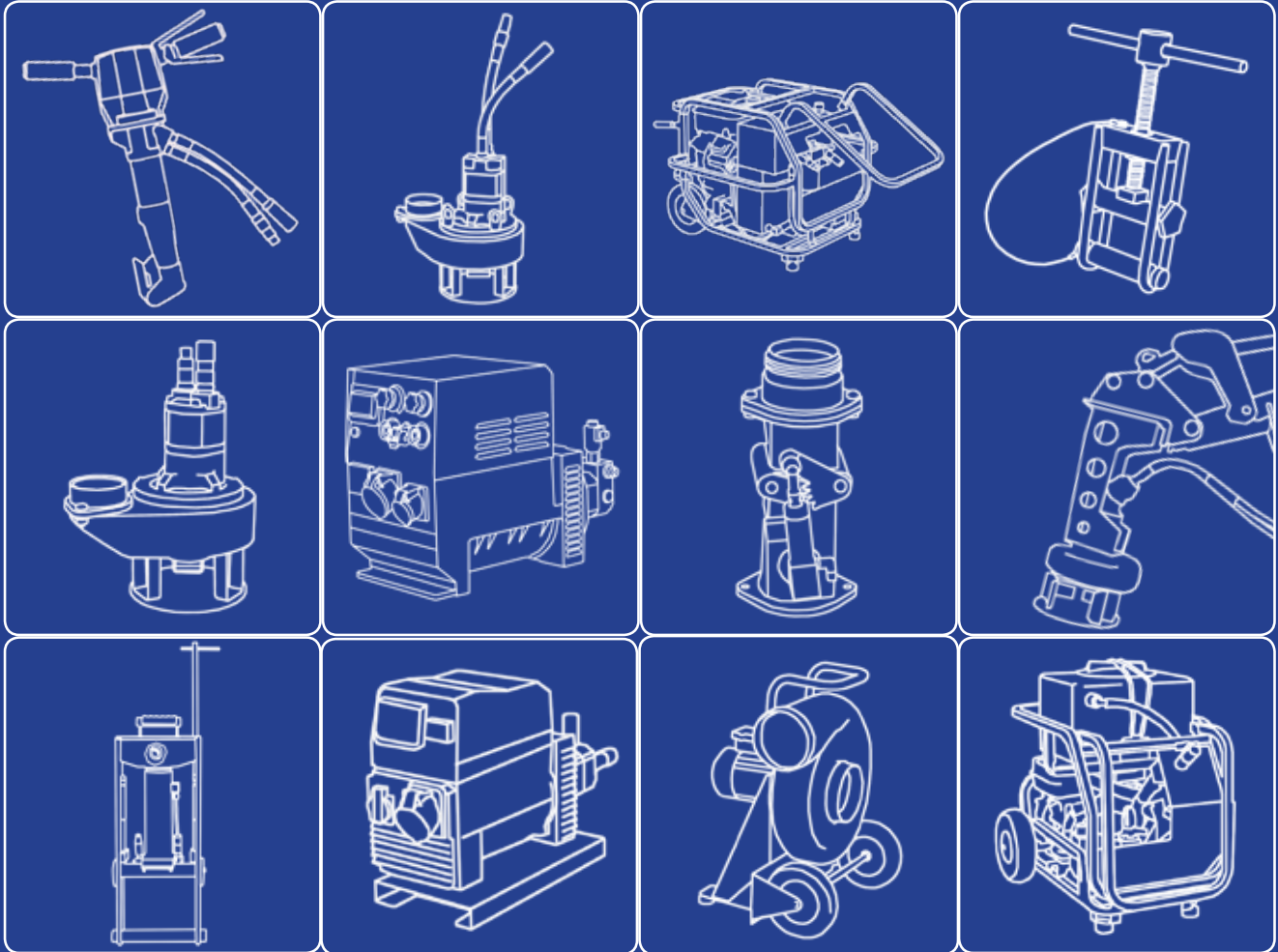




HYDRAULIC TOOLS



UTILITIES NETWORK MAINTENANCE

RESCUE AND CIVIL PROTECTION

ROAD MAINTENANCE

UNDERWATER WORKS

HYDRAULIC GENERATORS AND COMPRESSORS

HYDRAULIC PRODUCTS DESIGN ON CUSTOMER SPECIFICATIONS

The production of DOA Srl is in constant evolution, DOA Srl reserves the right to make modifications or change configuration, characteristics and functions of products at any time without previous notice or obligations on products already sold.



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WHY HYDRA

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



VERSATILITY AND LONG OPERATIVE LIFE OF TOOLS

Hydraulic tools can be powered also by the circuit of mini excavators, trucks and all vehicles with a sufficient hydraulic circuit, the DOA multi power groups TRIDENT and HYDROBOX are a synthesis of simplicity, economy, functionality 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, an hydraulic tool has a working life that is at least 20 times longer than other tools type.



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.



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 !



SCORPION

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



TECHNICAL CHARACTERISTICS

WEIGHT Kg	42
DIMENSION cm LxWxH	60 x 40 x 43
FLOW L/min	20 @ 95 Bar (12 @ 160 Bar)
PRESSURE Bar	95 - 160
ENGINE	Gasoline 6 HP Mono
STARTING	Recoil
ACCELERATION	Manual
HOSES LENGTH std	7 mt

Scorpion Micro power pack with 6 Hp gasoline engine – recoil start 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, These characteristics allow to power some tools of the class “C” of EHTMA standard or other type of hydraulic equipment. Many components are common to larger power packs such as the stainless steel frame, all the parts suspended on anti vibration shock mounts, the quick couplers installed on impact free swivel fitting, high efficiency oil cooling system that guarantees the best performances even in the hottest climate and with the most demanding applications. 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.

ASPID - SUPER ASPID - SUPER ASPID B

ASPID

20 L/min @ 140 Bar

Engine 12 Hp monocylinder - Starting battery or recoil

SUPER ASPID

30 L/min @ 140 Bar

Engine 13 Hp monocylinder - Starting battery or recoil

SUPER ASPID B

30 L/min @ 140 Bar

Engine 14 Hp monocylinder - Starting battery or recoil



TECHNICAL CHARACTERISTICS

	ASPID	SUPER ASPID	SUPER ASPID B
WEIGHT Kg	65	67	70
DIMENSION cm LxWxH	70 x 50 x 57		
FLOW L/min	20	30	30
PRESSURE Bar	140 (fino a 210 Bar cambiando pompa)		
ENGINE Hp	9	13	14
STARTING	Recoil	Recoil	Recoil/Battery
ACCELERATION	Automatic		
HOSES LENGTH std	7 mt		

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 thanks to the stainless steel frame, all parts suspended on anti vibration shock mounts, quick couplers installed on impact free swivel fitting, high efficiency oil cooling system that guarantees the best performances even in the hottest climate and with the more demanding applications. For these characteristics the ASPID range is the best selling and those more commonly used in the maintenance of underground pipes, in the civil protection and in all application where is necessary a professional hydraulic power supply. AVAILABLE WITH DIFFERENT HYDRAULIC POWER DEPENDING ON REQUEST.

SUPER RAPTOR SINGLE CIRCUIT

38 L/min @ 140 Bar - (30 L/min @ 180 Bar) Gasoline engine 18 Hp twin cylinder



TECHNICAL CHARACTERISTICS

WEIGHT Kg	110
DIMENSION cm LxWxH	85 x 60 x 65
FLOW L/min	30 - 38
PRESSURE Bar	140 - 180
ENGINE	Briggs & Stratton 18 Hp twin
STARTING	Recoil - Battery
ACCELERATION	Automatic - Manual
HOSES LENGTH std	7 mt

SUPER RAPTOR is a hydraulic power pack with 18 Hp twin cylinder gasoline engine, the machine is available on request with flows from 20 to 38 L/min and pressures up to 210 Bar depending on the pump size installed (example 30 litres @175 Bar or 38 litres @ 140 Bar). It can operate with hydraulic tools of the category C-D-E of EHTMA standard. **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.

SUPER RAPTOR DUAL DOUBLE CIRCUIT

Two circuits at 19 L/min or one at 38 L/min Gasoline engine 18 Hp twin cylinder



TECHNICAL CHARACTERISTICS

WEIGHT Kg	118
DIMENSION cm LxWxH	85 x 60 x 65
FLOW L/min	30 - 38
PRESSURE Bar	140 - 180
ENGINE	Briggs & Stratton 18 Hp twin
STARTING	Recoil - Battery
ACCELERATION	Automatic - Manual
HOSES LENGTH std	7 mt

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. . This characteristics allows to operate at the same time with two hydraulic tools of C group or with a single one of the E group of EHTMA standard. 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. The other characteristics are the same of **SUPER RAPTOR MONO**.

AVAILABLE WITH DIFFERENT HYDRAULIC POWER DEPENDING ON REQUEST..

MANTA

HYDRAULIC POWER PACK WITH GENERATOR

30 L/min @ 140 Bar - 2,2 Kva 115 - 230 Volt Engine power 14 Hp



TECHNICAL CHARACTERISTICS

WEIGHT Kg	95
DIMENSION cm LxWxH	85 x 60 x 65
FLOW L/min	30
PRESSURE Bar	140 kVA
ELECTRIC FLOW	2,2 Kva - 50 Hz (2 prese SHUCO e CE)
ENGINE	Gasoline 14 HP
STARTING	Recoil - Battery
ACCELERATION	Automatic
HOSES LENGTH std	7 mt



Detail generator

MANTA IS THE ONLY HYDRAULIC POWER PACK ON THE MARKET WITH ELECTRIC GENERATOR 2.2 KVA - 230 V

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). Like all the DOA power packs it has high quality components, the frame of stainless steel, the components are mounted on elastic anti-vibration and anti-noise shock mounts, quick couplers are installed on impact free swivel joints. 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

HYDRAULIC POWER 30 L/min @ 140 Bar



ELECTRIC POWER 230 Volt monofase



NITRO

ENGINE POWER 21 Hp - BRIGGS & STRATTON "Vanguard"

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



Double circuits model.

TECHNICAL CHARACTERISTICS

WEIGHT Kg	210
DIMENSION cm LxWxH	95 x 60 x 65
FLOW L/min	10 - 50 (circuito singolo)
FLOW L/min	2 da 25 (circuito doppio) Nel circuito doppio le due portate sono sommabili per avere un'unica portata
PRESSURE Bar	100 - 210
OIL TANK CAPACITY	50 Litres
QUICK COUPLERS	3/4" flush face
ENGINE	Briggs & Stratton 23 Hp
N° CYLINDERS	2 cylinders
STARTING	Battery - Recoil
ACCELERATION	Manual
GASOLINE TANK	30 Litres

NITRO is a hydraulic power pack with 23 HP engine designed to power tools and hydraulic equipment with a high flow or pressure necessity. 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 @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



SCORPION D**20 L/min @ 100 Bar - (12 L/min @ 160 Bar) Engine Diesel Yanmar 7,5 Hp****TECHNICAL CHARACTERISTICS**

WEIGHT Kg	70
DIMENSION cm LxWxH	70 x 50 x 57
FLOW L/min	20 @ 100 Bar (12 @ 160 Bar)
PRESSURE Bar	100 - 160
ENGINE	Yanmar Diesel 7,5 Hp
STARTING	Manual
ACCELERATION	Manual
HOSES LENGTH std	7 mt
GEAR PUMP	Low noise helicoidal gears

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. These characteristics allow to power some tools of the class "C" of EHTMA standard or other type of hydraulic equipment. Many components are common to those of larger power packs such as the stainless steel frame, all the parts suspended on anti vibration shock mounts, the quick couplers installed on impact free swivel fitting, high efficiency oil cooling system that guarantees the best performances even in the hottest climate and with the more demanding applications. Agile and robust **SCORPION D** is ideal in general hydraulic applications and in all works where are needed the hydraulic characteristics of the machine.

RAPTOR D**30 L/min @ 140 Bar - (20 L/min @ 200 Bar) Engine Diesel Yanmar 10,5 p****TECHNICAL CHARACTERISTICS**

WEIGHT Kg	90
DIMENSION cm LxWxH	85 x 60 x 65
FLOW L/min	20 - 30
PRESSURE Bar	130 (or 200 Bar @ 20 L/min)
ENGINE	Yanmar Diesel 10,5 Hp
STARTING	Recoil - Battery
ACCELERAZIONE	Manual
HOSES LENGTH std	7 mt
GEAR PUMP	Low noise helicoidal gears

Hydraulic power pack with 10,5 Hp Diesel engine with battery and recoil start, machine supplies a flow from 20 to 30 L/min @ 130 Bar and can power tools of the group C and D of the EHTMA standard. Like all the DOA power packs **RAPTOR D** has excellent characteristics of transportability, robustness, quietness, reliability and a superior construction quality thanks to the stainless steel frame, all parts suspended on anti vibration shock mounts, quick couplers installed on impact free swivel fitting, high efficiency oil cooling system that guarantees the best performances even in the hottest climate and with the more demanding applications. **RAPTOR D** is ideal in the maintenance of underground pipes, in the civil protection and in all application where is necessary a professional hydraulic power supply.

DINAMO

DINAMO single circuit 15 - 40 L/min @ 150 Bar
DINAMO double circuit 20 + 20 or 40 L/min @ 150 Bar



In the dual circuit model illustration.

TECHNICAL CHARACTERISTICS

WEIGHT dry Kg	227 single - 236 double
WEIGHT con liquidi Kg	250 single - 259 double
DIMENSION cm LxWxH	100 x 65 x 85
WHEELS DIAMETER mm	380
ENGINE	HATZ 2G4 40H - 202 A - 10.0
POWER	21 Hp - 2 Cylinders
FUEL TANK CAPACITY	6 Litres
FLOW Single L/min	15 - 40
FLOW Dual L/min	20+20 or 40
PRESSURE Bar	150 - 200 adjustable
OIL COOLING	2 radiators in parallel
QUICK COUPLERS	1/2 flush face
OIL TANK CAPACITY	17 Litres
GEAR PUMP	Low noise helicoidal gears

DINAMO is a hydraulic power pack for heavy and prolonged uses with 21 Hp Diesel HATZ twin-cylinder engine, the machine is available in two hydraulic configurations:

- DYNAMO SINGLE model with single circuit with only one pump, with flow 40 L / min @ 150 Bar to operate tools of class "D" and "E" of the EHTMA standard.
- DYNAMO 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, to operate two "C" class tools together "Of the EHTMA standard. - A range from 30 to 40 L / min @ 150 Bar, to operate a tool of class "E" of the EHTMA standard.

ADVANTAGES

- DINAMO DUAL has two separate circuits each with its own maximum pressure valve that allows different pressure regulators of the two lines
- 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 ensure the best cooling even in hot climates
- The oversized 21Hp motor ensures total reliability in difficult and prolonged operations
- Manual engine acceleration allows the engine rpm and flow to be dosed to match performance of the tools required
- It is possible to make the machine with hydraulic characteristics different from the standard and according to customer specifications.



