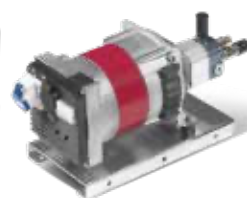




**DOA**

## Hydraulic Tools



*General Catalogue*



**TRIME GROUP**

# WHY HYDRAULIC TOOLS

## POWER & PRODUCTIVITY



The power to weight ratio of hydraulic tools is unbeatable! A comparative test will immediately demonstrate this advantage that means increased productivity and less fatigue for the operators.

## TRANSPORTABILITY & ECONOMY



The group power pack/tool is very compact and easy to transport, the fuel consumption of power packs is largely less than the one of air compressor, the power pack is lighter and can easily be transported by the smallest vehicles, can be positioned on job site occupying minimal space and without troubling operations and traffic, it does not have the typical problems associated with air compressors such as needs of brakes, lighting, car plates, hooks, lifting, parking etc.

## A BETTER WAY TO WORK IN TOTAL SAFETY



No other equipment either electric, gasoline, or pneumatic can solve together all the problems related to the urban maintenance of underground pipes. The modern utilities organisations require powerful, productive, reliable, easy transportable equipment that has to give maximum guarantee of safety for operators. Difficult to obtain all this from conventional equipment, hydraulics is the synthesis and the DOA range is the definitive point by point solution. Hydraulics is implicitly free of electric shock hazard, often the operators work inside trenches with feet in the water and mud, this is a dangerous condition prohibited by law if are used electric single phase tools that in case of contact with water can cause fatal accidents, hydraulic tools can work in total immersion in water without problems of functionality and in total safety.

## QUIETNESS - NO FROZEN MOISTURE IN WINTER



Absence of open exhaust gives a quietness that is unmatched by other tools type. In winter operations or at low temperatures hydraulic tools guarantee absence of frozen moisture, typical limit of the air tools. Hydraulics also give the advantage of not having pressure accumulation, being the oil incompressible it cannot cause explosions of tanks and hoses etc.

## MULTI POWER GROUPS FOR TRUCKS



DOA multi power groups for trucks: INTELLIPOWER, TRIDENT, HYDROBOX allow to significantly increase the use of the trucks and vans transforming them from normal transportation vehicles in real working equipment to obtain hydraulic, electric and pneumatic energies from the engine of trucks, the advantages in terms of reduction of weight and volumes transported, the versatility, the economy, the convenience and safety are obvious and concrete.

## VERSATILITY AND LONG OPERATIVE LIFE OF TOOLS



Hydraulic tools can be powered also by all vehicles with a sufficient hydraulic circuit and are ideal for crews that operate in the utilities maintenance. The tools "longevity" is another great advantage, hydraulic tools have a small number of components that are always bathed and lubricated by the oil, a hydraulic tool has a working life that is at least 20 times longer than other tools type.

## THE RANGE



DOA has the largest range in its type, no one has the same number of tools and solutions designed for the maintenance of underground pipes and for general urban works, our catalogue is constantly increased with new tools anticipating the operators necessity guaranteeing safety and productivity.  
DOA IS ALWAYS A STEP AHEAD!



## ***POWER PACKS***

6



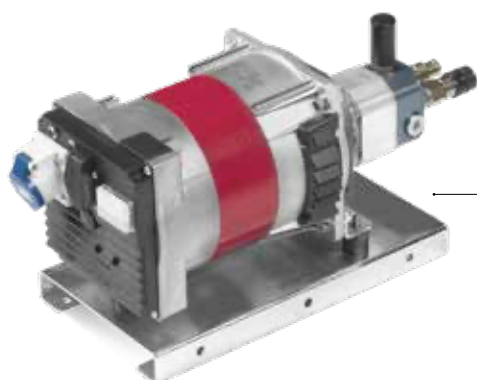
## ***HYDRAULIC TOOLS***

28



## ***WATER PUMPS***

53



## ***INDUSTRIAL LINE***

70

# POWER



# PACKS



# POWER PACKS

## SCORPION

19 L/min @ 95 Bar - (12 L/min @ 160 Bar) Gasoline engine 6 Hp



- *Stainless steel frame*
- *All parts suspended on anti-vibration shock mounts*
- *Quick couplers installed on impact free swivel fitting*
- *High efficiency oil cooling system with centrifugal fan*
- *Central lifting hook*



**SCORPION** micro power pack with 6 Hp gasoline engine – recoil start is designed to guarantee the minimum weight and easy transportability. The machine is available in two configurations of hydraulic power: 20 L/min @ 95 Bar or 12 L/min @ 160 Bar. Agile and robust **SCORPION** is ideal in the utilities maintenance , in general applications with hydraulic tools and in all works where are needed power and transportability.

**Available with different hydraulic power depending on request.**

| TECHNICAL CHARACTERISTICS | SCORPION                         |
|---------------------------|----------------------------------|
| Weight (kg)               | 42                               |
| Dimension LxWxH (cm)      | 60x40x43                         |
| Flow L/min                | 20@95 Bar (12@ 160 Bar)          |
| Pressure Bar              | 95-160                           |
| Engine                    | Briggs & Stratton 6hp - gasoline |
| Starter                   | recoil                           |
| Acceleration              | manual                           |
| Hoses Length std          | 7 mt                             |



# GASOLINE

## ASPID

20 L/min @ 140 Bar Engine 9 Hp - Recoil starter

- *Stainless steel frame*

- *All parts suspended on anti-vibration shock mounts*

- *Quick couplers installed on impact free swivel fitting*

- *High efficiency oil cooling system with centrifugal fan*

- *Central lifting hook*

## SUPER ASPID

30 L/min @ 140 Bar Engine 13 Hp - Recoil starter

## ASPID B

30 L/min @ 140 Bar Engine 14 Hp - Recoil and electric starter



**ASPID** is a three models power packs range with gasoline engine that have same size and minimal difference in weight due to the various engines installed and to the hydraulic output power. These machines have excellent transportability, robustness, quietness, reliability and a superior construction quality that guarantees the best performance in the more damaging applications. For these characteristics the **ASPID** range is the best selling and the more commonly power packs used in the maintenance of underground pipes, in rescue civil protection and in all application where is necessary a professional hydraulic power supply.

**Available with different hydraulic power depending on request.**

| TECHNICAL CHARACTERISTICS | ASPID                            | SUPER ASPID            | SUPER ASPID B                     |
|---------------------------|----------------------------------|------------------------|-----------------------------------|
| Weight (kg)               | 65                               | 67                     | 70                                |
| Dimension LxWxH (cm)      | 70x50x57                         | 70x50x57               | 70x50x57                          |
| Flow L/min                | 20@140 Bar                       | 30@140 Bar             | 30@140 Bar                        |
| Pressure Bar              | 140/210                          | 140/210                | 140/210                           |
| Engine                    | Briggs & Stratton 9hp - gasoline | Honda 13 hp - gasoline | Briggs & Stratton 14hp - gasoline |
| Starter                   | recoil                           | recoil                 | recoil and electric               |
| Acceleration              | automatic                        | automatic              | automatic                         |
| Hoses Length std          | 7 mt                             | 7 mt                   | 7 mt                              |

# POWER PACKS

## MANTA

30 L/min @ 140 Bar - 2,2 Kva 115 - 230 Volt Engine 14hp - Recoil and electric starter

### HYDRAULIC POWER PACK WITH GENERATOR



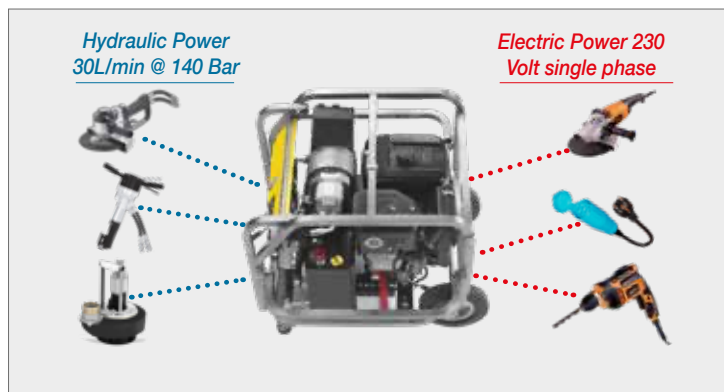
The double function makes **MANTA** the most versatile machine of its kind and adapts it to any situation being able to operate with most of the hydraulic and electrical tools. The hydraulic or electric functioning is selectable immediately by using a lever. Power sources can be used one at a time (not together). The efficient cooling system of the oil assures maximum performance even in hotter climates.

**MANTA** is for its construction and function the best machine in its kind. Its use is ideal for the maintenance of urban networks, for the civil protection and for all applications where are needed hydraulic and electric power

**MANTA is the only hydraulic power pack on the market with electric generator 2.2 kva - 230 v**

- *Electric generator  
2.2kVA - 230V*
- *Stainless steel frame  
with large folding handles*
- *All parts suspended  
on anti-vibration shock mounts*
- *Quick couplers installed  
on impact free swivel fitting*
- *High efficiency oil cooling system  
with centrifugal fan*
- *Central lifting hook*

| TECHNICAL CHARACTERISTICS | MANTA                             |
|---------------------------|-----------------------------------|
| Weight (kg)               | 95                                |
| Dimension LxWxH (cm)      | 85x60x65                          |
| Flow L/min                | 30@140 Bar                        |
| Pressure Bar              | 140 Kva                           |
| Generator                 | 2.2 kVA - 230V                    |
| Engine                    | Briggs & Stratton 14Hp - gasoline |
| Starter                   | recoil - electric                 |
| Acceleration              | manual                            |
| Hoses Length std          | 7 mt                              |



# GASOLINE

## SUPER RAPTOR single

38 L/min @ 140 Bar - Gasoline engine 18 Hp - Recoil and electric starter

- *Stainless steel frame with large folding handles*
- *Central lifting hook*
- *All parts suspended on anti-vibration shock mounts*
- *Quick couplers installed on impact free swivel fitting*
- *High efficiency oil cooling system with double radiator*
- *Central lifting hook*



**SUPER RAPTOR** is an hydraulic power pack with 18 Hp twin cylinder gasoline engine, the machine is available on request with different flows (example 30 l/min at 180Bar with 9 cc hydraulic pump or 38l/min at 140Bar with 11 cc hydraulic pump) depending on the pump size installed (example 30 litres @175 Bar or 38 litres @ 140 Bar). **SUPER RAPTOR** is for function and construction one of the best machine on the market, for its characteristics it is ideal in the maintenance of underground pipes, in the civil protection, in powering high flow hydraulic tools and in all application where is necessary a professional hydraulic supply.

**Available with different hydraulic power depending on request.**

| TECHNICAL CHARACTERISTICS | SUPER RAPTOR SINGLE       |
|---------------------------|---------------------------|
| Weight (kg)               | 110                       |
| Dimension LxWxH (cm)      | 85x60x65                  |
| Flow L/min                | 30-38@140 Bar             |
| Pressure Bar              | 140/180                   |
| Engine                    | Vanguard 18 hp - gasoline |
| Starter                   | recoil - electric         |
| Acceleration              | automatic (POD) or manual |
| Hoses Length std          | 7 mt                      |



# POWER PACKS

## SUPER RAPTOR dual

Double parallel circuit at 19 L/min or single at 38 L/min Gasoline engine 18 Hp - Recoil and electric starter



- *Stainless steel frame with large folding handles*
- *All parts suspended on anti-vibration shock mounts*
- *Quick couplers installed on impact free swivel fitting*
- *High efficiency oil cooling system with centrifugal fan*
- *Central lifting hook*

**SUPER RAPTOR DUAL** is a twin tool hydraulic power pack with 18 Hp twin cylinder gasoline engine, with electric pull starter. The machine has double possibility of hydraulic supply: either two hydraulic circuit at 19 L/min each or combined in a single circuit at 38 L/min with a maximum pressure of 140 Bar. The engine acceleration can be fixed and also automatic with piston according to customer specifications. The selection of the type of flow and acceleration can be done in a while through comfortable levers.

**Available with different hydraulic power depending on request.**

| TECHNICAL CHARACTERISTICS | SUPER RAPTOR DUAL                       |
|---------------------------|-----------------------------------------|
| Weight (kg)               | 118                                     |
| Dimension LxWxH (cm)      | 85x60x65                                |
| Flow L/min                | 30-38                                   |
| Pressure Bar              | 140-180                                 |
| Engine                    | Briggs & Stratton 18 HP twin - gasoline |
| Starter                   | recoil - electric                       |
| Acceleration              | automatic - manual                      |
| Hoses Length std          | 7 mt                                    |



# GASOLINE

## NITRO

Single circuit model: Flow max 50 L/min - Pressure max 210 Bar  
Double circuit model: 2 circuit of 25 L/min cad. - Pressure max 210 Bar

- *Stainless steel frame with large folding handles*

- *Central lifting hook*

- *All parts suspended on anti-vibration shock mounts*

- *Quick couplers installed on impact free swivel fitting*

- *High efficiency oil cooling system with double radiator*

ENGINE POWER 23 Hp - BRIGGS & STRATTON "Vanguard"



**NITRO** is a hydraulic power pack with 23 HP engine designed to power tools and hydraulic equipment for high flow or pressure necessity. NITRO can be delivered with one or two parallel circuits or with different hydraulic powers according to customer specifications, example: 50 L/ min @ 140 Bar, or 38 L/ min @ 200 Bar or two flows: one 20 L/min and the second one 30 L/min that can be added having one single circuit of 50 L/min @140 Bar. The large capacity oil tank and the double radiator cooling system guarantee ideal hydraulic conditions even in the more demanding applications. The chassis can be "skid" type (in the illustrations) or with wheels and handles like the other power packs. The typical use is to drive heavy duty hydraulic equipment like drilling equipment, big water pumps, powering underwater tools and in all applications where is need a professional hydraulic supply. *Flexible hydraulic hoses are not included in price. Length and diameter of hoses depend upon the flow and use and must be specified at the order.*

| TECHNICAL CHARACTERISTICS | NITRO                                                                                                       |
|---------------------------|-------------------------------------------------------------------------------------------------------------|
| Weight (kg)               | 210                                                                                                         |
| Dimension LxWxH (cm)      | 95x60x65                                                                                                    |
| Flow L/min                | 10-50 (single circuit)                                                                                      |
| Flow L/min                | 2 of 25 (double circuit) In the double circuit, the two flows can be added together to have a single course |
| Pressure Bar              | 100-210                                                                                                     |
| Oil Tank capacity         | 50 litres                                                                                                   |
| Quick couplers            | 3/4" flush face                                                                                             |
| Engine                    | Briggs & Stratton 23 HP - 2 cylinders - gasoline                                                            |
| Starter                   | recoil - belectric                                                                                          |
| Acceleration              | manual                                                                                                      |
| Gasoline tank             | 30 litres                                                                                                   |

# POWER PACKS

## DINAMO 35 H

Double circuit power pack - Gasoline engine 35Hp - Electric starter



- 12V socket and hours counter
- Extremely robust chassis with stainless steel superstructure and two large folding handles
- Large central wheels to facilitate movements on any ground
- Two Parallel oil coolers with centrifugal fan
- Manual engine acceleration allows to control the engine rpm and hydraulic flow
- Central lifting hook

**DINAMO 35H** is a double circuit power pack with gasoline engine 35Hp available in two configurations with flow 30 l/min x 2 - 60l/min x1 at 180 Bar or flow 40 l/min x2 - 80l/min x1 at 140 Bar. This power pack is developed to power two hydraulic tools of category D or E of EHTMA standard or special tools and pumps than require high flow and pressure.

**DINAMO 35H** has a Gasoline tank of 30l than guarantee an activity of 100% of engine power for 3 hours in continues.

| TECHNICAL CHARACTERISTICS | DINAMO 35 H dual                                     |
|---------------------------|------------------------------------------------------|
| Weight (kg)               | 205                                                  |
| Dimension LxWxH (cm)      | 640x867x1090                                         |
| Flow L/min                | 30L/min x 2 - 60L/min x1 or 40L/min x 2 - 80L/min x1 |
| Pressure Bar              | from 140Bar to max 210Bar                            |
| Engine                    | Vangard 35 Hp - gasoline                             |
| Starter                   | electric                                             |
| Acceleration              | manual                                               |
| Hoses Length std          | 7 mt                                                 |



# GASOLINE



# POWER PACKS

## SCORPION D

20 L/min @ 100 Bar - (12 L/min @ 160 Bar) Engine Diesel Kohler 7hp - Recoil starter



- *Stainless steel frame with large folding handles*

- *All parts suspended on anti-vibration shock mounts*

- *Quick couplers installed on impact free swivel fitting*

- *High efficiency oil cooling system with centrifugal fan*



**SCORPION D** is a hydraulic power pack with 7,5 Hp Diesel engine - recoil start, thanks to the compact dimension can be easily lifted and transported. The machine is available in two configurations of hydraulic power: - 20 L/min @ 100 Bar adjustable - 12 L/min @ 160 Bar, adjustable. Agile and robust **SCORPION D** is ideal in general hydraulic applications and in all works where are needed the hydraulic characteristics of the machine.

| TECHNICAL CHARACTERISTICS | SCORPION D                 |
|---------------------------|----------------------------|
| Weight (kg)               | 70                         |
| Dimension LxWxH (cm)      | 70x50x57                   |
| Flow L/min                | 20@100 Bar (12@ 160 Bar)   |
| Pressure Bar              | 100-160                    |
| Engine                    | Yanmar 7,5 HP - diesel     |
| Starter                   | recoil                     |
| Acceleration              | manual                     |
| Hoses Length std          | 7 mt                       |
| Gear pump                 | low noise helicoidal gears |



# DIESEL

## RAPTOR D

30 L/min @ 140 Bar - Engine Diesel Kohler 10.5hp - Recoil and electric starter

- *Stainless steel frame with large folding handles*
- *Central lifting hook*
- *All parts suspended on anti-vibration shock mounts*
- *Quick couplers installed on impact free swivel fitting*
- *High efficiency oil cooling system with double radiator*



**RAPTOR D** is an hydraulic power pack with 10,5 Hp Diesel engine with electric and recoil start, it can supply an hydraulic flow from 20 to 30 L/min @ 130 Bar adjustable by the manual accelerator. **RAPTOR D** is an ideal power pack for long lasting application thanks the high efficiency oil cooling system and Diesel engine.

| TECHNICAL CHARACTERISTICS | RAPTOR D                              |
|---------------------------|---------------------------------------|
| Weight (kg)               | 90                                    |
| Dimension LxWxH (cm)      | 85x60x65                              |
| Flow L/min                | 20-30                                 |
| Pressure Bar              | 130 (or 200 Bar@ 20 L/min)            |
| Engine                    | Kohler Diesel engine 10.5hp - Stage V |
| Starter                   | recoil - electric                     |
| Acceleration              | manual                                |
| Hoses Length std          | 7 mt                                  |



# POWER PACKS

## DINAMO D

DINAMO single circuit 15 - 40 L/min @ 150 Bar - DINAMO double circuit 20 + 20 or 40 L/min@ 150 Bar  
Engine Kohler 21hp diesel - electric starter



- Available with single or double circuit
- Extremely robust chassis with stainless steel superstructure with two large folding handles
- Large central wheels to facilitate movements on any ground
- Two Parallel oil coolers with centrifugal fan
- Manual engine acceleration allows to control the engine rpm and hydraulic flow
- Central lifting hook

