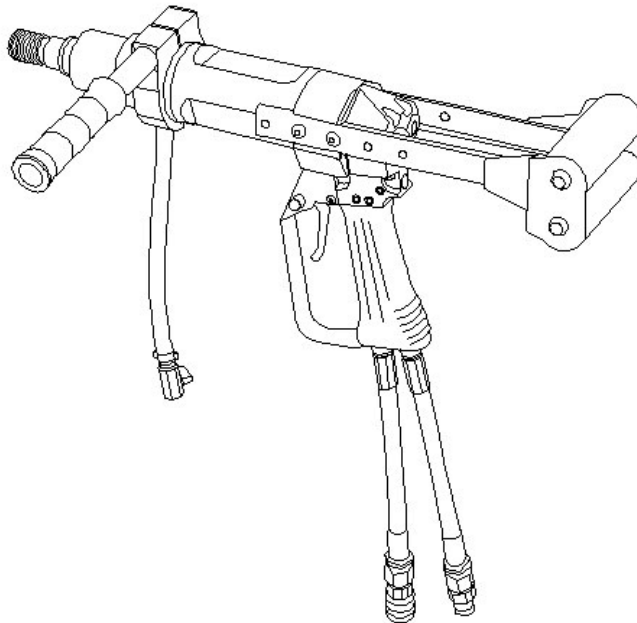


USE - SAFETY AND MAINTENANCE MANUAL

SEPTEMBER 2004 1st Edition



HYDRAULIC PISTOL CORE DRILL



IMPORTANT

READ MANUAL BEFORE USE

**KEEP THIS MANUAL FOR
FUTURE CONSULTATIONS**



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CONTENTS OF THE MANUAL

	Page
• INTRODUCTION	3
• SAFETY SYMBOLS	4
• DESCRIPTION OF THE PRODUCT	
DESCRIPTION	5
TYPICAL APPLICATION	5
ACCESSORIES ON REQUEST	5
DIAMOND CORE BITS	5
TYPICAL POWER SOURCES	5
TECHNICAL CHARACTERISTICS	
GENERAL VIEW - MAIN COMPONENTS AND THEIR FUNCTIONS	6
WEIGHT AND DIMENSION	7
PERFORMANCES - SPEED	7
HYDRAULIC CHARACTERISTICS	7
• GENERAL SAFETY NORMS	8
• USE OF THE PRODUCT	
WHAT NOT TO DO	10
BEFORE WORKING	12
USE OF THE TOOL	13
MANUAL CORE DRILLING OPERATIONS	14
DRILLING WITH DRILL RIGS	14
• END OF OPERATIONS	15
• MAINTENANCE AND CARE	
CLEANING	15
PERIODICAL CONTROL	16
MAINTENANCE OF THE FLEXIBLE HOSES	16
DISPOSAL AND SCRAPPING	17
REPAIR	17
GENERAL INFORMATION ON THE REPAIR	18
DISASSEMBLY	19
• PROBLEM / CAUSE / SOLUTION / CHART	20
• WARRANTY	23
• EXPLODED VIEW AND PART LIST	

INTRODUCTION

Dear customer,
Congratulations for having purchased a **DOA** product. The machine you bought was manufactured with high quality materials to assure your maximum satisfaction and a long lasting service without problems. For your safety and obtaining the best result, we recommend to read this manual and respect the simple instructions contained, this will protect you from accidents and avoid damages to the equipment. Keep it always available together with its enclosures, so that it can be consulted when necessary.

IMPORTANT

SOME ENCLOSURES CONTAINING INFORMATION ABOUT ACCESSORY PARTS OR SAFETY MANUALS OF THE MANUFACTURER OF SUB PARTS OR SUBCOMPONENTS OF DOA TOOLS, COULD HAVE BEEN SUPPLIED TOGETHER WITH THIS MANUAL. THESE ENCLOSURES ARE AN INTEGRAL PART OF THE MANUAL AND THEY MUST BE KEPT TOGETHER WITH THE MANUAL ITSELF..



BE CAREFUL WHEN YOU CONNECT THE TOOL TO AN HYDRAULIC CIRCUIT WHERE ARE UNKNOWN HYDRAULIC MAXIMUM VALUES OF PRESSURE AND FLOW. FOR AVOIDING ACCIDENTS AND DAMAGES TO THE EQUIPMENT, BE SURE THAT THE MAXIMUM VALUES OF PRESSURE AND FLOW OF THE POWERING CIRCUIT ARE COMPATIBLE WITH THOSE ONE OF THE TOOL ITSELF.

NOTE – THE TEXT AND THE ILLUSTRATIONS IN THIS MANUAL ARE AN EXCLUSIVE PROPERTY OF DOA S.R.L. THE PERSON WHO USES THE TEXT OR REPRODUCES, EVEN PARTIALLY, ILLUSTRATIONS OR PARAGRAPHS FOR NON-AUTHORISED PURPOSES CAN BE LEGALLY LIABLE.

DATA, ILLUSTRATIONS AND CHARACTERISTICS OF THIS MANUAL ARE ONLY INFORMATIVE AND NOT BENDING. DOA RESERVES THE RIGHT TO MAKE MODIFICATIONS AT ANY TIME AND WITHOUT PREVIOUS NOTICE.

SAFETY SYMBOLS

This manual contains safety warnings represented by symbols indicating three different levels of danger:



This symbol indicates an operation or situation extremely dangerous which can cause serious accidents or death if proper precautions are not respected



This symbol indicates a dangerous operation or situation that can cause serious accidents or death



This symbol warns about generic danger that can cause accidents and damages to the equipment or the properties.



This symbol indicates important information

IMPORTANT

WHEN THE EFFECTS OF A CERTAIN ACTION ARE NOT EXACTLY KNOWN, REMIND THAT EVEN THE SIMPLEST OPERATION MAY HIDE DANGERS.

**IN CASE OF DOUBTS DO NOT RISK – DO NOT MAKE EXPERIMENTS!
ASK YOUR DOA DEALER OR YOUR FOREMAN.**

DESCRIPTION OF THE PRODUCT

AK 46 IS A HYDRAULIC TOOL DESIGNED TO MAKE HOLES IN REINFORCED CONCRETE , BRICK WALLS, OR COMPOSITE MASONRY MATERIALS, THE TOOL CAN BE USED MANUALLY OR INSTALLED ON DRILL RIGS THAT EASE THE PENETRATION AND ASSURE A BETTER DRILLING PRECISION AND EFFORTLESS OPERATIONS.

TOOL USES DIAMOND CORE BITS FOR WET AND DRY CUT, THE MAXIMUM DRILLING CAPACITY IS 150 mm.