NITRO D

DIESEL ENGINE 25 Hp KUBOTA

Flow max 60 L/min adjustable - Pressure max 210 Bar adjustable



In the illustration dual circuit model.

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

TECHNICAL CHARACTERISTICS

WEIGHT Kg	210
DIMENSION cm LxWxH	95 x 60 x 65
FLOW single L/min	20 - 60 (single circuit)
FLOW dual L/min	2 of 30 each line (double circuit) The 2 separated flows can be united to have one single flow
PRESSURE Bar	100 - 210
OIL TANK	50 Litres
QUICK COUPLERS	3/4" flush face
ENGINE	Kubota 25 Hp water cooled
N° CYLINDERS	3 cylinders
STARTING	Battery
ACCELERATION	Manual
TANK CAPACITY	30 Litres

NITRO is a heavy duty hydraulic power unit with a 21Hp Diesel engine 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 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



• THE HYDRAULIC VALVE DIVERSION ON / OFF VALVES ARE ELECTRICALLY OPERATED BY A 12 V SOLENOID



LOTUS

POWER PACK FOR HEAVY DUTY APPLICATION

Flow max 120 L/min - 250 Bar Engine power available 32 Hp - 48 Hp - 62 Hp



TECHNICAL CHARACTERISTICS

WEIGHT Kg	900 a secco
DIMENSIONI cm LxWxH	160 x 90 x 130
ENGINES HATZ	32 Hp - 48 Hp - 62 Hp
FLOW L/min	30 - 120 L/min
PRESSURE Bar	250 <small>pressure can be increased by installing a piston pump</small>
OIL TANK	120 Litres
QUICK COUPLERS	3/4" flush face
ENGINE	Diesel Silent pack (32-48-62 Hp)
ACCELERATION	Manual
FUEL TANK CAPACITY	80 L

LOTUS is a professional power pack with Diesel engine, noise absorbing capsule the power output.

ATTENTION AND PLEASE NOTE
LOTUS power packs in today configuration are no longer available due to termination of the production of HATZ air cooled engines.
We are waiting of the availability of the new water cooled engines whose installation will require a complete redesign of the machine.
New LOTUS will be available from 1st September 2019.
Contact DOA for more information.

- A - Single use
 B - Two gear pumps for two parallel uses or for one single use when joining the two flows
 C - Piston pump (for pressures above 210 bar)
 D - Oil radiator E - Increased hydraulic tank on request

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



ADVANTAGES

- Adjustable flow rate via motor speed control (or with flow control valve that can be requested)
- Real-time adjustable pressures • Operating hours counter, pressure gauge, fuel level
- Bottom base with safety catch tank required by law case of accidental spillage of liquids
- Extremely robust chassis in square tubes and sheet metal with forklifting-base
- Four large upper lifting rings for cranes
- Cataphoresis powder coating ensures maximum protection against knocks and rust
- High capacity battery with marine type detachment for prolonged storage
- Hydraulic oil tank with a large capacity of 120 liter

SUPER RAPTOR E

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



TECHNICAL CHARACTERISTICS

WEIGHT Kg	120
DIMENSION cm LxWxH	85 x 60 x 65
ENGINE	Triphase 400 V - 50 Hz
MOTOR POWER	9 - 11 - 15 Kw
HOSES LENGHT std	7 mt
PRESSURE Bar	140- 210
FLOW @ 2900 rpm/min with pumps of different size	
	26 L/min 32 L/min 40 L/min
	con pompa 9 cc con pompa 11 cc con pompa 14 cc

GEAR PUMP

Low noise helicoidal gears

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 swift

THE POWER OF THE ELECTRIC MOTOR DEPENDS ON THE HYDRAULIC POWER REQUIRED IN PRESSURE AND FLOW, THE VALUES MUST BE SPECIFIED AT THE ORDER.

ENERGA MULTI FLOW POWER PACK WITH INVERTER

ELECTRIC POWER PACK WITH INVERTER

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



TECHNICAL CHARACTERISTICS

WEIGHT Kg	120
DIMENSION cm LxWxH	85 x 60 x 65
FLOW L/min	20 - 30 - 40
PRESSURE Bar	140 - 210
ENGINE	Triphase 400 V - 500 Hz
ELECTIC POWER	11 Kw
HOSES LENGHT std	7 mt
GEAR PUMP	Low noise helicoidal gears

Control panel

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

HYDRAULIC GROUP FOR MANEUVER THE UPPER DECK OF CAR TRANSPORTING TRAINS



POWER PACK CHARACTERISTICS

WEIGHT con liquidi Kg	98
DIMENSION cm LxWxH	130 x 50 x 90
ENGINE	Robin Subaru single cylinder
POWER	14 Hp
STARTING	Battery - Recoil
FUEL	Gasoline
HYDRAULIC POWER	20 L/min @ 180 Bar

HYDRAULIC CHARACTERISTICS DH80

WEIGHT Kg	12
TORQUE/SPEED max	35 Nm / 120 rpm/min
HOSES LENGHT mt	10

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 (see Fig. 1 - Fig. 2).

Powerful and practical the group eliminates fatigue and down time increasing the productivity.

ADVANTAGES

- 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



Fig 1

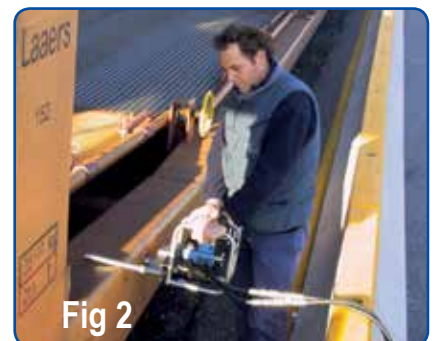


Fig 2

ASPID GETZ

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

Hydraulic power 12 L/min @ 140 Bar



TECHNICAL CHARACTERISTICS

WEIGHT Kg	62
DIMENSION cm LxPxH	70 x 50 x 57
FLOW L/min	12 @ 140 Bar (together)
PRESSURE Bar	140 max @ 12 L/min
OIL TANK CAPACITY	7 Litres
QUICK COUPLERS	3/8" a flush face
PRESSURE GAUGE	Yes
HOSES LENGHT	10 mt - Ø 3/8" - Thread 3/8" BSP
ENGINE	6 Hp Briggs & Stratton
STARTING	Battery - Recoil
ACCELERATION	Manual

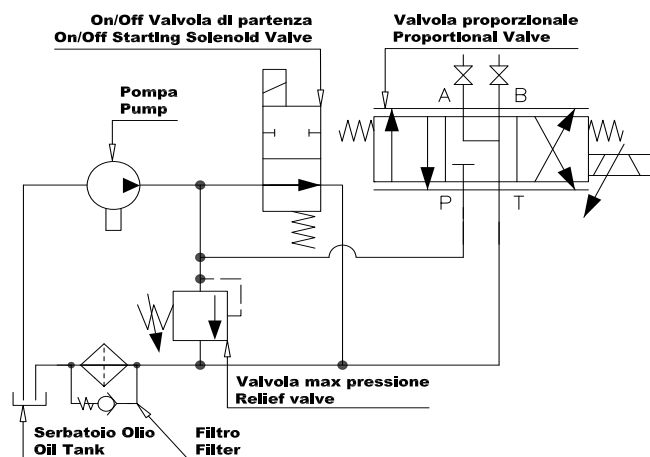
Hydraulic power pack designed to operate hydraulic equipment such as winches, capstans, rotary organs or double-acting cylinders that must be controlled remotely, the machine is equipped with a modern wireless remote control electronic system that, by means of a portable console, controls the hydraulic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



Complete group



REMOTE CONTROL CHARACTERISTICS

- 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 6 EMERGENCY STOP BUTTON**
If pressed, immediately cancels all the electronic parts functions, then press button 6 to reactivate.

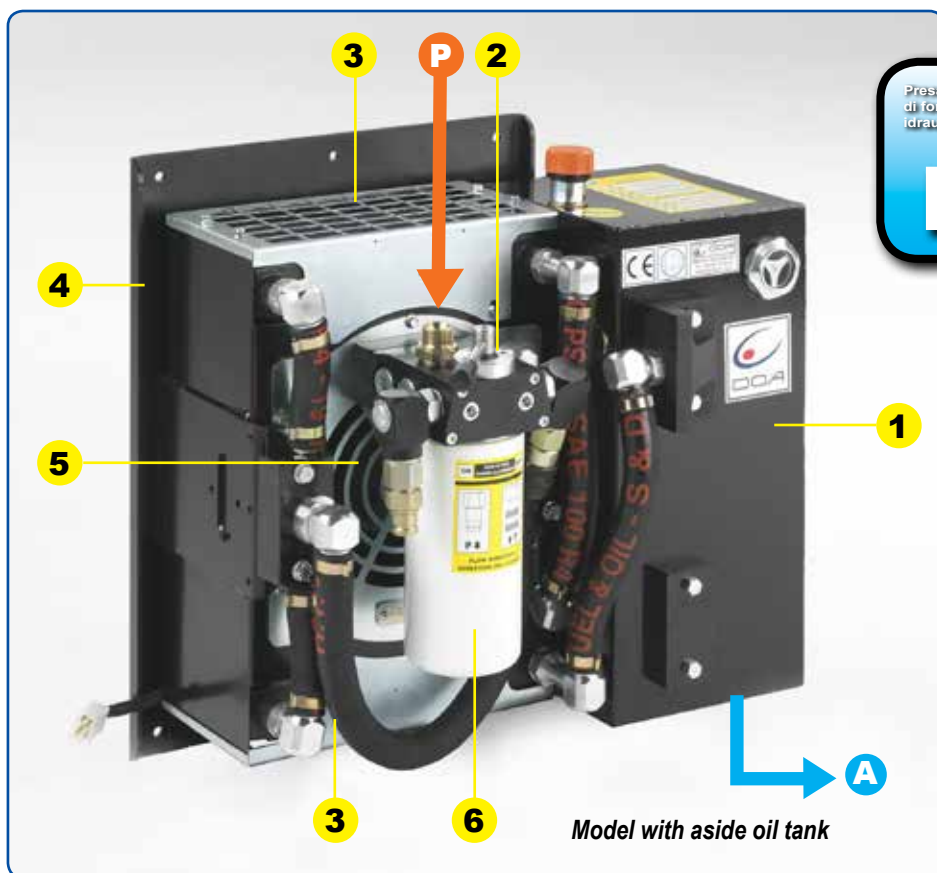


The electronic remote control with the start / stop function of the combustion engine of the power pack with acceleration control of the engine revolutions is available on request and at a higher price.

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. Contact DOA for more information.

HYDROBOX

HYDRAULIC GROUP FOR TRUCKS AND VANS



MAIN COMPONENTS:

- 1 - Hydraulic oil tank
- 2 - ON /OFF valve block
- 3 - N° 2 parallel oil radiators
- 4 - Fixing plate
- 5 - Electric fan
- 6 - Oil filter

A Model with side tank

P Model with upper tank

Model with upper tank



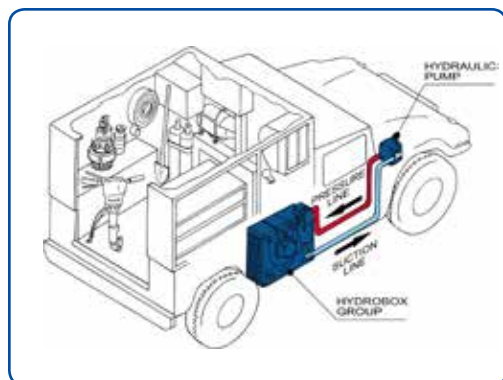
HYDROBOX is a compact hydraulic accessory installable on trucks and vans, can be installed on all vehicles equipped with hydraulic pump or that have the possibility to install it, **HYDROBOX** transforms these vehicles in powerful and economical power sources of hydraulic tools and various hydraulic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

ADVANTAGES

- 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



TECHNICAL CHARACTERISTICS

WEIGHT with oil Kg 38

DIMENSION cm LxWxH 48 x 30 x 45

HYDRAULIC CHARACTERISTICS

TANK CAPACITY 15 L (possibility to have larger tanks capacity)

FLOW L/min 42 (flow max adjustable)

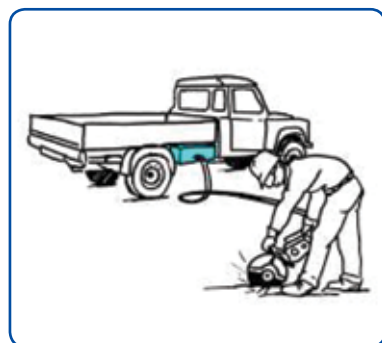
PRESSURE Bar 210 (pressure max adjustable)

RADIATOR

2 high efficiency radiators with centrifugal fan 12 VoltON/OFF

VALVE

3 ways, open center with relief valve





NIGHT DEFENDER

TOWER LIGHT - Led lamps 12 - 24 V



NIGHT DEFENDER is a modern 12V or 24 V illumination system for night operations designed as accessory and powered by the electric circuit of: trucks, 4WD vehicles, fire fighters, civil protection and surveillance vehicles, towing trucks, vans for maintenance of utilities networks, ambulances, mobile workshops , security and police vehicles.

LUMINOUS FLUX IS 12.000 LM. The mast height is adjustable up to mt 1,8 .

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 12 V or 24 V and a **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 for a total of 96 LED that assures **an exceptional illumination and a large light cone area**. The 12 V or 24 V functioning means convenience and safety, the electric absorption 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 assures thousands of hours of use impeccable, precise and safe.

ADVANTAGES & FUNCTIONS

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

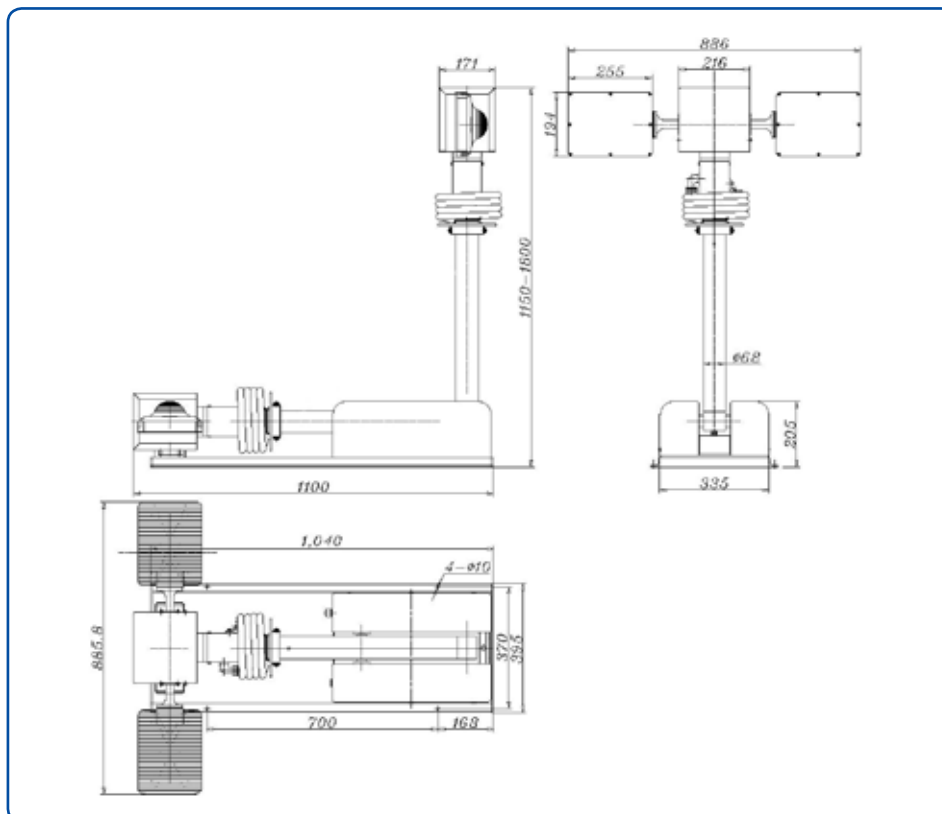
Insensitive to rain, snow, wind, ALWAYS READY FOR USE !

