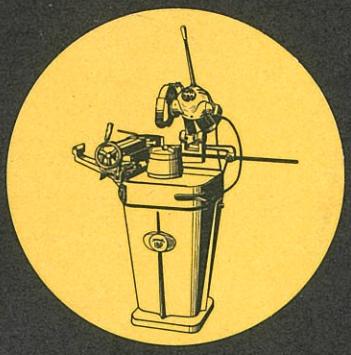
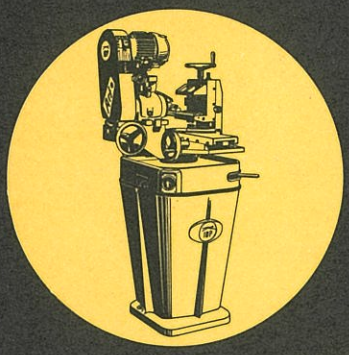
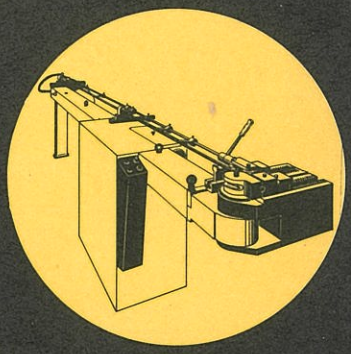
020/E 1966 CURVATUBI UNIVERSAL BROWN 32 INGLESE ultimo tipo







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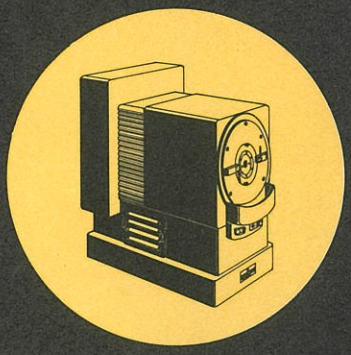
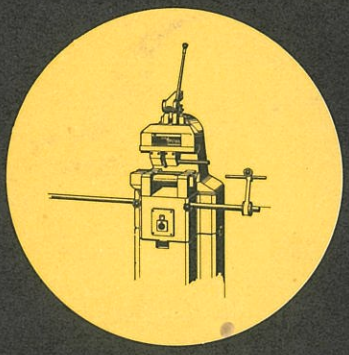
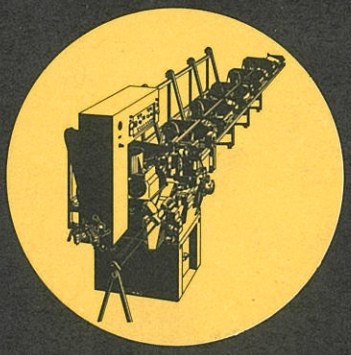






troncatrici fresatubi curvatubi
conificatubi macchine speciali

Gennaio 1971

IBP

EQUIPEMENT AND ACCESSORIES SUPPLIED WITH
UNIVERSAL BROWN 32

N.° 020/E
DATA
Pag N.° 1

CURVATUBI
UNIVERSAL BROWN 32

MACHINE N°.....Delivery Note no.....

HYDRAULIC PUMP.....TYPE.....

TRHEE PHASE ELECTRIC MOTOR.....TYPE.....N°.....

HP.....VOLTS.....CYCLES.....R.P.M.....

DIES FOR FOLLOWING PIPES:

N°										
Ø										

CLAMPS FOR FOLLOWING PIPES:

Ø										

CORES FOR FOLLOWING PIPES:

N°										
Ø										

SET OF TWO ROLLERS PER PIPE,

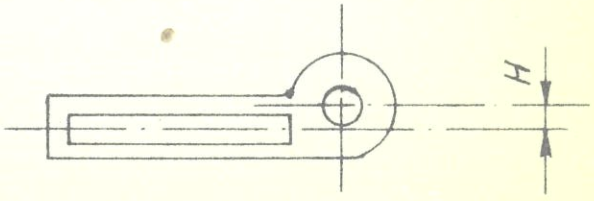
Ø										

CORE HOLDER ROD FOR PIPES WITH EQUAL OR HIGHER INSIDE DIAM. 15 mm

CORE HOLDER ROD FOR PIPES WITH INSIDE DIAM. OF 15 ÷ 10,5 mm

CLAMP SETTING GAUTE

SET OF SPANNERS



DISTANCE BETWEEN SHAFT AND CLAMP
CARRIAGE H.....

WHEN ORDERING DIES, SPECIFY:
DIAMETER (pipe diameter) RADIUS (inside curve radius) THICKNESS (pipe wall thickness)

MAXIMUM TEST PRESSURE

.....

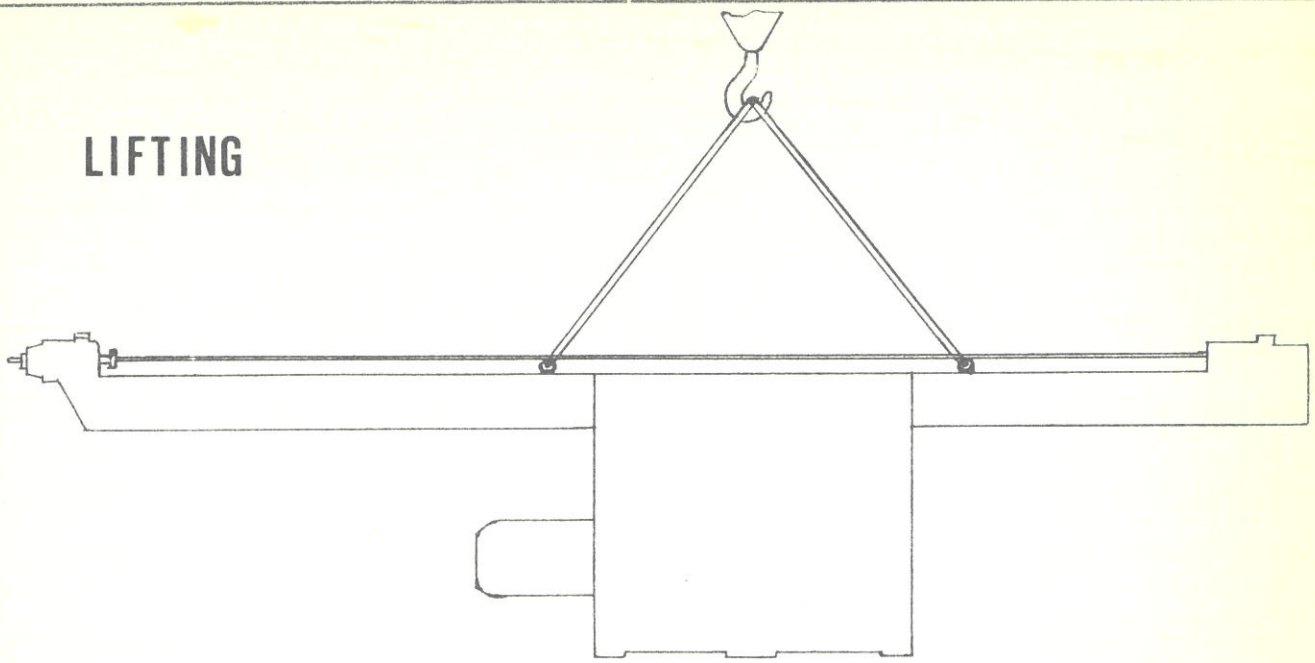
DATE OF TESTING

.....

TESTER'S SIGNATURE
FIRM'S STAMP

.....

LIFTING



FOUNDATION DRAWING

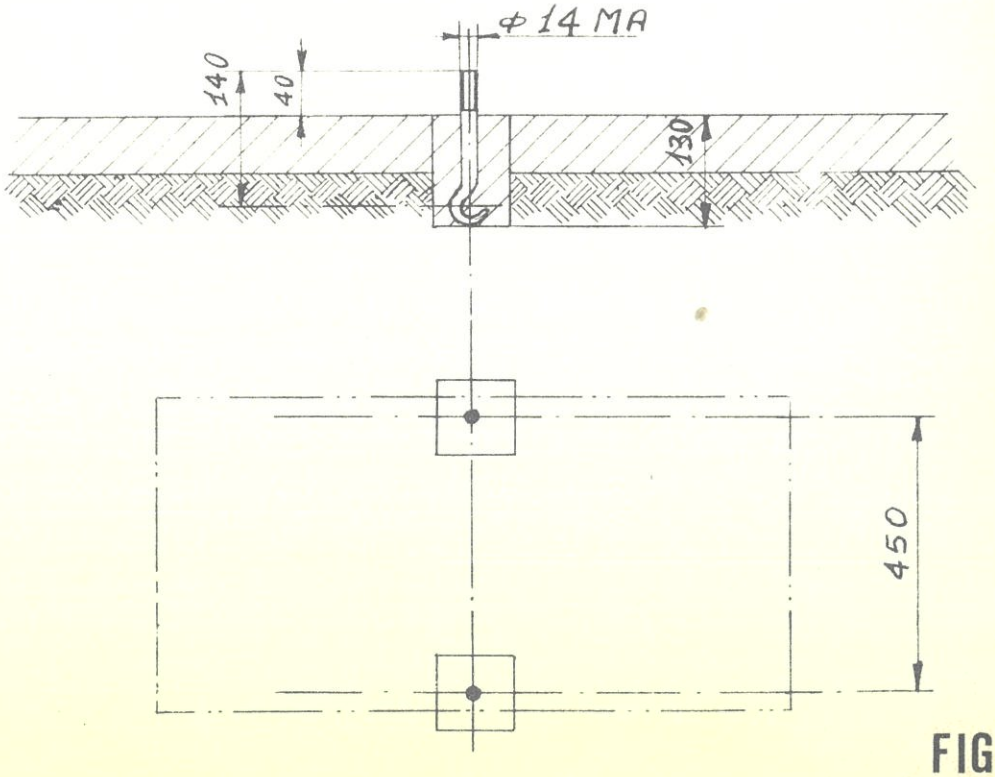


FIG. 0

Notes

The manufacturer, Industria Brevetti Pedrazzoli (IBP), advises customers to follow the instructions given in this booklet so that they will obtain the most affective performance and optimum output from their machine and avoid the problems that might arise if the operation and maintenance instructions are not consulted.