AK 46 FEATURES A SAFETY HYDRAULIC VALVE THAT IN CASE OF BLOCK OF THE ROTATION, AUTOMATICALLY PUT THE TOOL IN OFF ELIMINATING THE NEED TO CONTRAST THE ROTATION FORCE WITH THE HANDS, THE TOOL TRIGGER GIVES THE POSSIBILITY TO START GRADUALLY THE ROTATION, THIS HELPS AT THE BEGINNING OF THE DRILLING. THE HANDLES ARE LONG AND WELL DISTANCED TO GIVE AN EASY AND SICURE CONTROL

TOOL IS AVAILABLE IN TWO VERSIONS : MODEL **S** AND MODEL **G** , THE DIFFERENCE IS IN THE SHAFT SPEED AND CONSEQUENTLY IN THE DRILLING CAPACITY

TYPICAL APPLICATIONS

DRILLING REINFORCED CONCRETE , BRICKS AND MASONRY , STONE WALLS
DRILLING OF CONCRETE PIPES
DRILLING OF HOLES OF SIGN POST
UNDERWATER DRILLING WORKS

SPECIAL ACCESSORIES ON REQUEST

DRILL RIG COLUMN
ADJUSTABLE BACK HANDLE
PRESSURE TANK FOR WATER

STANDARD DIAMOND CORE BITS

AK 46 HAS A DRIVE SHAFT WITH MALE ATTACHMENT
SHAFT THREADS ARE 1 – ¼” BSP AND SHAFT INTERIOR WITH THREAD ½” BSP

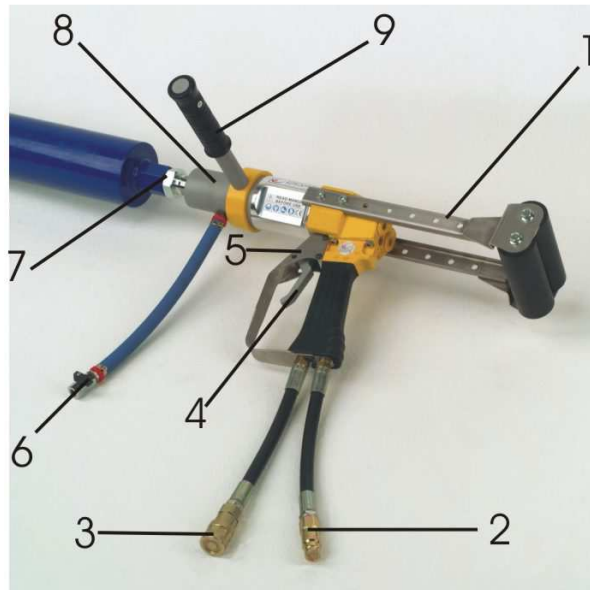
TOOL USES STANDARD DIAMOND CORE DRILL BITS.

TYPICAL POWERING MACHINES

HYDRAULIC POWER PACKS – MINI EXCAVATORS – TRUCKS – ALL CONSTRUCTION MACHINES EQUIPPED WITH A SUFFICIENT HYDRAULIC CIRCUIT

AK 46 TECHNICAL CHARACTERISTICS

GENERAL VIEW – MAIN COMPONENTS AND THEIR FUNCTIONS



1. **ADJUSTABLE BACK HANDLE** the tool penetration require a certain pushing force, the handle gives ergonomomy and allow to push tool with the chest or with knee or shoulders without efforts
2. **RETURN HOSE - T** is the hose where the oil exit the tool, this hose must be connected to the circuit return
3. **PRESSURE HOSE - P** is the hose where the oil enter in the tool, this hose must be connected to the pressure line of the power pack
4. **TRIGGER - is the ON OFF** control of the tool , the trigger is proportional that means that the drilling speed can be dosed help the beginning of hole, the handle is well distanced from the tool axle to guarantee a easy contrats of the tool rotation force
5. **TRIGGER “LOCK ON” LEVER** it allows to block in working position the trigger, this block is necessary only when tool is used installed on drill rigs



**NEVER BLOCK THE TRIGGER WHEN WORKING IN MANUAL HAND USE
THE TRIGGER MUST BE BLOCKED ONLY IN THE USE WITH DRILL RIGS, IF THE BLOCK IS
ENGAGED ALSO IN THE MANUAL USE THE TOOL CAN BECOME DANGEROUS AND CAUSE
SERIOUS ACCIDENTS**

6. **WATER HOSE** this hose has to be connected to the wtaer line or the the pressurised tank to cool the diamond core bits
7. **STANDARD SHAFT FOR THE ATTACHMENT OF CORE BITS** - the shaft is made in stainless steel, has external dimension 1- ¼” BSP and internal ½” BSP
8. **STANDARD COLLAR FOR THE INSTALLATION ON DRILL RIGS** the collar has diameter 60mm and allow the installation on all industry drill rigs
9. **ASSIST SIDE HANDLE** the handle is adjustable in rotation and allow to contrast the tool rotation force

AK 46 TECHNICAL CHARACTERISTICS

WEIGHT AND DIMENSIONS

WEIGHT WO HANDLES	Kg. 8
WEIGHT WITH HANDLES	Kg 11,5
HEIGHT	cm 18
LENGTH	cm 43
Ø OF THE SHAFT	mm 16

PERFORMANCES

TORQUE max	8 KGM (84 Nm) @ 140 bar oil pressure
SPEED model S	1000 RPM @ 20 L/min oil flow 1500 RPM @ 30 L/min oil flow
SPEED model G	400 RPM @ 20 L/min oil flow 600 RPM @ 30 L/min oil flow

	AK46 MOD G		AK46 MOD S	
RPM	400 @ 20 L / min	600 @ 30 L / min	1000 @ 20 L / min	1500 @ 30 L / min
HOLE DIAMETER	100 - 160	50 - 100	40 - 100	20 - 50
	Ø mm		Ø mm	
CUTTING SPEED	2 - 3,5	2 - 4	2 - 4,5	2 - 4
	m / sec		m / sec	

HYDRAULIC CHARACTERISTICS

FLOW min max	20 - 34 l/min
OPERATING PRESSURE	Bar 90 - 200
TOLERABLE BACK PRESSURE	max 90 bar
EHTMA GROUP	C - D

NOTE

THE TOOL TORQUE IS ADJUSTED AT THE FACTORY TO ASSURE THE BEST PERFORMANCES – THE CONTROL OF THE ROTATION FORCE (TORQUE) IS REGULATED BY TWO HYDRAULIC VALVES INTEGRATED IN THE TOOL THAT GUARANTEE THAT THE MAXIMUM ADMISSIBLE FORCE IS NOT EXCEEDED, THE VALVES GUARANTEE ALSO THAT WHEN THE TOOL ROTATION IS BLOCKED BY THE MATERIAL, THE TOOL AUTOMATICALLY GOES IN “OFF”, THE OPERATOR DO NOT NEED THEN TO CONTRAST THE TOOL ROTATION FORCE EVEN IF THE TRIGGER IS NOT RELEASED, TO CONTINUE DRILLING IT WILL BE ENOUGH TO RETRACT THE TOOL AND START AGAIN.

THIS CHARACTERISTICS IS USEFUL ALSO WHEN THE TOOL IS USED ON DRILL RIGS (SO WITH THE TRIGGER LOCKED) WHEN THE BIT IS BLOCKED IN THE MATERIAL THE DRILL RIG IS NOT EXPOSED TO USELESS PERMANENT TORSIONS

GENERAL SAFETY NORMS

GENERAL SAFETY INSTRUCTIONS



THE FOLLOWING INSTRUCTIONS ARE GENERAL SAFETY RULES AND HAVE TO BE RESPECTED IN EVERY WORKS WITH HAND TOOLS. WE RECOMMEND TO FOLLOW THEM CAREFULLY IN ORDER TO AVOID ACCIDENTS AND DAMAGES TO THE EQUIPMENT AND THINGS.