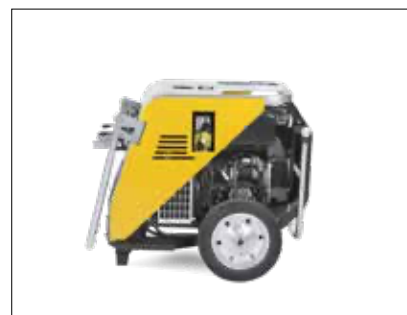
**DINAMO** is an hydraulic power pack for heavy and prolonged application, configured with Diesel engine 21 Hp Kohler twin-cylinder engine, the machine is also available in two hydraulic configurations:

**DINAMO SINGLE** model with single circuit with only one pump, with flow 40 L / min @ 150 Bar

**DINAMO DUAL** model with two pumps and two parallel hydraulic circuits that can be connected in a single output, which adds the two flow rates, to provide:

- Two separate flow rates of 20 L / min - 150 Bar each.
- A range from 30 to 40 L / min @ 150 Bar

| TECHNICAL CHARACTERISTICS | DINAMO single                        | DINAMO dual                          |
|---------------------------|--------------------------------------|--------------------------------------|
| Weight dry (kg)           | 227                                  | 236                                  |
| Weight with liquids (kg)  | 250                                  | 259                                  |
| Dimension LxWxH (cm)      | 100x65x85                            | 100x65x85                            |
| Wheels diameter (mm)      | 380                                  | 380                                  |
| Engine                    | Hatz 2G4 40H - 202 A - 10.0 - diesel | Hatz 2G4 40H - 202 A - 10.0 - diesel |
| Starter                   | electric                             | electric                             |
| Power                     | 21 HP - 2 cylinders                  | 21 HP - 2 cylinders                  |
| Fuel tank capacity        | 6 litres                             | 6 litres                             |
| Flow L/min                | 15-40                                | 20+20 or 40                          |
| Pressure Bar              | 150 - 200 adjustable                 | 150 - 200 adjustable                 |
| Oil cooling               | 2 radiators in parallel              | 2 radiators in parallel              |
| Quick couplers            | 1/2 flush face                       | 1/2 flush face                       |
| Oil tank capacity         | 17 litres                            | 17 litres                            |
| Gear pump                 | low noise helicoidal gears           | low noise helicoidal gears           |



# DIESEL

## NITRO D

### Special Power Pack

- Available with single or double circuit
- Skid frame with central lifting hook
- 50 L oil tank capacity
- All parts suspended on anti-vibration shock mounts
- Diesel engine water cooled Stage V/Tier 4
- 30 L Diesel tank capacity

#### DIESEL ENGINE 25 HP KUBOTA

The Hydraulic Valve Diversion On / Off Valves Are Electrically Operated By A 12 V Solenoid



**NITRO** is a heavy duty hydraulic power unit with a Diesel engine 25hp Kubota water cooled, designed to operate high-flow hydraulic tools and equipment. **NITRO** can be delivered with one or two parallel circuits or with different hydraulic power according to customer specifications, example: 50 L/ min @ 140 Bar, or 38 L/ min @ 200 Bar or two flows: one 20 L/min and the second one 30 L/min that can be added having one single circuit of 50 L/min. The large capacity oil tank and the double radiator cooling system guarantee ideal hydraulic conditions even in the more demanding applications. The typical use is to drive heavy duty hydraulic equipment like drilling equipment, big water pumps, powering underwater tools and in all applications where is needed a professional hydraulic supply.

**In the double circuit model the two flows and the pump size, can be changed according to application of customer specifications**

| TECHNICAL CHARACTERISTICS | NITRO D single                     | NITRO D dual                       |
|---------------------------|------------------------------------|------------------------------------|
| Weight (kg)               | 210                                | 210                                |
| Dimension LxWxH (cm)      | 95x60x65                           | 95x60x65                           |
| Flow L/min                | 20-60                              | On customer specifications         |
| Pressure Bar              | 100-210                            | 100-210                            |
| Engine                    | Kubota 25 HP water cooled - diesel | Kubota 25 HP water cooled - diesel |
| Starter                   | electric                           | electric                           |
| Acceleration              | manual                             | manual                             |
| Oil tank                  | 50 litres                          | 50 litres                          |
| Quick coupler             | 3/4" flush face                    | 3/4" flush face                    |
| Cylinder                  | 3                                  | 3                                  |
| Fuel tank capacity        | 30 litres                          | 30 litres                          |

# POWER PACKS

## LOTUS

Special Power Pack with Diesel engine Kohler 56hp

POWER PACK FOR HEAVY DUTY APPLICATION



control panel

**LOTUS** is a professional power pack with Diesel engine designed for heavy duty prolonged operations. The engines are available in different emission compliance in according with the application area regulation. LOTUS HPU is available in different configurations of hydraulic power output and number of hydraulic circuits, the configuration must be specified at the order. Standard configurations of the diesel engine with KOHLER engine 56hp, water cooled

### Possible hydraulic configurations:

- One hydraulic circuit with one gear pump for a single use
- Two hydraulic circuits with two gear pumps for two parallel uses or for one single use when joining the two flows
- Piston pump (for pressures above 210 bar)
- Additional of remote control with different configurations

Hydraulic characteristics *(depending on engine type, hydraulic circuit type and application)*

**Maximum flow in single circuit: 120 L/min - Maximum flow of the two separate circuits: 60 L/min every circuit**

**Maximum Pressure with standard gear pumps: 210 Bar - Maximum Pressure with piston pump: 350 Bar**

# DIESEL

## LOTUS

Special Power Pack with Diesel engine Kohler 56Hp

POWER PACK FOR HEAVY DUTY APPLICATION

- *Adjustable flow rate via motor speed control*
- *Real-time adjustable pressures*
- *Bottom base with safety catch tank in case of accidental spillage of liquids*
- *Extremely robust chassis in square tubes and sheet metal with forklifting-base*
- *High capacity battery with marine type detachment for prolonged storage*
- *Hydraulic oil tank with a large capacity of 140 L*
- *Available with piston pump for pressure over 210 Bar (310 Bar Max)*



| TECHNICAL CHARACTERISTICS | LOTUS                                                  |
|---------------------------|--------------------------------------------------------|
| Weight dry (kg)           | 1000                                                   |
| Dimension LxWxH (cm)      | 160x90x130                                             |
| Flow L/min                | 60 - 150                                               |
| Pressure Bar              | max. 210 Bar with gear pump - 350 Bar with piston pump |
| Engine                    | Kohler 56hp Diesel - Stage V (standard version)        |
| Starting                  | electric                                               |
| Acceleration              | manual                                                 |
| Quick couplers            | 3/4" flush face                                        |
| Oil tank                  | 120 litres                                             |
| Fuel tank capacity        | 80 litres                                              |

# POWER PACKS

## SUPER RAPTOR E

30 - 42 L/min @ 210 Bar Engine triphase 400 V - 50 Hz power 9-11-15 Kw



- *Stainless steel frame with large frontal and lateral folding handles*
- *Central lifting hook*
- *All parts suspended on anti-vibration shock mounts*
- *Quick couplers installed on impact free swivel fitting*
- *High efficiency oil cooling system with double radiator*

Professional power pack with tri phase electric motor designed to power hydraulic tools and various hydraulic equipment, the motor power can be supplied with power 9 - 11 - 15 KW and the hydraulic power output can be with flow up to 42 L/min and pressures up to 210 Bar according to customer specifications. **SUPER RAPTOR E** is fabricated for heavy duty operations, the high efficiency oil cooling system with exclusive double radiator guarantees the best performances even in the hottest climate and with the more demanding applications. The electric control panel has all the needed defences to guarantee the operator safety and the machine integrity in all conditions. Thanks to the compact dimension and to the three bendable handles the operations of loading and movements are easy and swif.

The power of the electric motor depends on the hydraulic power required in pressure and flow, the values must be specified at the order.

| TECHNICAL CHARACTERISTICS | SUPER RAPTOR E                                    |
|---------------------------|---------------------------------------------------|
| Weight (kg)               | 120                                               |
| Dimension LxWxH (cm)      | 85x60x65                                          |
| Flow L/min (with pump)    | 26 (pump 9 cc) - 32(pump 11 cc) - 40 (pump 14 cc) |
| Pressure Bar              | 140-210                                           |
| Engine                    | treephase 400V - 50 Hz                            |
| Motor power               | 9-11-15-Kw                                        |
| Hoses Length std          | 7 mt                                              |



# ELECTRIC

## ENERGA

20-30-40 L/min - 210 Bar Engine triphase 11 Kw - 400 V - 50 Hz with INVERTER

- *Inverter with control motor speed and flow or proportionally or three step 20-30-40 L/min*

- *Stainless steel frame with large frontal and lateral folding handles*

- *Central lifting hook*

- *All parts suspended on anti-vibration shock mounts*

- *Quick couplers installed on impact free swivel fitting*

- *High efficiency oil cooling system with double radiator*

MULTI FLOW POWER PACK WITH INVERTER

ELECTRIC POWER PACK WITH INVERTER



Electro-hydraulic control unit equipped with **INVERTER** which allows to change the three-phase motor speed and to have three hydraulic flows of 20 - 30 - 40 L / min immediately available and selectable by means of an electric 3-position control. **ENERGA** is manufactured for heavy and prolonged uses, the exclusive double radiator oil cooling system ensures trouble-free operation even with the most demanding equipment. The electrical panel is equipped with all the necessary defenses to protect the safety of the operators and the integrity of the machine. Thanks to the compact dimensions and the comfortable handles the movement and the loading operations are easy and fast.

**ENERGA** can be supplied also with INVERTER with progressive variation of motor speed, so not with the three fixed flow/speed like the standard aversion

| TECHNICAL CHARACTERISTICS | ENERGA                 |
|---------------------------|------------------------|
| Weight (kg)               | 120                    |
| Dimension LxWxH (cm)      | 85x60x65               |
| Flow L/min                | 20-30-40               |
| Pressure Bar              | 140-210                |
| Engine                    | treephase 400V - 50 Hz |
| Electric power            | 11 Kw                  |
| Hoses Length std          | 7 mt                   |



# POWER PACKS

## ASPID GETZ

Hydraulic power 12 L/min @ 140 Bar



*The electronic remote control with the start/stop function of the combustion engine of the power pack with acceleration control of the engine revolutions is available on request and at a higher price.*

Hydraulic power pack designed to operate hydraulic equipment such as winches, capstans, rotary organs or double-acting cylinders that must be controlled remotely, the machine is equipped with a modern wireless remote control electronic system that, by means of a portable console, controls the hydraulic functions of the machine such as:

- **FOR HYDRAULIC MOTORS**

the functions of clockwise/stop/anti clockwise rotation with speed control up to a distance of 80 meters from the control unit.

- **FOR HYDRAULIC CYLINDERS**

the functions press/hold/retract with speed control up to a distance of 80 meters from the power pack.

In the event of a failure of the electronic remote control, the power pack allows normal use with manual control only hydraulic, can therefore be used with the same functions regardless of remote control, the pressure gauge indicates the load value allowing an accurate adjustment of the movements. The weight and the dimensions contained at the maximum guarantee excellent portability and mobility both on board the vehicles and on the ground. **ASPID GETZ** has an accurate build quality, is manufactured with the best materials and components to guarantee a long and trouble-free service.

| TECHNICAL CHARACTERISTICS | ASPID GETZ                                  |
|---------------------------|---------------------------------------------|
| Weight (kg)               | 62                                          |
| Dimension LxWxH (cm)      | 70x50x57                                    |
| Flow L/min                | 12@140 Bar (together)                       |
| Pressure Bar              | 140 max@12 L/m                              |
| Engine                    | Briggs & Stratton 6HP - gasoline            |
| Starter                   | recoil - electric                           |
| Acceleration              | manual                                      |
| Hoses Length std          | 10 mt - $\varnothing$ 3/8" - tread 3/8" BSP |
| Oil tank capacity         | 7 litres                                    |
| Quick couplers            | 3/8" a flush face                           |

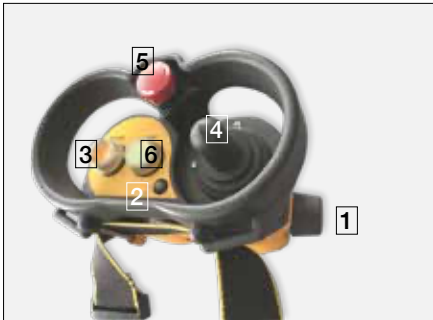


# SPECIAL VERSION

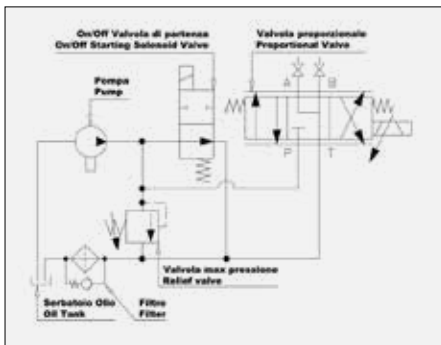
## ASPID GETZ

Hydraulic power packs for special applications

HYDRAULIC CONTROL UNIT FOR MANEUVERING AND CONTROL OF ROTATING EQUIPMENT OR DOUBLE EFFECT CYLINDERS



The **remote control** function and therefore the relative kit can also be installed on larger DOA control units to provide higher hydraulic pressure and flow capacities according to customer specifications.



- 1 General ON/OFF starting knob**  
the same function as the key of a car, in the on position, allows all the functions to be started.
- 2 Led light with green light**  
indicates that the appliance is on and ready to use.
- 3 Emergency safety button**  
like "dead man" type, therefore to be kept pressed during operation, as soon as it is released, everything goes off (only the electronic part is turned off).
- 4 Joystick for control of movements**  
it controls the 3 functions of clockwise /stop/anticlockwise rotation, it is of a proportional type, thus allowing the regulation of the rotation speed.
- 5 Emergency stop button**  
if pressed, immediately cancels all the electronic parts functions, then press button 6 to reactivate.



# POWER PACKS

## HYDRAULIC GROUP FOR TRAINS

Hydraulic group for maneuver the upper deck of car transporting trains



**Hydraulic group** formed by a small power pack and a hydraulic motor with proportional control valve studied for the mechanical rotation of organs that are normally rotated manually by hands. The group is used for lifting and lowering the upper deck of trains that transport automobiles, use is ideal for avoiding prolonged and tiring manual operations, it is enough to insert the tool spindle in the organ to turn and acting control valve is possible to rotate rapidly and without fatigue the more hard and heavy devices. The tool control valve is proportional type and allow rotation in two senses with speed control. The strong rotation force do not has to be controlled by the operator but is contrasted by the adjustable arm that assure the operator safety. Powerful and practical the group eliminates fatigue and down time increasing the productivity.

| TECHNICAL CHARACTERISTICS | POWER PACKS                        |
|---------------------------|------------------------------------|
| Weight (kg)               | 98                                 |
| Dimension LxWxH (cm)      | 130x50x90                          |
| Engine                    | Briggs & Stratton 14 Hp - gasoline |
| Starter                   | recoil - electric                  |
| Hydraulic power           | 20 L/min @ 180 Bar                 |

| TECHNICAL CHARACTERISTICS | DH 80             |
|---------------------------|-------------------|
| Weight (kg)               | 12                |
| Torqued/Speed max         | 35 Nm/120 rpm/min |
| Hoses Lenght              | 10 mt             |

# SPECIAL VERSION

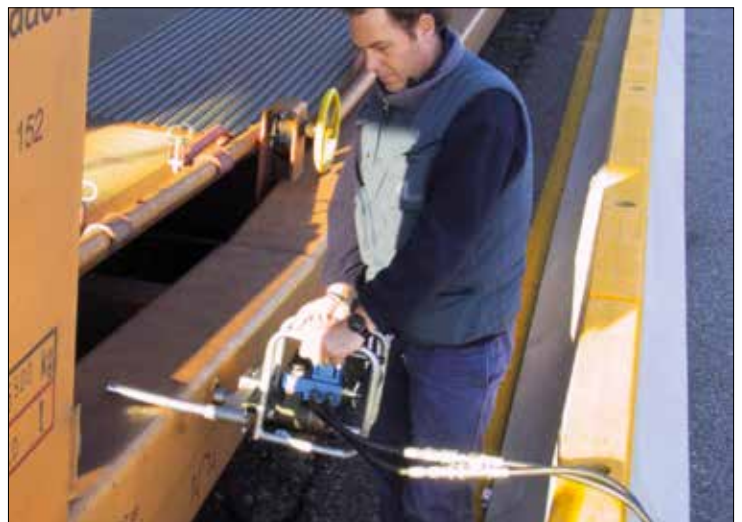
## HYDRAULIC GROUP FOR TRAINS

Hydraulic group for maneuver the upper deck of car transporting trains

- Robust frame in stainless steel with balanced handle to ease the transportability
- The upper plastic tray allow to conveniently put down tool after use
- High quality power pack with oil cooler to allow prolonged operations in tropical climates
- Large diameter wheels ease movements on rough terrains and ballast
- Tool can be used at a distance of 30 metres from the pack
- Hydraulic motor torque is adjustable



**DH 80**



# HYDRAUL



# IC TOOLS



# BREAKER

## KD 12

Breaker respects all safety CE norms and limits on noise, vibration level and defence against accidental starting

kg 14



Available in  
underwater version



- *Anti vibration handle according to the newest CE regulations allows operators comfort and safety*
- *Can work at flow 20 or 30 L/min*
- *Only one dynamic seal and few moving parts to assure maximum reliability and a unbeatable operative longevity*
- *High tolerance to back pressure allows to use it with very long oil hoses*

**KD12** hydraulic breaker Kg14 with “D type” anti vibration handle, the tool is “operator friendly” and its use is ideal in general demolition works either in vertical and horizontal position against walls. **KD12** gives the best compromise between high power and manoeuvrability, can be powered by power packs or by the hydraulic circuit of mini excavators, trucks or other machines with sufficient hydraulic circuit. The hydraulic functioning assures quietness, productivity, fuel economy united with the excellent transportability of the group power pack/ breaker eliminating the typical problems of transport and movements of the bulky air compressors and pneumatic breakers.

| TECHNICAL CHARACTERISTICS | KD 12                               |
|---------------------------|-------------------------------------|
| Weight (kg)               | 14                                  |
| Dimension LxP (cm)        | 60x19                               |
| Tool bitz size mm         | 22x82 std (7/8"x3 <sup>3/4</sup> ") |
| Flow L/min                | 20-30                               |
| Ideal flow L/min          | 20                                  |
| Pressure Bar              | 140                                 |
| Blow frequency            | 1300-1500                           |
| Impact energy             | 5,5 KGM                             |
| Handle type               | “D” anti vibration                  |



# BREAKER

## KV 16

Breaker respects all safety CE norms and limits on noise, vibration level and defence against accidental starting

- *Anti vibration handles according to the newest CE regulations allow operators comfort and safety*
- *Can work at flow 20 or 30 L/min*
- *Only one dynamic seal and few moving parts to assure maximum reliability and a unbeatable operative longevity*
- *High tolerance to back pressure allows to use it with very long oil hoses*
- *No vulnerable plastic parts -Slim tool profile without side rods or sharp angles assures maximum ergonomics*
- *Available with special percussion heads configured to dig in electric earthing pickets or small poles*