If the customer has carefully implemented the instructions in this booklet but still feels it necessary to return the machine to the makers, he should specify his reasons for so doing in writing, listing the parts and units that are not working properly.

This information will help the manufacturer to overhaul and restore the machine to working order within a shorter period of time, to the benefit of the user.

Guarantee

The makers guarantee that the UNIVERSAL 32 Hydraulic Pipe-bending machine has been successfully tested under the maximum allowable pressure.

The guarantee is for a period of six months and covers only materials and/or workmanship. It does not extend to the electric motor and the hydraulic pump.

The customer is entitled to replacement only of faulty components due to poor workmanship, and he will be responsible for the packing and shipping costs.

The guarantee does not extend to:

- damage resulting from dropping or faulty positioning of the machine, or non-compliance with operating and maintenance instructions set out in this booklet.
- in general, all damage due to circumstances beyond our control.

No compensation will be paid for losses, however caused, resulting from the non-availability of the machine for use.

Installation of machine

Having selected the site of the machine in the workshop allowing sufficient space to handle the workpieces and prepare the foundations as illustrated in Fig. 3.

When the whole is level and dry, the machine should be anchored to the floor by anchor bolts embedded in concrete, and locked by nuts in the special recesses in the base.

Electrical connections

No particular problems will be encountered in connecting the machine to the workshop mains supply. Check that the rated voltage of the motor (13 g, Fig. 1) is the same as that of the mains. Then insert the three-phase plug (87, Fig. 5) in a special socket of the appropriate size. This socket should be earthed, as the plug is also earthed, in compliance with the regulations of the Italian Institute for Prevention of Accidents (ENPI).

Important note

When connecting the machine to the mains, check that the motor rotates in the direction indicated by the arrow on the outside of the motor casing. If not, switch over two wires. (Starting up the motor: see "Operating instructions").

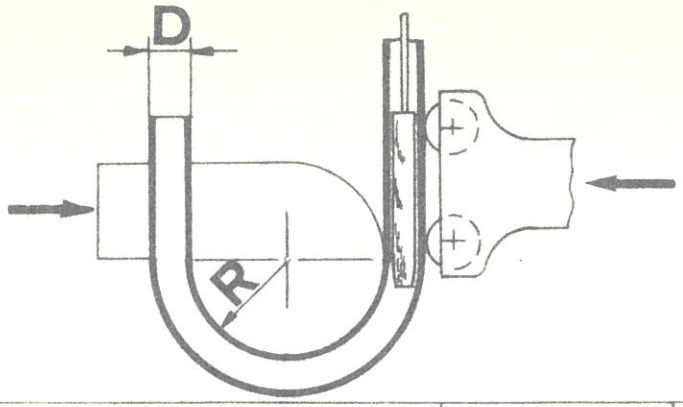
IBP

"UNIVERSAL BROWN 32"

RANGE OF PIPE BENDS

N 020/E

Pag N
Page N
Seite N



Sizes and minimum curve radii of pipes that can be obtained with the UNIVERSAL BROWN 32 hydraulic pipe-bending machine using standard dies.

The measurements listed opposite refer to the die, and cannot be guarateed as, after the bending process, the pipe tends to bend back due to elasticity, so that the curve radius is widned by 1-5 mm (depending on the type of material).

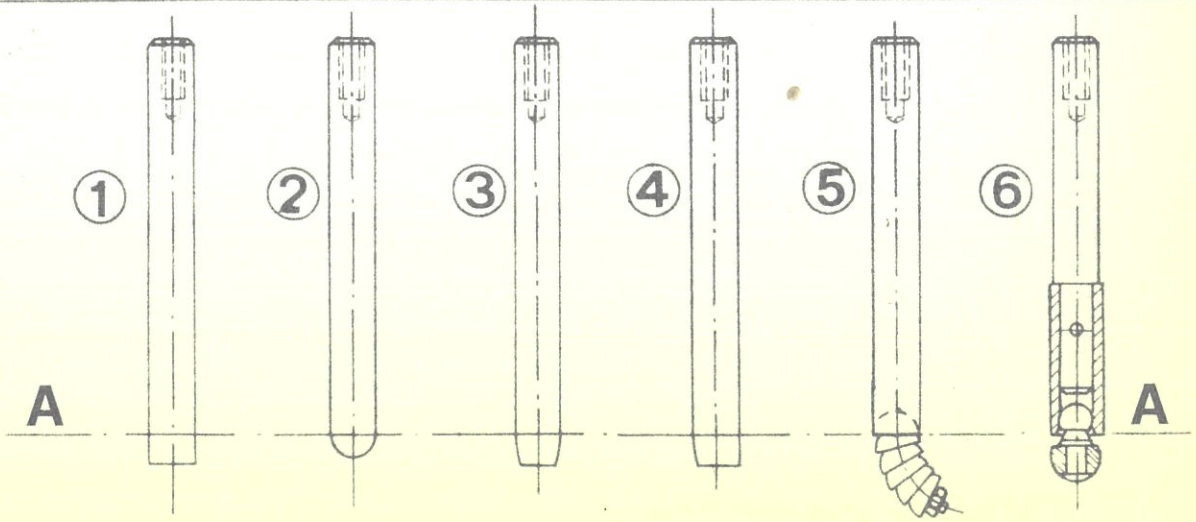
D - outside diameter of pipe
R - inside radius of die, corresponding to inside radius of the bend to be produced.
S - pipe wall thickness

When ordering equipment, specify the values of D, R and S for each size, as well as the value of H (described in the page headed "Equipment and accessories supplied with the machine").

Type of core

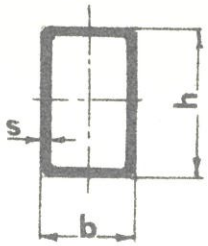
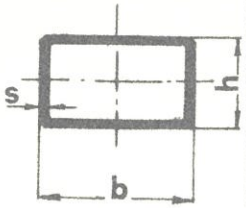
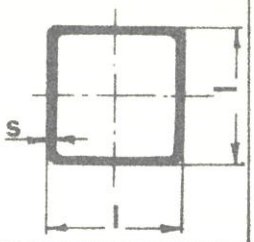
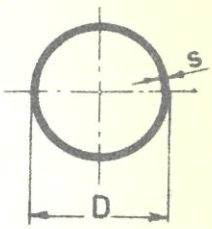
1 - Standard
2 - Round head
3 - Cigar shaped head
4 - Bevel cut head
5 - Swivel spherical shell head
6 - Swivel ball head

D	R
10	20
12	24
14	28
16	32
18	36
20	40
22	44
24	48
25	50
26	52
28	56
30	60
32	64



Performance

Maximum bending capacity with standard core:

Cross section / Max. tensile stress				
σ_R Kg/mm²	b x h x s	b x h x s	l x s	D x s
up to.. 25	25 × 30 × 2 20 × 30 × 3	30 × 25 × 1,8 30 × 20 × 2	30 × 1,5 25 × 2 20 × 3	32 × 2,2 28 × 4
over.. 25 to 45	25 × 30 × 1,2 20 × 30 × 1,5 15 × 30 × 2	30 × 25 × 1 30 × 20 × 1,2 30 × 15 × 1,5	30 × 0,8 25 × 1,5 20 × 3	32 × 1,5 28 × 2,2 22 × 4
over.. 45 to 60	25 × 30 × 0,6 20 × 30 × 1 15 × 30 × 1,5	30 × 25 × 0,6 30 × 20 × 0,8 30 × 15 × 1	30 × 0,5 25 × 0,8 20 × 1,5	32 × 0,75 28 × 1,2 22 × 2,2
over.. 60 to 80	25 × 30 × 0,5 20 × 30 × 0,8 15 × 30 × 1,2	30 × 20 × 0,6 30 × 15 × 0,7	25 × 0,6 20 × 1	28 × 0,6 22 × 1,2
over.. 80 to 100	20 × 30 × 0,6 15 × 30 × 1		25 × 0,5 20 × 0,6	28 × 0,6 22 × 1,2

- Minimum inside bending radius (standard shaft)..... mm. 20
- Maximum bending radius (measured along the centre line of pipe)..... mm. 210
- Maximum pipe lenght that can be inserted in machine..... mm. 3500
- Number of bends per hour, full cycle, 90° angle..... n° 750
- Number of bends per hour, full cycle, 180° angle..... n° 450
- Maximum bend angle..... degrees 185°
- Minimum bend angle..... degrees 2°
- Machine can be programmed for 1 to 8 bends
- Bending speed..... degrees per second 125°

Motor	HP	5,5
Rivolutions per minute	r.p.m.	1400
Delivery of vane pump	litres/min	32
Max. hydraulic system pressure	kg/cm	60
Opening and closing travel of clamp carriage	mm	20
Opening and closing travel of roller carriage	mm	10
Adjustable travel for core extraction	mm	0-45

OVERALL DIMENSIONS

Overall dimensions of head, from top of pipe to lower wall	mm	235
Overall length of machine in working order	mm	4300
Overall length of head in working order	mm	950
Overall heigth at drive shaft	mm	1150
Oil tank capacity	litres 100	Kg.90
Dry weigth	kg	600
Shipping weigth	kg	

BEFORE STARTING UP THE MACHINE

Having positioned the machine and connected it to the power supply, open the side doors in the base, clean the inside of the base thoroughly (76) and fill with li s required.