- WEAR ALWAYS THE HARD-HELMET, SAFETY GOGGLES, GLOVES, SAFETY SHOES, EAR PROTECTIONS AND, WHEN IT IS PRESCRIBED, A DUST MUSK.
- WEAR TIGHT-FITTING CLOTHES AND AVOID OPERATING WITH SHORT TROUSERS OR T-SHIRTS, OR OTHER BARE PARTS OF THE BODY. PAY ATTENTION TO LONG LOOSE HAIR, GATHER THEM TO PREVENT THEY GET IN CONTACT AND TRAPPED IN MOVING PARTS.
- BEFORE OPERATING, PREPARE ALWAYS A WORKING PLAN THAT CONSIDERS AND FORESEES PROBLEMS, INTERRUPTIONS AND AVOIDS MOST OF ALL DANGEROUS SITUATIONS. THIS LITTLE OPERATION STRATEGY, GUARANTEES SAFETY AND IMPROVES PRODUCTIVITY
- WHEN WORKING IN TRENCHES PAY THE MAXIMUM ATTENTION WHEN YOU APPROACH THE TRENCH IN STEEP AND SLIPPERY POINTS FOR PREVENTING FALLS AND ACCIDENTS. WET CORE DRILLING REQUIRE WATER THAT ONCE ON THE FLOOR OR ON LADDERS CREATES SLIPPERY CONDITIONS
- WORK ONLY IN GOOD PHYSICAL AND MENTAL CONDITIONS. ALWAYS PAY THE MAXIMUM ATTENTION!
- WHEN YOU OPERATE IN DIFFICULT POSITIONS, DO NOT REACH OUT AND NEVER LEAN AGAINST THE TOOL. KEEP THE BALANCE ON YOUR LEGS.
- BE SURE THAT THE EQUIPMENT IS IN PERFECT WORKING CONDITIONS, WITHOUT OIL LEAKS.
- KEEP THE PROTECTION DEVICES ALWAYS IN GOOD CONDITIONS AND PRESERVE THE READABILITY OF THE SAFETY STICKERS. DO NOT WORK WITH THE PUMP WITHOUT THE IMPELLER PROTECTING GRILLE.
- DO NOT WORK ON UNSTABLE OR ADAPTED SUPPORTS (SUCH AS OIL CANS, BOXES, WHEELBARROWS, ETC.). IF YOU NEED TO WORK IN ELEVATED POSITIONS, USE ONLY STABLE AND SAFE SUPPORTS APPROVED BY THE LOCAL SAFETY RULES.
- THE WORKING AREA MUST BE EXAMINED AND WELL-KNOWN. IF YOU WORK ALONG ROADS, MAKE WELL VISIBLE YOUR POSITION AND WARN THE TRAFFIC BY THE USE OF SIGNALS, FLASHING LIGHTS, OR OTHER PRESCRIBED ROAD SIGNS.
- WORK ONLY IF THE EQUIPMENT ENGINES ARE OUTSIDE OR IN A WELL VENTILATED POINT. THE INHALATION OF EXHAUST GAS CAN BE FATAL. THE WATER IS AN ELECTRICITY CONDUCTOR, THE CONTACT OF THE WATER AND OF THE BITS WITH ELECTRIC LINES CAN CAUSE SERIOUS ACCIDENTS AND EVEN DEATH.

- PAY THE MAXIMUM ATTENTION WHEN YOU WORK NEAR ENERGIZED ELECTRIC LINES THAT CAN BE BURIED, WALLED OR HIDDEN. BE VERY CAREFUL ALSO TO GAS AND WATER PIPES, TELEPHONE LINES OR OTHER BURIED CABLES OR DUCTS.



THE CONTACT OF THE WATER WITH ELECTRIC ENERGIZED LINES CAN CAUSE SERIOUS ACCIDENTS AND THE DEATH

- THE WORKING AREA MUST BE FREE FROM OBJECTS THAT MAY FALL, GET SPOILED, CATCH FIRE, MAKE TRIP UP OR MAKE THE OPERATION DIFFICULT OR DANGEROUS.
- WARN AND MOVE AWAY IMPRUDENT BYSTANDERS OR OTHER PEOPLE NOT AUTHORIZED OR INVOLVED WITH THE JOB.
- IF YOU WORK IN NARROW OR CLOSED ROOMS ALWAYS PLAN AN ESCAPE WAY OUT THAT MUST BE KEPT FREE.
- WHEN OPERATING THE TOOL WITH WATER TRY TO FORESEE WHERE THE WATER WILL FALL AND IN CASE CREATE THE OPPORTUNE DEFENCES AND COUNTER MEASURES, MAKE SURE THAT POINT YOU ARE DRILLING IS THE RIGHT ONE AND THAT THERE ARE THE PROPER AUTHORIZATIONS OF THE OWNERS OR OF THE LOCAL AUTHORITIES BEFORE STARTING THE WORKS.
- BEFORE WORKING ALWAYS FORESEE THE EFFECT OF THE OPERATION YOU ARE DOING AND TAKE OPPORTUNE DEFENCES AND COUNTER MEASURES FOR PREVENTING POSSIBLE DAMAGES OR DANGEROUS SITUATIONS.
- BEFORE USING THE EQUIPMENT MAKE SURE AND PREVENT VEHICLES, MACHINES OR PEOPLE FROM PASSING ON THE EQUIPMENT DISCHARGE HOSES OR HYDRAULIC CONNECTIONS
- ALWAYS CONNECT TOOLS TO THE OPERATING MACHINE OR POWER PACK BEFORE STARTING THE ENGINE.
- WHEN WORKING IN NOISY AMBIENT , BE SURE THAT YOUR VOICE MESSAGE OR WARNING OR OTHER SIGNAL GIVEN TO YOUR COLLEAGUES IT HAS REALLY BEEN UNDERSTOOD AND LISTEN . DO NOT TRUST TO ORAL MESSAGE GIVEN WHEN ENGINES OR OTHER NOISY EQUIPMENT ARE IN USE. **GOOD COMMUNICATION MEANS SAFETY**
- DO NOT INSPECT OR DISASSEMBLE THE TOOL WITH THE HYDRAULIC HOSES CONNECTED TO TOOL
- KEEP IN A SAFE DRY PLACE THIS MANUAL AND ITS ENCLOSURES, SO THEY CAN BE ALWAYS AVAILABLE FOR FUTURE CONSULTATIONS

USE OF THE TOOL

WHAT NOT TO DO



THE FOLLOWING RULES ARE GIVEN FOR DESCRIBING THE MORE COMMON ERRORS OR IMPROPER AND DANGEROUS USE OF THE TOOL.

SINCE IT IS IMPOSSIBLE TO FORESEE ANY ABUSE OR DANGEROUS SITUATIONS, THE RULES ARE NOT SUFFICIENT TO GUARANTEE THE TOTAL SAFETY.

IT'S RECOMMENDED TO USE ALWAYS THE MAXIMUM CAUTION IN EVERY CIRCUMSTANCES.

IN CASE OF DOUBT DO NOT RISK, BUT ASK YOUR FOREMAN.