**kg 16**

**KV16** hydraulic breaker Kg16 with “T type” anti vibration handles suspended on springs, it is “operator friendly” and its use is ideal in general demolition works of concrete and asphalt cutting. **KV16** gives the best compromise between high power and manoeuvrability, can be powered by power packs or by the hydraulic circuit of mini excavators, trucks or other machines with sufficient hydraulic circuit. The hydraulic functioning assures quietness, productivity, fuel economy united with the excellent transportability of the group power pack/breaker eliminating the typical problems of transport and movements of the bulky air compressors and pneumatic breakers.

| TECHNICAL CHARACTERISTICS | KV 16                               |
|---------------------------|-------------------------------------|
| Weight (kg)               | 16                                  |
| Dimension LxP (cm)        | 60x45                               |
| Tool bitz size mm         | 22x82 std (7/8"x3 <sup>3/4</sup> ") |
| Flow L/min                | 20-30                               |
| Ideal flow L/min          | 20                                  |
| Pressure Bar              | 140                                 |
| Blow frequency            | 1300-1500                           |
| Impact energy             | 5,5 KGM                             |
| Handle type               | “T” anti vibration                  |



# BREAKER

## KV 19

Breaker respects all safety CE norms and limits on noise, vibration level and defence against accidental starting



**KV19** hydraulic breaker Kg19 with “T type” anti vibration handles suspended on springs , it is “operator friendly” and its use is ideal in general demolition works of concrete and asphalt cutting. KV19 gives the best compromise between high power and manoeuvrability, can be powered by power packs or by the hydraulic circuit of mini excavators, trucks or other machines with sufficient hydraulic circuit. The hydraulic functioning assures quietness , productivity , fuel economy united with the excellent transportability of the group power pack/ breaker eliminating the typical problems of transport and movements of the bulky air compressors and pneumatic breakers.

| TECHNICAL CHARACTERISTICS | KV 19                  |
|---------------------------|------------------------|
| Weight (kg)               | 20                     |
| Dimension LxWxH (cm)      | 72x45                  |
| Tool bit size mm          | 25x108 std (1"x4 1/4") |
| Flow L/min                | 20-30                  |
| Ideal flow L/min          | 20                     |
| Pressure Bar              | 150                    |
| Blow frequency            | 1300-1500              |
| Impact energy             | 7 KGM                  |
| Handle type               | “T” anti vibration     |

- *Anti vibration handle according to the newest CE regulations allows operators comfort and safety*
- *Can work at flow 20 or 30 L/min (to be specified at the order)*
- *Only one dynamic seal and few moving parts to assure maximum reliability and a unbeatable operative longevity*
- *High tolerance to back pressure allows to use tool with very long oil hoses*
- *No vulnerable plastic parts*
- *Slim tool profile without side rods or sharp angles assures maximum ergonomics*
- *Available special percussion heads configured to dig in electric earthing pickets or small poles*



# HAMMER DRILL

## HD 13

- The high frequency and impact force of the axial percussion on the bits ensures maximum drilling speed
- Few moving parts constantly lubricated by oil assure reliability and a unbeatable operative longevity
- Drill bits with SDS PLUS connection can also be used with the appropriate adapter
- The universal std bit attachment SDS MAX allows to use a big range of drilling bits and accessories of commercial type

### \* IMPORTANT ON THE FLOW

An higher flow than 25 l/min generates an increase in back pressure which causes the tool to malfunction

**HD13** is an hydraulic hammer drill for concrete, masonry and natural stone. Powerful and light, its use is ideal where performance, maneuverability and safety are required. The bit attachment is of the universal standard type SDS MAX that allows to use a wide range of bits and accessories available anywhere. The hydraulic operation ensures power, long operating life, low noise and vibrations, minimum maintenance, robustness, implicit safety and impossibility electric shock failure, elimination of all the typical problems associated with the use of electric and pneumatic tools. **HD13** is irreplaceable for submarine use in drilling and tiling work.

| TECHNICAL CHARACTERISTICS | HD 13    |
|---------------------------|----------|
| Weight (kg)               | 13       |
| Dimension LxP (cm)        | 50x19    |
| Spindle type              | SDS MAX  |
| Tool bitz size mm         | 5 - 50mm |
| Flow L/min                | 20-25*   |
| Ideal flow L/min          | 20       |
| Pressure Bar              | 140      |
| Blow frequency            | 1200     |
| Rotation RPM              | 900      |
| Distance center hole/wall | 55 mm    |



Available in  
underwater version



# DISC SAW

## DC 14 - DC 16 - DC 18

Disc diameter 350 - 400 mm

The three models have the same mechanics, weights, dimensions and appearance, they differ only for 3 different displacements of the hydraulic motor and therefore each for different requests of hydraulic flow to which correspond proper numbers of revolutions



Available in  
underwater version

- Exclusive high performance DOA hydraulic motor with high performance even with high cutting load
- Direct transmission without vulnerable belts
- Saw is installable on the saw cart SC40 to become in few seconds a practical asphalt cutter
- Water is given to disc from center and without vulnerable external water hoses to give ideal cooling
- Lever to arrest water supply to disc
- Few moving parts, constantly lubricated, ensure reliability and unbeatable longevity

Hydraulic disc saw with 400 mm disc capacity, can mount "black" abrasive discs for metal or diamond discs for cutting reinforced concrete and building materials in general. Ergonomic and lightweight has an unbeatable weight / power ratio, hydraulic operation is a guarantee of maximum safety, no electricity therefore impossible to cause electric shocks, no fumes and emissions, minimum noise, vibration and maintenance, reliability, long service life and possibility of work in any position or condition and can also be used in submarine work.

### THE 3 MODELS REFERED TO THE FLOW REQUIREMENTS

DC16 is available in three sub models with different characteristics of hydraulic flow, so with different motor size and performance.

- DC14 ideal flow 20 L/min, can power discs with max diameter 350 mm (14")
- DC16 ideal flow 30 L/min, can power discs with diameter 400 mm (16") and 350 mm (16")
- DC18 ideal flow 38 L/min, can power discs with diameter 400 mm (16") and 350 mm (16")

| TECHNICAL CHARACTERISTICS | DC 14                                            | DC 16                                                         | DC 18                                                         |
|---------------------------|--------------------------------------------------|---------------------------------------------------------------|---------------------------------------------------------------|
| Weight (kg)               | 8,5                                              | 8,5                                                           | 8,5                                                           |
| Dimension LxWxH (cm)      | 70x40                                            | 70x40                                                         | 70x40                                                         |
| Flow L/min                | 20                                               | 30                                                            | 40                                                            |
| Ideal flow L/min          | 20 - can power discs with max diam. 350 mm (14") | 30 - can power discs with max diam. 400 mm (16") 350 mm (16") | 38 - can power discs with max diam. 400 mm (16") 350 mm (16") |
| Pressure Bar              | 140-180                                          | 140-180                                                       | 140-180                                                       |
| Disc diameter (mm)        | 350                                              | 400                                                           | 400                                                           |
| Shaft dimension (mm)      | 25,4 (1")                                        | 25,4 (1")                                                     | 25,4 (1")                                                     |
| Cutting capacity (mm)     | 120                                              | 145                                                           | 145                                                           |
| Speed RPM max             | 4300 spm                                         | 4300 spm                                                      | 4300 spm                                                      |
| Rotation                  | CW clockwise                                     | CW clockwise                                                  | CW clockwise                                                  |



# GRINDER

## AS 23

Disc diameter 230 mm (9")

- *Unique, extremely robust DOA hydraulic motor with high efficiency, keeps the speed even with great effort on the disc*

- *Possibility of operating at 20 or 30 L/min of hydraulic flow (to be specified on order)*

- *A few moving parts, constantly lubricated, ensure reliability and unbeatable longevity of operation*

- *High counter pressure tolerance allows the use of long pipes*

- *Auxiliary handle and adjustable casing cover*



Available in  
underwater version



**AS23** is a compact angular grinde/cut of saw, the hydraulic functioning assures power, quietness, long operative life and maximum safety thanks to the implicit impossibility of causing electric shocks. For these characteristics **AS23** is irreplaceable in external works with presence of water, in the maintenance of utilities networks, in metal brushing for preparation of welding , in works inside the excavation and in the UNDERWATER WORKS. Mounts standard discs with diameter 23 cm or metal brushes for scrubbing or cleaning ship hulls and propellers from marine formations. With cutting disc **AS23** becomes a precise cut off saw which manoeuvrability allows complete rotation around large pipes easing the cut in narrow spaces.

| TECHNICAL CHARACTERISTICS    | AS 23                              |
|------------------------------|------------------------------------|
| Weight (kg)                  | 5                                  |
| Dimension LxPxH (cm)         | 32x25                              |
| Flow L/min                   | 20-30 (specification at the order) |
| Pressure Bar                 | 140-180                            |
| Disc mm                      | 230 diameter - hole mm 22-23       |
| Disc speed Land model        | 5500@ 30 L/min                     |
| Disc speed underwater model  | 2200@ 30 L/min                     |
| Disc cutting capacity as saw | 50 mm                              |



GRINDING



CUTTING capacity 50 mm

# PISTOL CORE DRILL

## AK 46 S - AK 46 G

AK 46 S - core drill for holes  $\varnothing$  30 - 100 mm – AK 46 G - core drill for holes  $\varnothing$  80 - 160 mm

**Irreplaceable in underwater works!**



Available in  
underwater version

- Safety valve that automatically cuts rotation in case of block of the core beat.
- ON/OFF trigger with "lock on" button for use of the tool on drill rigs
- Equipped with level gauge to show vertical/horizontal linearity of holes
- Construction in Ergal and stainless steel to guarantee lightness and durability
- Exclusive adjustable back handle allows feed pressure on the tool pushing with chest or knee
- Long side handle to allow secure rotation contrast

**AK46** is a hydraulic core drill designed for manual use or for use with drill rigs. The tool is available in two configurations:

• **AK46 S** for holes from  $\varnothing$  30 a 100 mm • **AK46 G** for holes from  $\varnothing$  80 a 160 mm.

The hydraulic functioning and the superior technical characteristics assure a series of advantages not obtainable from traditional electric core drill tools: - Impossibility to cause electric shocks, can work even in complete water immersion - Absence of vibration and noise - Unbeatable ratio weight/power/dimension - Long operative life and minimal maintenance needs - Hydraulic motor cannot be damaged even in case of prolonged block of rotation or overload (*condition that will damage electric tools*) **AK46** is in many conditions the unique alternative to traditional electric tools, it is ideal in the maintenance of gas, water, sewers networks, irreplaceable when is needed to creates a pipe passage through walls of historical buildings that cannot undergo to vibrations or in the use inside trenches with high water pres. *Irreplaceable in underwater works!*

| TECHNICAL CHARACTERISTICS               | AK 46 S                                                | AK 46 G                                                |
|-----------------------------------------|--------------------------------------------------------|--------------------------------------------------------|
| Weight (kg)                             | 8 (without back handle)                                | 8 (without back handle)                                |
| Dimension LxPxH (cm)                    | 40x9x32                                                | 40x9x32                                                |
| Cut capacity (mm)                       | 30-100                                                 | 80-160                                                 |
| Flow L/min min-max                      | 20-30                                                  | 20-30                                                  |
| N° speed@20 L/min                       | 600                                                    | 400                                                    |
| N° speed@30 L/min                       | 1500                                                   | 1000                                                   |
| Pressure Bar min-max                    | 140-180                                                | 140-180                                                |
| Distance crown flush with the wall (mm) | 45                                                     | 45                                                     |
| Attachment of core bit                  | External 1-1 / 4 "BSP Male<br>Internal 1/2 "BSP Female | External 1-1 / 4 "BSP Male<br>Internal 1/2 "BSP Female |



**AK46** installed on drill rig



# CORE DRILL

## AK 50

Hydraulic core drill for holes up to ø 700 mm



Available in  
underwater version



**AK50** is an hydraulic core drilling tool for heavy duty drilling works for holes with diameter up to 70 cm. The tool is manufactured with the best components and materials to ensure high performance and maximum reliability. To have more speed and drilling capacity on the tool, you can install six different hydraulic motors, orbital type, which means high efficiency, zero maintenance and a long and trouble-free service life. The 20 cc motor for small diameters is gear type.



*The list price of complete tool includes: the tool body one motor/valve group to be chosen by customer depending on holes diameter. Other valve motor units available at more price.*



*Detail of the motor/valve group is available in 6 variants of displacement and number of revolutions.*

| TECHNICAL CHARACTERISTICS | AK 50                                                  |
|---------------------------|--------------------------------------------------------|
| Weight (kg)               | 13                                                     |
| Dimension LxH (cm)        | 54x22                                                  |
| Attachment of core bit    | 1-1/4" (internal 1/2" BSP)                             |
| Flow L/min                | 30-38                                                  |
| Pressure Bar              | 120-200                                                |
| Motor power               | 9KW (@38L/min 140 Bar)                                 |
| Speed min/max             | 90-1750 rpm                                            |
| Attachment of core bit    | External 1-1 / 4 "BSP Male<br>Internal 1/2 "BSP Female |

| MOTOR TYPE<br>cubic<br>centimetres | AK 50<br>speed/diameter chart - hydraulic motors range |                               |
|------------------------------------|--------------------------------------------------------|-------------------------------|
|                                    | speed @ 30 l/min<br>hole ø mm                          | speed @ 38 l/min<br>hole ø mm |
| 20 cc - code k0283                 | 1400 rpm-ø 40-100 hole                                 | 1750 rpm-ø 30-60 hole         |
| 50 cc - code k0116                 | 600 rpm-ø 70-120 hole                                  | 760 rpm-ø 50-100hole          |
| 100 cc - code k0114                | 300 rpm-ø 130-250 hole                                 | 380 rpm-ø 130-180 hole        |
| 160 cc - code k0112                | 180 rpm-ø 300-360 hole                                 | 220 rpm-ø 250-310 hole        |
| 200 cc - code k0118                | 150 rpm-ø 400-600 hole                                 | 190 rpm-ø 250-400 hole        |
| 315 cc - code k0119                | 90 rpm-ø 500-700 hole                                  | 120 rpm-ø 450-600 hole        |

The drill rig is not supplied with the tool



# VENTILATORS

## VENTILATORS - ASPIRATORS

• HYDRAULIC • GASOLINE • ELECTRIC - MOTORS



### CENTRIFUGAL VENTILATORS - ASPIRATORS

DOA produces a complete range of ventilators/aspirators powerful, effective and easily transportable, their use of ventilation and safety in closed space is mandatory and prescribed by law before, during and after works in environment that can be dangerous, toxic, flammable or explosive like tunnels, basements, manholes, silos, holds, tanks, petrochemical plants, wells, fuel stations, warehouses, mines, laboratories, confined space excavations, sewers ducts, gas distribution networks etc. The exclusive DOA system to fix the hoses on tools allows a quick installation on the mouth by simply "button up" the hose edge on pins only by hands without needing screw drivers or belts/clamp. The volute and air fan can be washed up without problems as are in polyethylene, maintenance necessity is minimal. Very robust thanks to the construction in polyethylene and stainless steel are invulnerable to impacts rust water and from the corrosion of the majority of acids and chemical agents.

### NOTES ON SAFETY IN THE USE OF THE ASPIRATORS

- For maximum safety, never use tool in aspiration if it is not known the nature of the fumes or if cannot exclude that the fumes to be sucked could be flammable or explosive, in such a case or in doubt tool must only be used as POSITIVE ventilator blowing into the ambient ventilating and making a sort of "air wash" of the ambient
- Aspiration and then centrifuging / pressurizing explosive gases makes them even more explosive in the event of a spark ignition.
- The hydraulic models, single-phase or electric single-phase, can only suck toxic or poisonous (but not explosive) fumes such as exhaust gas, welding fumes, CO<sub>2</sub>, powders etc.
- It occurred many times that in the attempt to help a victim stunned from gas also the rescuers remain victim from the gas as it was not realized the motive of the accident and the toxicity of the ambient.
- Some gas and even the lack of oxygen are odorless so can be fatal without giving suspects or signs of danger.



Ventilation of manholes and closed ambients



Aspiration in manholes and closed ambients



Direct ventilation without air hose



Suction of welding fumes in indoor works



Aspiration and ventilation in a precise point



The fans can be positioned directly in the closed environment

# ASPIRATORS

## AV 28 H

Hydraulic ventilator/aspirator

### HYDRAULIC

- High power thanks to the possibility given by hydraulic motors to give a high speed to the fan
- Hydraulic motor has no exhaust so can be placed directly in closed ambient
- Absence of electricity makes it implicitly safe, insensible to rain and high water presence
- Quiet, no vibration, minimal maintenance need
- Can be used in more positions or in the normal upward position or inclined on side or back to direct or suck air flow directly from manholes, sewers covers, hatches or volute and the air fan can be washed without problems
- Can be powered from hydraulic power packs or from the hydraulic circuit of trucks, mini excavators, etc.
- Hydraulic motor is equipped with safety valve to protect against excess of flow of hydraulic flow / fan speed
- Stainless steel frame with foldable handle and lifting hook for convenient handling
- The air hoses can be mounted on the inlets in just a few moments and without the need for tools thanks to the exclusive quick eyelet system



Ventilation positive and negative

| TECHNICAL CHARACTERISTICS | AV 28 H - HYDRAULIC                      |
|---------------------------|------------------------------------------|
| Weight (kg)               | 21                                       |
| Dimension LxPxH (cm)      | 60x57x74                                 |
| Mouth diameter            | 200 mm (8")                              |
| Oil flow L/min            | 20-40                                    |
| Oil pressure Bar          | 100-210                                  |
| Volute and fan            | polyethylene                             |
| Air flow                  | 2100 m <sup>3</sup> x h @ 2900 fan speed |
| Inclination               | yes, in 3 positions                      |

**Practical centrifugal ventilator/aspirator with hydraulic motor.** Powerful and easy transportable its use is mandatory by law for putting in safety conditions an ambient before and during operations in closed environment that could be dangerous or explosive like tunnels, basements, manholes, silos, large tanks, holds, wells, petrochemical plants, gas stations, mines, laboratories, narrow trenches, sewers ducts, gas distribution networks, etc... Extremely light can be inclined and used in more positions, can be used with or without the flexible hose, flexible hoses are needed when the air has to be transported IN or FROM a precise point, without hoses can be used as positive ventilator blower to make a powerful and direct "air wall". The volute and impeller are in robust polyethylene and polypropylene materials invulnerable to water, rust and corrosion, the frame is in indestructible stainless steel

# VENTILATORS

## AV 28 S

Ventilator/aspiratos gasoline engine

### GASOLINE



Ventilation positive and negative



- *High power, can be used everywhere in autonomy*
- *Stainless steel frame with foldable handle and lifting hook for convenient handling*
- *The air hoses can be mounted on the inlets in just a few moments and without the need for tools thanks to the exclusive quick eyelet system*
- *The volute and the air fan can be washed without problems*

**Practical centrifugal ventilator/aspirator with gasoline engine.** Powerful and easy transportable its use is mandatory by law for putting in safety conditions an ambient before and during operations in closed environment that could be dangerous or explosive like tunnels, basements, manholes, silos, large tanks, holds, wells, petrochemical plants, gas stations, mines, laboratories, narrow trenches, sewers ducts, gas distribution networks, etc...Extremely light can be used with or without the flexible hose, flexible hoses are needed when the air has to be transported IN or FROM a precise point, without hoses can be used as positive ventilator blower to make a powerful and direct "air wall". The volute and impeller are in robust polyetilene and polypropylene materials invulnerable to water, rust and corrosion, the frame is in indestructible stainless steel.