QUALITY IN EVERY DETAIL



TECHNICAL CHARACTERISTICS

WEIGHT	45 Kg
DIMENSION FOLDED	cm 110 x 90 x H 27
DIMENSION WITH MAST EXTENDED	cm 180
MAST HEIGHT	adjustable up to 1,8 mt (plus the height from group lower line base to top)
LUMINOUS FLUX	12.000 Lumen
LIGHT POWER	150 Watt
ELECTRIC ABSORPTION	6 A
POWER SUPPLY	12 or 24 Volt
LIGHT SOURCE	Two lamps with 48 LED each- 96 LED total
LED TYPE	GEN III 3W LED cold light
LAMPS ROTATION	Completely rotating 360°
LAMPS INCLINATION	Adjustable 180° (hour 12 to 6)
N° ELECTRIC MOTOR	4
FUNCTIONING	With vehicle engine ON or OFF
REMOTE CONTROLLERS	Two: 1 wireless + 1 wired with 3 mt cable and jack
MATERIAL OF MAST	Ergal / alu light alloy anodized
MAST MOVEMENT	4 electric motors and a 2 stages pneumatic telescopic cylinder
PNEUMATIC SUPPLY TO CYLINDER	12 V or 24 V micro air compressor
MAST FOLDING	Automatic return from any left previous position
LAMPS LIGHT ON/OFF	Only when the first lower segment of the mast is vertical



OTHER ADVANTAGES OF NIGHT DEFENDER

Avoiding the use of tower lights powered by gasoline or Diesel engines and 240 V generators means

- 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

MOTION SEQUENCE



EXAMPLE OF INSTALLATION



KD 12

Kg 14



TECHNICAL CHARACTERISTICS

WEIGHT Kg	14
DIMENSIONI cm LxP	60 x 19
TOOL BIT SIZE mm	22 x 82 std (7/8"x3-3/4")
FLOW L/min	26 - 34
IDEAL FLOW L/min	30 (on request with flow 20 L/min)
PRESSURE Bar	140
BLOW FREQUENCY	1300 - 1500
IMPACT ENERGY	5,5 KGM
HANDLE TYPE	"D" anti vibration

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

KD12 hydraulic breaker Kg14 with "D type" anti vibration handle, 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.

ADVANTAGES

- Anti vibration handle according to the newest CE regulations allows operators comfort and safety
- Tool can work at flow 20 or 30 L/min (to be specified at the order)
- Tools has 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



KV 16

Kg 16



TECHNICAL CHARACTERISTICS

WEIGHT Kg	16
DIMENSION cm LxP	60 x 45
TOOL BIT SIZE mm	22 x 82 std (7/8"x3-3/4")
FLOW L/min	26 - 34
IDEAL FLOW L/min	30 (on request with flow 20 L/min)
PRESSURE Bar	140
BLOW FREQUENCY	1300 - 1500
IMPACT ENERGY	5,5 KGM
HANDLE TYPE	"T" anti vibration

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

KV16 hydraulic breaker Kg16 with "T type" anti vibration handles suspended on springs , tool is "operator friendly" and its use 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.

ADVANTAGES

- Anti vibration handles according to the newest CE regulations allow operators comfort and safety
- Tool can work at flow 20 or 30 L/min (to be specified at the order)
- Tools has 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
- Completely made of metal without vulnerable plastic parts -Slim tool profile without side rods or sharp angles assures maximum ergonomics
- There are available special percussion heads configured to dig in electric earthing pickets or small poles



KV 19**Kg 20****TECHNICAL CHARACTERISTICS**

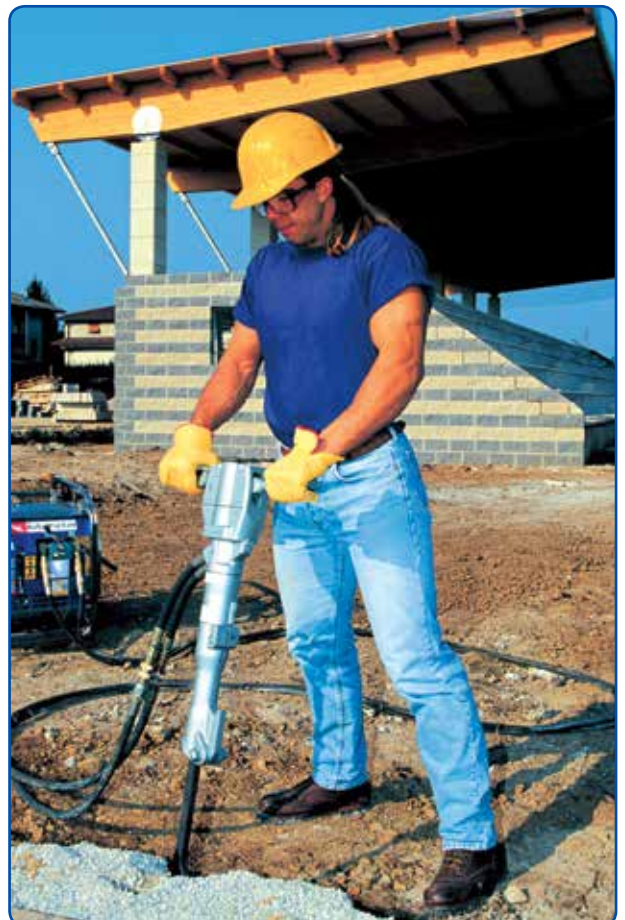
WEIGHT Kg	20
DIMENSIONI cm LxP	72 x 45
TOOL BIT SIZE mm	25 x 108 std (1"x 4 - ¹ / ₄ ")
FLOW L/min	26 - 34
IDEAL FLOW L/min	30 (on request with flow 20 L/min)
PRESSURE Bar	150
BLOW FREQUENCY	1300 - 1500
IMPACT ENERGY	7 KGM
HANDLE TYPE	"T" anti vibration

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 , tool is "operator friendly" and its use 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.

ADVANTAGES

- Anti vibration handles according to the newest CE regulations allow operators comfort and safety
- Tool can work at flow 20 or 30 L/min (to be specified at the order)
- Tools has 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
- Completely made of metal without vulnerable plastic parts
- Slim tool profile without side rods or sharp angles assures maximum ergonomics
- There are available special percussion heads configured to dig in electric earthing pickets or small poles



HD 13

Kg 13

TECHNICAL CHARACTERISTICS

WEIGHT Kg	13
DIMENSION cm LxP	50 x 19
TOOL BIT SIZE mm	SDS MAX
FLOW L/min	18 - 22*
IDEAL FLOW L/min	20
PRESSURE Bar	140
BLOW FREQUENCY	diam. mm 5 - 50
IMPACT ENERGY	diam. mm 10 - 32
DISTANCE CENTER HOLE / WALL	mm 55



**Available
in underwater
version**

* IMPORTANT ON THE FLOW

A higher capacity must not be sent to the tool at 22 L / min, a higher flow rate generates an increase in back pressure which causes the tool to malfunction

13 kg 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.

ADVANTAGES

- 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 that can be bought anywhere



DC 14 - DC 16 - DC 18

HYDRAULIC DISC SAW - 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

TECHNICAL CHARACTERISTICS

	DC14	DC16	DC18
WEIGHT Kg	8,5		
DIMENSION cm LxWxH	70 x 40		
FLOW L/min	20	30	40
PRESSURE Bar	140 - 180		
DISC DIAMETER mm	350	400	400
SHAFT DIMENSION mm	25,4 (1")		
CUTTING CAPACITY cm	12	14,5	14.5
SPEED RPM max	4300 rpm		
ROTATION	CW clockwise		

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.

ADVANTAGES

- Exclusive high performance DOA hydraulic motor that holds disc speed even with high cutting load
- Direct transmission of the disc 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

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")



AS 23

HYDRAULIC GRINDER - disc diameter 230 mm (9")



Available
in underwater
version



Detail of the hydraulic motor

TECHNICAL CHARACTERISTICS

DIMENSION LxP cm	32x25
WEIGHT Kg	5
PRESSURE Bar	140 - 180
FLOW L/min	20 - 30 (specification at the order)
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

AS23 is a compact angular grinder / 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 AS 23 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 23cm or metal brushes for scrubbing or cleaning ship hulls and propellers from marine formations. With cutting disc AS 23 becomes a precise cut off saw which manoeuvrability allows complete rotation around large pipes easing the cut in narrow spaces.

ADVANTAGES

- 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.



GRINDING



CUTTING capacity 50 mm

AK 46 Hydraulic pistol core drill

AK 46 S - core drill for holes ø 30 - 100 mm

AK 46 G - core drill for holes ø 80 - 160 mm



TECHNICAL CHARACTERISTICS

	AK 46 S	AK 46 G
CUT CAPACITY mm	30 - 100	80 - 160
N° SPEED @ 20 L/min	1000 @ 20 L/min	400 @ 20 L/min
N° SPEED @ 30 L/min	1500 @ 20 L/min	600 @ 20 L/min
WEIGHT Kg	8 (without back handle)	
DIMENSION LxPxH	cm 40 x 9 x H 32	
DISTANCE crown / flush with the wall cm	4,5	
ATTACHMENT OF CORE BIT	1 - 1/4" (internal 1/2" BSP)	
FLOW L/min min-max	20 - 30	
PRESSURE Bar min-max	140 - 180	

AK46 is a hydraulic core drill designed for manual use or for use with drill rigs. Tool is available in two configurations

AK46 S for holes from ø 30 a 100 mm

AK46 G for holes from ø 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 create 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!

ADVANTAGES

- Safety valve that automatically cuts rotation in case of block of the core beat, the valve avoids accidents deriving from tool recoil kicks and assuring a safe use when used manually
- 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 installed on drill rig



AK 50

HYDRAULIC CORE DRILL for holes up to ø 700 mm

TECHNICAL CHARACTERISTICS

WEIGHT Kg	13
DIMENSION LxH	54 x 22
ATTACHMENT OF CORE BIT	1 - 1/4" (internal 1/2" BSP)
FLOW L/min	30 - 38
PRESSURE Bar	120 - 200
MOTOR POWER	9 Kw (@38 L/min 140 Bar)
SPEED min/max	90 - 1750 rpm
HOLE DIAMETER CAPACITY	30 - 700 mm



AK50 is a 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

MOTOR TYPE Cubic centimetres	AK50 SPEED/DIAMETER CHART - HYDRAULIC MOTORS RANGE	
	SPEED @ 30 L/min HOLE Ø mm	SPEED @ 38 L/min 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 50-100 hole
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 - ASPIRATORS

WITH •HYDRAULIC •ELECTRIC •GASOLINE MOTORS



HYDRAULIC MOTOR



ELECTRIC MOTOR



GASOLINE MOTOR

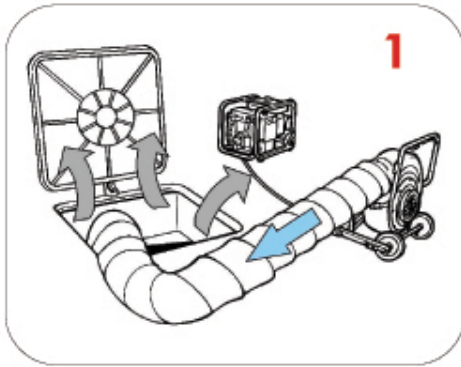
CENTRIFUGAL VENTILATORS - ASPIRATORS

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

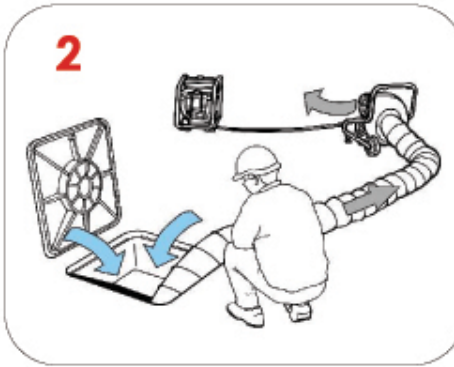
The exclusive DOA system to fix the hoses on tools allows a quick installation on the mouth by simply "button up" the hose edge on pins only by hands without needing screw drivers or belts/clamp. The volute and air fan can be washed up without problems as are in polyethylene, maintenance necessity is 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

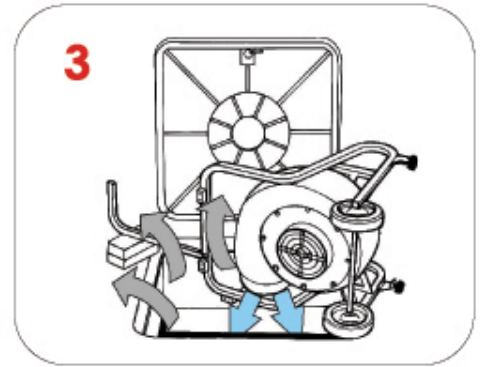
- For maximum safety, never use tool in aspiration if it is not known the nature of the fumes or if cannot exclude that the fumes to be sucked could be flammable or explosive, in such a case or in doubt tool must only be used as POSITIVE ventilator blowing into the ambient ventilating and making a sort 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, CO₂, 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



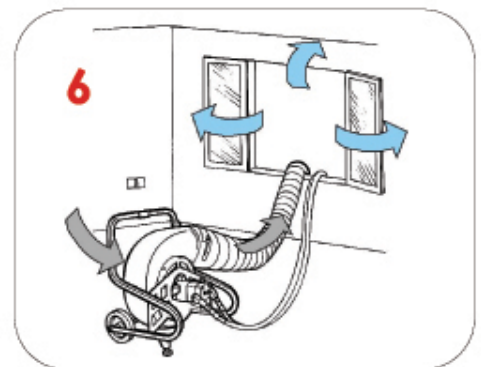
Direct ventilation without air hose



Suction of welding fumes in indoor works



Aspiration and ventilation in a precise point



The fans can be positioned directly in the closed environment



AV 28 H

HYDRAULIC VENTILATOR/ASPIRATOR

Ventilation positive and negative



TECHNICAL CHARACTERISTICS

WEIGHT Kg	21
DIMENSION cm LxPxH	60 x 57 x 74
MOUTH DIAMETER	200 mm (8")
OIL FLOW L/min	20 - 40
OIL PRESSURE Bar	100 - 210
VOLUTE AND FAN	Polyethylene
AIR FLOW	2100 m ³ 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

ADVANTAGES

- 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
- The 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

AV 28 S

VENTILATOR/ASPIRATOR GASOLINE ENGINE

Ventilation positive and negative



TECHNICAL CHARACTERISTICS

WEIGHT Kg	21
DIMENSIONI cm LxPxH	60 x 57 x 74
MOUTH DIAMETER	200 mm (8")
ENGINE POWER	3 Hp HONDA
VOLUTE AND FAN	Polyethylene
AIR FLOW	2100 m ³ x h @ 2900 fan turns
INCLINATION	NO

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 polyethylene and polypropylene materials invulnerable to water, rust and corrosion, the frame is in indestructible stainless steel.