WHAT NOT TO DO

- DO NOT USE THE TOOL IF THERE COULD BE THE POSSIBILITY OF GETTING IN CONTACT WITH ENERGIZED ELECTRIC LINES OR PRESSURIZED PIPES.
- DO NOT START OR USE THE POWER PACK AND TOOL IN CLOSED ROOMS WITHOUT VENTILATION , BE CAREFUL IF THERE ARE STRANGE ODOURS, THEY MAY BE DANGEROUS GASES OR EXHALATIONS. REMEMBER THAT NOT ONLY GASSES CAN BE DANGEROUS BUT ALSO THE LACK OF OXIGEN , BE VERY CAREFUL WHEN WORKING IN DEEP WELLS AND MANHOLES AND CREATE POSITIVE VENTILATION
- DO NOT USE TOOL IF IT IS DAMAGED, IF THERE ARE OIL LEAKS OR SOME PARTS ARE MISSING OR WRONGLY INSTALLED.
- IF THE TOOL IS RE USED AFTER A LONG PERIOD, OR IF IT HAS BEEN USED BY OTHERS, DO NOT USE IT IF YOU HAVE NOT CONTROLLED THE TORQUE AND THE SPEED SETTING, THE TOOL COULD BE WRONGLY REGULATED CREATING DANGEROUS SITUATIONS.
- DO NOT START THE TOOL CONNECTED TO POWER PACKS OR OTHER MACHINES WHOSE MAXIMUM VALUES OF PRESSURE AND FLOW ARE NOT KNOWN. IF THE TOOL IS STARTED WITH FLOWS HIGHER THAN 34 l/min AND PRESSURE HIGHER THAN 150 bar, THIS CAN CAUSE THE BREAK OF THE EQUIPMENT AND EVEN ACCIDENTS.
- DO NOT ALLOW THE USE OF THE EQUIPMENT TO PEOPLE THAT ARE NOT TRAINED OR WHO HAVE NOT READ THIS MANUAL.
- DO NOT WORK IF YOU ARE NOT IN PERFECT PHYSICAL AND MENTAL CONDITIONS. DO NOT KEEP THE HEAD TOO CLOSE TO TOOL WHEN WORKING
- DO NOT WORK ALONE WHEN IT IS POSSIBLE, MAKE SURE THAT SOMEBODY KNOWS WHERE YOU ARE AND WHAT YOU ARE DOING.
- DO NOT KEEP THE FACE NEAR THE TOOL
- DO NOT USE MANUALLY THE TOOL WITH THE TRIGGER LOCKED
- WHEN MAKING VERTICAL HOLES DO NOT "RIDE" THE TOOL PUSHING IT DOWN WITH THE THIGH

- DO NOT DRILL ON SURFACES MADE TOO SLIPPERY BY THE CONCRETE MUD AND PAY ATTENTION AT THE BEGINNING OF THE HOLE BECAUSE THE BITS TEND TO ESCAPE AWAY WHEN THE INITIAL NICH (THE ROUND CIRCULAR CUT) IS NOT YET TRACED
- DO NOT ACTIVATE THE TOOL HOLDING IT WITH ONE HAND ONLY, ALWAYS USE IT WITH BOTH HANDS
- DO NOT CARRY OUT REPAIRS, INSPECTIONS OR CLEANING OF THE POWER PACK WITH THE HYDRAULIC HOSES CONNECTED OR EVEN WORSE WITH THE PACK IS WORKING.
- DO NOT USE AND DISCARD IMMEDIATELY BAD, WORN, DEFORMED OR DAMAGED CORE BITS, ABSOLUTELY AVOID TO INSTALL BITS ON THE TOOL BY IMPROVISED FASTENINGS, THIS WILL IMMEDIATELY END UP WITH ACCIDENTS OR EQUIPMENT DAMAGES.
- DO NOT PULL THE TOOL BY THE HOSES ALWAYS GRAB IT IN ITS SOLID PARTS
- DO NOT MODIFY THE TOOL TRYING TO IMPROVE PERFORMANCES .

NEVER USE THE TOOL IF :

- THE TOOL SHAFT IS DEFORMED OR IF IT IS OFF CENTER OR IF THE DIAMOND BITS ARE NOT THE RIGHT ONES OR NOT EFFICIENT AND SHARP OR IF ONE OR MORE DIAMOND SEGMENTS (PLAQUETTES) MISSING
- IF THE RETURN SPRING OF THE TRIGGER IS BLOCKED OR NOT PERFECTLY EFFICIENT AND OPERATIVE
- THE DRILL RIG IS NOT PERFECTLY BLOCKED AND FIRM TO THE SURFACE TO DRILL
- IF YOU ARE NOT ABSOLUTELY SURE ABOUT THE RESULTS AND EFFECTS OF THE ACTION THAT YOU ARE DOING



DO NOT TRY TO ADJUST THE TORQUE CONTROL VALVE INSTALLED ON THE BACK OF TOOL TRYING TO INCREASE THE TORQUE – THE VALVE IS REGULATED AT THE FACTORY AND SHOULD BE ADJUSTED ONLY AT THE FACTORY OR BY A DOA SERVICE AGENT

AK 46 IS A TOOL THAT GENERATES A TORQUE THAT CAN BE EASILY CONTROLLED AND CONTRASTED MANUALLY. FOR THE MAXIMUM SAFETY AND FOR AVOIDING ACCIDENTS IT IS MANDATORY THAT TOOL IS USED WITH TWO HANDS TO HAVE ALWAYS A SECURE CONTROL OF THE OPERATIONS. IMMEDIATELY STOP WORK IF THE RETURN SPRING OF THE TRIGGER IS BLOCKED OR INEFFICIENT

CONTACT DOA FOR MORE INFORMATION IN THIS RESPECT



DO NOT USE THE TOOL WITH IMPROVISED ADAPTORS THAT MOUNT THE BITS ON THE TOOL SHAFT, IF THE CORE BIT IS BADLY INSTALLED THIS MAY CAUSE ACCIDENTS AND DAMAGE TO THE EQUIPMENT

IN CASE YOU NEVER USED BEFORE A CORE DRILL, THE FIRST TIME USE TOOL ONLY WITH THE PRESENCE OF AN EXPERT, EVEN IF YOU HAVE EXPERIENCE IN TRADITIONAL DRILLS REMEMBER THAT DIAMOND CORE DRILLING HAS PROBLEMATICS AND REACTIONS DIFFERENT THEN THOSE OF NORMAL DRILLS OR GRINDERS

IN PARTICULAR THE HOLE BEGINNING CAN CREATE UNEXPECTED REACTIONS OF THE CORE BIT IF ARE NOT USED THE “CENTERING POINTS”, IS THEREFORE IMPORTANT TO HAVE EXPERIENCE AND KNOW THE “JOB TRICKS” TO MAKE A GOOD WORK AND AVOID ACCIDENTS AND DAMAGE TO THE EQUIPMENT AND TO THE THINGS

BEFORE WORKING

CONNECTION OF THE TOOL TO THE POWER PACK OR OTHER HYDRAULIC SOURCE

1. Lay down the flexible hydraulic hoses avoiding the contact of the couplers with the mud or dirt.
2. Lay the tool on a clean surface. Make sure that the tool is in perfect condition and that bits are well installed and that the spring return of the trigger is perfectly efficient
3. First connect the flexible hoses to the power pack whose engine must be OFF. Connect the female coupler of the hose to the male coupler of the power pack, then connect the other hose.

NOTE !