| TECHNICAL CHARACTERISTICS | AV 28 S - GASOLINE ENGINE               |
|---------------------------|-----------------------------------------|
| Weight (kg)               | 21                                      |
| Dimension LxPxH (cm)      | 60x57x74                                |
| Mouth diameter            | 200 mm (8")                             |
| Engine power              | 3 Hp Honda                              |
| Volute and fan            | polyetilene                             |
| Air flow                  | 2100 m <sup>3</sup> xh @ 2900 fan turns |
| Inclination               | no                                      |

Typical complete set



# ASPIRATORS

## AV 28 E

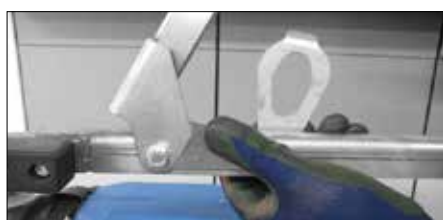
Ventilator/aspiratos electric

- Can be power by common home electric sockets or from small generators
- Electric motor has no exhaust so can be placed directly in closed ambient
- Quiet, no vibration, minimal maintenance need
- Can be used in many positions or in the normal upward position or inclined on side or back to direct or suck air flow directly from manholes, sewers covers, hatches, etc.
- Stainless steel frame with foldable handle and lifting hook for convenient handling
- The air hoses can be mounted on the inlets in just a few moments and without the need for tools thanks to the exclusive quick eyelet system

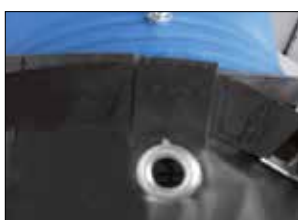
### ELECTRIC



Ventilation positive and negative



Folding handle with locking system



Detail of the quick installation system of the hoses on the tool mouth

| TECHNICAL CHARACTERISTICS | AV 28 E - ELECTRIC                      |
|---------------------------|-----------------------------------------|
| Weight (kg)               | 21                                      |
| Dimension LxPxH (cm)      | 60x57x74                                |
| Mouth diameter            | 200 mm (8")                             |
| Engine power              | 1,5 KW - 230 V 50 Hz                    |
| ON/OFF Swicht             | on the motor with emergency button      |
| Volute and fan            | polyetilene                             |
| Air flow                  | 2100 m <sup>3</sup> x h @2900 fan speed |
| Inclination               | yes, in 3 positions                     |

**Practical centrifugal ventilator/aspirator with 230 V electric motor.**

Powerful and easy transportable its use is mandatory by law for putting in safety conditions an ambient before and during operations in closed environment that could be dangerous or explosive like tunnels, basements, manholes, silos, large tanks, holds, wells, petrochemical plants, gas stations, mines, laboratories, narrow trenches, sewers ducts, gas distribution networks, ecc. Extremely light can be inclined and used in more positions, can be used with or without the flexible hose, flexible hoses are needed when the air has to be transported IN or FROM a precise point, without hoses can be used as positive ventilator blower to make a powerful and direct "air wall". The volute and impeller are in robust polyetilene and polypropylene materials invulnerable to water, rust and corrosion, the frame is in indestructible stainless steel

# PIPE MAINTENANCE

## AH 15

Hydraulic motor for driving pipe drilling/hot tapping equipment

*The tool performs in just 4 minutes and without effort the operation that manually performed requires at least 20*



**AH15 is a tool designed for the rotation in the two senses of pipe drilling machines for hot tapping connections** operations normally necessary in the maintenance of gas and water networks. For its exclusive characteristics **AH15** can be used also for the rotation of other rotary devices like: gates irrigation canals, lifting/lowering of rail road devices, rotation of reducers, ecc. The tool features a “twist type” control handle to turn clock wise and counter clock wise, ON/OFF control is proportional so can increase or reduce speed in both rotations modes, the torque force and the rotation speed can be adjusted by acting on the two valve that control these functions. The handle with spring return assures total safety, the rotation immediately stops when the operator releases the handle (“dead man” action) **AH15 eliminates the fatigue and increases the productivity.**

| TECHNICAL CHARACTERISTICS | AH 15                 |
|---------------------------|-----------------------|
| Weight (kg)               | 5,5                   |
| Dimension LxH (cm)        | 18x56                 |
| Square drive size         | 12 mm - 1/2"          |
| Pressure                  | 140 Bar               |
| Rotation speed            | 10-150 rpm adjustable |
| Torque force              | 55 Nm adjustable      |
| Rotation                  | CW - CCW              |



*AH15 used in operating opening/closing the gates of irrigation canals*



*AH15 in action on typical pipe drilling/hot tapping equipment*

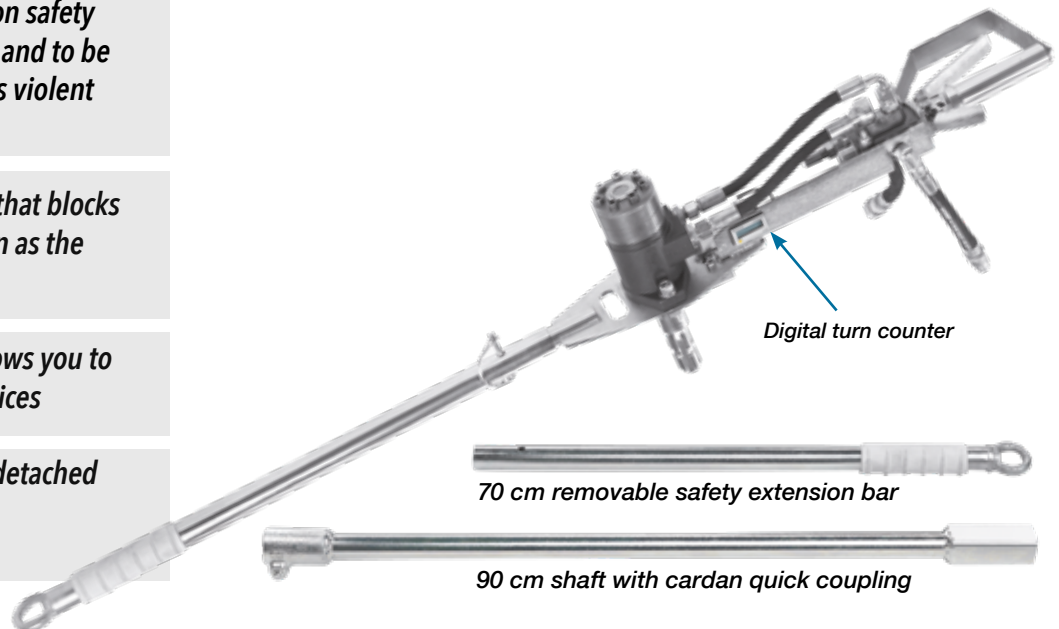


# PIPE MAINTENANCE

## VO 31

For the maneuver of gates of water networks

- *Equipped with an anti-reaction safety bar for use with one operator and to be fixed to a fixed point, it avoids violent backlash from rotation stall*
- *"Dead man" rotation control that blocks rotation and function as soon as the command is left*
- *High rotational force that allows you to rotate even very blocked devices*
- *The 90 cm long shaft can be detached and connected thanks to the quick coupling*



Powerful and modern hydraulic tool designed for the maneuver of water valves of aqueducts, the use eliminates tiring and long manual operations. The long handle and the clockwise/anticlockwise activation control guarantee an excellent control of the operations in all conditions, it can be used by one or two operators and operated by both hydraulic power packs and by the circuits of vans and mini excavators, its use guarantees safety and a great saving of time. Hydraulic operation means no noise, low vibration, robustness, long operating life, minimal maintenance requirements, implied impossibility of electric shock injuries. It can also be used for the mechanical rotation of other rotating devices such as machines for pipes and handling, gates of irrigation channels, various crank mechanisms. **VO31** increases productivity and simplifies operations, it can not be missing in the equipment of modernly equipped teams.

| TECHNICAL CHARACTERISTICS | VO 31                        |
|---------------------------|------------------------------|
| Weight (kg)               | 16                           |
| Dimension LxPxH (cm)      | 95x33x21                     |
| Rotation                  | CW - CCW                     |
| N° turns a 20 L/min       | 0 - 70 rpm                   |
| N° turns a 30 L/min       | 0 - 100 rpm                  |
| Turns counter             | yes - with digital display   |
| Torque                    | 400 Nm@140 Bar               |
| Torque regulation         | yes - with valve on the tool |
| Turns regulation          | yes - can adjust speed /revs |
| Flow L/min                | 15-40                        |
| Pressure Bar              | 140-180                      |



# PIPE MAINTENANCE

## RS 80

Hydraulic reciprocating saw for metal and pe pipes



- *No electricity means total security*

- *Quick and precise cuts*

- *Blades of different lengths for different materials are available for wet and dry cutting*

- *The reciprocating frequency of cut is adjustable in real-time without stopping the cut*

- *Cut pipes up to 16" with free blade without mounting the "arc guide"*

- *An accessory "arc guide" for long blades and pipe cutting over 16" is available*

**RS80** is a powerful hydraulic reciprocating saw designed to cut pipes made of steel, cast iron, cement and PE with diameter up to 600 mm quickly and safely. It can also cut sections, girders and metal manufactured products in linear configuration. The hydraulic operation ensures low level of noise, no vibration, long using period, minimal maintenance, invulnerability to water and mud, and implicit impossibility of danger of electrical shock. Accurate and reliable tool significantly increases productivity and efficiency in the maintenance of gas and water networks.

| TECHNICAL CHARACTERISTICS | RS 80                      |
|---------------------------|----------------------------|
| Weight (kg)               | 9                          |
| Dimension LxH (cm)        | 50x19                      |
| Cutting capacity          | 600 mm                     |
| Blade stroke              | 25 mm                      |
| Cut frequency             | 10 -200 for min adjustable |
| Flow                      | 20-30 L/min                |
| Pressure                  | 100-200 Bar                |



# PIPE MAINTENANCE

## RS 80

Hydraulic reciprocating saw for metal and pe pipes



*Reciprocating saw*



*Locking group included  
in tool price*



*Blade guide arch*

### BLADES

| Blade length | Material                   | Cutting capacity | Code    |
|--------------|----------------------------|------------------|---------|
| 300 mm       | steel-cast iron-non-ferros | 170 mm           | A671121 |
| 400 mm       | steel-cast iron-non-ferros | 260 mm           | A671122 |
| 500 mm       | steel-cast iron-non-ferros | 350 mm           | A671123 |
| 600 mm       | steel-cast iron-non-ferros | 440 mm           | A671124 |
| 800 mm       | steel-cast iron-non-ferros | 650 mm           | A671125 |
| 900 mm       | steel-cast iron-non-ferros | 750 mm           | A671126 |
| 200 mm       | steel-cast iron-non-ferros | 120 mm           | A671127 |
| 400 mm       | rigid plastic              | 260 mm           | A671128 |
| 800 mm       | rigid plastic              | 700 mm           | A671129 |
| 300 mm       | Polyetilene                | 170 mm           | A671130 |
| 530 mm       | Cement                     | 450 mm           | A671131 |

### DIAMOND BLADES FOR ONLY DRY CUTTING

| Blade length | Material           | Cutting capacity | Code    |
|--------------|--------------------|------------------|---------|
| 320 mm       | Polyetilene-Cement | 200 mm           | A671132 |
| 490 mm       | Polyetilene-Cement | 320 mm           | A671133 |
| 800 mm       | Polyetilene-Cement | 700 mm           | A671134 |

# PIPE MAINTENANCE

## ST 10

Pipe compressing tool for pe pipe up to 67 mm

**LIFE GUARANTEED!**



**ST10** is manual pipe squeezing tool designed for compressing polyethylene pipes, of gas and water, with diameters up to mm 63. The vise is manufactured for guaranteeing the maximum of practicality and safety. The sliding lever assures easy and effortless operations in any position, the upper jaw features two rotating plates that have the function of gauges for avoiding excess of compression and material yielding. The five position indicator, allows instant selection of the gauge depending on pipe diameters. The lower jaw is self-positioning and is secured to the tool by a steel cord that prevents losses. **Fast, robust, easy to use, the tool does not require maintenance.**

- Five rotating spacers anti stress of fibres immediately selectable

- Completely galvanised for protection against rust

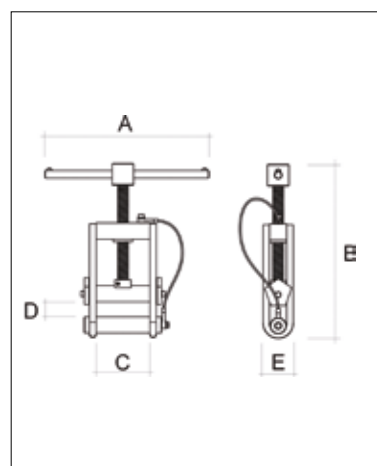
- Bronze threaded bush avoids seizing and do not need lubrication

- The product configuration allows a contrast rod to be inserted between the stems to hold the jaws in position at 90° on the tube

- Lower bar with positioning grooves and fastened with flexible chain against losses

- The central panel has a 12 MA threaded hole that allows the insertion of a long screw (of any type) to create a contrast and hold the jaws to 90°

**Detail of calibers anti-yielding**



| TECHNICAL CHARACTERISTICS | ST 10                |
|---------------------------|----------------------|
| Weight (kg)               | 4,7                  |
| Pipe type                 | PE diameter 16-63 mm |
| Material                  | steel - bronze       |
| Dimension (mm)            |                      |
| A                         | 300                  |
| B                         | 390 open - 297 close |
| C                         | 100                  |
| D                         | 100 mouth open       |
| E                         | 54                   |

# PIPE MAINTENANCE

## PC 105

Pipe compressing equipment for the arrest of flow on pipes in steel and polyetilene

- The small dimension allows to operate in restricted spaces
- Fabrication with high resistance steel
- The set can be used to press the pipe end before welding "squeeze off" operation



*Pumping operation for pipe compressing*



*The cylinder/cross bar group can be detached from the clamp to leave it in compressed mode, the compression operation can be repeated in another point of the pipe with another clamp.*



**PC105** is a powerful hydraulic equipment designed for rapidly pressing pipes, in steel and polyetilene, with outside diameters up to 80 mm and wall thickness up to for 3 mm on steel pipes, and diameter 100 mm thickness 20 mm for polyetilene pipes. **NOTE** - the equipment can compress only ductile metals or plastics - **NO CAST IRON - NO FRAGILE PIPES**, the compression performances can vary depending on material tensile strength and upon the ratio diameter / thickness. The equipment is irreplaceable when in emergency situations, the flow coming from a damaged pipe must be arrested. The use is practical and simple; the main tool is an hydraulic cylinder that is screwed into a cross bar. A clamp formed by two rugged jaws sliding on threaded rods is installed around the pipe to press and fastened to the cylinder/cross bar assembly by the two rods, this group is now a strong hydraulic vice that the operator can power by an hydraulic hand pump. The cylinder will compress the pipe till the contact of the apposite walls. Once the wanted effect of flow arrest is achieved will be sufficient to hold in position the jaws, blocking the nuts, the pipe will remain locked and the flow arrested. The cross bar and the cylinder assembly can be removed from the clamp which can be left in position as long as necessary. The operation can be repeated with other clamps, in another point of pipe. Ideal for gas and water companies - military and naval sectors, rescue and civil protection, refineries, chemical and petrochemical industries, pipe lines, depurators, power stations, under water works.

| TECHNICAL CHARACTERISTICS | PC 105                                 |
|---------------------------|----------------------------------------|
| Weight (kg)               | 8                                      |
| Compressable steel pipes  | max 80 mm - thickness 4 mm             |
| Compressable pe pipes     | max 100 mm - thickness 20 mm           |
| Cylinder stroke           | 100 mm                                 |
| Cross bar width           | 125 mm                                 |
| Hose lenght std           | mt 4                                   |
| Pressure                  | 700 Bar                                |
| Hand pump type            | manual with flexible hose and couplers |

# PIPE MAINTENANCE

## PC 49

### Hydraulic emergency steel pipe compressing equipment



- *Power, and intervention speed, simple use*

- *Allows compression operations with the pipe flush to the wall*

- *Wide mouth aperture allows to engage pipes coated with tape protection*

- *Top quality foot pump assures easy operation without effort*

- *Operative longevity, no maintenance, tool is built in high tensile steel*

Tool designed for the emergency rapid compression of steel gas pipes damaged by car accidents or impacts on ascending pipes on walls and buildings. Operators know well the damages and dangers caused by vehicles that after accidents or wrong maneuvers against walls can tear off and cut the pipes, these damages require immediate emergency intervention to stop the gas leak and the imaginable risks. The high compression capacity gives maximum chocking, sometime till the total arrest of the pressurized leak. The retaining clamp (patented) can hold the tool in compressing positioning allowing the operator to stay at safe distance acting on pedal pump. The equipment is an hydraulic set composed of: pipe compressing tool pedal type, high pressure pump, 5 mt flexible high pressure hydraulic hose with swiveling action on the cylinder, retaining clamp metal box.

| TECHNICAL CHARACTERISTICS   | PC 49                        |
|-----------------------------|------------------------------|
| Tool Weight (kg)            | 16                           |
| Weight complete set (kg)    | 42                           |
| Maximum steel pipe diameter | max Ø 65 mm - Thickness 3 mm |
| Mouth opening               | 67 mm                        |
| Hydraulic pump              | pedal operated 700 Bar       |
| Oil hose length             | 5 mt                         |



# PIPE MAINTENANCE

**PC 49**

Hydraulic emergency steel pipe compressing equipment

*The equipment is a synthesis of effectiveness, practicality and function, a high quality product designed for safety of the city and of the staff that cannot miss in the equipment of modernly equipped teams*



*Allows the operator to operate remote in a safe position*



# PIPE MAINTENANCE

## ST 225

Hydraulic pipe compressing tool for polyethylene

**The complete set  
ST225**



- *Robust hydraulic double effect cylinder with long rod guide designed to avoid deformation of the rod when in total extension (typical defect of the traditional tools with bottle type jacks)*

- *High quality hydraulic pump, separated pump means stability, tool remain firm on the pipe when pumping so there is not the typical rocking movement possible with the traditional tools, separated give also the possibility to work with tool in any position*

- *Supplied with two series of spacers for SDR 11 and SDR17 needed to avoid over compression of pipe*

- *The effort needed to pump is minimal thanks to the pump type and to the large cylinder*

- *The high power guarantees total compression also on larger pipe diameters and also in winter when the polymer is very hard*

- *Supplied in strong wood box with locks for the care and transport*

| TECHNICAL CHARACTERISTICS | ST 225                                          |
|---------------------------|-------------------------------------------------|
| Weight (kg)               | 55 without lower jaw                            |
| Pipe compressing capacity | PE pipe from mm 90 to 225 (3"-9")               |
| Pe pipes type             | SDR 11 -SDR 17                                  |
| Flexible oil hose         | diameter 1/4" - SAE 100 R2                      |
| Oil hose length           | 3 mt with flat face quick couplings             |
| Hydraulic pump type       | Double acting with flattening/opening inversion |
| Pump weight (kg)          | 18                                              |

# PIPE MAINTENANCE

## ST 225

### Hydraulic emergency steel pipe compressing equipment

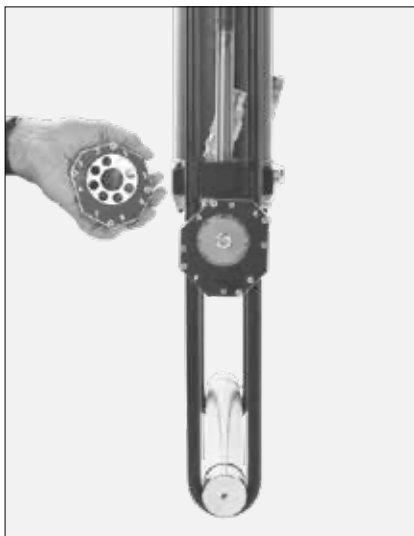
**ST225** is a pipe compressing tool designed for stopping the flow in polyethylene pipes for gas and water with diameters up to 225 mm (9"), it has no typical limitations of similar tools that for the compression use common hydraulic jacks "bottle". **ST225** allows a slow reopening of the jaws at the end of the compressing, the tube can be damaged more in the re-opening phase than in the compressing phase because the rapid re-opening, typical of the bottle jacks, causes the so-called "entanglement" phenomenon of the polyethylene fibers, the too rapid reopening does not allow the polymer molecules to return in order in the original position (entanglement) causing rupture breakers in the tube that often result in a break, **ST225** avoids this possibility. Thanks to the robustness and its exclusive features ensures the best results and can not be missing in the equipment of modernly equipped teams.