ADVANTAGES

- 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 -

AV 28 E

ASPIRATOR/VENTILATOR ELECTRIC 230 Volt

Ventilation positive and negative



TECHNICAL CHARACTERISTICS

WEIGHT Kg	21
DIMENSION cm LxPxH	60 x 57 x 74
MOUTH DIAMETER	200 mm (8")
ENGINE POWER	1,5 KW - 230 V - 50 Hz
ON/OFF SWITCH	on the motor with emergency button
VOLUTE AND FAN	Polyetilene
AIR FLOW	2100 m³ 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, 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 polyetilene and polypropylene materials invulnerable to water, rust and corrosion, the frame is in indestructible stainless steel

ADVANTAGES

- 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



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



Folding handle with locking system

Typical complete set of the hydraulic model



HYDRAULIC PUMPS

SUBMERSIBLE CENTRIFUGAL PUMPS WITH HYDRAULIC MOTOR

7 REASONS TO PREFER

FOR THE POWER AND PERFORMANCES

The hydraulic pumps have an unbeatable power / weight/ dimension ratio, example an hydraulic motor with power of 15 KW have a weight of only 4 Kg and the dimension of a beer can, which other type of motor either electric, gasoline, pneumatic or other can give such concentrated power? This gives to the hydraulic pumps compactness, lightness, easy handling and unmatched performances



FOR THE SAFETY

Absence of electricity is an implicit assurance of safety as it is impossible to cause electric shocks, a man can work in all safety with the feet in the same water where the hydraulic pump is submerged and pumping, this will not be allowed by law and can be fatal when working with electric pumps, contacts or accidental rupture of the electric power cable can cause accidents and death.



FOR THE POSSIBILITY TO RUN DRY AND FOR MANY OPERATIONAL ADVANTAGES

A hydraulic pump can run dry without limitation and as long as needed, most the pumps either electric or with engine cannot run dry !!! The submersible pumps have not problem of priming, they pump as they touch the water, so it is possible to place the pumps in difficult access points where the traditional self priming pumps with engines cannot stay and operate or will simply sink in the mud.



FOR THE ROBUSTNESS AND FOR THE LONG OPERATIVE LIFE

For sure there are no other pumps that can stand impacts and abuses as the hydraulic pumps can!! Pumps are really strong and are made to resist to the more heavy duty use. The hydraulic functioning is assurance of "self lubrication", so the motor is constantly lubricated by the oil. In case of an accidental block of the impellers rotation, due to the entrance in the pumping chamber a solid object or a clog, nothing will happen to the hydraulic water pump, other pump will have serious damages in such conditions



FOR THE VERSATILITY

The hydraulic pumps are really versatile as they can work powered by power packs and by the hydraulic circuits of excavators, back hoe loaders, trucks, mining machinery, tractors, boats and all working machinery equipped with a sufficient hydraulic circuit.



FOR THE EASY MAINTENANCE

The maintenance needed is minimal and simple, pumps are made with many parts that can be sourced on the market at low price. The simplicity of the hydraulic motors and associated components, the absence of the many complicate parts that are on the electric or self priming pumps make the maintenance easy and possible for any mechanic and without the need special tools or equipment.



FOR THE ECONOMY

For all the above advantages, for the economy of purchase, the economy of running, the economy on maintenance costs, the long operative life etc all this guarantee consistent cuts of costs and the maximum economy.



SP20 pump

mouth 2"



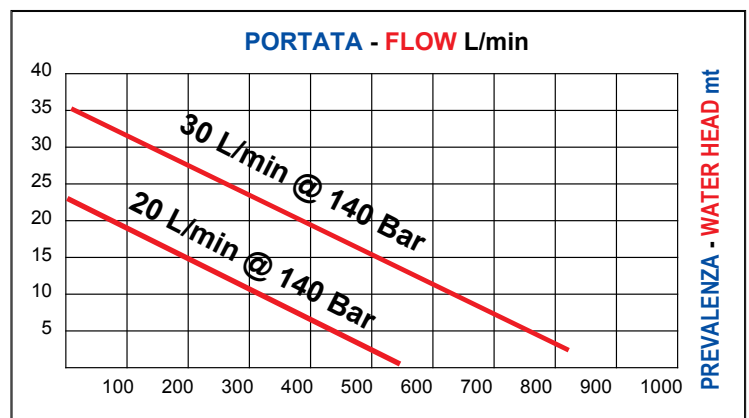
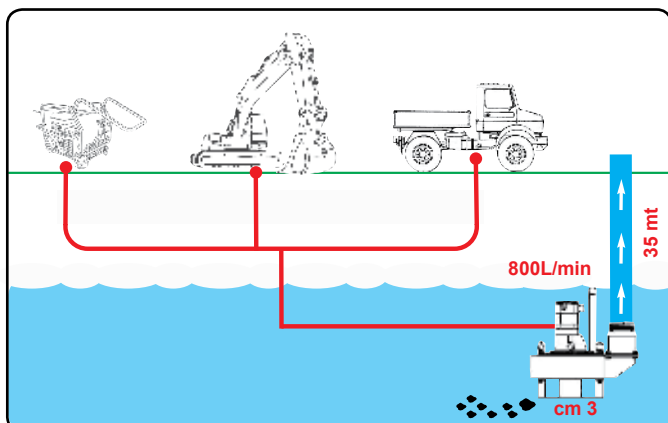
TECHNICAL CHARACTERISTICS

DISCHARGE MOUTH	2" BSP female
DIMENSION cm LxH	22 x H 30
WEIGHT Kg	8
FLOW L/min	800 L/min
WATER HEAD max	35 m
PUMPABLE SOLIDS	3 cm
IMPELLER TYPE	Chromium cast iron
PUMP BODY MATERIAL	Stainless steel
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 and muddy waters and for highly charged fluids in general, small and light provides a flow rate up to 800 L/min and maximum head of 35 meters, can suck solid particles in suspension with dimensions up to 3 cm. It can run dry without damage indefinitely. Small and safe, the SP20 is ideal for emergency services, for the maintenance of urban gas and water networks, as operators can also work with their feet immersed in the same water in which the pump is operating, it is also available in the SP21 ATEX variant for pumping works in explosive environments.

ADVANTAGES

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



WP25 pump

mouth 3"



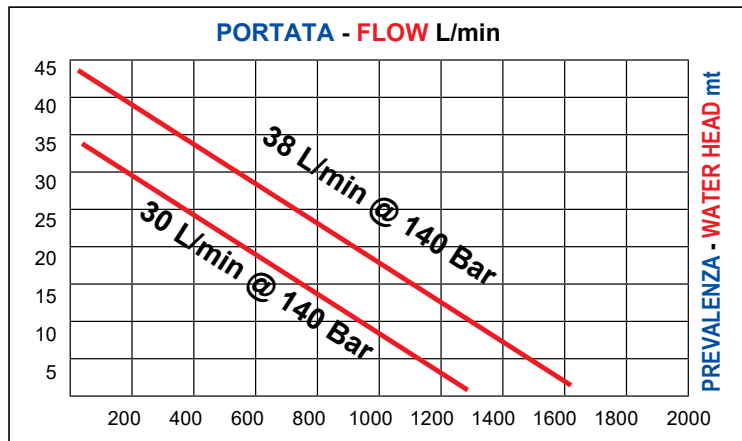
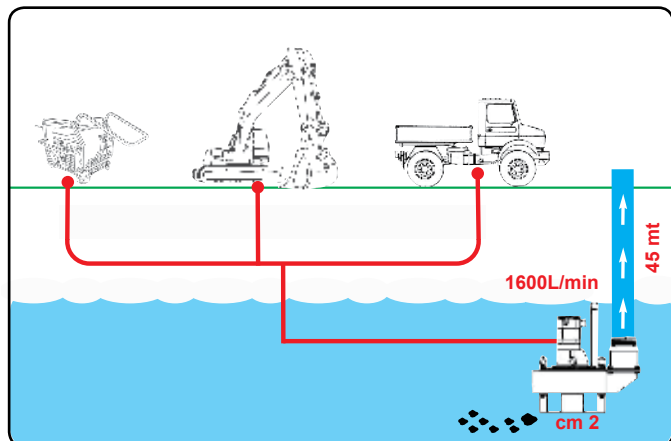
TECHNICAL CHARACTERISTICS

DISCHARGE MOUTH	3" female - UNI 70
DIMENSION cm LxH	30 x H 30
WEIGHT Kg	13
IMPELLER TYPE	open centrifugal
IMPELLER MATERIAL	Chromium cast iron
PUMP BODY MATERIAL	Aluminium
WATER FLOW L/min	1600 L/min
WATER HEAD max	45 m
PUMPABLE SOLIDS	2 cm
MOTOR TYPE	gear motor group 2
OIL FLOW	15 - 38 L/min
IDEAL FLOW	30 L/min
OIL PRESSURE	100 - 210 Bar
BACK PRESSURE	17 Bar max

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. The performances are very high: 1.600 L/min flow rate and head up to 45 meters, hydraulic operation is guaranteed implicit maximum safety, operators can also work with 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 in civil protection and forest fire protection services and road works in general.

ADVANTAGES

- 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.
- A lowered grating available for suction even in a few centimeters of water on tunnel floors and basements
- Hydraulic motor equipped with a one-way valve that prevents accidental oil leaks in the wrong port
- Available with "Viton" hydraulic motor seals for pumping of high temperature fluids
- The pump housing can be flanged for external mounting (not submerged) on water tanks



SP35 pump

mouth 3"

Also available
in configuration



explosion-proof



TECHNICAL CHARACTERISTICS

DISCHARGE MOUTH	3" BSP female
DIMENSION cm LxH	35 x H 37
WEIGHT Kg	10
FLOW L/min	1600 L/min
WATER HEAD max	50 m
DIM. SOLIDI POMPABILI	5 cm (SP35)
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

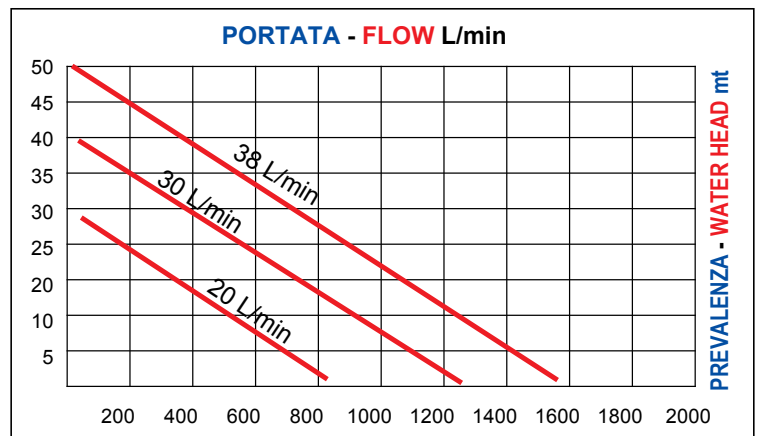
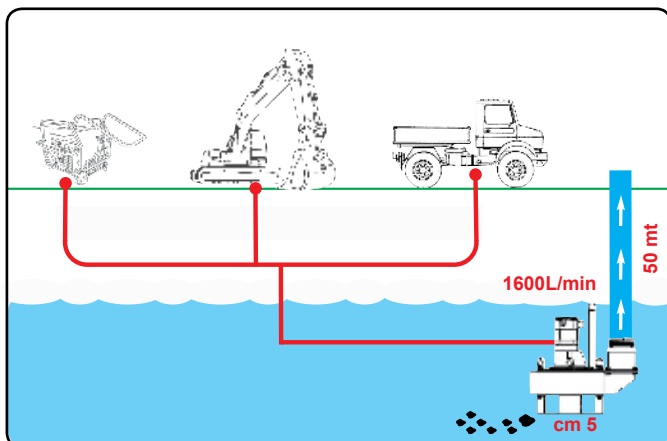
Girante
monocanale



SP35 is a 3" hydraulic trash pump for clear and very loaded fluids, impeller and volute are in stainless steel. The pump has very high performance thanks to the hydraulic operation and the exclusive closed single-channel impeller that allows very high efficiency with flow rates up to 1600 L/min, head up to 50 meters and the possibility of pumping thick or very muddy water with solid bodies in suspension up to 50 mm diameter. The SP35 is ideal for maintenance work on urban networks, pumping very dense liquids, against flooding in civil protection services and road works in general.

ADVANTAGES

- 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 in the wrong 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



SP45 pump

mouth 4"



TECHNICAL CHARACTERISTICS

DISCHARGE MOUTH	4" BSP female
DIMENSION cm LxH	40 x H 50
WEIGHT Kg	28
WATER FLOW L/min	3000 L/min
WATER HEAD max	16 m
PUMPABLE SOLIDS	7 cm
IMPELLER TYPE	Open centrifugal
IMPELLER MATERIAL	Chromium cast iron
VOLUTE PUMP MATERIAL	Stainless steel
MOTOR TYPE	Gears group 2
OIL FLOW	30 - 40 L/min
IDEAL FLOW	38 L/min
OIL PRESSURE	140 - 210 Bar
BACK PRESSURE	17 Bar max

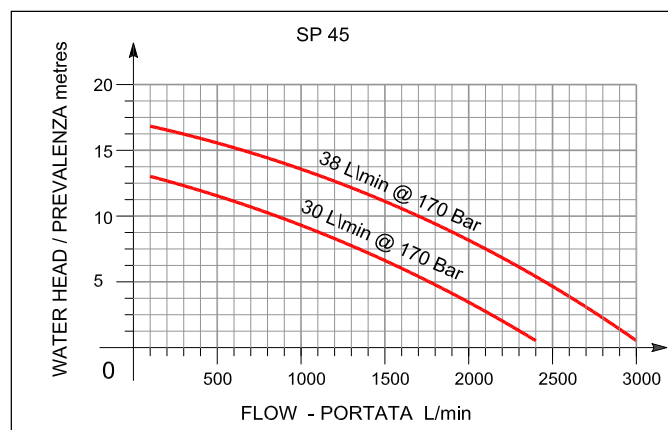
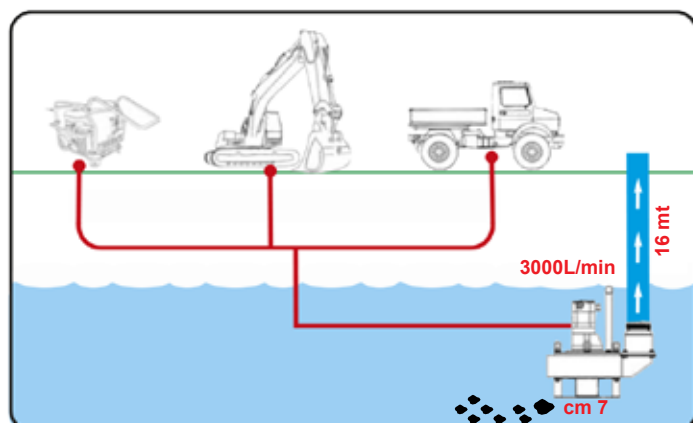
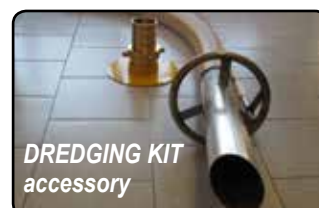
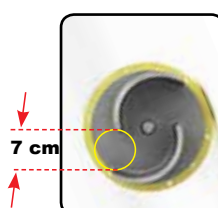
SP45 is a professional 4" trash pump designed for pumping trash or very loaded fluids with a concentration of sludge in the liquid up to 20%, it can pump suspended solid bodies with dimensions of 70 mm. The performances are very high: flow rate up to 3000 L/min and a head up to 16 meters. THE PUMP BODY 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 operation 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 depletion of biological pits and in water purification plants.

