth strainer as most pump failures, valve malfunctions and short unit life, can be directly or indirectly attributed to dirt or other foreign material (water, swarf, grit, lint, etc) getting into the system.

**CAUTION:** WHEN FILLING OR TOPPING UP, ONLY USE NEW, FILTERED HYDRAULIC OIL OF THE SAME TYPE AND BRAND, NEVER MIX TYPES OR BRANDS!

## 7 ELECTRICAL INSTALLATION



**CAUTION:** Ensure the power cables are disconnected from the power before connecting them to the power pack!

The cable size and length from the power source to the electric motor should be selected in order to avoid too much voltage drop.

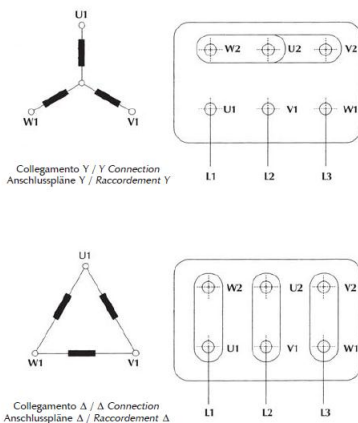
### 7.1 AC MOTOR:

The tolerances on the nominal voltage for the Aluminum European AC motors are:

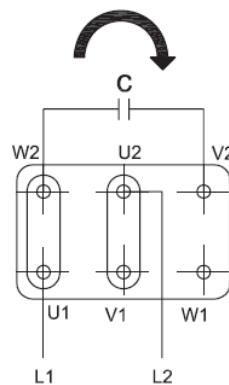
- Single phase motor: 230V +/- 5%
- Three phase motor: 230-400V +/- 10%
- Protection degree IP54
- Insulation class: F (155°C)

**! Connection schematic for the motor is always present in the connection box of the motor.**

#### 230/400 VAC motor:



#### 230 VAC motor





## **IMPORTANT :**

Single phase motors are not designed to run against load. If the torque is too high, the motor will stall. In this case an extra capacitor can be supplied to provide a similar starting torque as a 3 phase motor. This extra capacitor is connected parallel over the standard capacitor and will come on for 6 seconds. After 6 seconds the capacitor will switch off.  
Your local STONE® distributor can help you with extra info on this.

## **8 HYDRAULIC CONNECTIONS**



**CAUTION:** The hydraulic connections and hoses need to be of adequate sizes, thread form, torques and safety factors, to withstand the maximum pressures within the hydraulic system. Liberally squirt some clean oil into the pressure port of the pump before making the connection to the cylinder line.  
The manufacturer of the complete hydraulic system needs to follow the applicable norms and regulations, so that the safety for the operator is assured under all conditions.

## **9 STARTING**

Make sure the reservoir is filled with the recommended hydraulic oil. Pay attention to the oil level if the cylinder is extended and already filled with oil.



**IMPORTANT:** The power pack must never operate without oil !

**PLEASE NOTE:** If the oil flow doesn't start on running the power pack, air might have to be bled from the system, at the highest point and with the system under pressure. Air in the system generates uneven and noisy operation. It might also cause a sudden drop of the cylinder and system.

## **10 MAINTENANCE, CLEANING AND STORAGE**

### **10.1 PUMP & MOTOR:**

Under normal operating conditions, neither the pump nor the motor should require any attention. The motor bearings are life-lubricated; The pump bearings are lubricated by the fluid being pumped.

### **10.2 PERIODICALLY CHECK:**

- A. The level and degree of pollution of the hydraulic oil. if needed fill up the oil to the max level.
- B. The oil level must never go below the suction filter.
- C. Check the suction filter of the power pack regularly. the filter can become clogged over time. this must be checked and if necessary cleaned or replaced.
- D. Check the complete hydraulic system for leakages regularly and if necessary tighten connections.

- E. Check electrical connections for corrosion. spray them with some corrosion protection (wd-40) regularly.
- F. Check the cable insulation for cracks and bare wires.