The oil level indicator (80, Fig. 4) indicates the appropriate level.

RECOMMENDED OILS

CASTROL	-Hyspin 100
SHELL	-Tellus 33
MOBIL	-D.T.E. Heavy Medium or Vaceuline 1409
AGIP B. P.	-EM 100 and Hydraulic 100
ESSO	-Esstic 50 and Teresso 52

BASIC INSTRUCTIONS ENSURING TROUBLE-FREE, CONTINUOUS OPERATION

After the first 300 hours of work, the oil in the tank (76) should be drained: unscrew plug (79, Fig. 5), remove filter (141, Fig. 4) from pump (140) and clean.
Oil drained from the tank must be filtered through "cotton waste" type filters. Do not use "activated earth" filters as these retain the additives.
Oil should be drained, decanted and filtered, and the filters cleaned, approximately every 1500 hours of operation. The maximum life of the oil should be approximately 3000-3500 hours. This means that the process of decanting and filtering the oil may only be carried out once with the same oil, as there will be a complete oil change on the subsequent occasion.

LUBRICATION

FREQUENT LUBRICATION OF MOVING PARTS AND PARTS SUBJECT TO WEAR IS STRONGLY RECOMMENDED.
Insert lubricating oil in the special ball-type oil feeders in the head (95) and the die turning arm (96).
In addition, lubricate the programmer units (fig. 4), the control valve mechanism (fig.), and the stop-holder rod (58).
Periodically grease the die turning arm driving chains.

MACHINE CONTROLS

These consists of: two pushbuttons (84, 85) and one switch (83) on the panel (82), (fig. 5).
The switch (83) provides current to the electrical equipment.
Whenswitched to position 1, the machine is live and the red light (86) comes on.
Push button (85), "on", starts the motor/pump unit.
Push button (84), "Stop", switches off the motor/pump unit and also the machine if this is moving.
One foot control unit (88) with two pedals is provided; one pedal is marked "M" (On, 90), the other "A.R." (89) (Stop, Return).
The pedals arare connected, by means of two sheathed steel wires (91, 92), to the control valve mechanism (128), which sets up the circuit for the phases of On, Stop and Return of die turning arm (96). Once the motor/pump unit is swiched on, pedal M (90) is depressed to operate the tie rod controlling the control valve, which is set up for the bending phase. The A.R. pedal steps the machine while it is working. If the A.R. pedal steps the machine while it is working. If the A.R. pedal is pressed approximately half-way down, the lever (129) is pulled to control the control valve which in turn moves to the resting position, thus stopping the machine. Subsequently, pressing the same pedal (89) fully down, the lever (129) is pulled again and the control valve is set to start the hydraulic circuit on the return phase.

The A.R. pedal should remain depressed until the die turning arm (96) has reached the end of the return stroke.

INSTRUCTIONS ON USE OF MACHINE

FOR SATISFACTORY OPERATION, THE USER IS ADVISED TO START UP THE MOTOR/PUMP UNIT AND ALLOW IT TO RUN FOR 10 TO 15 MINUTES BEFORE STARTING WORK.
THIS PRELIMINARY OPERATION WILL WARM THE OIL AND MAKE THE HYDRAULIC SYSTEM MORE RESPONSIVE TO THE PROCESSES THAT THE MACHINE IS TO CARRY OUT.

To start up the motor/pump unit, turn switch (83) on the panel (82) and press the "On" button (85).
While the oil in the machine is warming up:
- remove the threaded plug (99, fig. 2).
- place the die (111) on the drive shaft (98) and hook on the rope (118), with the counterweight (116).

Assemble the clamp jaw (101, fig. 2) on the carriage (100).
Assemble the rollers (105) on the carriage (103), taking care to lock grub screws.

- Screw the core onto rod (59) and lock with the nut. Then check that its position compared with the die axis A-A is the same as one of those illustrated on page 3. If the position needs adjustment, move the two ring nuts (66,67) Fig. 6.
- Press the A.R. pedal fully down (89) and bring the die turning arm to 0° position, making sure that the clamp carriage is fully open (100 Fig. 2).
- Loosen screw (108). Insert the gauge (115) between the clamp jaw (101), the rollers (105) and the die, as shown in Fig. 2.
- Turn the handwheel (107) and bring the clamp jaw (101) and the pipe guide rollers (105) in light contact with this gauge, then tighten the screw (108) to prevent movement during work.
- Set the programmer and test run the machine before starting work. For this operation, disengage the handle (43) by pulling outwards and inserting it into n° 8 on the disc (39 Fig. 3).
- Remove the cover (81) and rotate the lever (43) in an anticlockwise direction to bring the block (32, corresponding to channel no. 1 up to the top. Loosen the grub screw (31) and move the block to the 90° position, then lock (Fig. 10).
- Turn the handle again (43) in a clockwise direction until it reaches the end of stroke, and then allow it to return on its own. It will stop in a position corresponding to the setting of bend n° 1.
- Open the plexiglass side door and withdraw the sequence tripping stud by pulling out the handle (8) and moving it round until the plug (10) enters its housing and remains disengaged (Fig. 10).
- In addition, check that the die is free to return to its correct starting position, so that the die stop pin (106, Fig. 14) can hook onto the die, and keep it hooked during the work phase.
- At this point, the machine is ready for test running. When pedal M is pressed (90), the machine goes through a complete working cycle, as follows:

- The roller carriage (103, Fig. 2)

- The clamp carriage (100) closes and the die (111) is hooked by the tooth (106).

- The arm (96) rotates over an angle of 90°, as preset on the programmer.

- The arm stops.

- The core is drawn back by the rod (59 Fig. 1).

- The clamp jaw (101) opens and the pin (106) is unhooked.
- The roller carriage opens (103)
- The die turning arm returns to zero (96).

- The core returns to its normal position.

If the machine fails to work properly during the first operation, press the A.R. pedal (89) halfway through to stop the machine.
Press the same A.R. pedal fully down for the return operation.
To stop the machine altogether in emergencies, press the "stop" button (84) on the panel (82).

PROGRAMMING THE BENDS

An understanding of how the bend programmer works is important as it will enable the operator to set up work in the best possible way and to take full advantage of this versatile machine.

COMPONENTS AND THEIR FUNCTIONS - FIG. 9

The programmer consists of a rotating shaft (33) borne by two supports (21, 36); through a pin (49), a bush (34) is fixed on the shaft; this transmits to the shaft the intermittent rotary movement from the drum (30). For this purpose, the bush (34) has a flat surface on its outer circumference for keying to the drum (30) through the plate (50) to which it is fixed, although it is free to move in an axial direction. A helical tooth wheel is fixed to the drum (30); its teeth mesh with a stud (9) to transmit a rotary movement to the drum. There are eight longitudinal grooves on the outer face of the drum, and a centering block (32) is inserted in each groove and can move the whole way along the groove. The position of each of these eight blocks determines the angle width of the bends to be carried out. The rotations angle of the drum (30) is such as to move a block (32), following each axial movement, to the position corresponding to the path travelled by the controllever (28), which, together with the tie rod (26) completes the same stroke as the axis of the tie rod during every bending cycle. A rope (14) with a counterweight (15) is wound around a pulley keyed to the rear end of the shaft (33). The effect of the weight on the programmer drum is two-fold: it keeps the unit hooked after each partial rotation of the programmer drum and it returns the drum to its starting position at the end of each preset bend programme. Another tooth wheel (5) keyed to the shaft (33) in front of the support (36) (see Section A-B), and to this is hooked a stop pin (3) attached to the rocker arm (2). The latter is hinged by screw (4) and bush (46) to the rigid support (36) and retains the wheel (5) with its hook (3), since otherwise the wheel would tend to rotate in a clockwise direction due to the counterweight. The hook (3) remains attached to the wheel (5) because of pressure by the spring (52) which applies its force on the rocker arm (2) through pins (53, 51). The wheel (5) is keyed to the programmer, drum shaft and rotates with the shaft, thus forcing the pin (3) and rocker arm (2) to move from one tooth to the next. A disc (39) is keyed to the end of the shaft; the disc has the same number of holes as there are grooves in the programmer drum. The disc (48) bears a stud (40) which can be inserted in any of the holes in the disc (39). The stud (40) determines the number of bends to be carried out in a given sequence, depending on the hole in which it is inserted.