ADVANTAGES

- 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 control units 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 in the wrong port
- Available with "Viton" hydraulic motor seals for pumping high-temperature fluids
- With the "Dredging Kit" accessory mounted on the vent Aspiration can act as a small sorbonna to directly aspirate sand, light sludge and solid, melted and suspended material



Possibility to install
on the discharge mouth
the SG4 mixer for liquids
very dense.



The pumps in ATEX configuration have two differences compared to standard pumps: the cast iron hydraulic motor, instead of aluminum, the solids are 10 mm max for all models, the rest of the features and the performances are the same of the standard models and respectively SP21 = SP20 SP36 = SP35 SP46 = SP45 illustrated in the previous pages

ATEX CATEGORY FOR ALL PUMPS

ATEX CATEGORY/CLASS:
II2G c IIB T5 X-20°≤Tamb≤+50°C

SP21 pump

mouth 2"



TECHNICAL CHARACTERISTICS

DISCHARGE MOUTH	2" female - UNI 45		
DIMENSION cm LxH	22 x 30	WEIGHT Kg	8
IMPELLER TYPE	Open centrifuge in chrome cast iron		
BODY PUMP MATERIAL	Stainless steel		
FLOW MAX L/min	800 L/min	WATER HEAD max	35 m
SOLID PUMPABLE DIM.	1 cm		
OIL FLOW	15 - 30 L/min	IDEAL	20 L/min
OIL PRESSURE	100 - 210 Bar		
BACK PRESSURE max	17 Bar		

Performance curves as model SP20 on the previous pages

SP 36 pump



mouth 3"



TECHNICAL CHARACTERISTICS

DISCHARGE MOUTH	3"female - UNI 70		
DIMENSION cm LxH	35 x 37	WEIGHT Kg	10
IMPELLER TYPE	Monocanal in stainless steel		
BODY PUMP MATERIAL	stainless steel		
FLOW MAX L/min	1600 L/min	WATER HEAD max	50 m
PUMPABLE SOLID	1 cm		
OIL FLOW	15 - 38 L/min	IDEAL	30 L/min
OIL PRESSURE	100 - 210 Bar		
BACK PRESSURE max	17 Bar		

Performance curves as model SP35 on the previous pages

SP 46 pump



mouth 4"



TECHNICAL CHARACTERISTICS

DISCHARGE MOUTH	4" female - UNI 100		
DIMENSION cm LxH	40 x 50	PESO Kg	28
IMPELLER TYPE	Open centrifugal in chromium cast iron		
BODY PUMP MATERIAL	Stainless steel		
PORTATA MAX L/min	3000 L/min	WATER HEAD max	16 m
PUMPABLE SOLID	1 cm		
OIL FLOW	30 - 40 L/min	IDEAL	38 L/min
OIL PRESSURE	100 - 210 Bar		
BACK PRESSURE max	17 Bar		

Performance curves as model SP45 on the previous pages

SP55 pump

mouth 5"



shearing
impeller
can cut many
solids



TECHNICAL CHARACTERISTICS

DISCHARGE MOUTH	5" BSP female
DIMENSION cm LxH	50 x H 80
WEIGHT Kg	95

WATER CHARACTERISTICS - H2O

FLOW L/min	5500 L/min - (330 m ³ /H)
WATER HEAD max	29 m
PUMPABLE SOLIDS	5,5 cm
IMPELLER TYPE	Open with shearing effect
IMPELLER MATERIAL	High tensile steel
BODY PUMP MATERIAL	Ductile iron

HYDRAULIC CHARACTERISTICS

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 HOSES DIMENSION	3/4" minimum size

SP55 is a powerful submersible trash pump with hydraulic piston motor with 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 head up to 29 meters - pumpable solids 5.5 cm. SP55 can work with oil pipes up to 60 meters long from the driving machines. 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 (model SP55B illustrated in the following pages).

ADVANTAGES

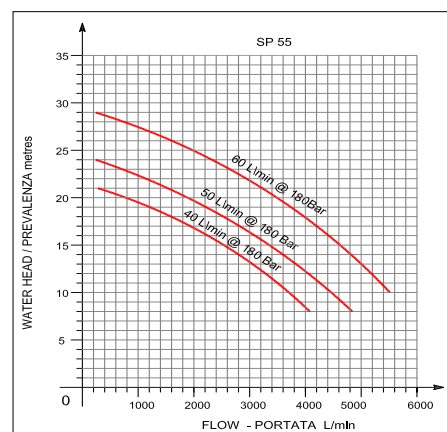
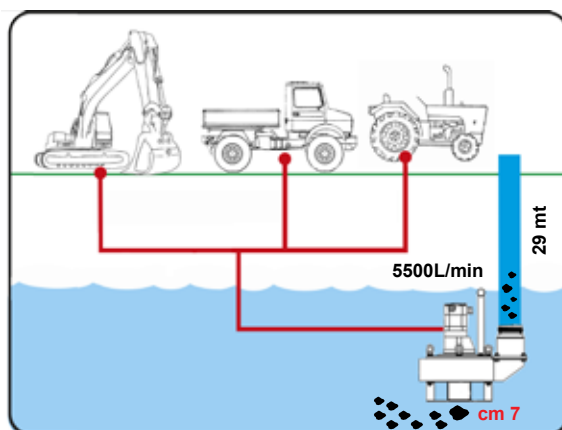


Ideal response for emergencies from floods

- It sucks everything! The shearing impeller can shred and pump branches, algae, rags, ropes, bags and solid objects with dimensions up to 50 mm
- High performance, weight / size / power ratio unmatched by other types of pump - long working life, minimal maintenance
- Nothing electricity means safety, it can be used with people 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 dry pump without damage indefinitely.
- 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



SG4 fluid mixer



Possibility to install on the discharge mouth the SG4 accessory that allows to shake the very heavy / dense fluids to make them pumpable suction

SP65 pump

mouth 6"



shearing
impeller
can cut many
solids

TECHNICAL CHARACTERISTICS

DISCHARGE MOUTH	6" BSP female
DIMENSIONI cm LxH	55 x H 90
WEIGHT Kg	135

WATER CHARACTERISTICS - H2O

FLOW L/min	8000 L/min - (480 m ³ /H)
WATER HEAD max	39 m
PUMPABLE SOLIDS	6,5 cm
IMPELLER TYPE	Open with shearing effect
IMPELLER MATERIAL	High tensile steel
BODY PUMP MATERIAL	Ductile iron

HYDRAULIC CHARACTERISTICS

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 HOSES DIMENSION	3/4" minimum size

SP65 is a powerful immersion trash pump for sewage water with hydraulic piston motor with a 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 5500 L / min with head up to 39 meters - pumpable solids 6.5 cm. SP65 can work with oil pipes up to 60 meters long from the driving machines. 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 (model SP65B illustrated in the following pages).

ADVANTAGES

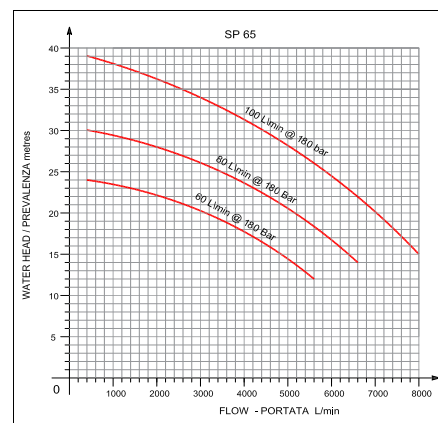
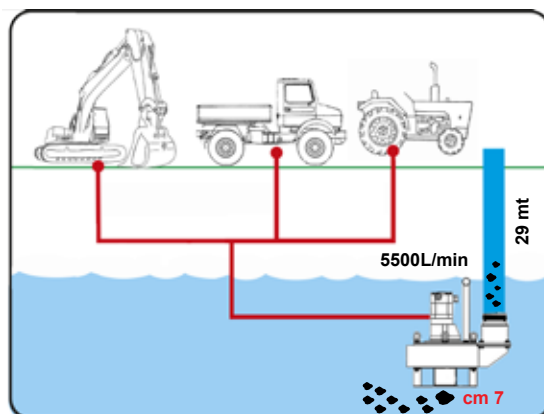


Ideal response for emergencies from floods

- It sucks everything! The shearing impeller can shred and pump branches, algae, rags, ropes, bags and solid objects with dimensions up to 50 mm
- High performance, weight / size / power ratio unmatched by other types of pump - long working life, minimal maintenance
- Nothing electricity means safety, it can be used with people 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 dry pump without damage indefinitely.
- 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



SG4 fluid mixer



Possibility to install on the discharge mouth the SG4 accessory that allows to shake the very heavy / dense fluids to make them pumpable suction

SP 55 B - SP 65 B

Trash pumps with bracket for installation on excavators arm



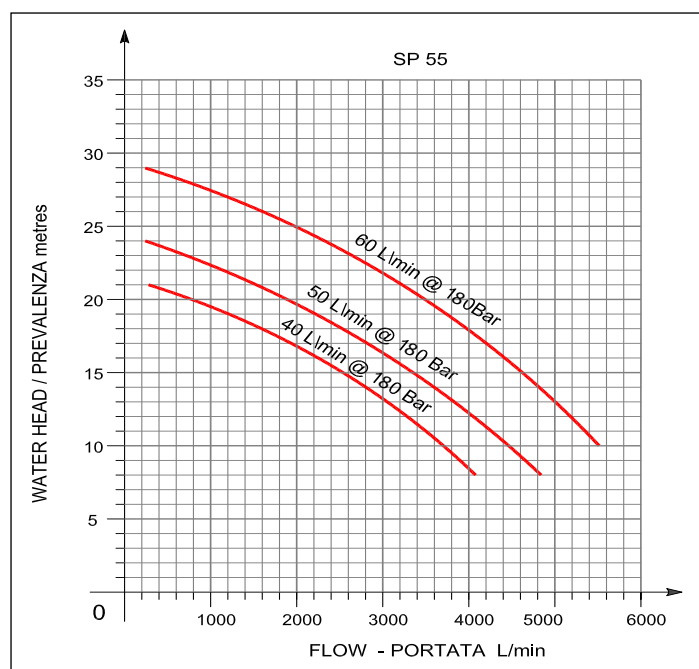
SP55B - SP65B are an adaptation of the standard pump models SP55 - SP65 but configured with a simple modification kit for mounting on the arm of excavators in the same position of bucket and powered by the hydraulic circuit of the same machines. Pumps exploit the great hydraulic power of the machines transforming them into an incredibly powerful pumping equipment. Use and installation are quick and easy operations, the "breaker" accessory circuit which is present on the arm of all the machines is always suitable for the hydraulic characteristics of the pumps so that do not require any hydraulic adjustment or valving. Their very high power makes them ideal for all fast movement of large volumes of water.

SP55 B flow capacity is up to 5500 L/min (330 cubic meters/hour) - Water head up to 29 meters

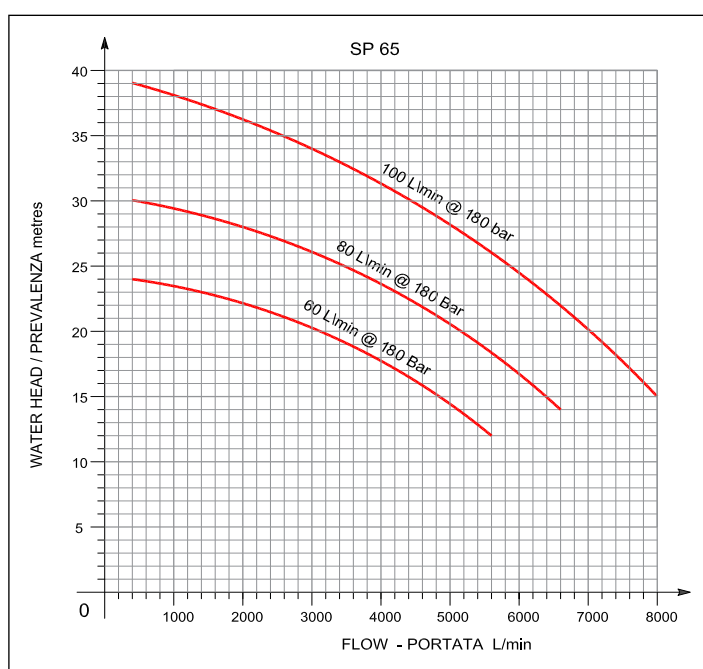
SP65 B flow capacity is up to 8000 L/min (480 cubic meters/hour) - Water head up to 39 meters



SP55B - SP65B have formidable performance and are often irreplaceable for function and versatility in civil protection operations as an emergency response to flooding



Curve SP55



Curve SP65

ADVANTAGES? MANY AND CONCRETE

High performance, weight / size / power ratio unmatched by other types of pumps.

Powerful and easy to use, they can be installed in a few minutes on the arm of the excavators and transform the earthmoving machines into very efficient pumps, they are very robust and require minimal and easy maintenance.

They guarantee total use of the excavator, increasing its versatility and maximizing the economy.

Possibility to install the SG4 accessory (sold separately) which makes it possible to make liquid liquids very dense or with dry surfaces or with semi-solid agglomerates that would prevent pumping.

They suck everything! The shearing impeller can shred and pump branches, algae, rags, ropes, bags and solid objects with dimensions up to 50 mm, they can pump very muddy water and very heavy and dense liquids.