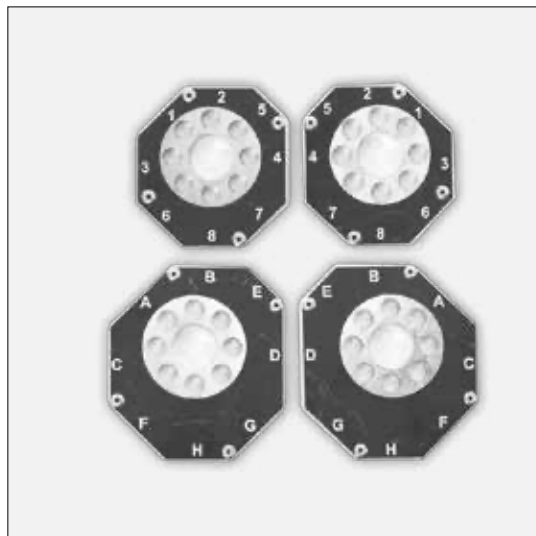
*Long "T" wrench for the mechanical safety blocking of the pipe when in total compressio*



*Hydraulic pump and flexible hoses*



*Rotating calibers/specers to avoid over compression of the pipe and consequential PE fibres damages*



# WATER



# PUMPS



# WATER PUMPS

## THE ADVANTAGE OF DOA HYDRAULIC PUMP



**GREAT POWER WEIGHT AND DIMENSION RATIO**



**COMPACT AND EASY TO CARRY**



**OEM AND SPECIAL APPLICATIONS**



**CAN RUN DRY WITHOUT DAMAGE**



**CAN PUMP HIGH TEMPERATURE LIQUIDS**



**NO ELECTRICITY**



**MINIMAL MAINTENANCE NEEDED**



**CAN PUMP AGGRESSIVE FLAMMABLE  
AND PETROLEUM BASED LIQUIDS**

# WATER PUMPS

## SP 20

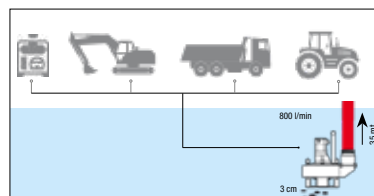
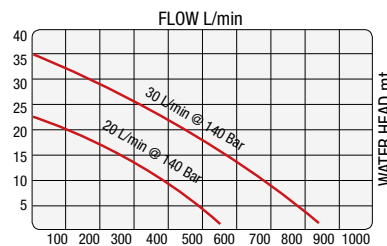
### Hydraulic Trash Pump

mouth 2"

- Extremely robust and reliable
- Simplified construction that ensures reliability, long lasting life and minimal maintenance requirements
- Can run dry without damage
- The maximum circumference of only 22 cm allows easy insertion even in narrow manholes and very small excavation sites
- It can be operated by small power packs or by the hydraulic circuit of mini excavators, tractors, etc
- Hydraulic motor equipped with a one-way valve that prevents accidental oil leaks if connected in the wrong hydraulic port
- Available with "Viton" seals for pumping high temperature fluids



Also available in configuration



| TECHNICAL CHARACTERISTICS | SP 20              |
|---------------------------|--------------------|
| Discharge mouth           | 2" bsp female      |
| Dimension LxH (mm)        | 220x300            |
| Weight                    | 8 KG               |
| Flow                      | 800 l/min          |
| Water head                | 35 mt max          |
| Pumpable solids           | 3 cm               |
| Impeller material         | chromium cast iron |
| Pump body material        | stainless steel    |
| Impeller type             | open centrifugal   |
| Motor type                | gears group 2      |
| Oil flow                  | 15 - 30 l/min      |
| Ideal flow                | 20 l/min           |
| Oil pressure              | 100 - 210 bar      |
| Backpressure              | 17 bar max         |

**SP20** is a compact and powerful immersion pump designed for handling trash, muddy waters and for heavy fluids in general. Compact and light provides a flow rate up to 800 L/min and maximum water head of 35 meters. Can pump solid particles with dimensions up to 3 cm. It can run dry without damage. Compact and safe, the **SP20** is ideal for emergency services, for the maintenance of urban gas and water networks, the field operators can work with their feet immersed in the same water in which the pump is operating, it is also available in the **ATEX variant for pumping works in explosive environments**.

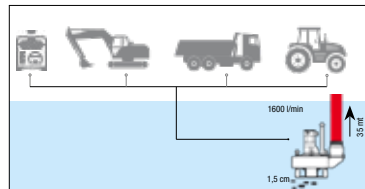
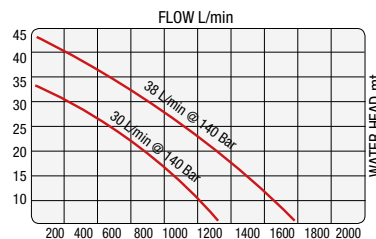


# WATER PUMPS

## WP 25

Hydraulic Pumps For Clear And Moderatly Muddy Waters

mouth 3"



**WP 25** is a professional hydraulic submersible pump designed for pumping clear water, excavation water or moderately muddy fluids, it can pump solid particles in suspension with dimensions up to 2 cm. High performances: 1.600 L/min flow rate and water head up to 45 meters. The hydraulic pumping operation guaranteed maximum safety for the field operators that can work with their feet immersed in the same water in which the pump is operating. **WP 25** is ideal for maintenance work on urban networks, pumping large volumes of water, flooding, civil protection and forest fire protection services and road works in general.



- *Extremely robust and reliable, minimal maintenance requirements, can run dry without damaging it*
- *The pump housing can be open in few minutes without tools for inspection of the impeller and the pumping chamber*
- *Can be operated by small power packs or by the hydraulic circuit of mini excavators, vans, tractors, work vehicles, etc*
- *The perforated round base allows pumping in just few cm deep of water, ideal in basements and tunnel floors*
- *Hydraulic motor equipped with a one-way valve that prevents accidental oil leaks in the wrong port*
- *Available with "Viton" seals for pumping of high temperature fluids*

| TECHNICAL CHARACTERISTICS | WP 25               |
|---------------------------|---------------------|
| Discharge mouth           | 3" bsp female       |
| Dimension LxH (mm)        | 300x300             |
| Weight                    | 13 KG               |
| Flow                      | 1600 l/min          |
| Water head                | 45 mt max           |
| Pumpable solids           | 1,5 cm              |
| Impeller type             | open centrifugal    |
| Pump body material        | hard aluminum alloy |
| Impeller material         | chromium cast iron  |
| Motor type                | gears group 2       |
| Oil flow                  | 15 - 38 l/min       |
| Ideal flow                | 30 l/min            |
| Oil pressure              | 100 - 210 bar       |
| Backpressure              | 17 bar max          |

# WATER PUMPS

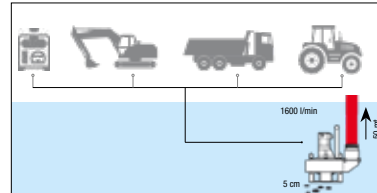
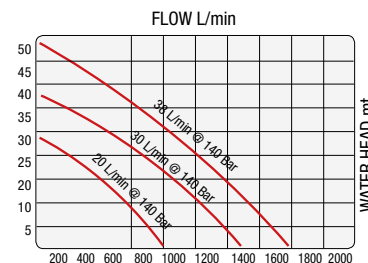
## SP 35

### Hydraulic Trash Pump

- *Extremely robust and reliable, minimum maintenance required, can run dry without damage indefinitely*
- *The pump housing can be open in few minutes without tools, for inspection of the impeller and the pumping chamber*
- *Can be operated by small power packs or by the hydraulic circuit of mini excavators, vans, tractors, work vehicles etc.*
- *Hydraulic motor equipped with a one-way valve that prevents accidental oil leaks if connected in the wrong hydraulic port*
- *Available with "Viton" hydraulic motor seals for pumping high-temperature fluids*
- *The single-channel impeller (without vanes) has a minimal mechanical effect on the fluid this limits the formation of emulsions and foams*
- *Important feature in pumping spills of oils and oil products from "skimmers" into the sea and lakes*



Also available in configuration



| TECHNICAL CHARACTERISTICS | SP 35             |
|---------------------------|-------------------|
| Discharge mouth           | 3" bsp female     |
| Dimension LxH (mm)        | 350x370           |
| Weight                    | 17 KG             |
| Flow                      | 1600 l/min        |
| Water head                | 50 mt max         |
| Pumpable solids           | 5 cm              |
| Impeller type             | mono canal closed |
| Impeller material         | stainless steel   |
| Pump body material        | stainless steel   |
| Motor type                | gears group 2     |
| Oil flow                  | 15 - 38 l/min     |
| Ideal flow                | 30 l/min          |
| Oil pressure              | 100 - 210 bar     |
| Back pressure             | 17 bar max        |

**SP35** is a 3 hydraulic waste pump for clear and heavily loaded liquids, impeller and shell are made in stainless steel. The pump produce high performance thanks to hydraulic power and the exclusive closed single channel impeller which allows very high efficiency with flow rates up to 1600 L / min, head up to 50 meters and the possibility of pumping dense or very muddy water with suspended solid bodies up to 50 mm in diameter. **SP35** is ideal for maintenance work urban networks, which pump very dense liquids, against floods in civil protection services and road works in general.



# WATER PUMPS

## SP 45

### Hydraulic Trash Pump

mouth 4"



Also available  
in configuration



- *Extremely robust and reliable, minimum maintenance required, can run dry without damage indefinitely*

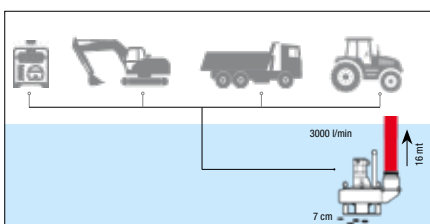
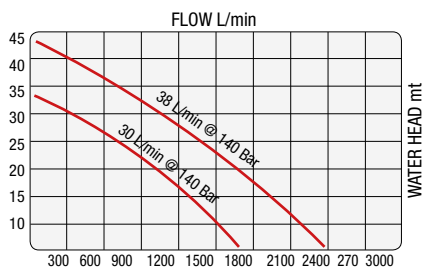
- *The pump housing can be open in few minutes without tools for inspection of the impeller and the pumping chamber*

- *Can be operated by small power pack or by the hydraulic circuit mini excavators, vans, tractors, work vehicles etc.*

- *Hydraulic motor equipped with a one-way valve that prevents accidental oil leaks if connected in the wrong hydraulic port*

- *Available with "Viton" seals for pumping high-temperature fluids*

- *With the accessory "Dredging Kit" mounted on the volute base, act as a floor vacuum for directly suction of sand, light mud and solid melted suspended material*



# WATER PUMPS

## SP 45

### Hydraulic Trash Pump

mouth 4"

**SP45** is a professional 4" trash pump designed for pumping trash or very loaded fluids with a concentration of sludge in the liquid up to 20%, it can pump suspended solid bodies with dimensions of 70 mm. The performances are very high: flow rate up to 3000 L/min and a water head up to 16 meters. The pump body is constructed in stainless steel with polyurethane polyether shielding plates, materials that ensure unbeatable qualities of sturdiness, resistance to abrasion to impact and rust. Hydraulic function is an implicit guarantee of safety due to the impossibility of causing electric shock injuries. It can run dry without damage indefinitely. It is ideal for the pumping of large volumes of clear and dirty water, for the maintenance of underground gas and water networks, against flooding and natural disasters in the disposal of biological pits and manhole dewatering.



| TECHNICAL CHARACTERISTICS | SP 45              |
|---------------------------|--------------------|
| Discharge mouth           | 4" bsp female      |
| Dimension LxH (mm)        | 400x500            |
| Weight                    | 28 KG              |
| Flow                      | 3000 l/min         |
| Water head                | 16 mt max          |
| Pumpable solids           | 7 cm               |
| Impeller type             | open centrifugal   |
| Impeller material         | chromium cast iron |
| Pump body material        | stainless steel    |
| Motor type                | gears group 2      |
| Oil flow                  | 30 - 40 l/min      |
| Ideal flow                | 38 l/min           |
| Oil pressure              | 140 - 210 bar      |
| Backpressure              | 17 bar max         |



# WATER PUMPS

## SP 55

### Heavy Duty Hydraulic Trash Pump

mouth 5"

*Ideal response  
for emergencies  
from floods*



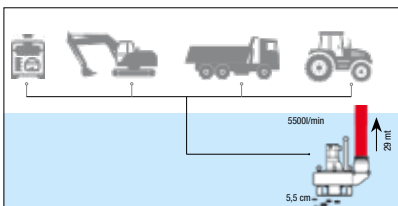
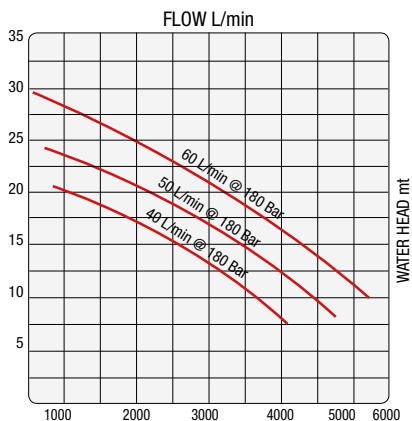
- *Pump everything! The shearing impeller can shred and pump branches, algae, rags, ropes, bags and solid objects with dimensions up to 55 mm*

- *High performance, weight/size/power ratio unmatched by other types of pump - long working life, minimal maintenance*

- *No electricity means safety, it can be used while standing in the water close to the pump (a situation forbidden by law with electro pumps)*

- *The piston engine guarantees maximum efficiency and the possibility of running the pump dry without damaging it*

- *Possibility to install the SG6 mixer accessory whit the function of liquified liquids that are very dense or dry into more fluid liquids and therefore pumpable*



**Shearing impeller**



*Possibility to install the SG4 mixer accessory which makes it possible to make liquids that are very dense or with a dry surface more fluid and therefore pumpable.*

# WATER PUMPS

## SP 55

### Heavy Duty Hydraulic Trash Pump

mouth 5"

**SP55** is a powerful submersible trash pump with hydraulic piston motor and a 5" discharge port, ideal for pumping large volumes of clear and dirty water, in emergency interventions in civil protection, in the military sector and in the movement of large volumes of charged fluids. The maximum capacity is 5500 L / min with water head up to 29 meters - pumpable solids 5.5 cm. The particular impeller with cutting knives allows cutting and pumping also of suspended solids such as leaves, branches, algae, ropes or even large linear fibers. The hydraulic powering offers a long series of safety, operational and performance advantages that can not be obtained from traditional priming or electropumps. A typical application is that the pump is mounted on the excavator arm instead of the bucket, transforms the excavators into very powerful water scoops.



| TECHNICAL CHARACTERISTICS | SP 55                     |
|---------------------------|---------------------------|
| Discharge mouth           | 5" bsp female UNI 70      |
| Dimension LxH (mm)        | 500x800                   |
| Weight                    | 95 KG                     |
| Flow                      | 5500 l/min                |
| Water head                | 29 mt max                 |
| Pumpable solids           | 5,5 cm                    |
| Impeller type             | open with shearing effect |
| Impeller material         | high tensile steel        |
| Pump body material        | cast iron spheroidal      |
| Motor type                | piston type               |
| Oil flow                  | 50 - 100 l/min            |
| Ideal flow                | 75 l/min                  |
| Oil pressure              | 150 - 350 bar             |
| Back pressure             | 17 bar max                |
| Oil house dimension       | 3/4" minimum size         |



# WATER PUMPS

## SP 65

### Heavy Duty Hydraulic Trash Pump

mouth 6"

*Ideal response  
for emergencies  
from floods*



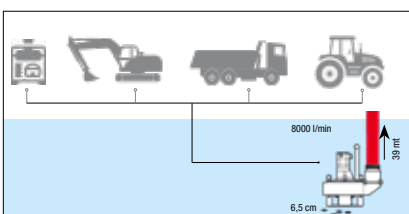
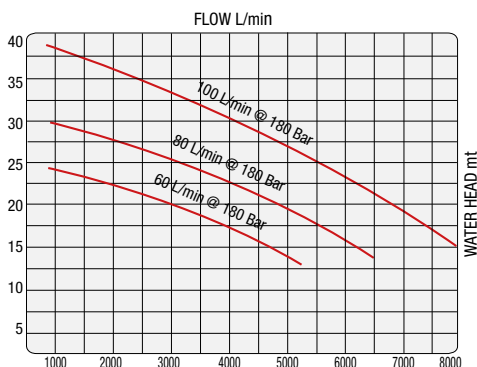
- Pump everything! The shearing impeller can shred and pump branches, algae, rags, ropes, bags and solid objects with dimensions up to 55 mm

- High performance, weight/size/power ratio unmatched by other types of pump - long working life, minimal maintenance

- No electricity means safety, it can be used while standing in the water close to the pump (a situation forbidden by law with electro pumps)

- The piston engine guarantees maximum efficiency and the possibility of running the pump dry without damaging it

- Possibility to install the SG6 mixer accessory with the function of liquified liquids that are very dense or dry into more fluid liquids and therefore pumpable



**Shearing impeller**



Possibility to install the SG4 mixer accessory which makes it possible to make liquids that are very dense or with a dry surface more fluid and therefore pumpable.