IF CORRECTLY INSTALLED, THE MALE COUPLER INSTALLED ON THE POWER PACK IS THE ONE CORRESPONDING TO THE PRESSURE LINE, WHERE THE OIL "GETS OUT" FROM THE POWER PACK, THE CORRECT SEQUENCE OF COUPLERS INSTALLATION DEPENDS ON THE POSITIONING OF THE FIRST MALE COUPLER.

4. Now connect the flexible hoses to the tool, connecting first the return hose corresponding to the hole on the back of the tool with a **T** or **OUT** symbol punched on the tool
5. The hydraulic connection is now completed.
6. Start the power pack (or other hydraulic source) leaving it at idle for a few minutes allowing engine and oil warm up
7. Put the flow lever of the power pack to **ON** position making circulate the oil. Leave the equipment in this condition for a few minutes without using the tool and warming engine and the hydraulic oil. The tool is now ready to use. Check that there are not hydraulic oil leaks.



IF A FLEXIBLE HOSE FULL OF OIL REMAINS UNDER THE SUN, THE OIL EXPANSION DUE TO THE HEAT CAN CAUSE A PRESSURE INCREASE AND PREVENT THE CONNECTION OF THE QUICK COUPLERS. IN THIS CASE THE HOSES SHOULD BE DEPRESSURIZED UNSCREWING THE QUICK COUPLERS DRIPPING SOME OIL DROPS.

NOTE !

IF THE AMBIENT TEMPERATURE IS VERY COLD, THE HEATING OPERATION SHOULD BE PROLONGED UNTIL THE HYDRAULIC OIL TANK WILL BE WARM TOUCHING IT. DO NOT WORK IMMEDIATELY IF THE OIL IS COLD. AT LOW TEMPERATURES THE OIL CAN BE VERY VISCOUS (HARD) AND CAN CAUSE HARMFUL INCREASES IN THE BACK PRESSURE AND DIFFICULT SUCTION OF THE PUMP (CAVITATION PHENOMENON)

USE OF THE TOOL



THIS MANUAL CAN NOT BE NOT A COURSE OF DIAMOND CORE DRILLING OR CONTROLLED DEMOLITIONS TECHNIQUES, FOR FUNCTIONS THE CORE DRILLING IS A SPECIALIST WORK THAT HAS TO BE MADE BY TRAINED AND EXPERIENCED PERSONNEL

THE OPERATOR MUST THEN KNOW ALL THE PRINCIPAL DRILLING PARAMETERS THAT ARE:

- **A** THE CORRECT RATIO BETWEEN THE HOLE DIAMETER AND THE SPEED OF THE BITS (RIDE PER MINUTE OF THE SHAFT)
- **B** THE RIGHT RATIO AND ADEQUACY OF THE TYPE OF DIAMOND BITS WITH THE TYPE OF MATERIAL TO BE DRILLED
- **C** THE SPEED OF THE BIT DEPENDING IF WET CUT BITS OR DRY BITS ARE USED
- **D** HOW TO CORRECTLY INSTALL AND SECURE THE DRILL RIG TO THE SURFACE

AND IN GENERAL TO EVALUATE THE ADEQUACY OF THE WORK TO BE MADE WITH THE EQUIPMENT AVAILABLE

AK 46 IS A TOOL THAT DEVELOPS A HIGH ROTATION FORCE TOGETHER WITH HIGH SPEED , FOR ITS FUNCTION THE TOOL MUST HAVE TORQUE STRENGTH THAT IS REGULATED AT THE FACTORY, THIS FORCE MUST BE COTROLLED ANDCONTRASTED BY THE OPERATOR THAT MUST ALLWAYS WORK KEEPING THE TOOL WITH TWO HANDS

IN BOTH USES BY HANDS OR ON DRILL RIGS THE PUSHING FORCE OR FEED PENETRATION FORCE IS VERY IMPORTANT TO OBTAIN THE BEST PERFORMANCES , THE PUSHING FORCE MUST BE APPLIED BY THE OPERATOR AND MUST BE LINEAR WITH THE TOOL AXLE , SO PARALLEL WITH THE CENTRAL AXLE OF THE CORE BIT, IF A RADIAL / SIDE FORCE IS APPLIED THIS WILL CREATE MULTIPLE BLOCKS OF ROTATION AND USELESS EFFORTS OF THE TOOL AND REDUCED PERFORMANCES, THE PUSHING FORCE MUST BE A GOOD BALANCE BETWEEN IT AND THE FREE ROTATION OF BIT

THE MAJOR AND MORE COMMON RISKS DERIVING FROM IMPROPER USES ARE THE FOLLOWING:

COUNTERBLOW / RECOIL KICKS ON THE OPERATOR ARMS DERIVING FROM ARREST OF ROTATION

BLOCK OF ROTATION WHEN THE BIT ENCOUNTERS THE STEEL REBARS

BREAK UP OF THE DRILL RIGS FROM THE ANCHOR DUE TO BAD FIXATION

PREMATURE WEAR OF DIAMOND CORE DRILL BITS, THIS CAN DERIVE FROM DIFFERENT WRONG FACTORS LIKE SPEED TOO HIGH, ABSENCE OF WATER COOLING , BITS NOT ADEQUATE FOR THE MATERIAL ETC

SCARCE PERFORMANCES DEPENDING FROM SPEED TOO LOW, WORN OUT DIAMOND BITS, BITS NOT ADEQUATE FOR THE MATERIAL ETC

BAD QUALITY OF THE DRILLING - MISALIGNEMENT AND BAD FINISHING OF HOLE

REACTIVITY AND SIDE KICKS OF THE BITS AT THE BEGINNING OF THE HOLE

ACCIDENTAL CUTTING OF HIDDEN BURIED PIPES OR CABLES

OPERATIONS

MANUAL USE OF THE TOOL

1. WITHOUT ENGAGING THE TOOL ON THE MATERIAL, MAKE SOME FREE ROTATION IN ORDER TO GET FAMILIAR WITH TURNING EFFECT
2. ALLOW THE WATER SUPPLY TO TOOL
3. SECURELY KEEP THE TOOL WITH TWO HANDS AND BE READY TO THE TOOL REACTION
4. IF IT IS USED A CENTERING POINT , WITHOUT YET PULLING THE TRIGGER PUT THE BIT ON THE POINT TO DRILL AND SLIGHTLY PUSH THE CENTERING POINT IN THE WANTED POSITION, AT THIS POINT PULL TRIGGER STARTING ROTATION AND DRILLING
5. THE PUSHING FORCE MUST BE SUFFICIENT TO TURN THE BITS BUT WITHOUT SLOWING DOWN THE ROTATION SPEED, IF THE BIT SPEED SLOWS DOWN THE PERFORMANCES WILL IMMEDIATELY DROP
6. IF THE PUSHING FORCE IS TOO HIGH THE ROTATION WILL BE STOPPED BY THE SAFETY EFFECT OF THE TORQUE CONTROL VALVE, IT WILL BE THEN SUFFICIENT TO RETRACT THE BIT TO RE START ROTATION AND CONTINUE WORKING



WHEN DRILLING UP WORD BE CAREFUL TO THE WATER WITH THE CONCRETE MUD THAT CAN FALL ON THE OPERATOR, THE SLIPPERY EFFECT OF THE WATER MAY CREATE DANGEROUS CONDITIONS AND PREVENT A SECURE TOOL CONTROL

USE OF THE TOOL WITH DRILL RIGS

NOTE !