The earth-moving machines can also run in deep water and on muddy and rough soils, thanks to the length of the arms the pumps can be positioned in difficult to access or dangerous areas, unthinkable to reach for normal wheeled pump bikes.

No electric current means implicit safety, can be used with people "in the water" near the pump (dangerous situation and prohibited by law with electro pumps).

The high quality piston hydraulic motor is a guarantee of: technical superiority, maximum hydraulic efficiency and operation without the need for adjustment of the operating hydraulic circuit.

They can be detached from the excavator arms and operate as normal immersion pumps with oil pipes up to 50 meters long from the operating vehicle



PRESSURE WASHER PUMPS WITH HYDRAULIC MOTOR

WHY 1520

THY 2715



● Illustrated model **WHY 1520**

WHY 1520 - THY 2715 are professional pressure washer pumps powered by gear hydraulic motor available in three configurations. The water pumping part is rotative type with three ceramic pistons to assure a long reliable service. Robust and incredibly powerfull are ideal used from the hydraulic circuit of trucks, concrete pumps, street sweepers, fishing boats and various vehicles. Typical use is in the urban hygiene and the removal of wall graffities. Hydraulic functioning is implicit safety, no current means no possibility of electric shock hazard.

ADVANTAGES

- 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.

WATER CHARACTERISTICS	WHY 1520	THY 2715
WASHING POWER	15 L/min - 200 Bar	27 L/min - 150 Bar
FLUID TYPE	Filtred water - Temperature max 50° C	
WATER PRESSURE REGULATION	YES	
THREAD DIMENSION	IN suction port 3/8" Female - OUT pressure port 3/8" Male	
LUBE OIL	SAE 75W90	

TECHNICAL AND HYDRAULIC CHARACTERISTICS both pumps		
WEIGHT AND DIMENSION L x P x H	12 Kg - 320 x 270 x H 220 mm	
FLOW AND PRESSURE oil	25 - 40 L/min - 150 - 210 Bax max	
IDEAL FLOW AND PRESSURE	30 L/min - 210 Bar	
PUMP SPEED	ideal and maximum 1750 revolution x minute	
TOLLERABLE BACKPRESSURE	15 Bar max	
STD MOTOR DISPLACEMENT AND POWER NEEDED	14 cc - 7,5 HP	

3 MODELS WHY 1520

WHY1520	WHY1520 H	WHY1520 HE
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.	Hydraulic motor with adjustable control of: maximum flow/speed and pressure, with electric solenoid 12 V to stop pump rotation when trigger of water gun is released and an electric signal stops motor.
When the gun trigger is released the water keeps bypassing inside the pump without pressure in free circulation.	When the gun trigger is realeased the water keeps bypassing inside the pump without pressure in free circulation.	

SG 4

MIXING VALVE FOR FLUIDIFICATION OF VERY LOADED WATER



SG4 fluid mixer body

TECHNICAL CHARACTERISTICS

FLUID PASSAGE	equivalent a 5,5"
TOTAL HIGH	370 mm
WEIGHT	9 Kg
TYPE CYLINDER	double effect
HYDRAULIC VALVE	3 positions, open center



**3 position control valve
for opening / closing windows of pump**

SG4 is a accessory for trash pumps DOA models SP45 - SP55 - SP65. The accessory is a set formed by:

- SG4 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 gate

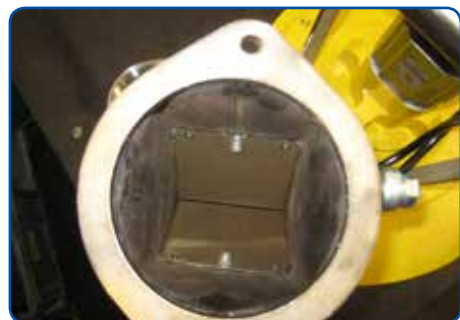
SG4 transforms the pumps in "mixers" to allows to shake and reduce to a more fluid state liquids that can be thick, loaded and viscous like those that can be found in waste water treatment plants, anaerobic digesters, API separators, petrochemical plants and refineries, environmental operations, and for moving all liquids not easy to pump.

The **SG4** is a "retrofit accessory" that can be installed on pumps after the purchase, 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 "balls" must be disintegrated to become more fluid and be pumped, the balls neutralisation is needed also to avoid that may choke the pump inlet. After some minutes of this treatment the liquid can be pumped better and the pump will be used in its natural function.

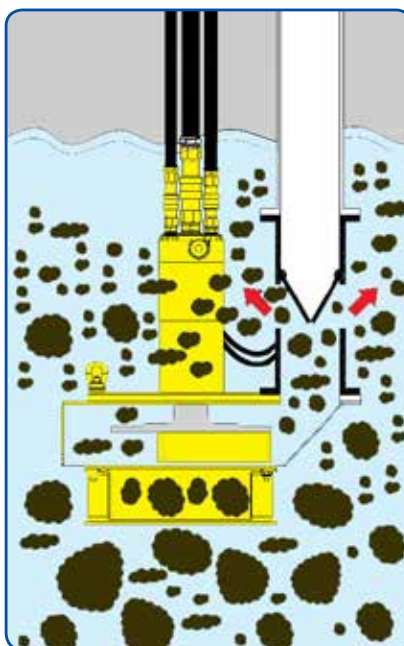
The length of the hydraulic pipe that connects the three-position valve to the mixer body must be prepared by the customer or communicated to DOA at the time of purchase and can be supplied at more price



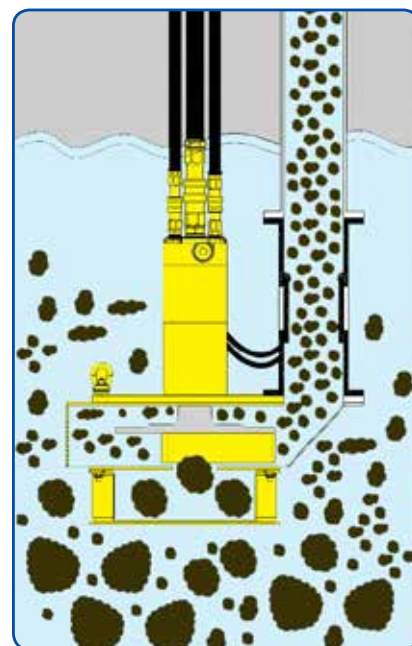
SG4 installed on SP45 pump



The pump discharge mouth with windows closed



**WITH WINDOWS CLOSED
pump impeller is mincing
suspended solids**



**WITH WINDOWS OPEN
fluid is pumped up from
the output mouth**

TWP 40

WATER PUMP FOR TESTING PRESSURE HOLDING CAPACITY ON WATER NETWORKS



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.

ADVANTAGES

- 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

TECHNICAL CHARACTERISTICS

WEIGHT DRY	50 Kg
DIMENSION LxH	cm 70 x 50 x H 70
ENGINE	Briggs & Stratton 6 Hp Gasoline
STARTING	Recoil

WATER CHARACTERISTICS

WATER FLOW	60 L/min max adjustable
WATER PRESSURE	40 Bar max adjustable
WATER TANK	30 Litres
WATER OUTLET CONNECTION	Female swivel 3/8" BSP

WP116

SELF-PRIMING PUMP WITH HYDRAULIC MOTOR FOR WATER EVACUATION FROM SIPHONS OF GAS NETWORKS



TECHNICAL CHARACTERISTICS

WEIGHT	20 Kg
DIMENSION LxH	50 cm x 30 cm x H 30 cm

WATER CHARACTERISTICS

WATER FLOW	110 L/min @ 1 mt - 25 L/min @ 20 mt
WATER HEAD	20 mt (2 Bar)
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

HYDRAULIC CHARACTERISTICS

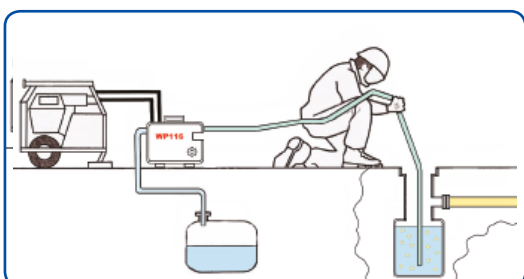
OIL FLOW	20 - 30 L/min
IDEAL OIL FLOW	20 L/min
OIL PRESSURE	100 - 210 Bar

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.

ADVANTAGES

- 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



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

FDC 01

FOLDING MEMBRANE FOR EMERGENCY COVERING OF MANHOLES AND AVOID CANALIZATION OF DANGEROUS FLUIDS



Universal modular system for a quick plugging of drains and sewers in case of spills of liquids and dangerous, toxic substances, whose incomparable property is that of being able to be used also in angled drains with a "wolf mouth aperture".

It is effective and applies very quickly in case of loss of dangerous substances and threats of environmental disasters; it can be used horizontally to cover the pit of wells in both plastic and steel.

Among the exclusive advantages, one is being able to be used repeatedly, its easy application and the versatility of use for all types of drains. It folds easily.

It is used on the clean entrances of the sewer system drains, applying the part with the membrane downwards, with the labels visible from above. The recommended use is shown in the chemical resistance table.

Use temperatures: from -20°C up to $+60^{\circ}\text{C}$.

Materials: 0.9 mm isotropic magnetic sheet, PUR flexi special sheet 0.06 mm, PES / PVC sheet.

Once folded it becomes a flat panel, easily placed on board the vehicles, taking up minimal space.

WORKING PRINCIPLE

FDC 01 uses the simple physical phenomenon of pressure difference. Liquids have a tendency to flow through the holes in the manhole, but also through the unsealed edges. If you want to avoid this,

it is necessary to put in place a barrier, which tampons and seals in safety. What works best

in these cases it is a sheet, with a higher flexibility, on which the hydrostatic pressure acts in way

to obtain the best possible adhesion, even on irregular surfaces and edges. For this reason, a sheet has been chosen consisting of a material resistant

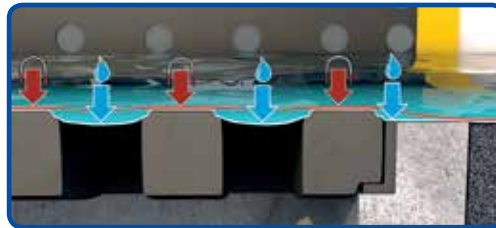
to the action of chemical agents, elastic and rigid with a magnetic elastic sheet inserted with holes, thus allowing the access of liquids in the lower sheet in PUR.



TECHNICAL CHARACTERISTICS

WEIGHT	1,5 Kg
DIMENSION LxH	cm 75 x 63 x 1

It may never serve but in a emergency can limit serious and very costly environmental damage.



PATENTED PRODUCT, PROTECTED BY INDUSTRIAL PROPERTY WITH DEPOSITED UTILITY MODEL



For manholes and gratings with side entrance on the sidewalks



Suitable for entrances to grates of discharge of considerable size. It seals the inputs even if they are overlapped

Suitable for all duct and drainage systems, also for curved manholes



AH 15

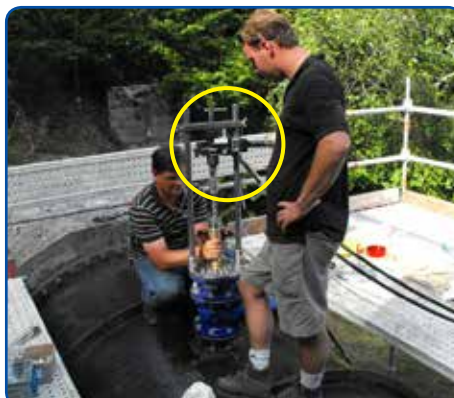
HYDRAULIC MOTOR FOR DRIVING PIPE DRILLING/HOT TAPPING EQUIPMENT

TECHNICAL CHARACTERISTICS

WEIGHT	5,5 Kg
DIMENSION LxH	cm 18 x 56
SQUARE DRIVE SIZE	12 mm - 1/2"
FLOW	15 - 30 L/min
PRESSURE	140 Bar
ROTATION SPEED	10 - 150 rpm adjustable
TORQUE FORCE	55 Nm adjustable
ROTATION	CW - CCW

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 AH 15 can be used also for the rotation of other rotary devices like: gates irrigation canals, lifting/lowering of rail road devises, 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) AH 15 eliminates the fatigue and increases the productivity.



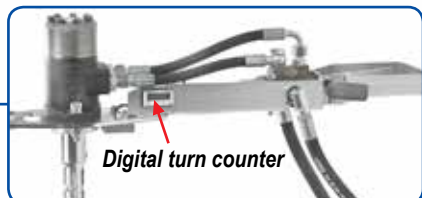
AH15 used in operating opening/closing the gates of irrigation canals



AH15 in action on typical pipe drilling/hot tapping equipment

V031 HYDRAULIC MOTOR

FOR THE MANEUVER OF GATES OF WATER NETWORKS



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. V031 increases productivity and simplifies operations, it can not be missing in the equipment of modernly equipped teams

TECHNICAL CHARACTERISTICS

WEIGHT Kg	16
DIMENSION cm LxPxH	95 x 33 x 21
ROTATION	CW - CCW
N° TURNS a 20 L/min	0 - 70 giri/min
N° TURNS a 30 L/min	0 - 100 giri/min
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

HYDRAULIC CHARACTERISTICS

FLOW L/min	15 - 40
PRESSURE Bar	140 - 180

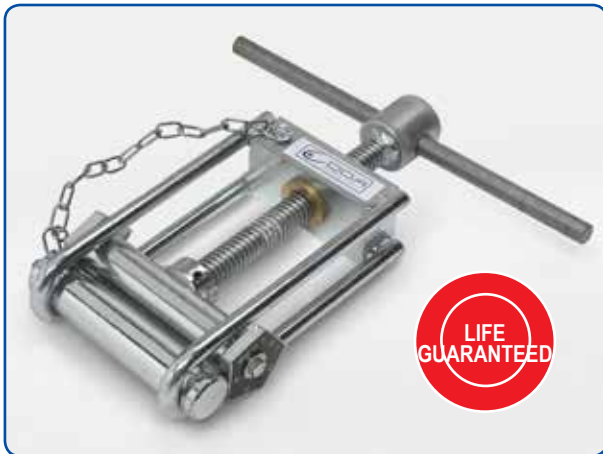
ADVANTAGES

- 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.



ST 10

PIPE COMPRESSING TOOL FOR PE PIPE UP TO 67 mm



TECHNICAL CHARACTERISTICS

WEIGHT	4,7 Kg
PIPES TYPE	PE diameter 16 - 63 mm
MATERIAL	steel - bronze
DIMENSION (Figure 1)	A - 300 mm
	B - 390 mm open / 297 mm close
	C - 100 mm
	D - 100 mm mouth open
	E - 54 mm

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.