### **10.3 STORAGE AND PACKAGING:**

- A. Store the power pack in a clean environment.
- B. When the power pack is stored over a long period of time, high humidity and temperature differences should be avoided.
- C. Keep port plugs in place and check for foreign material in the hydraulic ports before use.
- D. Protect the power pack from shaking and falling.
- E. Prevent the power pack from coming in contact with corrosive substances.

### **10.4 CLEANING:**

- F. never use a high pressure washer to clean the power pack.

## **11 DISPOSAL**

Properly dispose of all fluids, components, and assemblies at the end of their useful life.  
After end of lifetime of the power pack, follow the local regulations to dispose the power pack, or contact your STONE® supplier for instructions of disposal.

## 12 TROUBLE SHOOTING

GENERAL		
TYPICAL EXAMPLES		
SYMPTOM	POSSIBLE CAUSE	FIXES & HINTS
1 Check to see that the motor is wired correctly with tight connections, and the proper voltage. 2 Check reservoirs oil level. 3 Check relief valve for proper setting with pressure gauge in outlet line. 4 Check for external leakges at cylinder, hoses and power unit.		
Unit will not start or stalls. (see causes 1,2,10,12,)	1. Improper voltage to motor. (A,F,G) 2. Motor is over loaded. (I, J)	A. Check wiring and insure connections are tight, as well as proper voltage.
Unit runs but nothing happens. (see causes 6,7,9,13)	3. Relief valve set too low. (C,E) 4. Relief valve set too high. (C,E)	B. Keep oil reservoir full & clean. C. Do not adjust valves without proper equipment (pressure gauges)
Cylinder or work load drops. (see causes 5,6,7 & 8)	5. Improper voltage to valve solenoid. (A,H) 6. Leakage through pump check valve. (D,F) 7. Leakage through solenoid lowering valve. (D,F)	D. Flush & clean Hydraulic system. E. Adjust relief valve to proper setting.
Slow cylinder travel (see causes 1,2,3,7,8,9,10 & 11)	8. Internal leakage at cylinder. (F,G) 9. Insufficient oil to pump. (B,D,G) 10. Pump seized-frozen up. (F,G)	F. Replace component. G. Return for necessary repair.
Unit will not lower. (See causes 2,4,5 & 11)	11. Cylinder overloaded. (C,E) 12. Broken motor. (F) 13. Motor runs the wrong way. (K)	H. Check for clean tight metal to metal connection. I. Motor runs against pressure and is not designed to do that, makes sure you use an extra capacitor if you have a single fase motor. J. The pressure is to high for the motor to provide the needed torque, lower the pressure. K. Make sure motor runs counter clockwise looking from the back of the motor.

## EC DECLARATION OF CONFORMITY



We declare under our sole responsibility that our Hydraulic Power Packs Model:

UD-xxxx series  
UA-xxxx series

to which this declaration relates are in conformity with the following:

<u>EN, EN-ISO, ISO standards</u>	<u>Title</u>
<b>Per the provisions of the Machinery Safety Directive</b>	<b>2006/42 EC</b>
EN_ISO 12100:2011	Safety of machinery, basic concepts, general principles for design, risk assessment & risk reduction
EN 4413:2010	Hydraulic Fluid Power – general rules and safety requirements for systems & their components
<b>Per the provisions of the EMC Directive</b>	<b>2004/108 EC</b>
EN_61000-4-2:2001	Electromagnetic Discharge Immunity test
EN_61000-4-3:2001	Radiated, Radio Frequency, Electromagnetic Field Immunity test
EN_61000-4-6:2001	Immunity to Conducted Disturbances, Induced by Radio-Frequency Fields
EN55011_2007	Industrial, Scientific and Medical (ISM) Radio Frequency Equipment-Electromagnetic Disturbance Characteristics-Limits and Methods of Measurement
<b>Per the provisions of the Noise Emission in the Environment by Equipment for Use Outdoors Directive</b>	<b>2000/14 EC</b>
EN_3200L0014	Noise emission in the environment for use outdoors
ISO 3744:1994	Sound Power Level Measurements
<b>Per the provisions of the RoHS Directive</b>	<b>2011/65 EU</b>
	Restriction of the use of certain hazardous substances in electrical and electronic equipment

We, the undersigned, hereby declare that the equipment specified conforms to the above European Communities Directive(s) and Standard(s).

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