THE DRILL RIGS ARE STANDARD INDUSTRIAL PRODUCTS, IT WILL BE RESPONSABILITY OF THE OPERATOR TO PROPERLY INSTALL AND SECURELY FIX THE DRILL RIG ON THE SURFACE TO DRILL

AK46 HAS A STANDARD COLLAR WITH Ø 60 mm THIS ALLOW THE INSTALLATION ON COMMON DRILL RIGS THAT MUST HAVE A DRILLING CAPACITY OF AT LEAST Ø 15 cm

1. BLOCK THE DRILL RIG SECURELY AND STEADY ON THE POINT TO DRILL
2. REMOVE FROM THE TOOL THE SIDE HANDLE AND ENGAGE THE "LOCK ON" BUTTON THAT KEEP IN ON THE TOOL
3. INSTALL THE TOOL ON THE DRILL RIG AND BE SURE IT IS FIRMLY BLOCKED
4. AFTER HAVING GIVEN WATER TO TOOL IF NECESSARY, WITH CAUTION START THE DRILLING WITH A LIMITED PUSHING PRESSURE TO EASE THE BEGINNING OF THE HOLE
5. ONCE THE BIT HAS CREATED THE INITIAL DRILLING "RING PRINT " THEN PUSH WITH HIGHER FORCE BUT ALLWAYS WITHOUT SLOWING THE ROTATION SPEED
6. WHILE KEEPING ATTENTION CONTINUE WITH DRILLING TILL THE COMPLETE HOLE IS MADE

END OF OPERATIONS

1. WITH MANUAL USE LAY DOWN THE TOOL LIMITING CONTACTS WITH THE MUD AND DIRT
2. PUT THE FLOW LEVER OF THE POWER PACK IN **OFF** POSITION, THIS WILL TAKE AWAY FLOW TO TOOL
3. PUT THE PACK ENGINE OFF
4. DISCONNECT THE TOOL FROM THE OIL FLEXIBLE HOSE RELEASING **FIRST THE PRESSURE HOSE** (IS THE SHORT HOSE ON THE TOOL ON TRIGGER SIDE) CORRESPONDING TO THE HOLE WITH **P – IN** PUNCHED ON THE TOOL. THIS OPERATION WILL PREVENT ACCIDENTAL PRESSURE TRAPPING INSIDE THE TOOL.
5. DISCONNECT THE FLEXIBLE OIL HOSE FROM THE POWER PACK
6. ROLL UP THE OIL FLEXIBLE HOSE IN CIRCLES OF ABOUT 60 CM OF DIAMETER, CONNECTING THE QUICK COUPLERS AT THE EXTREMITIES IN THE “HEAD/TAIL” WAY. THIS OPERATION WILL PROTECT THE OIL COUPLERS AGAINST IMPACTS OR SCRAPING AND WILL ALSO HELP IN KEEPING THE HOSE WELL ROLLED UP.
7. DETACH THE DIAMOND CORE BIT FROM THE TOOL IF NEEDED, CONTROL THE STATE AND EFFICIENCY OF THE BIT AND DISCARD THOSE DAMAGED TO AVOID THAT CAN BE REUSED
8. STORE THE EQUIPMENT IN A SAFE PLACE REPAIRED FROM BUMPS AND ATMOSPHERIC AGENTS
9. IF THE EQUIPMENT SHOULD BE TRANSPORTED ON VEHICLES OR TRUCKS, TAKE CARE THAT IT IS LOADED AND BLOCKED IN A PROPER WAY FOR AVOIDING TILTING AND DAMAGES.

MAINTENANCE AND CARE OF THE PRODUCT

CLEANING OF THE TOOL

WHEN THE CONCRETE MUD BECOMES SOLID CREATES INCRUSTATIONS THAT ARE DIFFICILT TO CLEAN AND MAKE DAMAGES, THE TOOL CLEANING IS ESSENTIAL FOR THE GOOD FUNCTIONING OF THE EQUIPMENT. A CLEAN PRODUCT WILL IMMEDIATELY ALLOW TO FIND OIL LEAKS OR CAUSES OF MALFUNCTIONING. A CLEAN TOOL IS ALSO MORE COMFORTABLE FOR THE OPERATOR AND GUARANTEES A FIRM GRIP.

CLEANING WITH CLOTHS OR PAPER

- THE TOOL CAN BE CLEANED WITH A DAMP RAG, USING A BRUSH WITH GASOHOL OR AN AIR GUN FOR ELIMINATING ALL TRACES OF DIRT AND OIL
- CLEAN IN PARTICULAR THE RECESSED POINTS AND CAVITIES AND THE CONNECTION SURFACE OF THE QUICK COUPLERS.
- WITH THE TOOL PERFECTLY DRY, SPRAY A PROTECTIVE-DEWATERING PRODUCT (**CRC-or WD40**) ON THE TOOL AND ON THE QUICK COUPLERS.
- DRY UP COMPLETELY THE TOOL HANDLE TO GUARANTEE A FIRM GRIP

PERIODICAL CONTROLS

EVERY TIME THE EQUIPMENT IS USED :

1. CONTROL THAT THE TRIGGER RETURN SPRING IS EFFICIENT , AND THAT THE SCREWS, THE VALVES, AND ALL COMPONENTS ARE WELL INSTALLED AND EFFICIENT, IN CASE SOMETHING IS DAMAGED IMMEDIATELY DISCARD THE PART OR INFORM YOUR FOREMAN SO THE PARTS WILL NOT BE REUSED
2. CLEAN THE TOOL AND ITS HOSES AND THE REST OF THE EQUIPMENT
3. PERFORM A GENERAL INSPECTION OF ALL THE EQUIPMENT

MAINTENANCE OF THE OIL FLEXIBLE HOSE

INSPECTION OF THE HOSE

- Lay the flexible hoses on the floor and control if there are oil leaks and the hose surfaces are integral without peeled sections showing metallic braid with broken steel wires.
- the presence of little sections of wire braid can be tolerated only if the wires are not broken and still braided.
- Control the pressed bushing at the extremity of the hydraulic hoses and discard immediately hoses showing bending, squeezing, or deformations.
- Check that the quick couplers are well dry, without oil leaks and that the knurled bushing on the female quick coupler is intact and can slide freely during the connections. The male coupler should be intact, without dents and deformations. If you try to force the connection of a damaged male coupler, this will damage irremediably also the female.
- If the oil flexible hose and quick couplers show oil leaks, even if the couplers are well screwed into the hose fittings, they should be immediately substituted with new parts.
- Replace hoses that show squeezing, unnatural bending, deformations, swellings, etc...

CARE AND MAINTENANCE OF THE OIL FLEXIBLE HOSES

The flexible hose can be cleaned with a hydro cleaner or pressure washer after having laid it on a clean surface. Clean with the water jet in particular near the area of the clips where the dirt is going to deposit.

Move the hoses and wash completely in particular the quick couplers.

Blow the hoses with an air gun in particular in the area of the quick couplers.

Roll up the flexible hoses in a roll having a diameter of about 60-70 cm and connect the quick couplers at the ends in the "head/tail" way. This operation will protect them against impacts or scraping.

Place the hose in a safe and dry place, protected from bumps and weather



IF A FLEXIBLE HOSE FULL OF OIL REMAINS UNDER THE SUN, THE OIL EXPANSION DUE TO THE HEAT CAN CAUSE A PRESSURE INCREASE AND PREVENT THE CONNECTION OF THE QUICK COUPLERS. TO DECREASE PRESSURE, LOOSEN THE QUICK COUPLERS, DRIPPING SOME OIL DROPS DE-PRESSURIZING THE HOSE.