THE PROGRAMMER

Pedal M (90) controls the valve (128, Fig. 7) which sets the hydraulic circuit for the working phase. The boss (28, Fig. 7) moves forward during this operation, the control lever (28) moves towards right, toghether with the rod (26), i.e. towards the block (32). The boss (28) contacts one of the corresponding blocks (32), and draws the programmer drum forward. As this advances through the disc (25) it operates the rocker arm (7) controlling the hydraulic control valve. The drum always moves sufficiently to bring wheel (22) to the right of the trip stud (9), so as to ensure operation of the hydraulic control valve by moving the rocker lever (7); the control valve reverses the stroke of the machine. The rotation angle of the die turning arm (96), which is the same as the bend angle, is governed by the relative position of each block (32) attached to the programmer (30). In the return phase, the boss (28) moves back together with the tie rod (26) and comes to rest against the disc (25), thus bringing the programmer drum back. During the movement, the stud (9) inserted between the teeth of the helical wheel (22), transmits a rotary movement to the programmer drum (30), and the next block (32, Fig. 10) is thus brought onto the path of the boss (28). At the same time, disc (25) operates the rocker arm (7) which returns the control valve (128) to the resting position, thus causing the die turning arm (96) to stop. As the drum (30) rotates partially in each return phase, the blocks (32) line up with the boss (28), thus producing the sequence of bends according to the preset angles (Fig. 9). The number of bends in a sequence is programmed by the position of stud (40). For example: if the stud (40) is inserted in hole

n° 2 on disc (39), there will be a threebend sequence; after this, the drum (30) will return to its original position ready for a further three-bend cycle, starting with bend n° 1. The programmer drum (30) returns to bend n° 1 when the stud (40) contacts the rocker arm (2) tooth (54), and pushes it until the wheel tooth (3) disengages. At this point, the programmer is free and, moved by the counterweight (15), it rotates in the opposite direction, returning to its initial position. The programmer functions in the same way, whatever the number of bends (1 to 8).

SAFETY LEVER (FIG. 9)

The machine is fitted with an additional safety control lever (24), attached to rod (28). If the boss (28) fails to contact one of the blocks (32) of the drum (30), this lever (24) comes into contact with disc (25), stops and reverts the die turning arm (96).

It is a good precaution to adjust the lever (24) if any equipment is applied to the die arm (96) of such a shape that, should the machine carry out a bend angle greater than the maximum programmed angle, the equipment would break by coming up against the machine head. To adjusttment, move lever (24) towards the programmer drum disc (25) by a sufficient amount so that when the lever (28) comes into contact with the block (32) for the largest programmed bend, its distance from the disc (25) is 5 to 10 mm.

MANUAL OPERATION (FIG. 9)

When there is a continual requirement for the same bend, or for a sequence of bends to be selected by manual control:

- insert the stud (40) in hole n° 8 in the disc (39).
- disengage trip stud (9) by pulling handle (8), and rotate until plug (10) enters its housing. The machine will then continue to produce the bend corresponding to the number shwn by reference 5125 on the front of the base near the disc (29, Fig. 10). To change the bend, rotate the disc (39) in an ticlockwise direction by turning the knurled knob and operating handle (43). To change from a bend of a given index number to a bend with a lower number, the disc (39) should be turned fully in an anticlockwise direction and then allowed to return to bend n° 1 by itself. From this position, again rotate disc (39) manually and line up the required bend number with the index (125).

MAINTENANCE

The only maintenance required is lubrication of the sliding surfaces. If any fault is encountered, it will be easy to find out the cause provided that the operator is conversant with the working principles of the programmer and that he follows the dismantling instructions in the following paragraph (fig.9).

DISMANTLING

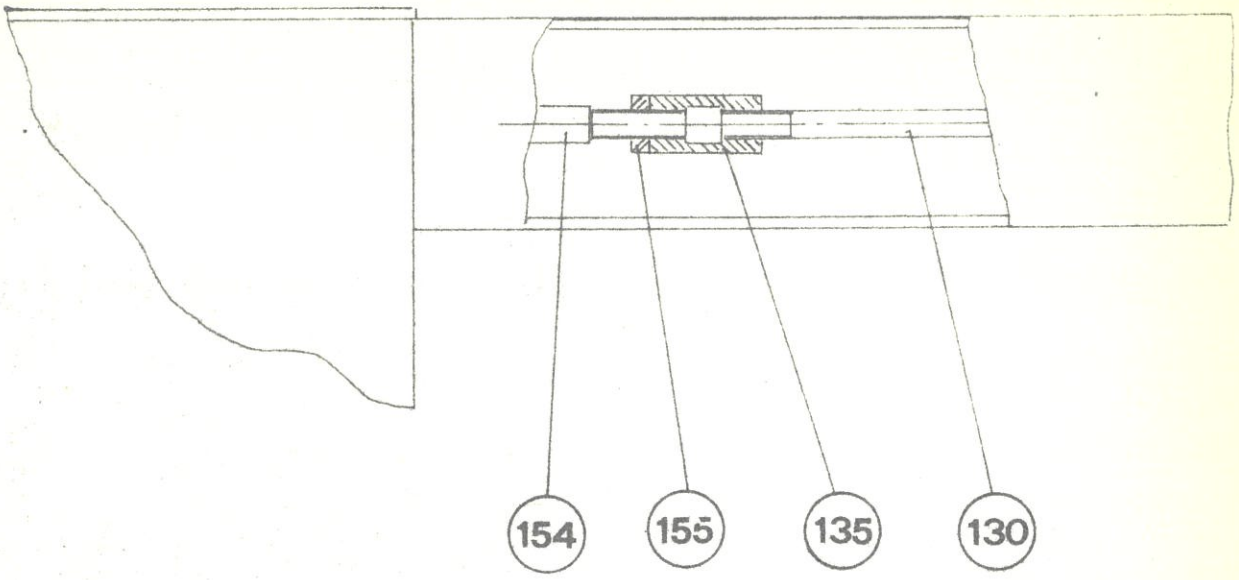
To dismantle the programming device:

- remove top cover.
- with a hexagonal spanner, remove screw (45), the washer (44) and slide off the disc unit (39) from the shaft, together with the disc (43) and the stud (40).
- unscrew nut (19), slide off the washer (18) and the pulley (17).
- lift the shaft (33) from the rear and disengage from the front support (36); lift it obliquely and remove it from the support (21) together with the drum wheel unit.

When reassembling, carry out the above proceduresin the reverse sequence, taking care to reassemble the parts in their proper positions to prevent misalignment between the drum (30) and the disc (39).

ADJUSTMENT REQUIRED BEFORE STARTING WORK

Install the die on the machine (111 fig. 2), together with the clamp jaw (101, fig. 2), the pipe guide rollers (105, fig. 2) and a core of the appropriate size for the pipe.
With gauge (115), adjust the clamp jaw and the guide roller carriage, as already described under the heading "Before starting up the machine".
Slip the pipe on the core and push it to the desiredposition, fixing the longitudinal stops (61, fig. 1) on the rod (58). Check and preset the bends in the programmer drum, as already described under the heading "The Programmer". The machine in now ready for bending operations.
Press pedal M (60) and the machine will automatically go through a bending cycle without any further action by the operator.
A few bends are advisable to regulate the core and guide roller carriage, as well as the stops (32) on the programmer drum. If the pipe being bent wrinkles on the inside, the core is too far back and must be pushed forward. However, if this is not sucessful, a special type of core as illustrated on page 4 must be used, and an anti-wrinkle plate will probably have to be used as well.
The situation may arise when the inside bend radius is less than twice the outside diameter of the pipe being bent. If the bend is over-stretched on the outside, with evident signs of swelling at the beginning and end of the bend, the core is too far compared with axis A-A (page 4).
For satisfactory bending, the position of the guide roller carriage should be checked and corrected by moving it forward and back until the bend is satisfacory. In general, if the carriage is too far forward at the end of the bend, the bend is recessed inside. If the carriage is too far back, wrinkles tend to from inside even when the core is in the correcte position.
The best bends are produced when the core filts tightly in the pipe.



ADJUSTMENT OF CHAIN TENSION

After the machine has been working for some time, the chain driving the die turning shaft may become slack due to normal wear. This can be overcome by screwing in the sleeve (135) connecting the piston rod to the driving chain.

To do this:

- take off the plexigas cover by removing screw.
- loosen the lock nut (155) and screw up the sleeve (135).until the correct chain tension is achieved.
- tighten up the lock nut (155) and replace cover.

CORE LUBRICATING UNIT

To avoid scoring or seizing up between the pipe and the core, a lubrication system has been designed that operates only during the working phase and which is actuated by a poston pump located in the front of the machine. The pump is hydraulically controlled by the central unit and takes the lubricating oil from a tank with filler cap (74).

A window is provided to check the oil in the tank. From the pump, the oil passes through a rubber hose and along the core holder, emerging through holes in the core.

Pump delivery can be adjusted by screw (72°. If the screw is tightened, the flow is reduced (and also lubrication). When the screw is loosened, flow is increased (and also lubrication).