# WATER PUMPS

## SP 65

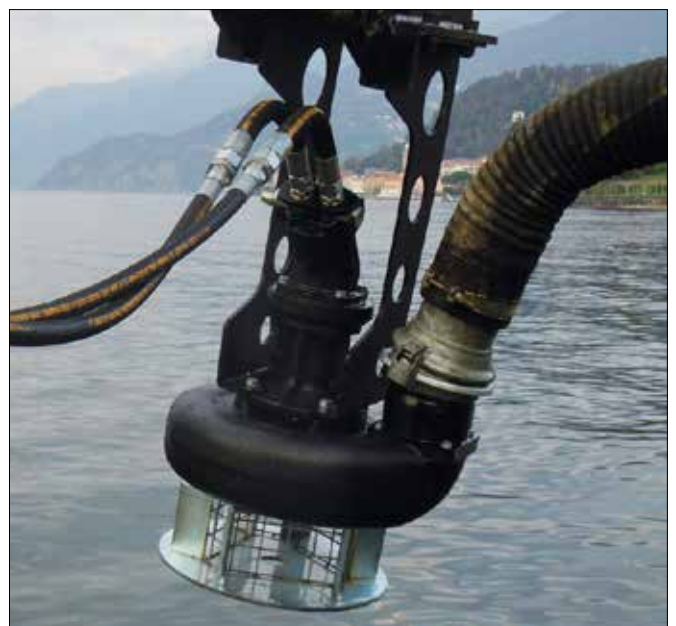
### Heavy Duty Hydraulic Trash Pump

mouth 6"

**SP65** is a powerful immersion trash pump for sewage water with hydraulic piston motor and 6" discharge port, ideal for pumping clear and dirty water, in emergency interventions in civil protection, in the military sector and in the movement of large volumes of charged fluids. The maximum capacity is 8000 L / min with head up to 39 meters - pumpable solids 6.5 cm. The particular impeller with cutting knives allows cutting and pumping also suspended solids such as leaves, branches, rags, algae, ropes or even large linear fibers. The hydraulic operation offers a long series of safety, operational and performance advantages that can not be obtained from traditional priming or electropump pumps. A typical application is that of the pump mounted on the excavator arms instead of the bucket, transforms the excavators into very powerful water scoops.



| TECHNICAL CHARACTERISTICS | SP 65                     |
|---------------------------|---------------------------|
| Discharge mouth           | 6" bsp female             |
| Dimension LxH (mm)        | 550x900                   |
| Weight                    | 135 KG                    |
| Flow                      | 8000 l/min                |
| Water head                | 39 mt max                 |
| Pumpable solids           | 6,5 cm                    |
| Impeller type             | open with shearing effect |
| Impeller material         | high tensile steel        |
| Pump body material        | cast iron spheroidal      |
| Motor type                | piston type               |
| Oil flow                  | 60 - 100 l/min            |
| Ideal flow                | 80 l/min                  |
| Oil pressure              | 150 - 350 bar             |
| Back pressure             | 17 bar max                |
| Oil house dimension       | 3/4" minimum size         |



# WATER PUMPS

## SG4 - SG 6

Fluid mixer accessory for pumps SP45 - SP55 - SP65

MIXING VALVE FOR FLUIDIFICATION OF VERY LOADED WATER

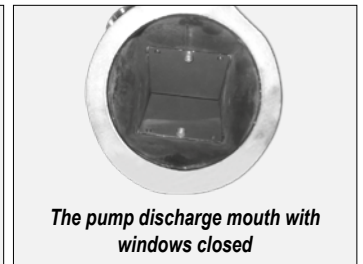


SG4 installed on SP45 pump

| TECHNICAL CHARACTERISTICS | SG 4                     | SG 6                     |
|---------------------------|--------------------------|--------------------------|
| Weight dry                | 9 KG                     | 12 KG                    |
| Fluid passage             | equivalent at 4"         | equivalent at 5"         |
| Total high                | 370 mm                   | 420 mm                   |
| Type cylinder             | double effect            | double effect            |
| Hydraulic valve           | 3 positions, open center | 3 positions, open center |



3 position control valve for opening/closing windows of pump



The pump discharge mouth with windows closed

**Slurry Gate** is an accessory for trash pumps DOA models SP45 - SP55 - SP65. The accessory is a set formed by:

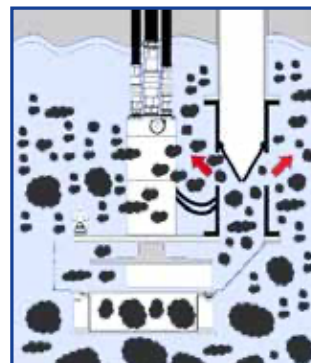
- SG4 - SG6 body and cylinder, this element to be installed on the pump outlet mouth.
- Hydraulic control valve and hoses that can control the opening/ closing action of the slurry gate.

The **Slurry Gate** is a "retrofit accessory" that can be installed on pumps, its action as mixer is necessary when the liquid to pump is very thick and have suspended solids (like sediments, mud balls or oil balls or other agglomerate of semi solid/ pasty liquids) the above must be disintegrated to become more fluid and pumped, is needed also to avoid choke at the pump inlet. After some minutes of this treatment the liquid can be pumped easier and the pump will run in its natural function. The length of the hydraulic pipe that connects the three-position valve to the mixer body must be prepared by the customer or ordered at DOA at the time of purchase.

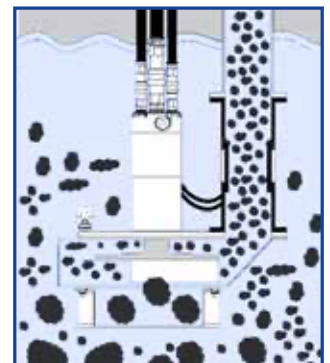
### HOW IT WORKS

Action of **SG4** is very simple: it is a flow diverter placed on the out let mouth of the pumps, that can direct the fluid in its natural "upward" pumping direction or divert it aside bypassing from the two openings and repumped in its bed. Once the fluid is shaken and minced at more liquid state and can be pumped, will be enough to close the side openings (by acting on the oil valve that is part of the set) and the pump can be used in the normal pumping action.

**WINDOWS OPEN**  
Pump impeller is mincing suspended solids



**WINDOWS CLOSED**  
Fluid is pumped up from outlet passage



# WATER PUMPS

## TWP 40

Water pump for testing pressure holding capacity on water networks

Gasoline pump

- *High quality two diaphragm pump and engine speed reductor*
- *Water filter on suction line to prevent stone and particles to enter in pump*
- *High quality water tank with large filler aperture for loading and cleaning*
- *Quick bayonet tank connection for continuous refilling*
- *Can run dry without damage*
- *Stainless steel square tube frame*



**TWP40** is a modern gasoline engine water pump with adjustable pressures up to 40 Bar and flow up to 60 L/min, pump is designed to make test and pressure drop related to time on new water networks. The pump characteristics and its versatility allow to perform the majority of test requested by the European norms. The construction quality, the rational position of components, the practical controls and regulation features makes its operations easy and intuitive to guarantee an use precise and problems free.

| TECHNICAL CHARACTERISTICS | TWP 40                          |
|---------------------------|---------------------------------|
| Weight dry (kg)           | 50                              |
| Dimension (LxH) (cm)      | 70x50x70                        |
| Engine                    | Briggs & Stratton 6 HP Gasoline |
| Starting                  | recoil                          |
| Water flow L/min          | 60 - max adjustable             |
| Water pressure            | 40 Bar - max adjustable         |
| Water tank (l)            | 30                              |
| Water outlet connection   | female swivel 3/8" BSP          |



# WATER PUMPS

## WP 116

Self-Priming pump with hydraulic motor for evacuation from siphons of gas networks



- *Practical, robust and safe is irreplaceable in its application*
- *Fabricated in "spark free" anti explosive bronze*
- *Large water filter prevents dirt and metal chips to enter in the pump*
- *The water filter can be open in few seconds for cleaning and inspection*
- *Requires minimal and easy maintenance*

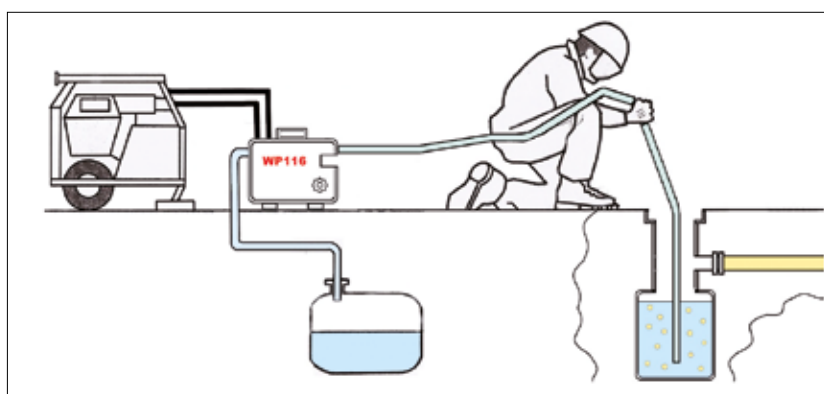
**WP116** CAN BE USED FOR MOVEMENT OF HOT WATER FROM HEATING NETWORKS, FOR USE OF THE PUMP WITH HOT WATER UP TO 100 ° C. REQUEST THE CONSTRUCTION OF THE PUMP WITH VITON® GASKETS FOR HIGH TEMPERATURES (AT A HIGHER PRICE)

**WP116** is a modern self priming water pump with hydraulic motor. The pump is designed for the suction and evacuation of water that accidentally entered in the collecting siphons located in the lower parts of gas networks. Water can enter into gas pipes after ruptures or maintenance interventions, this mass of water accumulated in the lower part of the network can fill up the siphons and also overflowing choking the pipes and preventing the normal free gas passage that inevitably flows away by "waves" causing water entering and damaging the gas meters and creating other problems that are well known by the gas maintenance crews. **WP116** is made in spark free bronze and with moving parts without metal/metal contacts so no possibility of creating localised overheated points. The hydraulic functioning (no electricity!) means implicit safety that has to be absolutely guaranteed in this delicate operation. For the use is enough to connect the suction mouth of pump with a flexible hoses to the siphon and then prime and pump out the mixture water/ gas / air, all in absolute safety and with the gas line in normal working condition. The fluid extracted has to be successively disposed according to local rules as it is a special waste. **WP116** is unique in its type, for characteristics, function and safety assurance cannot miss in the equipment of modern gas maintenance crews.

# WATER PUMPS

## WP 116

Self-Priming pump with hydraulic motor for evacuation from siphons of gas networks



**WARNING** The pump must not run completely dry for more than two minutes, this could damage the seals, if there is water in the siphon the pump will stick and pump after a few seconds. The pump can tolerate partially dry uses, as long as there is a minimum presence of water due to a small loss from a district heating network. A couple of minutes after the complete complete evacuation of the water must be interrupted.

| TECHNICAL CHARACTERISTICS | WP 116                               |
|---------------------------|--------------------------------------|
| Weight (kg)               | 20                                   |
| Dimension (LxH) (cm)      | 50x30x30                             |
| Water flow                | 110 L/min@1mt-25 L/min@20 mt         |
| Water head                | 20 mt (2Bar)                         |
| Suction height            | 6 mt max from water level            |
| Mouth dimension           | diameter 40 mm both suction pressure |
| Suction diameter          | ideal 25 mm                          |
| Pumpable fluid            | only filtered water                  |
| Oil flow                  | 20-30 L/min                          |
| Ideal oil flow            | 20 L/min                             |
| Oil pressure              | 100-210 Bar                          |



# FLOW CONTROL VALVE

## RFP 50 - RFP 50V

Hydraulic valves for regulation flow pressure

Are supplied with short hoses and couplers as shown in illustration

Hydraulic valve for the control of flow control of flow and pressure, assure that tools are supplied with the correct hydraulic values for safety and avoid damages to the equipment, the valves body is in laminated aluminium with anodised surface, the cartridge elements are of the best quality to assure a stabile and precise regulation.



### RFP50 - FLOW/PRESSURE CONTROL VALE

The regulated flow is fixed and pre set at the factory and cannot be charged, this fix configuration of the output flow avoids manumission and errors. Customer must require the needed regulated flow at the order.

The valve can receive a maximum incoming flow at 60 L/min.

The valve can regulate the following fixed flows: 15-21-25-30-36 L/min.

The regulated pressure valve must be adjustable by the customer.

### RFP50 V - FLOW/PRESSURE CONTROL VALVE

The output regulated flow is adjustable according to necessary in any moment..

The valve can receive a maximum incoming flow of 60 L/min.

The valve can regulate at maximum flow 38 L/min.

The regulated pressure valve must be adjustable by the customer.

| TECHNICAL CHARACTERISTICS | RFP 50               | RFP 50 V        |
|---------------------------|----------------------|-----------------|
| Dimension (LxPxH) (cm)    | 13x10x5              | 13x10x5         |
| Flow in                   | 60 L/min             | 60 L/min        |
| Flow reg                  | 15-21-25-30-36 L/min | 0-36 L/min      |
| Pressure in               | 250 Bar max          | 250 Bar max     |
| Pressure reg              | 10-200 Bar max       | 250 Bar max     |
| Port thread in            | 3/4" BSP female      | 3/4" BSP female |
| Port thread reg           | 1/2" BSP female      | 1/2" BSP female |

# FLOW CONTROL VALVE

## RFP 70

Hydraulic valves for regulation flow pressure

Valve is supplied bwith 1/2" flush face quick couplers only in the regulated side as shown in illustration

Hydraulic valve for the control of flow control of flow and pressure, assure that tools are supplied with the correct hydraulic values for safety and avoid damages to the equipment, the valves body is in laminated aluminium with anodised surface, the cartridge elements are of the best quality to assure a stable and precise regulation.



### RFP70

Both threads in pressure and regulated side are 1" BSP. Hydraulic valve for the control of flow control of flow and pressure, assure that tools are supplied with the correct hydraulic values for safety and avoid damages to the equipment, the valves body is in laminated aluminium with anodised surface, the cartridge elements are of the best quality to assure a stabile and precise regulation. The valve can receive a maximum incoming flow of 90 L/min. The valve can regulate a maximum flow of 50 L/min. The output regulated flow is adjustable according to necessity in any moment. The regulated pressure valve must be adjustable by the customer.

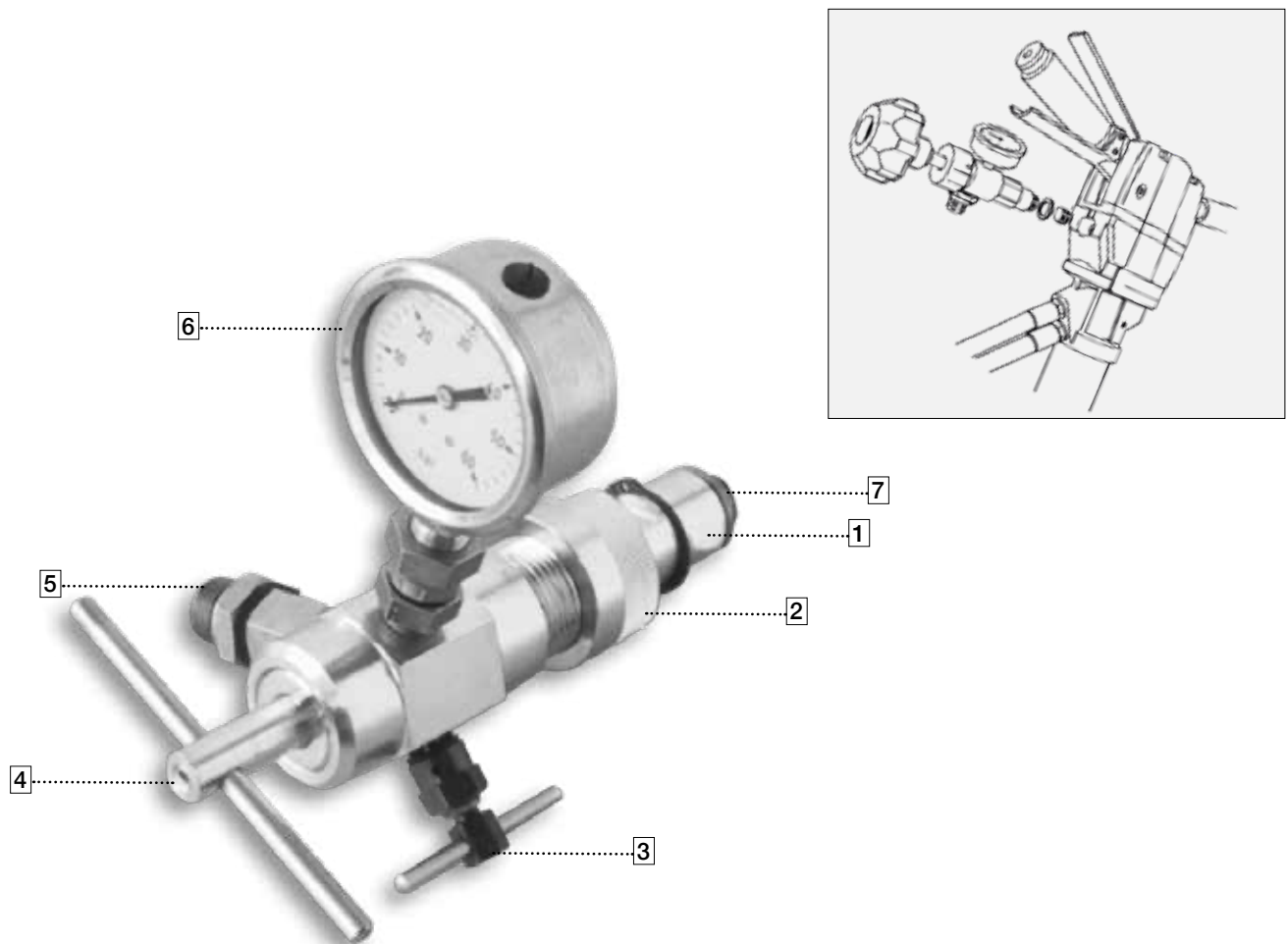
| TECHNICAL CHARACTERISTICS | RFP 70         |
|---------------------------|----------------|
| Dimension (LxPxH) (cm)    | 13x10x6,5      |
| Flow in                   | 90 L/min       |
| Regulated flow            | 50 L/min       |
| Pressure in               | 350 Bar max    |
| Pressure adjustable       | 10-250 Bar max |
| Port thread in            | 1" BSP female  |
| Port thread reg           | 1" BSP female  |

# FLOW CONTROL VALVE

## CT 100

For pressure and Flow

*Service tool for control and charge nitrogen into DOA breakers accumulators*



- 1 Adapter the adaptor can be separated from the tester body
- 2 Ring nut of the adaptor
- 3 Valve for discharging the excess of pressure
- 4 Handle for opening closing the valve cap
- 5 Nitrogen inlet in the tester
- 6 Pressure gauge
- 7 Internal allen key that open/closes the valve cap acting on the handle

**CT 100** tool is a service item necessary to make the service of DOA breakers, like all hydraulic breakers DOA hammers are equipped with a nitrogen accumulator that in case of failure has to be replaced and recharged with nitrogen at a pressure between 35-40 Bar. **CT100** allows to open up the check valve of the accumulator, to adjust the recharging nitrogen pressure and to close the check valve.