ADVANTAGES

- 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 the threaded bronze bush

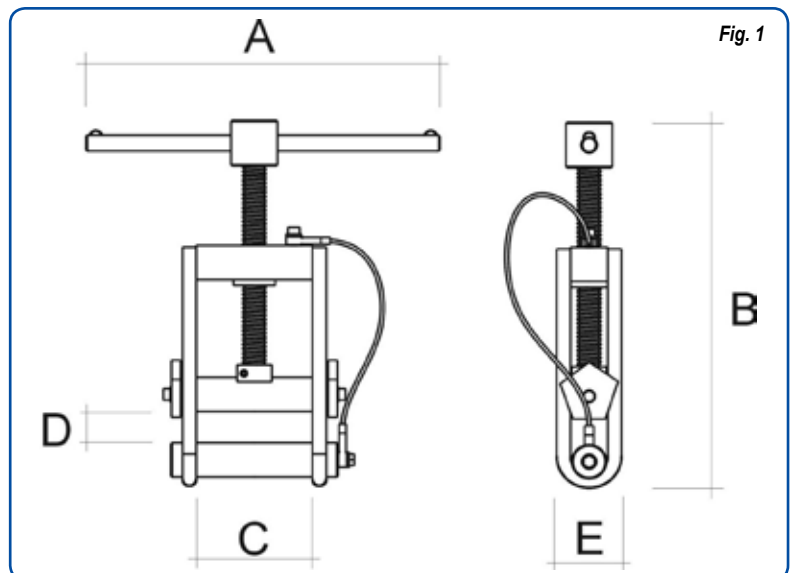
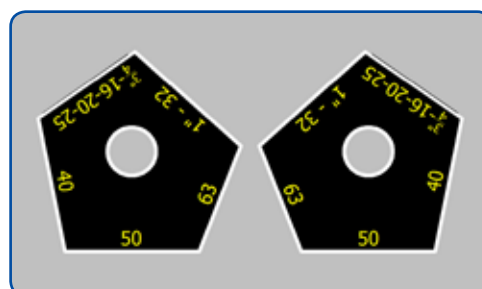


Fig. 1



Detail of calibers anti-yielding

ST 225

HYDRAULIC PIPE COMPRESSING TOOL FOR POLYETHYLENE



TECHNICAL CHARACTERISTICS

PIPE COMPRESSING CAPACITY PE pipe from mm 90 to 225 (3" - 9")

PE PIPES TYPE SDR 11 - SDR 17

WEIGHT 55 Kg without lower jaw

FLEXIBLE OIL HOSE Diameter 1/4" - SAE100 R2

OIL HOSE LENGTH 3 mt with flat face quick couplings

HYDRAULIC PUMP TYPE Double acting with flattening / opening inversion

PUMP WEIGHT 18 Kg

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". ST 225 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.

ADVANTAGES

- 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



Hydraulic pump and flexible hoses



Rotating calipers / spacers to avoid over compression of the pipe and consequential PE fibres damages



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



The complete set ST225

PC 49

HYDRAULIC EMERGENCY STEEL PIPE COMPRESSING EQUIPMENT



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.

ATEX PROTECTION
II2G cII T5 X-20° ≤ Tamb ≤ +50°C

ITALIAN PATENT PENDING

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



PC 49

HYDRAULIC EMERGENCY STEEL PIPE COMPRESSING EQUIPMENT

TECHNICAL CHARACTERISTICS

MAXIMUM STEEL PIPE DIAMETER	max Ø 65 mm - THICKNESS 3 mm
MOUTH OPENING	67 mm
TOOL WEIGHT	16 kg
WEIGHT COMPLETE SET (metal box, tool, pipe, clamp)	42 kg
HYDRAULIC PUMP	pedal operated 700 Bar
OIL HOSE LENGTH	5 mt
ATEX PROTECTION METHOD	II2G cII T5 X-20° ≤ Tamb ≤ +50°C

ADVANTAGES

- Power, and intervention speed, simple use
- Tool feature ATEX anti-explosive protection against possible fire blast and explosions
- 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



PC 105

PIPE COMPRESSING EQUIPMENT FOR THE ARREST OF FLOW ON PIPES IN STEEL AND POLYETILENE



TECHNICAL CHARACTERISTICS

COMPRESSABLE STEEL PIPES	max 80 mm - thickness 4 mm
COMPRESSABLE PE PIPES	max 100 mm - thickness 20 mm
WEIGHT	cylinder/cross bar Kg 8
CYLINDER STROKE	mm 100
CROSS BAR WIDTH	mm 215
HOSE LENGTH STD	mt 4
PRESSURE	Bar 700
HAND PUMP TYPE	Manual with flexible hose and couplers

PC 105 is a powerful hydraulic equipment designed for rapidly pressing pipes, in steel and polyethylene, 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 polyethylene 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 wich can be left in position as long as necessary. The operation can be repeated with other clamps, in another point of pipe. (see picture 1)

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.

ADVANTAGES

- 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)



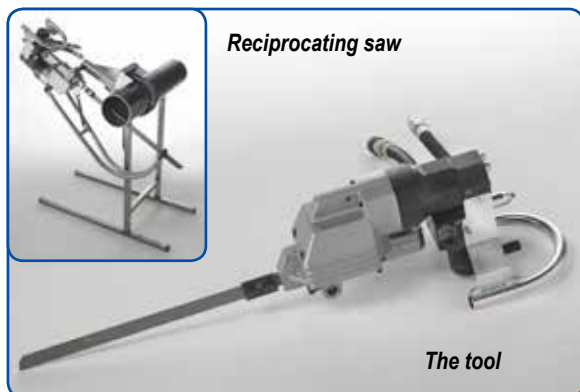
• Pumping operation for pipe compressing



• 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.

RS 80

HYDRAULIC RECIPROCATING SAW FOR METAL AND PE PIPES



TECHNICAL CHARACTERISTICS

WEIGHT	9 Kg
DIMENSION LxH (senza lama)	cm 50 x 19
CUTTING CAPACITY	600 mm
BLADE STROKE	25 mm
CUT FREQUENCY	10 - 200 for min adjustable
FLOW	20 - 30 L/min
PRESSURE	100 - 210 Bar

RS 80 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.

ADVANTAGES

- 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



LAME

BLADE LENGTH	MATERIAL	CUTTING CAPACITY	CODE
300 mm	STEEL - CAST IRON NOT FERROSI	170 mm	A671121
400 mm		260 mm	A671122
500 mm		350 mm	A671123
600 mm		440 mm	A671124
800 mm		650 mm	A671125
900 mm		750 mm	A671126
200 mm	RIGID PLASTIC	120 mm	A671127
400 mm		260 mm	A671128
800 mm		700 mm	A671129
300 mm	POLYETHYLENE CEMENT	170 mm	A671130
530 mm		450 mm	A671131

DIAMOND BLADES FOR ONLY DRY CUTTING

BLADE LENGTH	MATERIAL	CUTTING CAPACITY	CODE
320 mm	POLYETHYLENE CEMENT	200	A671132
490 mm		320	A671133
800 mm		700	A671134

SINGLE-PHASE GENERATORS WITH HYDRAULIC MOTOR

HG 3000



HG 3000 - HG 5000 are compact hydraulic generators with power respectively of :

- HG 3000: 3 KVA - 230 volt - 50 HZ - AC
- HG 5000: 5 KVA - 230 volt - 50 HZ - AC

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, illuminate and also welding, avoiding the presence of gasoline engine generators with their associated problems of starting, maintenance, fuel availability, transport, exhaust fumes and noise.

HG 3000 - HG 5000 are a high quality products that increase significantly the equipment versatility improving productivity and providing anywhere is necessary low cost and low maintenance electricity.

Low noise hydraulic motor with helicoidal gears

NOTE: DOA also produces generators with higher power and with different electrical characteristics according to customer specifications - For special configurations contact DOA

TECHNICAL CHARACTERISTICS

	HG 3000	HG 5000
WEIGHT Kg	23	25
DIMENSION cm LxPxH	60 x 22 x 28	62 x 22 x 28

ELECTRIC CHARACTERISTICS

SINGLE PHASE POWER	3 Kva	5 Kva
VOLT/ FREQUENCY	230 Vac - 50 Hz	
ELECTRIC SOCKETS	1 CEE + 1 SHUKO	
VOLT METER	YES with LED display	
THERMAL PROTECTION	YES with reset	
IP PROTECTION	IP 23 (can be requested with higher protection)	

HYDRAULIC CHARACTERISTICS (Interaction - Flow/Pressure/Electric power on graph on following pages)

FLOW min/max	25 - 40 L/min	30 - 40 L/min
FLOW/PRESSURE example	25 L/min @ 140 Bar (motor 7,5 cc)	30 L/min @ 140 Bar (motor 9 cc)
FLOW/PRESSURE example	30 L/min @ 140 Bar (motor 8,5 cc)	40 L/min @ 140 Bar (motor 11 cc)
PRESSURE min/max	140 - 210 Bar	
BACKPRESSURE	17 Bar max	

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

NOTE:

- 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.

ELECTRIC GENERATORS TRI/single phase WITH HYDRAULIC MOTOR

HG 7000



HG 7000 e HG 10000 are compact hydraulic generators with power respectively of :

- HG 7000 7 KvA 400 Vac 50 Hz (in single phase 3 KvA)
 - HG 10000 10 KvA - 400 Vac - 50 Hz (in single phase 4,5 KvA)
- 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, illuminate and also welding, avoiding the presence of gasoline engine generators with their associated problems of starting, maintenance, fuel availability, transport, exhaust fumes and noise.

HG 7000 - HG 10000 are a high quality products that increase significantly the equipment versatility improving productivity and providing anywhere is necessary low cost and low maintenance electricity

Low noise hydraulic motor with helicoidal gears

NOTE: DOA also produces generators with higher power and with different electrical characteristics according to customer specifications - For special configurations contact DOA

TECHNICAL CHARACTERISTICS

	HG 7000	HG 10000
WEIGHT Kg	35	40
DIMENSION cm LxPxH	60 x 22 x 36	60 x 22 x 40

ELECTRIC CHARACTERISTICS

TRI PHASE POWER	7 KvA	10 KvA
SINGLE PHASE POWER	3 KvA	4,5 KvA
VOLT/ FREQUENCY	400 - 230 Vac - 50 Hz	
ELECTRIC SOCKETS	1 CEE + 1 SHUKO	
VOLT METER	YES con scala a LED	
THERMAL PROTECTION	YES with reset	
IP PROTECTION	IP 23 (can be requested with higher protection)	

HYDRAULIC CHARACTERISTICS (Interaction - Flow/Pressure/Electric power on graph on following pages)

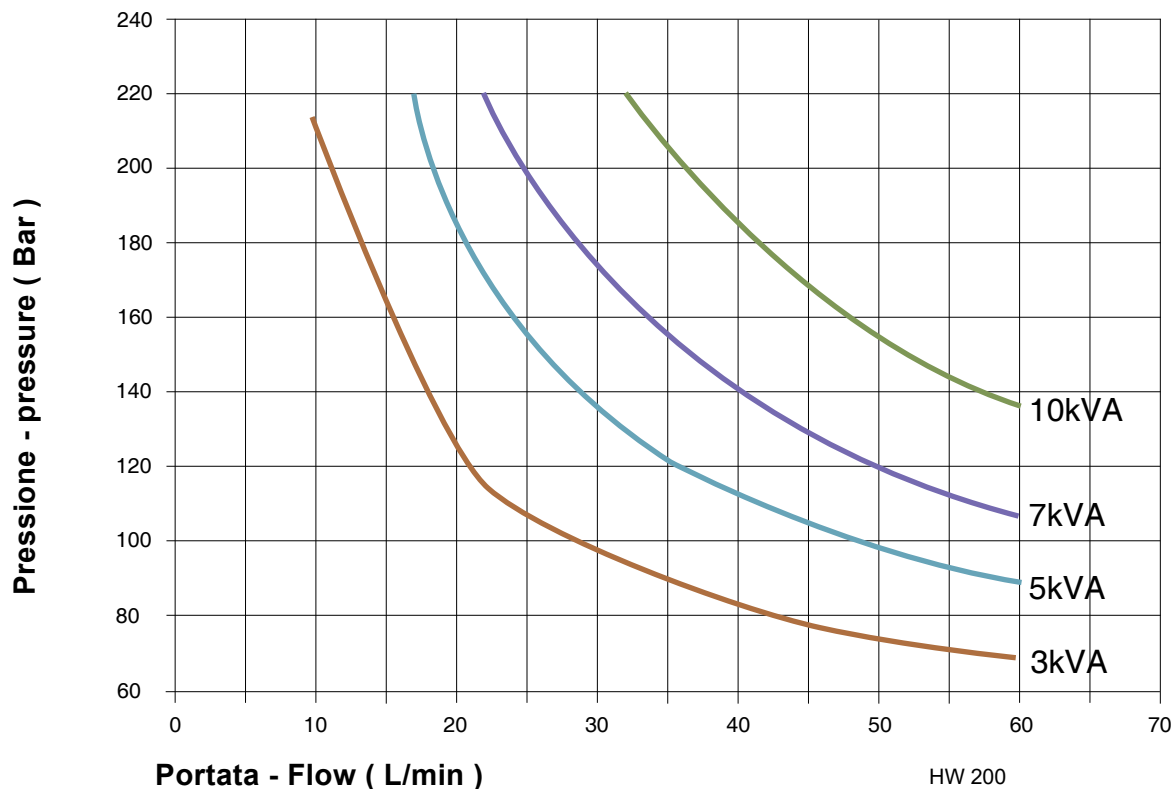
FLOW min/max	30 - 45 L/min	40 - 55 L/min
FLOW/PRESSURE example	30 L/min @ 180 Bar (motor 8,5 cc)	40 L/min @ 185 Bar (motor 11 cc)
FLOW/PRESSURE example	40 L/min @ 145 Bar (motor 11 cc)	50 L/min @ 160 Bar (motor 14 cc)
PRESSURE min/max	150 - 210 Bar	
BACKPRESSURE	17 Bar max	

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

NOTE:

- 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.
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CHARACTERISTIC CURVES OF ELECTRIC POWER REFERRED TO THE PRIMARY HYDRAULIC POWER (FLOW X PRESSURE)



- The curves are indicative and non-binding referring to hydraulic circuits in ideal conditions of: back pressure, actual available pressure, viscosity and temperature of the oil, type and displacement of the hydraulic motor and in general to the efficiency of the hydraulic circuit.
- The pressures indicated in the graph are to be considered real dynamic pressures, in fact the maximum normal pressure measured "in static condition" at zero flow always corresponds to a usable real value of at least 10% lower.