Once the correct quantity of lubricant is determined by experience, the screw (72) is locked with the nut. The oil used for core lubrication may be of any grade, provided that it is fairly fluid.

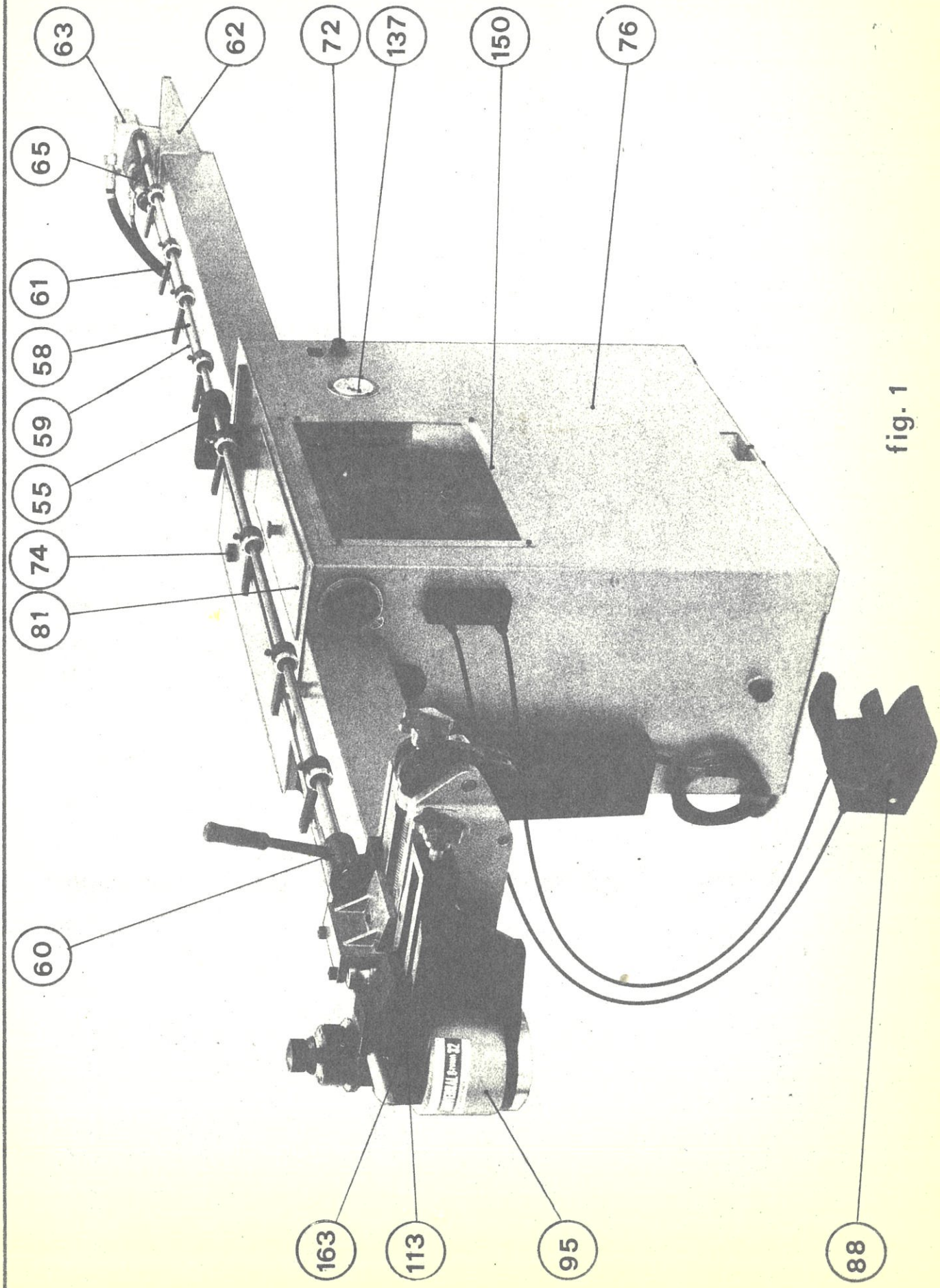


fig. 1

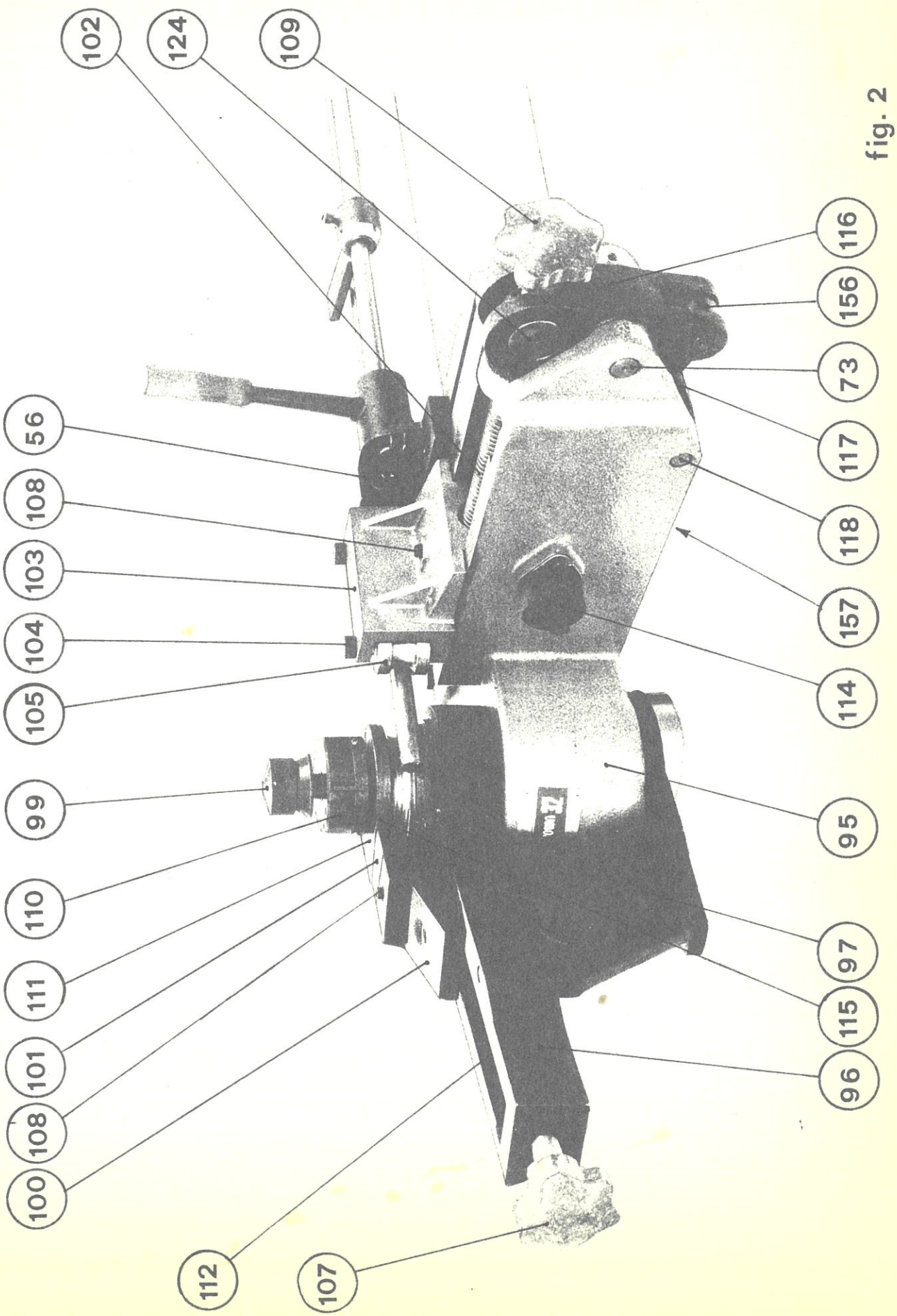

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fig. 2

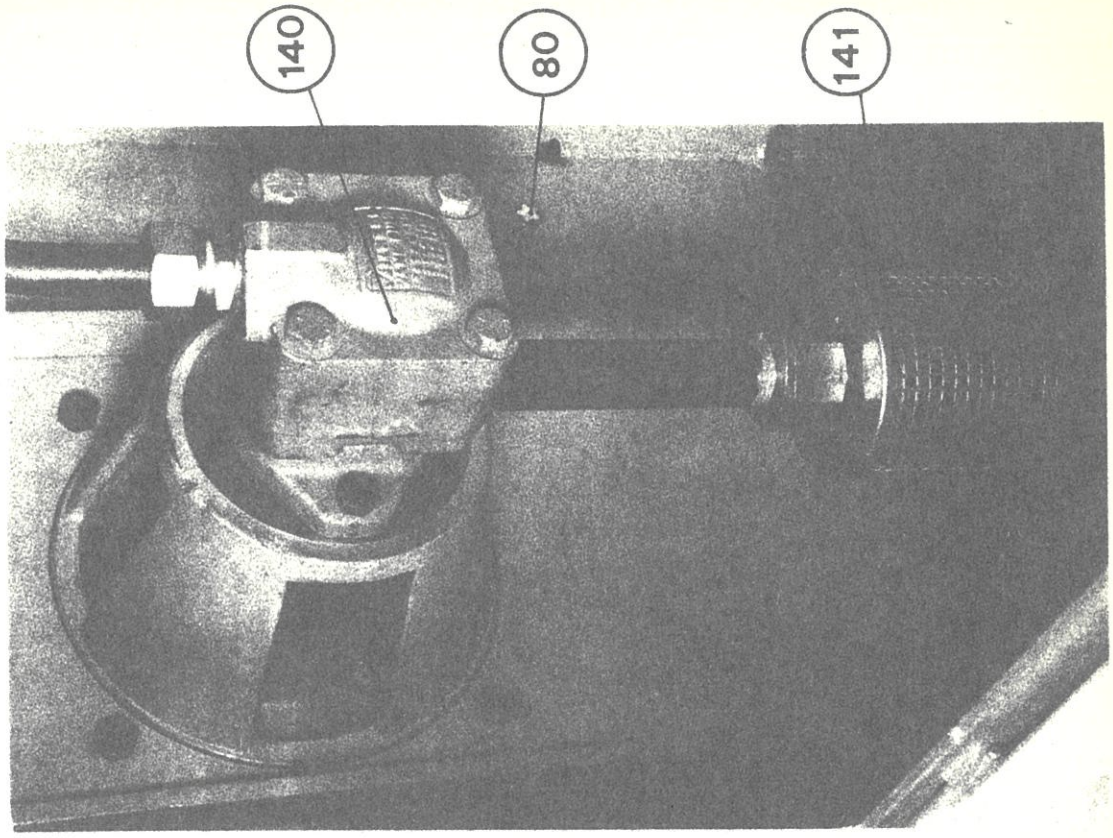