# FLOW CONTROL VALVE

## FLOW AND PRESS TESTER

For pressure and Flow

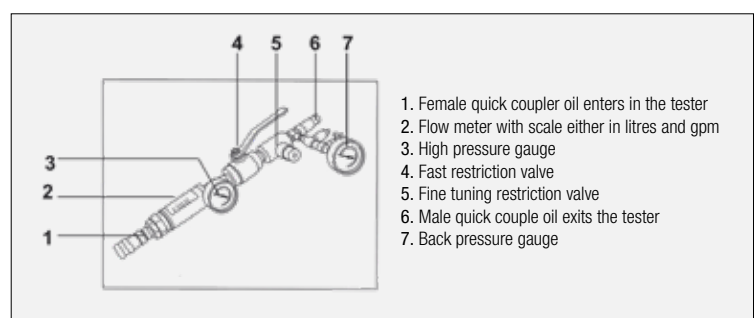
- *It is possible to visualize the actual data of flow and the interaction between flow, pressure and back pressure closing progressively the tester restriction valve*
- *It is possible to take the maximum pressure of the circuit (static pressure) and the pressure value of the pre-opening of the relief valve (cracking pressure) that corresponds to the real relief valve setting, it is also possible to see the engines speed under load, like controlling revolution drop or raise etc.*
- *It is possible to create the necessary load on the circuit to simulate the operative condition of the tool and getting data to make a graph temperature/time*
- *Allows to make an accurate regulation of the hydraulic circuit of a power pack or mini excavator or any hydraulic machine and to control its real values.*



**The tester** is an indispensable measuring instrument for hydraulics that allows to visualize anywhere , precisely and in real time the maximum and relative values of: **flow-pressure-back pressure and the interaction of these values.**

**The tester** can control on the job site the hydraulic characteristics of power packs, trucks, excavators and earth moving equipment, street sweepers, and all hydraulic machines locating immediately the problems of the circuits that often are the causes of malfunctioning of the tools. The instrument is robust, light, easy to use and thanks to its mechanical functioning can be used also with high presence of water and dirt that are typical situations of the out door use. Surprising are also its precision and cost that is much lower if compared to the expensive and fragile electronic testers.

| TECHNICAL CHARACTERISTICS | Tester     |
|---------------------------|------------|
| Weight (kg)               | 2,5        |
| Length (cm)               | 50         |
| Flow max L/min            | 60         |
| Pressure max              | 210 Bar    |
| Backpressure              | max 60 Bar |



# INDUSTR



IAL LINE

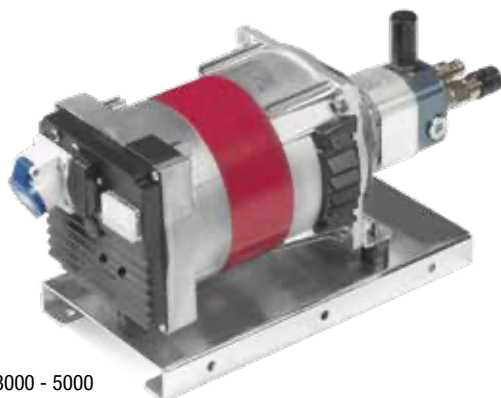
OEM



# HYDRAULIC

## HG 3000 - HG 7000

Single-Three-phase generators with hydraulic motor



HG 3000 - 5000



HG 7000 - 10000

Are compact hydraulic generators with power respectively of:

• **From 3 kVA to 40 kVA, 110 – 220V, 50-60Hz. Available in other configurations on demand.** They are ideal accessories of trucks, mini excavators, sky platforms, boats, mobile workshops and all machines equipped with sufficient hydraulic circuit. The connection to the machines is easy as the generators are hydraulically self regulated. Two flexible hoses are sufficient and in few minutes your machine becomes a powerful generator that can power electric tools of all types, electric spotlights and also welders, avoiding the presence of gasoline, engine generators with their associated problems of starting, maintenance, fuel availability, transport, exhaust fumes and noise. Our line is made with high quality products that increase significantly the equipment versatility improving productivity and providing anywhere is necessary low cost and low maintenance electricity.

| TECHNICAL CHARACTERISTICS  | HG 3000                 | HG 5000                 | HG 7000                 | HG 10000                |
|----------------------------|-------------------------|-------------------------|-------------------------|-------------------------|
| Weight with base           | 25 Kg                   | 28 Kg                   | 41 Kg                   | 55 Kg                   |
| Length                     | 410 mm                  | 410 mm                  | 480 mm                  | 510 mm                  |
| Width                      | 210 mm                  | 210 mm                  | 240 mm                  | 240 mm                  |
| Height                     | 430 mm                  | 430 mm                  | 450 mm                  | 450 mm                  |
| ELECTRIC CHARACTERISTICS   |                         |                         |                         |                         |
| n° phases                  | single                  | single                  | tri/single              | tri/single              |
| Power tri phase            | -                       | -                       | 7 KVA                   | 10 KVA                  |
| Power single phase         | 3 KVA                   | 5 KVA                   | 4 KVA                   | 5.5 KVA                 |
| Socket type                | 1 CEE - 1 Schuko        | 1 CEE - 1 Schuko        | 1 CEE - 1 Schuko        | 1 CEE - 1 Schuko        |
| Ampere                     | 230 V                   | 230 V                   | 400-230 V               | 400-230 V               |
| Protection                 | IP 23                   | IP 23                   | IP 23                   | IP 23                   |
| Volt meter                 | YES                     | YES                     | YES                     | YES                     |
| Thermic protection         | YES                     | YES                     | YES                     | YES                     |
| Alternator type            | Electro mechanic rotary | Electro mechanic rotary | Electro mechanic rotary | Electro mechanic rotary |
| HYDRAULIC CHARACTERISTICS  |                         |                         |                         |                         |
| Hydraulic motor            | gears group 2           | gears group 2           | gears group 2           | gears group 2           |
| Flow L/min                 | 20-40                   | 30-40                   | 30-50                   | 40-60                   |
| Pressure bar               | 140 - 210 Bar           | 140 - 210 Bar           | 140 - 210 Bar           | 140 - 210 Bar           |
| Back pressure              | max 17 Bar              | max 17 Bar              | max 17 Bar              | max 17 Bar              |
| Flow rate/speed adjustment | YES                     | YES                     | YES                     | YES                     |

# GENERATOR

## HG 3000 - HG 7000

### Single-Three-phase generators with hydraulic motor

- Depending on the available hydraulic capacity and pressure of the actuating machine, hydraulic motors with different displacements can be installed in order to have the ideal alternator revolutions, using the most suitable pressure or flow values as required. Contact DOA for more information.
- The pressures indicated in the table are to be considered real dynamic pressures, in fact the maximum pressure measured "in static condition" at zero flow corresponds to a real usable value of at least 10% lower than the static pressure.
- The alternator flow / rev control valve mounted on hydraulic motors is a safety feature that prevents the alternator from exceeding the revolutions necessary to provide the correct voltage and frequency values, the valve can bypass a limited excess of flow (maximum 10 liters above the minimum value necessary) for which it can not be entrusted with the function of regulating excessive hydraulic flows that can not be managed by the valve itself, so if the actuator sends, for example, a flow rate of more than 45 liters to the generator, the excess flow rate it must be regulated upstream in line by a real and larger flow control valve, this will also avoid harmful excesses of backpressure at the exhaust, unnecessary increases in operating pressure and increase in the temperature of the hydraulic oil.



**MOTOR A**



**MOTOR B**

The hydraulic generators can be supplied with two types of hydraulic motors.

**MOTOR A** equipped with regulation of flow/speed and with ON/OFF hydraulic activation only.

**MOTOR B** with ON/OFF activation by a integrated solenoid switch, thanks to the electric activation, the motor rotation can be started/stopped by a electric control.

**CONTROLS** regulation valve for flow rate/rpm alternator with hydraulic motor silenced and protected by a mono-directional valve that prevents reverse rotation and damage from "violent arrest" to give a natural rotation arrest when the flow is cut

| TECHNICAL CHARACTERISTICS  | HG 12000                | HG 19000                | HG 26000                | HG 35000                |
|----------------------------|-------------------------|-------------------------|-------------------------|-------------------------|
| Weight with base           | 60 Kg                   | 120 Kg                  | 120 Kg                  | 175 Kg                  |
| Length                     | 600 mm                  | 600 mm                  | 600 mm                  | 750 mm                  |
| Width                      | 300 mm                  | 300 mm                  | 300 mm                  | 450 mm                  |
| Height                     | 450 mm                  | 450 mm                  | 450 mm                  | 450 mm                  |
| ELECTRIC CHARACTERISTICS   |                         |                         |                         |                         |
| n° phases                  | tri/single              | tri/single              | tri/single              | tri/single              |
| Power tri phase            | 12 KVA                  | 19 KVA                  | 26 KVA                  | 35 KVA                  |
| Power single phase         | 7 KVA                   | 11 KVA                  | 15 KVA                  | 20 KVA                  |
| Socket type                | 1 CEE - 1 Schuko        | 1 CEE - 1 Schuko        | 1 CEE - 1 Schuko        | 1 CEE - 1 Schuko        |
| Ampere                     | 400-230 V               | 400-230 V               | 400-230 V               | 400-230 V               |
| Protection                 | IP 23                   | IP 23                   | IP 23                   | IP 23                   |
| Volt meter                 | YES                     | YES                     | YES                     | YES                     |
| Thermic protection         | YES                     | YES                     | YES                     | YES                     |
| Alternator type            | Electro mechanic rotary | Electro mechanic rotary | Electro mechanic rotary | Electro mechanic rotary |
| HYDRAULIC CHARACTERISTICS  |                         |                         |                         |                         |
| Hydraulic motor            | gears group 2           | gears group 2           | gears group 2           | gears group 2           |
| Flow L/min                 | 50-70                   | 80-100                  | 90-120                  | 90-130                  |
| Pressure bar               | 140 - 210 Bar           | 140 - 210 Bar           | 140 - 210 Bar           | 140 - 210 Bar           |
| Back pressure              | max 17 Bar              | max 17 Bar              | max 17 Bar              | max 17 Bar              |
| Flow rate/speed adjustment | YES                     | YES                     | YES                     | YES                     |

# HYDRAULIC

## HW 220 - HW 300 - HW 400

With sockets for single-three-phase generators

*Welders features low noise hydraulic motors with helicoidal gears*



HW 220



HW 300

**HW 220 - HW 300 - HW 400** are professional DC hydraulic welders with power respectively of 220, 300 and 400 amps standard, other configurations on demand. This products can also be used as tri / mono phase current generators. They can be powered by the hydraulic circuit of excavators, trucks, mobile workshops and by all machines equipped with a suitable hydraulic circuit. Hydraulic offers numerous advantages: quietness, safety, versatility, easy transportability, robustness, absence of vibrations, no exhaust or smokes and minimal maintenance requirements, thanks to these features the welding machines increase the versatility of the machines, improving their efficiency and productivity. Ideal in any welding work outdoors and where it is necessary to have electricity everywhere and at low cost. Welders features low noise hydraulic motors with helicoidal gears.

| TECHNICAL CHARACTERISTICS | HW 220                                                 | HW 300                                                 | HW 400                                                 |
|---------------------------|--------------------------------------------------------|--------------------------------------------------------|--------------------------------------------------------|
| Weight with base          | 55 Kg                                                  | 95 Kg                                                  | 150 Kg                                                 |
| Length                    | 540 mm                                                 | 670 mm                                                 | 770 mm                                                 |
| Width                     | 230 mm                                                 | 230 mm                                                 | 300 mm                                                 |
| Height                    | 400 mm                                                 | 470 mm                                                 | 500 mm                                                 |
| ELECTRIC CHARACTERISTICS  |                                                        |                                                        |                                                        |
| Welding power             | 220 a                                                  | 300 a                                                  | 400 a                                                  |
| Welder type               | 2 poles - direct current brushes rotating type welders | 2 poles - direct current brushes rotating type welders | 2 poles - direct current brushes rotating type welders |
| Elettrodes                | all types included basic and cellulosic                | all types included basic and cellulosic                | all types included basic and cellulosic                |
| Regulation                | contineous                                             | contineous - possibility remote control                | contineous - possibility remote control                |
| Power                     | 3,5 KVA in 1 PHASE<br>6,5 KVA in 3 PHASE               | 4 KVA in 1 PHASE<br>10 KVA in 3 PHASE                  | 4 KVA in 1 PHASE<br>10 KVA in 3 PHASE                  |
| Protection                | IP 21 (IP 23 on request)                               | IP 21 (IP 23 on request)                               | IP 21 (IP 23 on request)                               |
| Sockets                   | 1 CE 1 phase - 1 CE 3 phase                            | 1 CE 1 phase - 1 CE 3 phase                            | 1 CE 1 phase - 1 CE 3 phase                            |
| Volt meter                | YES                                                    | YES                                                    | YES                                                    |
| Thermic protection        | YES                                                    | YES                                                    | YES                                                    |
| HYDRAULIC CHARACTERISTICS |                                                        |                                                        |                                                        |
| Flow L/min                | 40-50                                                  | 65-75                                                  | 80-90                                                  |
| Pressure bar              | 34 - 45                                                | 36 - 45                                                | 36 - 45                                                |
| Back pressure             | 140-210 Bar                                            | 140-210 Bar                                            | 140-210 Bar                                            |
| Regulation flow/speed     | YES                                                    | YES                                                    | YES                                                    |

# WELDERS

## HW 220 - HW 300 - HW 400

With sockets for single-three-phase generators

- *Compact and easy to install*
- *Exclusive silenced hydraulic motors with helicoidal gears*
- *Hydraulic motor are protected by hydraulic valve against flow/rev limit, single directional valve that avoids reverse rotation and "water hammer" damage for a natural stop when the flow is removed*
- *Available hydraulic motors with different displacements for an ideal ratio of available flow of the driving machine and alternator revolutions*
- *Provided with a voltmeter that allows to display the correct regulation of the revolutions/volt/Hertz*



**MOTOR A**



**MOTOR B**

*The hydraulic welders can be supplied with two types of hydraulic motors.*

**MOTOR A** equipped with regulation of flow/speed and with ON/OFF hydraulic activation only.

**MOTOR B** with ON/OFF activation by a integrated solenoid switch, thanks to the electric activation, the motor rotation can be started/stopped by a electric control.



# PRESSURE

## WHY 1520

Pressure washer pumps with hydraulic motor



WHY 1520

- *Quieteness, no vibrations, low maintenance needs*
- *Compact dimension allows an easy installation onboard machines*
- *With "canal jet" accessory can unblock obstructed ducts, sewers, drain pipes etc.*
- *Chemical injector for the suction of solvents, soaps and additive, is available on request*

| TECHNICAL CHARACTERISTICS   | WHY 1520       | THY 2715       | THY 4520       |
|-----------------------------|----------------|----------------|----------------|
| Weight with base            | 12 Kg          | 15 Kg          | 16 Kg          |
| Length                      | 260 mm         | 300 mm         | 300 mm         |
| Width                       | 220 mm         | 240 mm         | 240 mm         |
| Height                      | 290 mm         | 540 mm         | 540 mm         |
| <b>WATER</b>                |                |                |                |
| Water flow                  | 15 L/min       | 27L/min        | 45L/min        |
| Water pressure              | 200 Bar        | 150 Bar        | 200 Bar        |
| Pressure thread             | 3/8 BSP male   | 3/8 BSP male   | 3/8 BSP male   |
| Fluid pumpable              | filtered water | filtered water | filtered water |
| Pressure gauge              | YES            | YES            | YES            |
| Chemical injector           | YES            | YES            | YES            |
| Ejector of by pass water    | YES            | YES            | YES            |
| Suction filter              | YES            | YES            | YES            |
| <b>OIL</b>                  |                |                |                |
| Hydraulic motor             | gears group 2  | gears group 2  | gears group 2  |
| Flow L/min                  | 20-40          | 20-40          | 20-40          |
| Ideal flow L/min            | 30 L/min       | 30 L/min       | 30 L/min       |
| Pressure Bar                | 140 - 210 Bar  | 140 - 210 Bar  | 140 - 210 Bar  |
| Back pressure               | 17 Bar         | 17 Bar         | 17 Bar         |
| Possibility on/off electric | on request     | on request     | on request     |

# WASHER PUMP

## WHY 1520

### Pressure washer pumps with hydraulic motor

Professional pressure washer pumps powered by gear hydraulic motor available in different configurations. Rotative water pumping part with three ceramic pistons to as sure as long reliable service.

**Robust and incredibly powerful are ideal used from the hydraulic circuit of trucks, concrete pumps, street sweepers, fishing boats and various vehicles.**

Hydraulic functioning is implicit safety, no current means no possibility of electric shock hazard. Standard hydraulic motor without regulations. Hydraulic motor with pre-regulated cartridge at the factory for control of oil flow/speed. Cartridge cannot be adjusted this to prevent wrong regulations of the cartridge itself. Hydraulic motor with adjustable control of: maximum flow/speed and pressure, with electric solenoid 12V or 24V to stop pump rotation when trigger of water gun is released



**MOTOR A**



**MOTOR B**

*The washer pumps can be supplied with two types of hydraulic motors.*

**MOTOR A** equipped with regulation of flow/speed and with ON/OFF hydraulic activation only.

**MOTOR B** with ON/OFF activation by a integrated solenoid switch, thanks to the electric activation, the motor rotation can be started/stopped by a electric control.



# AIR COMPRESSOR

## CH 75 OEM

Compressors with hydraulic motor



CH 75 OEM

| TECHNICAL CHARACTERISTICS | CH 45 OEM                                                                                                                                                           | CH 75 OEM                                                                                                                                                           | CH 95 OEM                                                                                                                                                           | CH 200 OEM                                                                                                                                                          |
|---------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Weight with base          | 50 Kg                                                                                                                                                               | 65 Kg                                                                                                                                                               | 65 Kg                                                                                                                                                               | 80 Kg                                                                                                                                                               |
| Length                    | 600 mm                                                                                                                                                              | 670 mm                                                                                                                                                              | 670 mm                                                                                                                                                              | 700 mm                                                                                                                                                              |
| Width                     | 350 mm                                                                                                                                                              | 400 mm                                                                                                                                                              | 400 mm                                                                                                                                                              | 400 mm                                                                                                                                                              |
| Height                    | 490 mm                                                                                                                                                              | 540 mm                                                                                                                                                              | 540 mm                                                                                                                                                              | 540 mm                                                                                                                                                              |
| PNEUMATIC CHARACTERISTICS |                                                                                                                                                                     |                                                                                                                                                                     |                                                                                                                                                                     |                                                                                                                                                                     |
| Air flow output           | 450 l/min                                                                                                                                                           | 600 L/min                                                                                                                                                           | 950 L/min                                                                                                                                                           | 2000 L/min                                                                                                                                                          |
| Air pressure              | max 10,5 Bar                                                                                                                                                        | max 10,5 Bar                                                                                                                                                        | max 10,5 Bar                                                                                                                                                        | max 10,5 Bar                                                                                                                                                        |
| Head type                 | 2 stage                                                                                                                                                             | 2 stage                                                                                                                                                             | 2 stage                                                                                                                                                             | 2 stage                                                                                                                                                             |
| Air tank capacity         | OEM models are formed by the compressor head and hydraulic motor, the installer has to provide regulations, air tank and pi-ping for installation on board machines | OEM models are formed by the compressor head and hydraulic motor, the installer has to provide regulations, air tank and pi-ping for installation on board machines | OEM models are formed by the compressor head and hydraulic motor, the installer has to provide regulations, air tank and pi-ping for installation on board machines | OEM models are formed by the compressor head and hydraulic motor, the installer has to provide regulations, air tank and pi-ping for installation on board machines |
| Pressure gauge            |                                                                                                                                                                     |                                                                                                                                                                     |                                                                                                                                                                     |                                                                                                                                                                     |
| Pressure regulation       |                                                                                                                                                                     |                                                                                                                                                                     |                                                                                                                                                                     |                                                                                                                                                                     |
| Chassis type              | steel base plate                                                                                                                                                    | steel base plate                                                                                                                                                    | steel base plate                                                                                                                                                    | steel base plate                                                                                                                                                    |
| HYDRAULIC CHARACTERISTICS |                                                                                                                                                                     |                                                                                                                                                                     |                                                                                                                                                                     |                                                                                                                                                                     |
| Driving power             | 4 KW                                                                                                                                                                | 5,5 KW                                                                                                                                                              | 7,5 KW                                                                                                                                                              | 15 KW                                                                                                                                                               |
| Flow L/min                | 20-45                                                                                                                                                               | 30-45                                                                                                                                                               | 34-45                                                                                                                                                               | 40-60                                                                                                                                                               |
| Pressure bar              | 150 - 210 Bar                                                                                                                                                       | 150 - 210 Bar                                                                                                                                                       | 150 - 210 Bar                                                                                                                                                       | 150 - 210 Bar                                                                                                                                                       |
| Back pressure             | max 17 Bar                                                                                                                                                          | max 17 Bar                                                                                                                                                          | max 17 Bar                                                                                                                                                          | max 17 Bar                                                                                                                                                          |
| Motor type                | gear type                                                                                                                                                           | gear type                                                                                                                                                           | gear type                                                                                                                                                           | gear type                                                                                                                                                           |

# AIR COMPRESSOR

## CH 75 OEM

### Compressors with hydraulic motor

Compact air compressor powered by hydraulic gear motor, the tool can work connected to the circuits of power packs, trucks, sky platforms, mobile workshops, excavators and all machines equipped with a suitable hydraulic circuit. The tools of the line can supply air compressed with flow out put from 400 l/min to 2000 l/min and pressure from 1 to 10 bar. The exclusive hydraulic motor has control valves integrated that assure protection against excess of flow / speed and other possible hydraulic abuses. This guarantees safety in case the tool is connected to machines with hydraulic values higher than what is necessary.