NOTE !

THE FLEXIBLE HOSE ALWAYS REMAINS FULL OF OIL THAT, DEPENDING ON THE HOSE LENGTH, CAN HAVE A RELEVANT VOLUME. IF YOU CHANGE THE HYDRAULIC OIL IN THE POWER PACK, IT IS RECOMMENDED TO REPLACE ALSO THE OIL IN THE HOSES. THIS WILL ASSURE A FULL REPLACEMENT AND AVOID THE CONTAMINATION OF THE NEW OIL.

DISPOSAL AND SCRAPPING

IMPORTANT

THE HYDRAULIC OIL –
HYDRAULIC OIL FILTERS –
ENGINE OIL –
ENGINE OIL FILTERS –

BATTERIES OF THE POWER PACKS
ACID OF THE BATTERIES
FLEXIBLE HOSES FULL OF OIL
ALL FUELS

ARE DANGEROUS WASTES

THAT MUST BE DISPOSED ACCORDING TO THE LOCAL REGULATION OF YOUR COUNTRY OR MUNICIPALITY



DON'T THROW AWAY THE LIQUIDS AND MATERIALS OF THE ABOVE-MENTIONED LIST. THE INFRINGEMENT OF THE RULES REGARDING THE DISPOSAL OF DANGEROUS WASTES IMPLIES LEGAL RESPONSIBILITIES.

Also the storing and charging/discharging management of the materials of the above-mentioned list have to be run according to the specific regulation.

For information about the handling and disposal of the dangerous wastes contact the ENVIRONMENT department of your municipality.

NOTE !

Except for the liquids and materials of the previous list, the other components of the products manufactured by DOA are fabricated with recyclable materials that can be stored, disposed and scrapped without particular cautions.

MATERIALS AND COMPONENTS USED BY DOA DO NOT CONTAIN ASBESTOS OR OTHER TOXIC ELEMENTS THAT REQUIRE SPECIAL CAUTION FOR THEIR USE.

REPAIR

DISASSEMBLY – INSPECTION OF THE PARTS – REASSEMBLY



DOA HYDRAULIC TOOLS ARE PROFESSIONAL PRODUCTS THAT SHOULD BE REPAIRED ONLY BY QUALIFIED PERSONNEL.

THE TOOL REPAIR MAY REQUIRE TECHNICAL LITERATURE AND INSTRUMENTS FOR THE CONTROL OF THE HYDRAULIC VALUES AND AN ADEQUATE HYDRAULIC SOURCE NECESSARY FOR CARRYING OUT THE TOOL FUNCTIONING TESTS.

IT IS THEREFORE ADVISABLE NOT TO START THE COMPLETE DISASSEMBLY OF THE PRODUCT IF YOU ARE NOT A TECHNICIAN AND IF PROFESSIONAL TOOLS AND EQUIPMENT ARE NOT AVAILABLE

REPAIR OF PRODUCTS UNDER WARRANTY

IMPORTANT

IF THE PRODUCTS ARE STILL UNDER WARRANTY, THE REPAIRS MUST BE CARRIED OUT ONLY BY DOA AUTHORIZED SERVICE AGENTS OTHERWISE THE WARRANTY WILL BE AUTOMATICALLY NULLIFIED.

GENERAL INFORMATION

Although we recommend that the repairs have to be carried out only by authorized DOA service agents, some minor repairs can be carried out also by other engineers, in this case follow these instructions:

BEFORE DISASSEMBLY

- Clean accurately the product and remove any trace of dirt and solidified concrete.
- Keep available a clean working surface, paper, rags, tools, an air gun, a rubber hammer, a brass punch, a vice with soft protection for the jaws, a clean container for collecting the tool oil.
- Keep available an exploded view of the tool and part list.
- Consider that when the tool is completely disassembled, it's recommended to replace all exposed seals.

NOTE !

OFTEN THE CAUSE OF FAILURE IS NOT DUE TO PROBLEMS OF THE HYDRAULIC TOOLS, BUT TO PROBLEMS OF THE HYDRAULIC CIRCUITS WHICH COULD NOT HAVE PRESSURE AND FLOW CORRECT VALUES. IF YOU SUPPOSE THIS, DO NOT DISASSEMBLE THE TOOL, DO NOT MAKE EXPERIMENTS AND CONTACT THE NEAREST AUTHORIZED DOA CENTRE.

GENERAL PRE-INSPECTION

- CONTROL THAT THE TOOL IS INTEGRAL AND COMPLETE, AND THAT ALL BOLTS AND NUTS ARE IN THEIR PLACE AND WELL TIGHTENED.
- CHECK THAT POSSIBLE SAFETY DEVICES AND THE RETURN SPRING ARE EFFICIENT, WITHOUT DEFORMATIONS AND IN THEIR ORIGINAL STATE. IF THEY HAVE BEEN MODIFIED OR REPAIRED ADAPTING THEM, DISCARD THEM AND ORDER NEW PARTS.
- IF SAFETY OR WARNING STICKERS ARE DAMAGED, ILLEGIBLE OR MISSING, ORDER NEW PARTS CHECKING THE PART NUMBER ON THE TOOL PART LIST.
- CONTROL THE ACCESSORIES:, HYDRAULIC FLEXIBLE HOSES AND QUICK COUPLERS ARE OF THE RIGHT TYPE AND INTEGRAL, ORIENTED IN THE RIGHT WAY AND THEY ARE NOT THE CAUSE OF THE PROBLEMS.
- CONTROL THE QUICK COUPLERS ON THE TOOL AND ON THE FLEXIBLE HOSES, MAKE SURE THEY ARE CORRECTLY INSTALLED, THAT THEY CAN BE CONNECTED IN THE RIGHT WAY TO ASSURE THE RIGHT OIL DIRECTION.
- CONTROL THE FLEXIBLE HOSES, DISCARDING THOSE DAMAGED, WORN, SQUEEZED, ETC., CONTROL ALSO THAT THERE ARE NOT EXPOSED BRAIDS.

DISASSEMBLY

- REMOVE THE PIG-TAIL HOSES OR THE QUICK COUPLERS FROM THE TOOLS, MEMORIZING THE ORIGINAL POSITION OF THE PARTS. REMIND THAT THE FEMALE QUICK COUPLERS SHOULD BE INSTALLED ON THE PUMP IN THE HOLE WITH **P** PUNCHED (OIL ENTERS THE TOOL), COLLECT THE DRIPPING OIL IN A CLEAN CONTAINER. CHECK IF THE OIL IS DIRTY, OR WITH IMPURITIES, THIS WILL HELP IN FINDING SOME CAUSES OF PROBLEMS.
- IF A VICE IS USED FOR HOLDING THE TOOL, ALWAYS COVER THE JAWS OF THE VICE WITH SOFT PROTECTIONS, AND BLOCK THE TOOL IN ITS MORE SOLID POINT, FOR NOT DEFORMING THE PARTS.
- IF IT IS POSSIBLE TO MEMORIZE THE ORIGINAL POSITION OF THE SCREWS AND THEIR TENSION.
- IF IT IS POSSIBLE TO DISASSEMBLE ONLY THE PART INVOLVED IN THE PROBLEM, MEMORIZING THEIR ORIGINAL POSITION AND THE ORIENTATION OF THE SEALS.