fig. 4

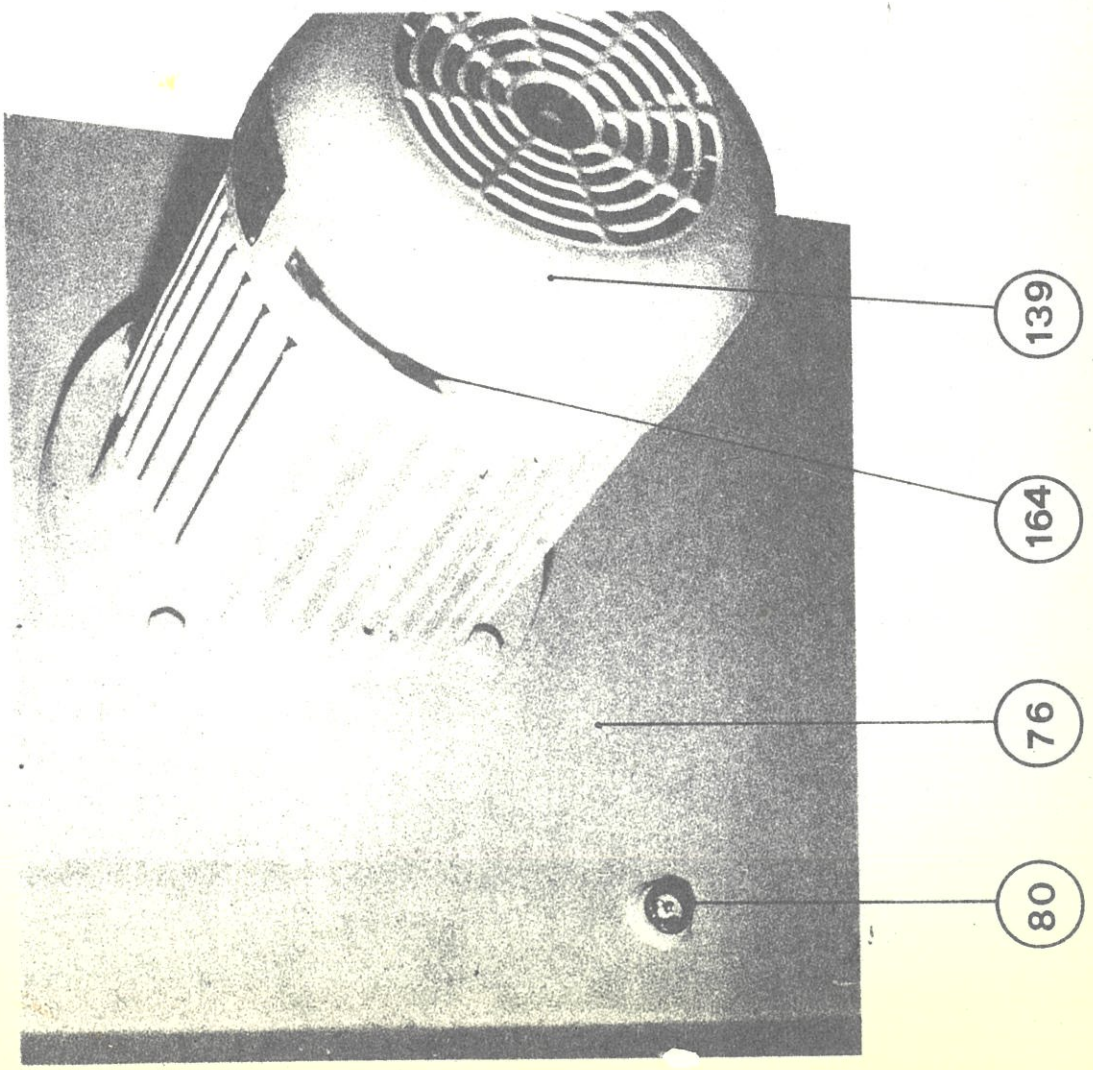


fig. 3

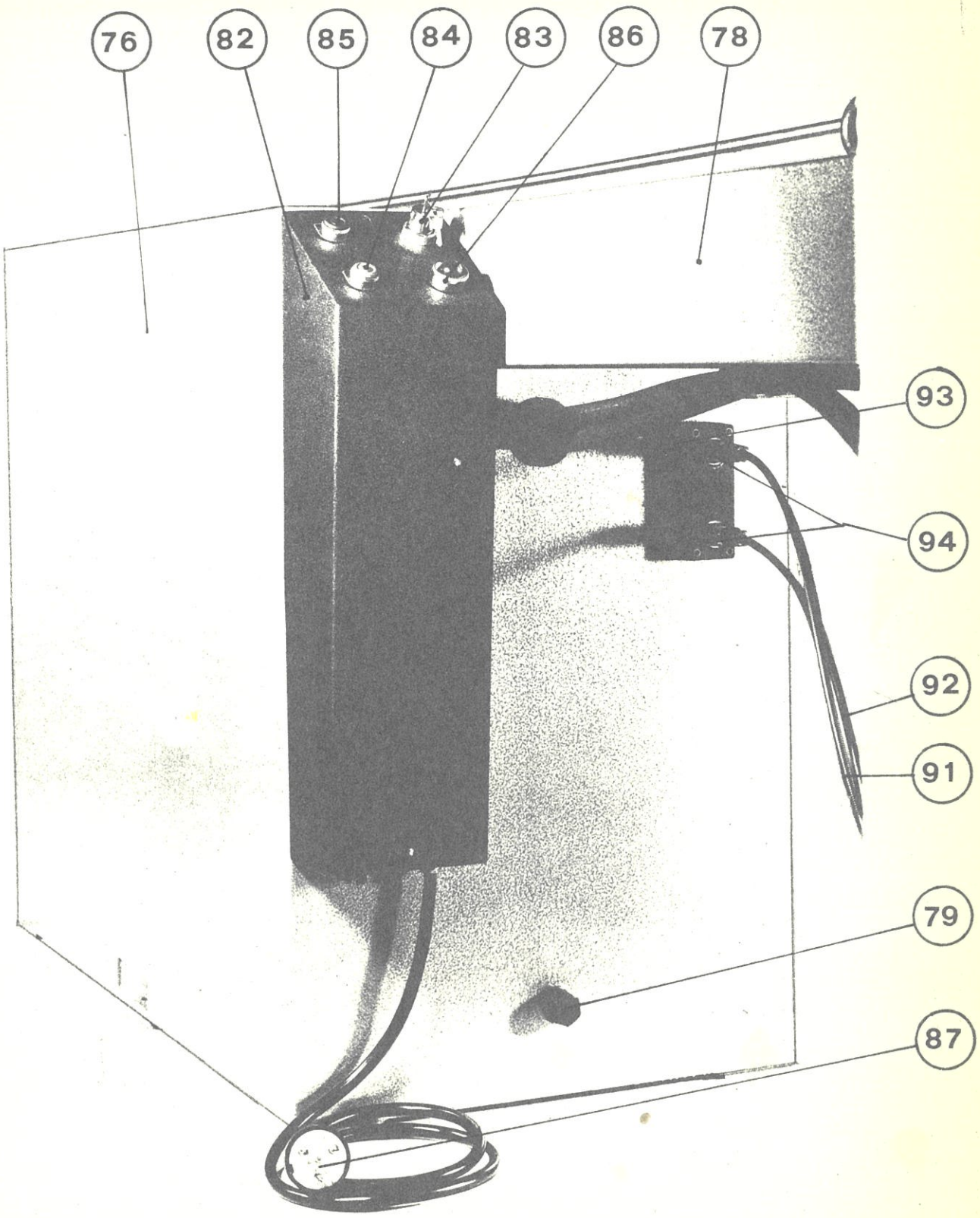


fig. 5

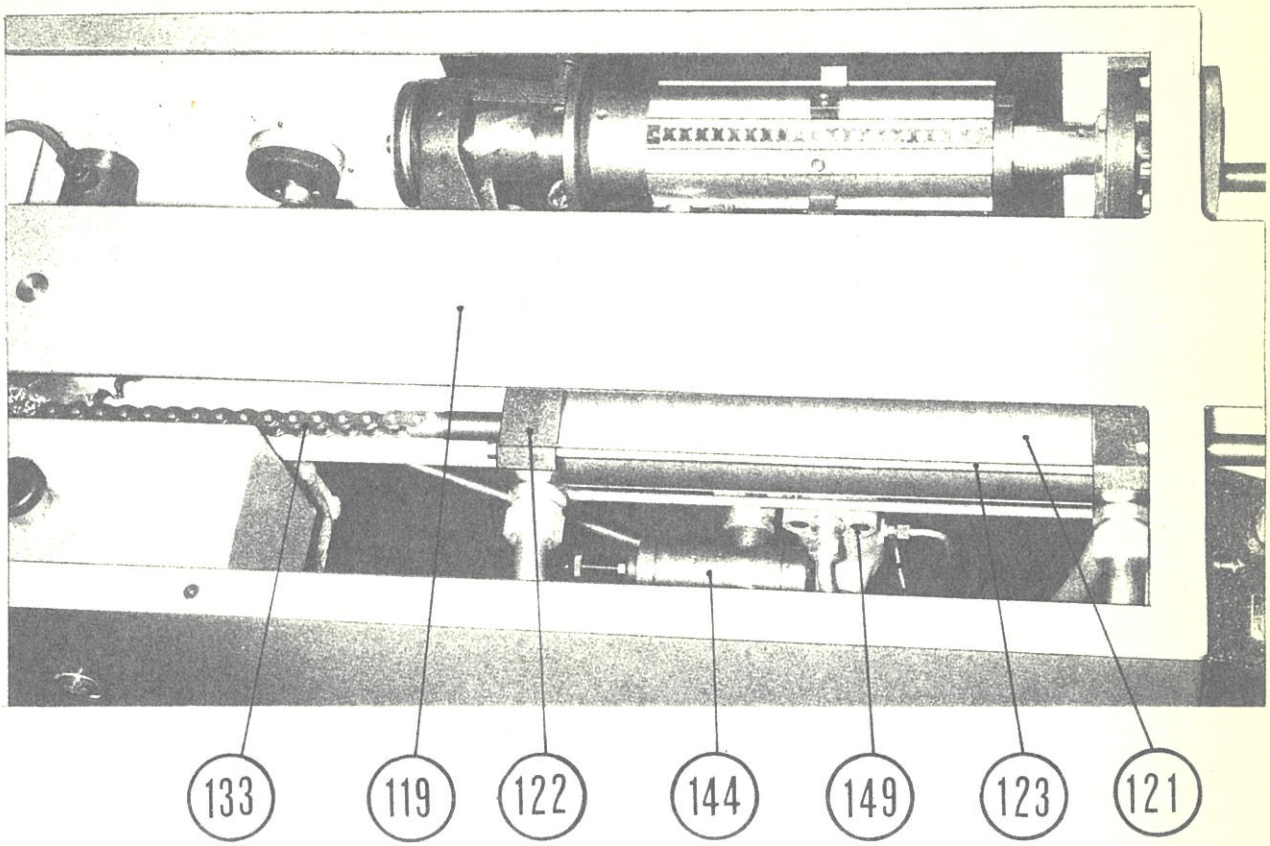
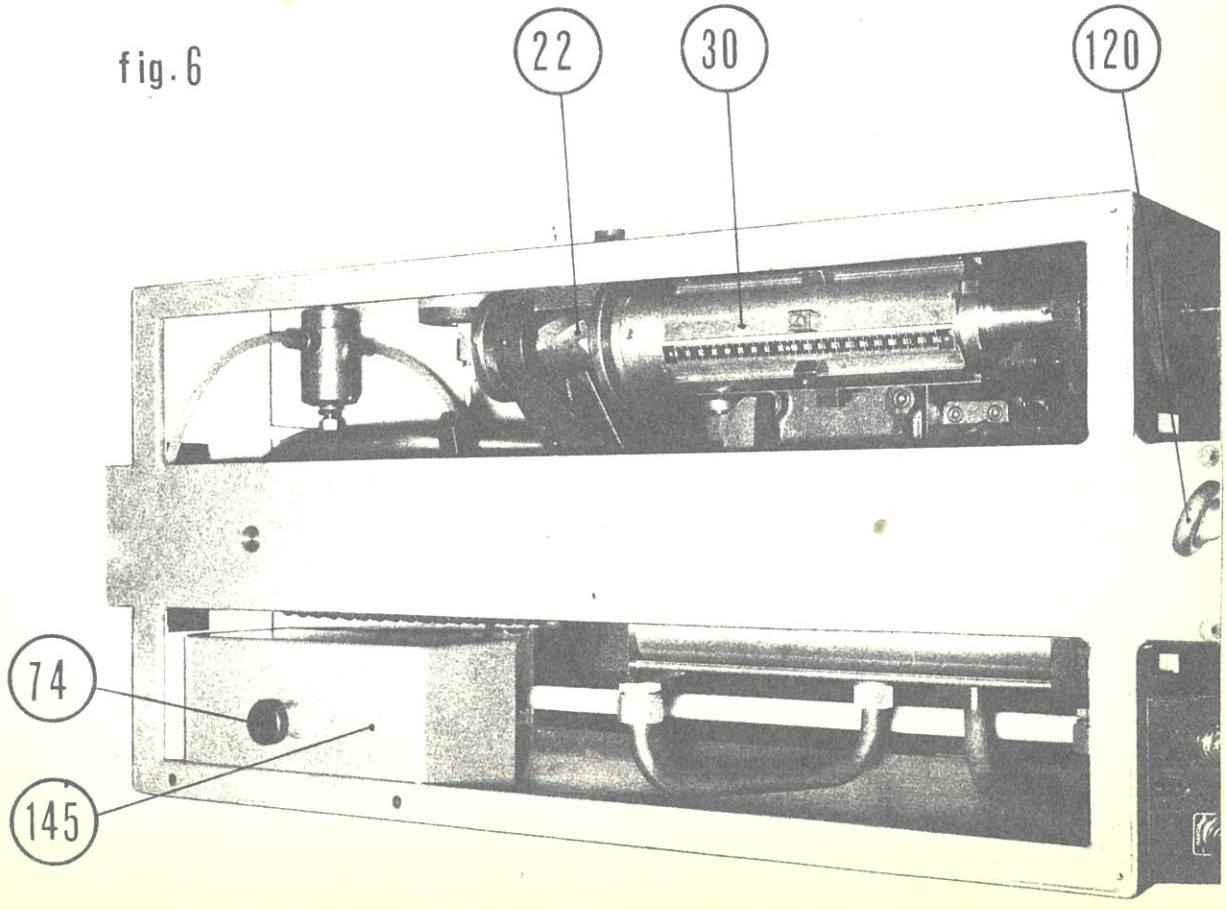