COMPRESSORS ARE COMPOSED OF 4 MAIN ELEMENTS:

- 1** *Compressor head with two stage pistons and air filters*
- 2** *Cooling unit with axial fan protected by safety grill*
- 3** *The base frame*
- 4** *The hydraulic motor. Low noise type with helicoidal gears*



**MOTOR A**



**MOTOR B**

*The compressors can be supplied with two types of hydraulic motors.*

**MOTOR A** equipped with regulation of flow/speed and with ON/OFF hydraulic activation only.

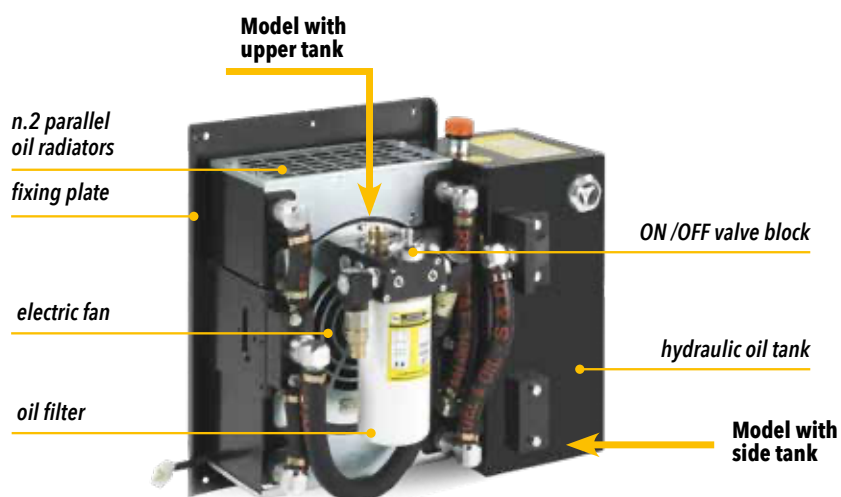
**MOTOR B** with ON/OFF activation by a integrated solenoid switch, thanks to the electric activation, the motor rotation can be started/stopped by a electric control.



# POWER PACK

## HYDROBOX

For trucks and vans



**HYDROBOX** is a compact hydraulic accessory installable on trucks and vans, can be installed on all vehicles equipped with hydraulic pump or that have the possibility to install it, **HYDROBOX** transforms these vehicles in powerful and economical power sources of hydraulic tools and various hydraulic equipment such as winches, hydraulic generators, cranes, compressors, etc...

**HYDROBOX** is in substance a complete professional hydraulic power pack, the engine produces the hydraulic power, **HYDROBOX** manages the power, with **HYDROBOX** vehicles avoid to transport, tow, load and download the typical heavy and bulky electric generator or compressors, the vehicles can power in autonomy a wide range of tools and equipment normally used in external urban works, in the utilities line maintenance and also in operations for rescue and civil protection.

**HYDROBOX** is an accessory designed for professional use that occupies minimal space on board, can be installed also under the open loading platform of trucks (like a normal tool box) it does not require approvals. For the installation is just necessary to connect the **HYDROBOX** to the gear pump by two hoses (*suction and pressure*) and the vehicles will be transformed from a simple transporter item into a practical and versatile hydraulic autonomous power source "on wheels".

| TECHNICAL CHARACTERISTICS | HYDROBOX                                                        |
|---------------------------|-----------------------------------------------------------------|
| Weight (kg)               | 38                                                              |
| Dimension LxWxH (cm)      | 48 x 30 x 45                                                    |
| Flow L/min                | 42 (flow max adjustable)                                        |
| Pressure Bar              | 210 (pressure max adjustable)                                   |
| Radiator                  | 2 high efficiency radiators with centrifugal fan 12 Volt ON/OFF |
| Valve                     | 3 ways, open center with relief valve                           |

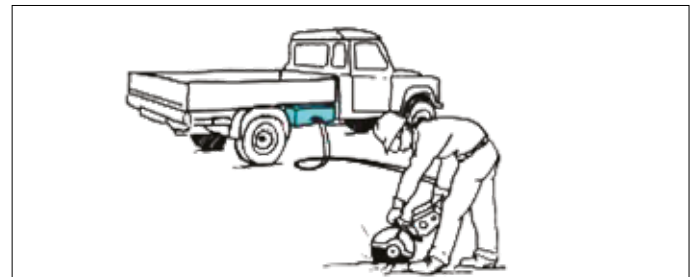
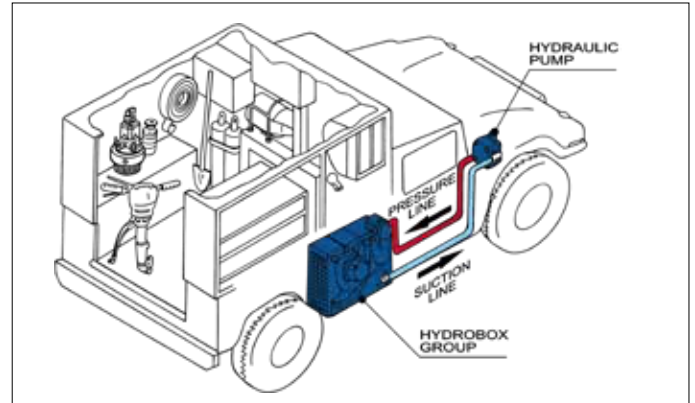


# POWER PACK

## HYDROBOX

For trucks and vans

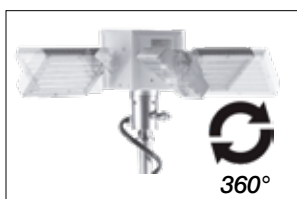
- *Safety and maximum quietness*
- *Power maximum running economy and practicality*
- *Versatility and total utilization of the vehicle*
- *Avoids to transport, tow, load/download heavy bulky power units of other type*
- *Easy to install and use*
- *Minimal space and weight occupied on board*
- *Always ready to use with minimal maintenance need*



# NIGHT DEFENDER

## NIGHT DEFENDER

Tower light - Led lamps 12 - 24 volt



- Features a light, robust, telescopic mast in aeronautic grade light alloy, the lift up to cm180 assures the ideal height of the cone of light
- The two powerful rotating and inclinable lamps features 48 latest generation LED each one for a total of 96 cold light LED, is possible to operate one lamp only or both together to have full illumination.
- The mast movements are operated by four electric motors and one micro air compressor integrated in the group base, all operations are actually without noise.
- The opening and folding operations are fast, simple and intuitive, can be controlled at distance by 2 remote controllers, one wireless and one with cord and jack usable as back up unit to be connected directly in the group socket.
- The cross bar that hold the lamps can rotate by 360°, lamps can be inclined pointing the light cone in the topic point.
- The operations of opening / extending the mast and the mast repositioning in driving mode require a time of only 55 seconds.
- At the end of the intervention the mast repositioning to driving mode is completely automatic whatever would have been the latest lamps position.
- The group can be installed on the top of all vehicles without necessity of tests and traffic authority certifications.
- The installation kit supplied with group includes brackets, bars and various fastenings to reduce at minimum the adaptations necessity, the electric wiring connection is real basic (only two cables).
- Group is retrofittable and can easily be installed in few minutes on other vehicles
- Insensitive to rain, snow, wind, ALWAYS READY FOR USE!

option: control wireless

**Lumionous flux is 12.000 LM.**

The must height is adjustable up to 1,8 mt. The group is a synthesis of technology, effectiveness, high illumination power, simplicity of installation and use, running and purchase economy.

# NIGHT DEFENDER

## NIGHT DEFENDER

Tower light - Led lamps 12 - 24 volt

- More available space on board, less transported weight and more loading capacity.
- No risks of accidents from electric shocks in case of rain or accidental contacts.
- No necessity of transporting other fuels or refilling, no noise, no smokes, no vibrations.
- No annoying operation of loading, down loading and positioning on ground.
- No typical engine starting problems in winter or after long inactivity.

**NIGHT DEFENDER** is a modern 12V or 24V illumination system for night operations designed as accessory and powered by the electric circuits of: trucks, 4WD vehicles, fire fighters, civil protection and surveillance vehicles, towing trucks, vans for maintenance of utilities networks, ambulances, mobile workshop, security and police vehicles. **Lumionous flux is 12.000 LM.** The mast height is adjustable up to 1,8 mt. The group is a synthesis of technology, effectiveness, high illumination power, simplicity of installation and use, running and purchase economy. The movements of extension, 360° rotation and lamps inclination are controlled by two wire less and wired remote controllers, 4 electric motors 12V or 24V and micro pneumatic air compressor integrated in the base. The mast is extensible in two phases, one with "book type" opening, a second one by a telescopic movement powered by two stage air cylinder. Both the lamps features 48 LED each a total of 96 LED that assures an exceptional illumination and a large light cone area. The 12V or 24V functioning means convenience and safety, the electric absorbtion is minimal thanks to the low consumption of leds. **NIGHT DEFENDER** weights only 45 Kg, can be easily removed and installed in few minutes on other vehicles of the same fleet, the maintenance necessity is easy and minimal, the quality of components, materials, and treatments is thought for military standard, this assure thousands of hours of use impeccable, precise and safe.

| TECHNICAL CHARACTERISTICS        | NIGHT DEFENDER                                              |
|----------------------------------|-------------------------------------------------------------|
| Weight (kg)                      | 45                                                          |
| Dimension folded (LxWxH) (cm)    | 110x90x27                                                   |
| Dimension with max extended (cm) | 180                                                         |
| Mast height                      | 1,8 mt adjustable                                           |
| Lumionous flux                   | 12.000 lumen                                                |
| Light power                      | 12V or 24V                                                  |
| Electric absorpion               | 2 lamps with 48 led each - 96 led totally                   |
| Led type                         | Gen III 3W cold light                                       |
| Lamp rotation                    | 360°                                                        |
| Lamp inclinations                | Adjustable 180° (from hour 12 to 6)                         |
| n°electric motor                 | 4                                                           |
| Function                         | with vehicle engine ON or OFF                               |
| Remote controllers               | 2 (1 wireless+1wired with 3 mt cable and jack)              |
| Mast material                    | Ergal/alu light alloy anodized                              |
| Mast movements                   | 4 electric motors and 2 stage pneumatic telescropy cylinder |
| Pneumatic supply cylinder        | 12V or 24V micro air compressor                             |
| Mast folding                     | Automatic return from any left previous position            |
| Lamps light ON/OFF               | Only when the first lower segmaent of the mast is vertical  |



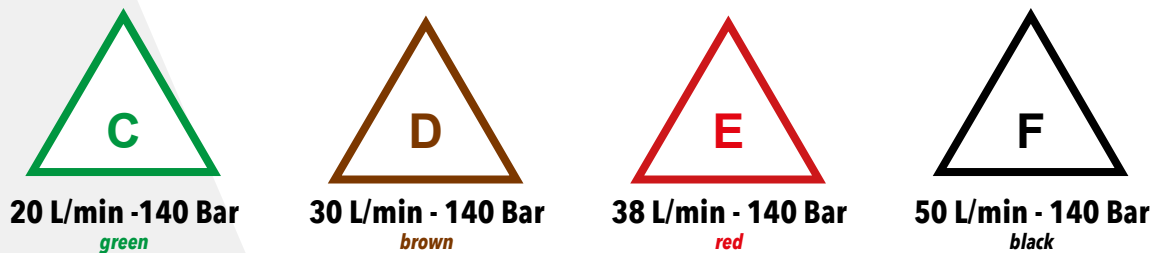
# EHTMA SYMBOLS

## TRIANGULAR LABELS

### ON HYDRAULIC TOOLS AND POWER PACKS

The hydraulic tools produced by companies that are members of **EHTMA** are marked with triangular stickers showing an alphabetical letter that can be C, D, E or F. this denotes the functional hydraulic characteristics of the tool, making them visually evident. this classification has been planned and standardized by EHTMA, the European Hydraulic Tools Manufacturers Associations.

**EHTMA** has defined a number of functional standards for hydraulic tools and their circuits. the standards refer to the flow and pressure values that a tool must work on. This classification is represented by coloured triangular symbols with four different alphabetical letters in the centre: C, or D, or E, or F



*The above hydraulic characteristics applies to all hydraulic tools of EHTMA standard, some DOA hydraulic tools that mount standard industrial hydraulic gear motor can work also with pressures above 140 Bar up to a maximum of 210 Bar, this means that developed output performances of DOA rotary tools can be higher if tool can use oil pressure higher then 140 Bar.*

## HYDRAULIC FUNCTION CHARACTERISTICS

### OF TOOLS AND POWER PACKS

|                                                                                                                                                                                                          |                                     |                          |                          |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|--------------------------|--------------------------|
| FLOW (min - max)                                                                                                                                                                                         | Category C -15-24 L/min             | Category D -26-34 L/min  | Category E -35-45 L/min  |
| RELIEF VALVE SETTING                                                                                                                                                                                     | 150 - 165 Bar all categories        |                          |                          |
| TOOL OPERATING PRESSURE<br>(pressure load created by the tool while working)                                                                                                                             | ≤ 140 Bar lower or equal to 140 Bar |                          |                          |
| MAXIMUM TOLLERABLE BACK PRESSURE<br>ideal zero Bar Back pressure value on return line<br>must be measured at the connecting point of the tool<br>with the return hose and at the lower oil temperature   | 17 Bar (250 PSI)                    |                          |                          |
| HYDRAULIC OIL TEMPERATURE<br>The circuit must be equiped with an oil radiator<br>that must limit temperature at max 60° C at the<br>maximum expected ambient temperature<br>even in the hottest climate. | MAXIMUM 60° C (140° F)              |                          |                          |
| OIL RADIATOR HEAT REJECTION CAPACITY                                                                                                                                                                     | Category C -3HP (2.24KW)            | Category D -5HP (3.73KW) | Category E -7HP (5,22KW) |
| At a temperature difference of 22 ° C between the ambient temperature and the maximum oil (delta T)                                                                                                      |                                     |                          |                          |
| Do not operate tools at an oil temperature above 60° C; if tool is used at higher temperature this can cause skin burns and reduce the tool life.                                                        |                                     |                          |                          |
| HYDRAULIC OIL FILTER<br>Minimum filtration value required<br>Filter must be sized for flow of at least                                                                                                   | 20 µ - micron<br>120 L / min        |                          |                          |

# HYDRAULIC OIL AND TABLE OF EQUIVALENTS BRAND AND TYPE

Viscosity at the lower expected ambient temperature  
**max 68 cSt (9° E)**

Viscosity at the higher expected ambient temperature  
**min. 22 cSt (3.10° E)**

(cSt = centistokes   °E = gradi Engler)

| OIL                 | Cold weather       | Hot weather        |
|---------------------|--------------------|--------------------|
| <b>AGIP</b>         | ARNICA 32          | ARNICA 46          |
| <b>BP</b>           | ENERGOL SHF- HV 32 | ENERGOL SHF- HV 46 |
| <b>CASTROL</b>      | HYSPIN AWH-M 32    | HYSPIN AWH-M 46    |
| <b>TOTAL</b>        | EQUIVIS ZS 32      | EQUIVIS ZS 46      |
| <b>ESSO</b>         | UNIVIS N 32        | UNIVIS N 46        |
| <b>MOBIL</b>        | DTE EXCEL 32       | DTE EXCEL 46       |
| <b>Q8</b>           | HANDEL 32          | HANDEL 46          |
| <b>SHELL</b>        | TELLUS T 32        | TELLUS T 46        |
| <b>GAZPROM NEFT</b> | HYDRAULIC HDZ 32   | HYDRAULIC HDZ 46   |
| <b>TEXACO</b>       | RANDO HDZ 32       | RANDO HDZ 46       |

For arctic conditions (-30°- 0°c) use **SHELL TELLUS ARCTIC 32**.

Indicated oils are intended for temperate climates, for extreme temperatures oils contact DOA.

Following chart shows common hydraulic oils - use these fluids or their equivalents

## WARRANTY

All parts fabricated by DOA are guaranteed for a period of 12 MONTHS from the date of delivery to the customer only on defects of material, workmanship and assembly. The period of warranty coverage begins from the date of shipment-mailing of the warranty card supplied with the tools. The warranty card must be mailed to DOA within 10 days from delivery to customer. Costs of labour and transports are not covered by warranty and must be borne by the customer. The parts and components not produced by DOA such as engines, compressors, alternators, etc. are covered by the warranty of the manufacturers. The power pack batteries and wear out items such as: breakers chisels, drill bits, cut off discs, flexible hoses, quick couplers or accessories that are without an identification serial number are covered by a warranty limited at 3 months from the date of delivery or activation of the service.

DOA reserves the right to make improvements modification at any time without obligations at any time and without previous notice on units already sold.



**DOA**  
Hydraulic Tools



# TRIME GROUP

[www.trime.it](http://www.trime.it)

## Lighting Tower



[www.teknoproget.com](http://www.teknoproget.com)

## Generators and Welders



[www.wtechno.com](http://www.wtechno.com)

## Water treatments



[www.grizzlytank.it](http://www.grizzlytank.it)

## Fuel tanks



[www.tekno-spray.com](http://www.tekno-spray.com)

## Dust control system



[www.doa.it](http://www.doa.it)

## Hydraulic tools



[www.italifters.com](http://www.italifters.com)

## Cover lifters



[www.trimegroup.com](http://www.trimegroup.com)