IMPORTANT

THE HYDRAULIC COMPONENTS OF DOA PRODUCTS ARE MANUFACTURED WITH FINE WORKMANSHIP AND STRICT TOLERANCES. BE CAREFUL NOT TO DEFORM AND DROP THEM. IT IS COMPULSORY TO KEEP EVERYTHING CLEAN. WHEN IT IS POSSIBLE INSTALL PARTS WITH MORE THAN ONE INSTALLABLE POSITION, IN THE ORIGINAL POSITION.

HYDRAULIC COMPONENTS INSPECTION



THE HYDRAULIC MOTOR SHOULD NEVER BE DISASSEMBLED. IF THE MOTOR SHOWS OIL LEAKS OR OTHER DAMAGES IT MUST BE SHIPPED TO DOA FOR REPAIR

SEALS - O-RINGS

- CONTROL THE CONDITION AND AREA OF WEAR, TRYING TO FIND THE CAUSE (DIRTY OIL, EXCESS OF TURNS, OTHER). IT IS ALWAYS BETTER TO REPLACE ALL SEALS THAT HAVE BEEN DISASSEMBLED, IN PARTICULAR THE “DYNAMIC SEALS”, WHICH SEAL MOVING OR ROTATING PARTS. THESE SEALS ARE MORE SUBJECT TO WEAR.

NOTE !

IF WORKING PROBLEMS REOCCUR OVER AND OVER, THE CAUSE OR CAUSES OF MALFUNCTIONING ARE PROBABLY IN THE HYDRAULIC CIRCUIT. FOR SOLVING THESE PROBLEMS, CONTACT THE NEAREST DOA SERVICE AGENT. THE TROUBLE SHOOTING CHART PROBLEM-CAUSE-SOLUTION AT THE END OF THIS MANUAL GIVES SOME GENERAL INFORMATION ABOUT FUNCTIONING PROBLEMS LINKED WITH HYDRAULIC CIRCUITS.

IMPORTANT

IF THE PRODUCT SHOULD BE SHIPPED:

DRIP THE TOOL COMPLETELY AND MAKE SURE THAT THE TOOL IS PERFECTLY SEALED AND THAT THERE ARE NOT OIL OR WATER LEAKS DURING THE TRANSPORT. USE AN ADEQUATE CONTAINER OR PACKAGING, SUFFICIENTLY STRONG AND PROPORTIONAL TO THE TOOL WEIGHT, IN ORDER TO PROTECT THE TOOL AND MAINTAIN ITS INTEGRITY.

PROBLEM / CAUSE / SOLUTION TRUBLE SHOOTING CHART

THE FOLLOWING TABLE IS A GUIDE FOR FINDING AND SOLVING THE MOST COMMON WORKING PROBLEMS. THE CAUSES OF MALFUNCTION OFTEN DEPEND ON INADEQUATE VALUES OF THE HYDRAULIC CIRCUIT. THE CONTROL OF THE PRESSURE-FLOW-BACK PRESSURE VALUES SHOULD BE CARRIED OUT WITH PROPER INSTRUMENTS AND OIL AT A TEMPERATURE OF **ABOUT 40° C.**

PROBLEM:

IT IS NOT POSSIBLE TO CONNECT THE HOSES TO TOOL

<i>CAUSE</i>	<i>SOLUTION</i>
Quick couplers damaged or blocked or inadequate	Control and change as necessary
Tool or hoses pressurised by residual pressure	Verify and release some oil drops after having unscrewed the quick couplers

PROBLEM:

THE TOOL SHAFT DOES NOT TURN

<i>CAUSE</i>	<i>SOLUTION</i>
Power pack flow lever left in OFF	Put flow lever in ON delivering flow to tool
Problems of flow circulation	Control hoses, quick couplers and their installation sequence,
The trigger or the ON OFF valve are broken or blocked	Control and repair

Broken hydraulic motor or broken drive shaft	Control / repair or contact the nearest DOA service agent
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PROBLEM

THE DIAMOND BIT TURNS BUT THERE ARE POOR PERFORMANCES – TOOL HAS NO POWER

CAUSE	SOLUTION
The torque control valves integrated in the tool are dirty, damaged or blocked	Control, clean or change
The power pack does not give sufficient pressure The power pack has low setting of the relief valve	Control the power pack pressure delivery Increase setting of relief valve of power pack
Tool broken	Control and contact the nearest DOA service agent

PROBLEM:

THE TOOL SPEED IS TOO HIGH OR TOO LOW

CAUSE	SOLUTION
The tool trigger and its ON OFF valve are broken	Control, clean, repair or change
The power pack gives low flow, insufficient flow to tool	Control the flow delivery of power pack in case contact the nearest DOA service agent
Broken tool or broken power pack or bad oil circulation	Control or repair and contact the nearest DOA service agent

Back pressure too high	Control and reduce hose length
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PROBLEM:

TOOL WORKS WELL BUT THERE ARE POOR PERFORMANCES

CAUSE	SOLUTION
Diamond bits inadequate to material or to tool speed – Bad state of diamond segments or diamond dull - no abrasivity	Control and contact the nearest DOA service agent
The material has plastic inside or is simply not drillable with diamond bits	Control hoses, quick couplers and their installation sequence,
High back pressure, hoses too long	Control and repair , in case unblock the devise with a hand type system then continue with tool

PROBLEM:

THE CORE BITS AND SHAFT KEEP TURNING ALSO WHEN TRIGGER IS RELEASED

CAUSE	SOLUTION
Broken return spring of trigger	STOP WORK IMMEDIATELY Control , repair and contact the nearest DOA service agent
The ON OFF valve of trigger is dirty	Control and clean, change and control hydraulic power pack oil filter

WARRANTY

All parts produced by DOA s.r.l. are guaranteed for a period of twelve months from the date of delivery to the final customer, against defect of: material, workmanship-assembly.

Cost of labour and transports are not covered by warranty and should be paid by the customer.

Parts and complete components not produced by DOA such as engines, compressors, alternators, etc., are covered by the warranty of the manufacturer.

Batteries of power packs and "worn out " accessories, such as chisel bits, drill bits, cut off discs, flexible hoses, quick couplers, or other accessories that have not an identification number, are covered by a **LIMITED WARRANTY OF THREE MONTHS** from the date of starting.

DOA reserves the right to substitute only those parts recognized to be defective after an inspection of DOA engineers under warranty at its own expenses and in its own plant.

If the repairs during the warranty period are performed by the customers, DOA will reject any charge for labour expenses.

THE WARRANTY WILL BE AUTOMATICALLY VOIDED IF:

- Repairs are performed using non original, adapted or modified parts.
- The maximum hydraulic values of pressure, back pressure and flow are exceeded, or the filtration and other operative conditions of the hydraulic circuits are inadequate to power DOA tools.
- If the tool has been modified or used in excessive heavy applications or different from its natural applications.
- If the attached WARRANTY CARD is not properly filled and mailed to DOA.

In any case the warranty excludes any redraft or reimbursement for damages of any kind and there are not other explicit or implicit warranties besides the above mentioned one.

FOR ANY CONTROVERSY, THE COMPETENT COURT IS IN RAVENNA-ITALY.