Fig. 1

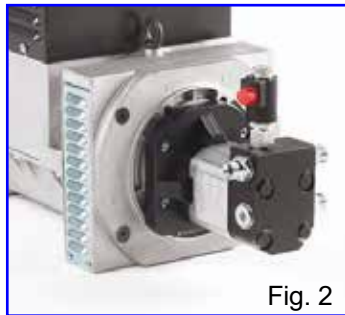


Fig. 2



Fig. 3

In addition to the standard motor with flow rate / revolving valve (Fig.1), generators with different hydraulic motor configurations can be made as required, for example:

- Fig.2 motor with flow / revolving control valve, an open center and ON / OFF activation by means of a 12 or 24 Volt electric coil.
 - Fig.3 motor with flow / revolving valve, open center and ON / OFF activation by means of 12 or 24 Volt electric coil and possibility of in line operation with LOAD SENSING main circuits.
- Contact DOA for more information

Low noise hydraulic motor with helicoidal gears

WELDERS WITH HYDRAULIC MOTOR

WITH SOCKETS FOR SINGLE-THREE-PHASE GENERATORS

HW 220



HW 300



HW 220 ed HW 300 are professional DC hydraulic welders with power respectively of 220 and 300 amps, products can also be used as tri / mono phase current generators. Can be powered by the hydraulic circuit of excavators, trucks, mobile workshops and by all machines equipped with a suitable hydraulic circuit. Hydraulics 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

ADVANTAGES

- 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

TECHNICAL CHARACTERISTICS	HW 220	HW 300
WEIGHT	55 Kg	95 Kg
LENGTH	540 mm	670 mm
WIDTH	230 mm	230 mm
HEIGHT	400 mm	470 mm
WELDING CHARACTERISTICS		
WELDING POWER	220 A	300 A
WELDER TYPE	2 POLES - DIRECT CURRENT - BRUSHES ROTATING TYPE WELDERS	
ELECTRODES	ALL TYPES INCLUDED BASIC AND CELLULOSIC	
REGULATION	CONTINEOUS	CONTINEOUS POSSIBILITY REMOTE CONTROL
GENERATOR CHARACTERISTICS		
POWER	3,5 KVA in 1 PHASE 6,5 KVA in 3 PHASE	4 KVA in 1 PHASE 10 KVA in 3 PHASE
PROTECTION	IP 21 - IP 23 a richiesta - IP 23 on request	
SOCKETS	1 CE 1 phase - 1 CE 3 phase	1 CE 1 phase - 1 CE 3 phase
VOLT METER	YES	YES
THERMIC PROTECTION	YES	YES
HYDRAULIC CHARACTERISTICS		
DRIVING POWER*	12,5 HP	20 HP@ 300 A 16 HP@ 250 A
FLOW L/min*	35 - 50	40 - 55
PRESSURE Bar*	150 - 210 Bar	150 - 210 Bar
BACK PRESSURE	max 17 Bar	max 17 Bar
REGULATION FLOW/SPEED	YES	YES

COMPRESSORS WITH HYDRAULIC MOTOR

CH 75 OEM

CH 100 OEM



Air compressors with hydraulic motor designed for use with trucks, sky platforms, mobile workshops, excavators and all machines equipped with a suitable hydraulic circuit.

- CH 75 provides compressed area with a maximum flow rate of 600 L / min of area yielded at a pressure of 7 Bar
- CH 100 provides compressed area with a maximum flow rate of 1000 L / min. Of area yielded at a pressure of 7 Bar.

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

The product do not include: control components such as pressure gauges, air pressure regulating valves, air tank, hydraulic or pneumatic quick couplings. These elements must be chosed sized, organized and installed by the machine manufacturer builder on which the heads will be mounted.

HYDRAULIC MOTORS

The compressors can be supplied with two types of hydraulic motor A and B:



MOTOR A

Hydraulic motor equipped with speed / flow, control valve, check valve against wrong oil direction to motor, the motor activation is only hydraulic, the compressor runs as soon as it receives hydraulic power.



MOTOR B

Open center motor with speed / flow control and with ON / OFF rotation activation by means of a 12 or 24 V electric solenoid integrated in the motor, this allows the compressor to start and stop thanks to an electrical signal received from a pressure switch, as it happens in electric compressors whose rotation is stopped by a signal when the air tank is full and there is no air need, motor has check valve against wrong oil direction

TECHNICAL CHARACTERISTICS	CH 75 OEM	CH 100 OEM
WEIGHT with base	55 Kg	65 Kg
LENGTH	60 cm	67 cm
WIDTH	35 cm	40 cm
HEIGHT	49 cm	54 cm
PNEUMATIC CHARACTERISTICS		
AIR FLOW OUTPUT	600 L/min	950 L/min
AIR PRESSURE	max 10,5 Bar	max 10,5 Bar
HEAD TYPE	2 STAGES	2 STAGES
PRESSURE REGULATION	OEM MODELS ARE FORMED BY THE COMPRESSOR HEAD AND HYDRAULIC MOTOR, THE INSTALLATOR HAS TO PROVIDE REGULATIONS, AIR TANK AND PIPING FOR INSTALLATION ON BOARD MACHINES	
PRESSURE GAUGE		
CHASSIS TYPE	STEEL BASE PLATE	STEEL BASE PLATE
HYDRAULIC CHARACTERISTICS		
DRIVING POWER	5,5 KW (10 HP)	7,5 KW (10 HP)
FLOW L/min	30 - 45	35 - 50
PRESSIONE Bar	150 - 210 Bar	150 - 210 Bar
BACK PRESSURE	max 17 Bar	max 17 Bar
GEAR MOTOR	GEAR TYPE LOW NOISE - TYPE A - TYPE B with solenoid	

RFP50 RFP50V

Hydraulic valves for
regulation flow pressure



Hydraulic valves for the 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.

RFP 50 FLOW / PRESSURE CONTROL VALVE

The regulated flow is fixed and pre set at the factory and cannot be changed, this fix configuration of the out put flow avoids manumission and errors

Customer must require the needed regulated flow at the order.

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

The valve can regulate the following fixed flows:

15 - 21 - 25 - 30 - 36 L/min

The regulated pressure valve must be adjusted by the customer

DIMENSION LxPxH	130 x 100 x 50 mm
FLOW IN max	60 L/min max
REGULATED FLOWS	15 - 21 - 25 - 30 - 36 L/min
MAXIMUM PRESSURE IN	250 Bar max
REGULATED PRESSURES	10 - 200 Bar
PORT THREAD IN	3/4" BSP female
PORT THREAD REG	1/2" BSP female

RFP 50V FLOW / PRESSURE CONTROL VALVE

The output regulated flow is adjustable according to necessity in any moment,

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

The valve can regulate a maximum flow of 38 L/min

The regulated pressure valve must be adjusted by the customer

DIMENSION LxPxH	130 x 100 x 50 mm
FLOW IN max	60 L/min max
REGULATED FLOWS	0 - 36 L/min
MAXIMUM PRESSURE IN	250 Bar max
REGULATED PRESSURES	10 - 200 Bar
PORT THREAD IN	3/4" BSP female
PORT THREAD REG	1/2" BSP female

RFP50 - RFP50V are supplied with short hoses and quick couplers as shown in illustration

RFP70

Hydraulic valve for
regulation flow pressure



RFP 70R FLOW / PRESSURE CONTROL VALVE

Both threads in pressure nad regulated side are 1" BSP

Hydraulic valve for the 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,

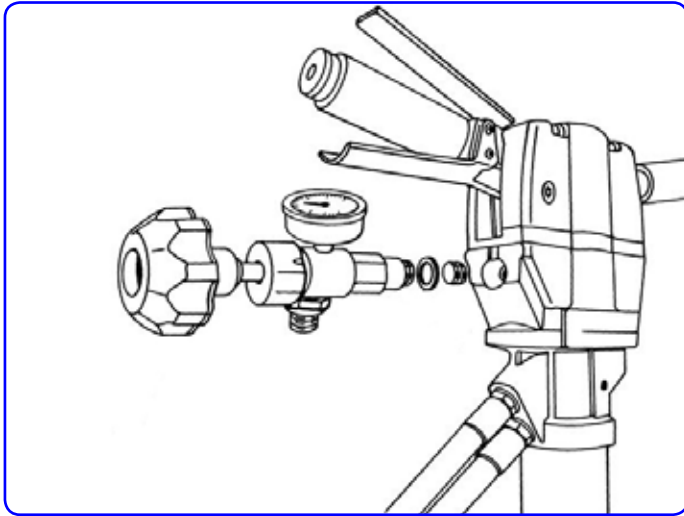
The regulated pressure valve must be adjusted by the customer.

DIMENSION LxPxH	150 x 150 x 65 mm
FLOW IN max	90 L/min max
REGULATED FLOW	0 - 50 L/min
MAXIMUM PRESSURE IN	350 Bar max
REGULATED PRESSURES	10 - 250 Bar
PORT THREAD IN	1" BSP female
PORT THREAD REG	1" BSP female

RFP 70 valve is supplied with 1/2" flush face quick couplers only in the regulated side as shown in illustration

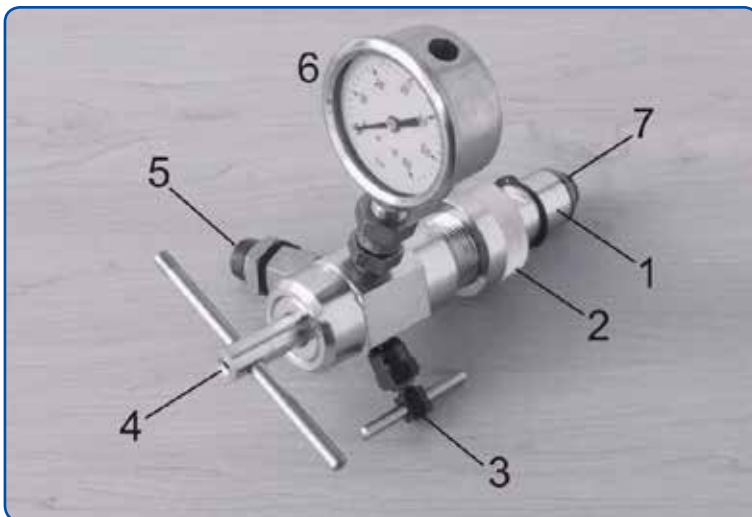
CT 100

Service tool for control and charge nitrogen into DOA breakers accumulators



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.



1. ADAPTOR

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

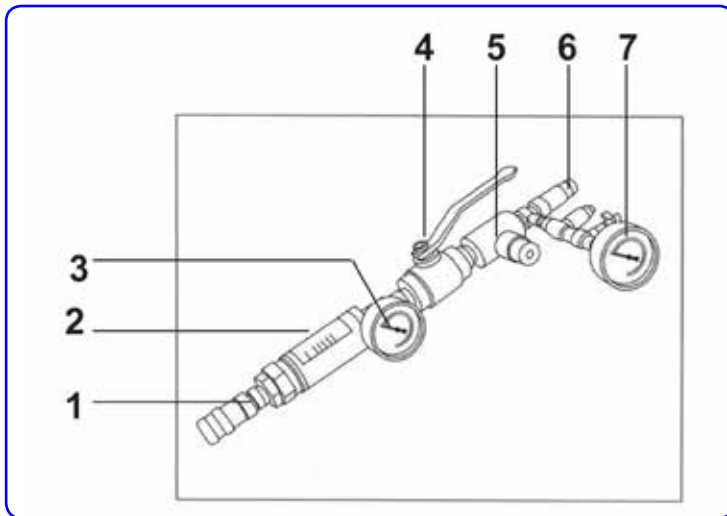
5. NITROGEN INLET IN THE TESTER

6. PRESSURE GAUGE

7. INTERNAL ALLEN KEY THAT OPEN/CLOSES THE VALVE CAP ACTING ON THE HANDLE

HYDRAULIC TESTER

For pressure and Flow



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.

1. FEMALE QUICK COUPLER – OIL ENTERS IN THE TESTER
2. FLOW METER WITH SCALE EITHER IN LITRES AND GPM
3. HIGH PRESSURE GAUGE
4. FAST RESTRICTION VALVE
5. FINE TUNING RESTRICTION VALVE
6. MALE QUICK COUPLER - OIL EXITS THE TESTER
7. BACK PRESSURE GAUGE

TYPICAL MEASUREMENTS & USE

- 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.

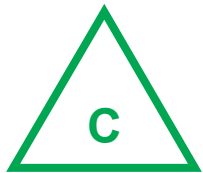
TECHNICAL CHARACTERISTICS

WEIGHT	2,5 Kg
LENGTH	50 cm
FLOW Max	60 L/min
PRESSURE Max	210 Bar
BACKPRESSURE	Max 60 Bar

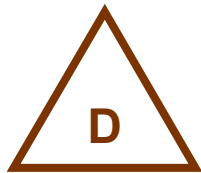
EHTMA SYMBOLS - TRIANGULAR LABELS ON HYDRAULIC TOOLS AND POWER PACKS

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.

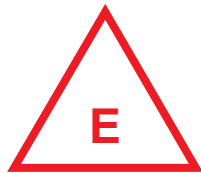
EHTMA has defined a number of functional standards for hydraulic tools and their circuits. The standards refer to the flow and pressure values that a tool must work on. This classification is represented by coloured triangular symbols with four different alphabetical letters in the centre: C, or D, or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



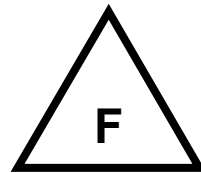
20 L/min
140 Bar
COLORE VERDE



30 L/min
140 Bar
COLORE MARRONE



38 L/min
140 Bar
COLORE ROSSO



50 L/min
140 Bar
COLORE NERO

This classification ensures recognition of the operative data of the hydraulic tool and to match its compatibility with the circuits of power packs or other hydraulic machines. This guarantees against mistaken connections, avoiding damage to the equipment and possible accidents.

NOTE: 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 than 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 35-45L/min
RELIEF VALVE SETTING TOOL OPERATING PRESSURE (pressure load created by the tool while working)	150 - 165 Bar all categories ≤ 140 Bar lower or equal to 140 Bar		
MAXIMUM TOLLERABLE BACK PRESSURE 17 Bar (250 PSI) ideal zero Bar Back pressure value on return line must be measured at the connecting point of the tool with the return hose and at the lower oil temperature			
HYDRAULIC OIL TEMPERATURE The circuit must be equipped with an oil radiator that must limit temperature at max 60° C even in the hottest climate.	MAXIMUM 60° C (140° F) at the maximum expected ambient temperature		
OIL RADIATOR HEAT REJECTION CAPACITY	Category C 3 HP (2.24 kW)	Category D 5 HP (3.73 kW)	Category E 7 HP (5.22 kW)

At a temperature difference of 22 ° C between the ambient temperature and the maximum oil (delta T)

NOTE: 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
Minimum filtration value required: 20 µ - micron
Filter must be sized for flow of at least 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)

FOLLOWING CHART SHOWS COMMON HYDRAULIC OILS - USE THESE FLUIDS OR THEIR EQUIVALENTS

	CLIMI FREDDI	CLIMI CALDI
AGIP	ARNICA 32	ARNICA 46
BP	ENERGOL SHF- HV 32	ENERGOL SHF- HV 46
CASTROL	HYPIN AWH-M 32	HYPIN AWH-M 46
TOTAL	EQUIVIS ZS 32	EQUIVIS ZS 46
ESSO	UNIVIS N 32	UNIVIS N 46
MOBIL	DTE EXCEL 32	DTE EXCEL 46
Q8	HANDEL 32	HANDEL 46
SHELL	TELLUS T 32	TELLUS T 46
GAZPROM NEFT	HYDRAULIC HDZ 32	HYDRAULIC HDZ 46
TEXACO	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.

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.

HYDRAULIC TOOLS

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