fig.6



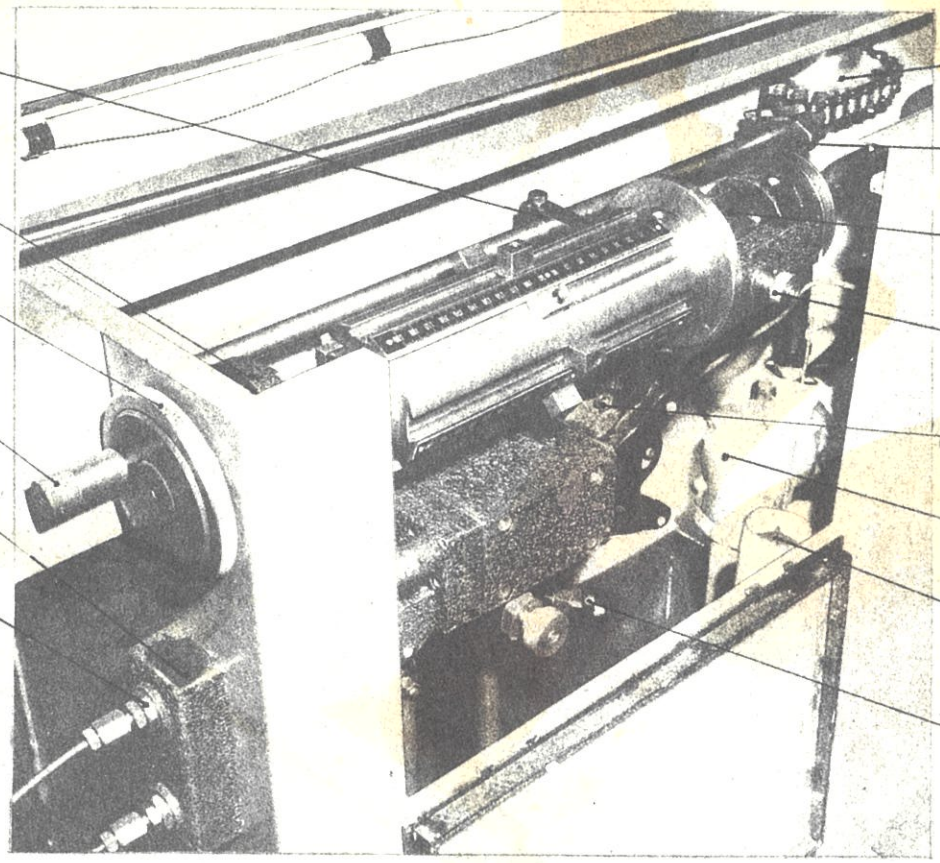

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fig. 7

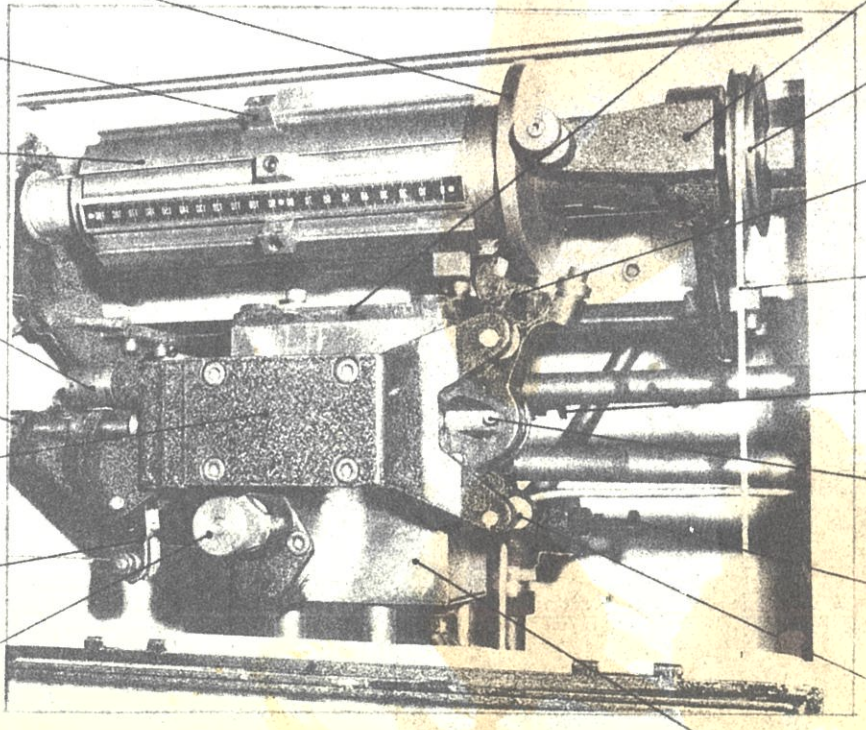
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fig. 8

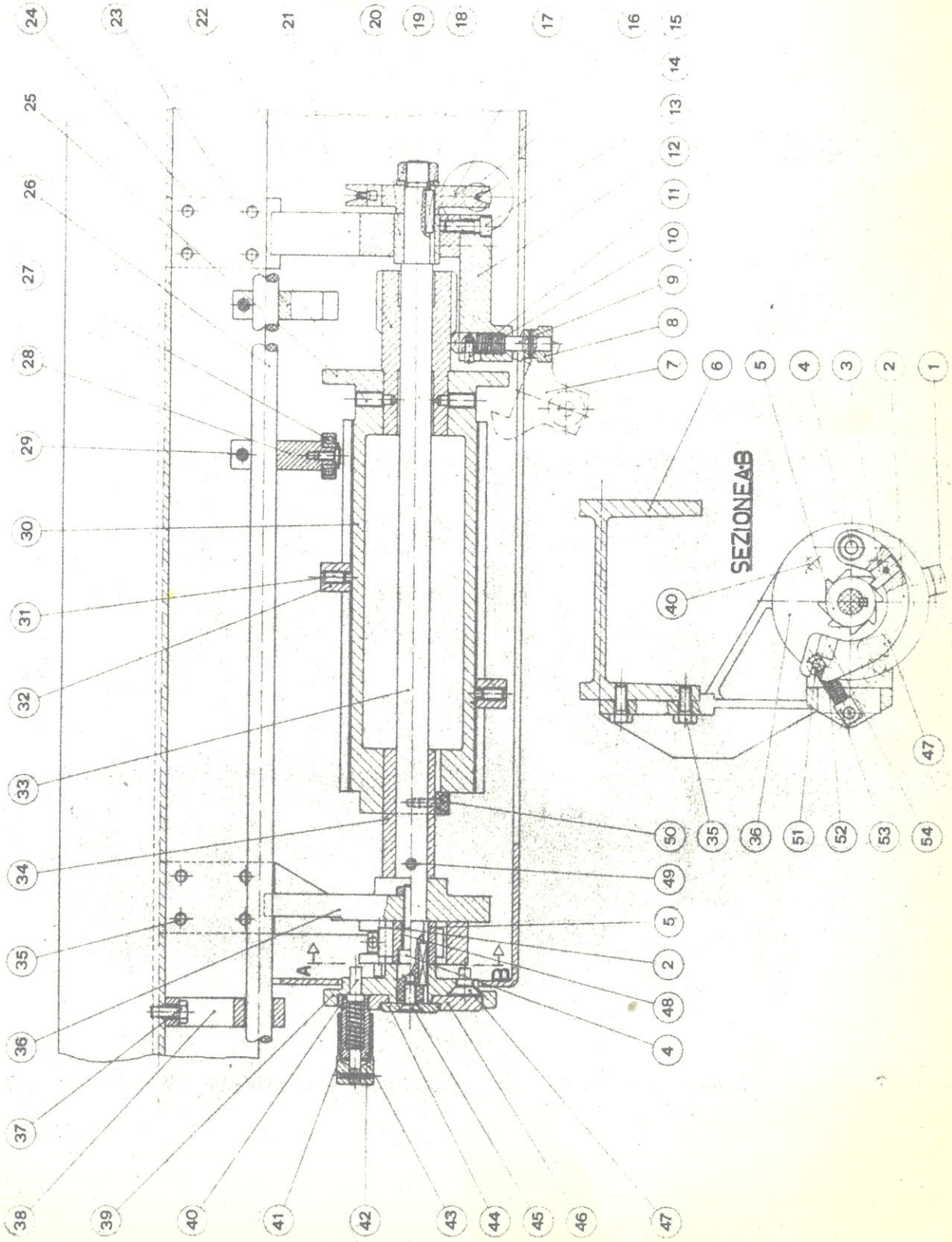

fig. abb. 9

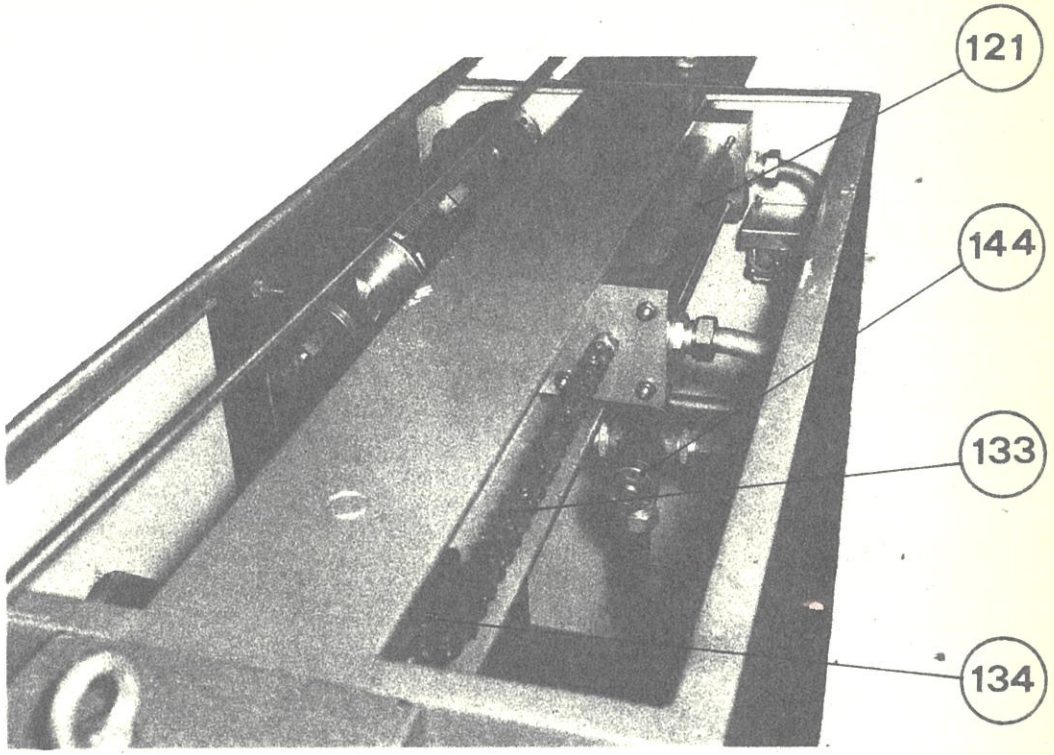

fig.11

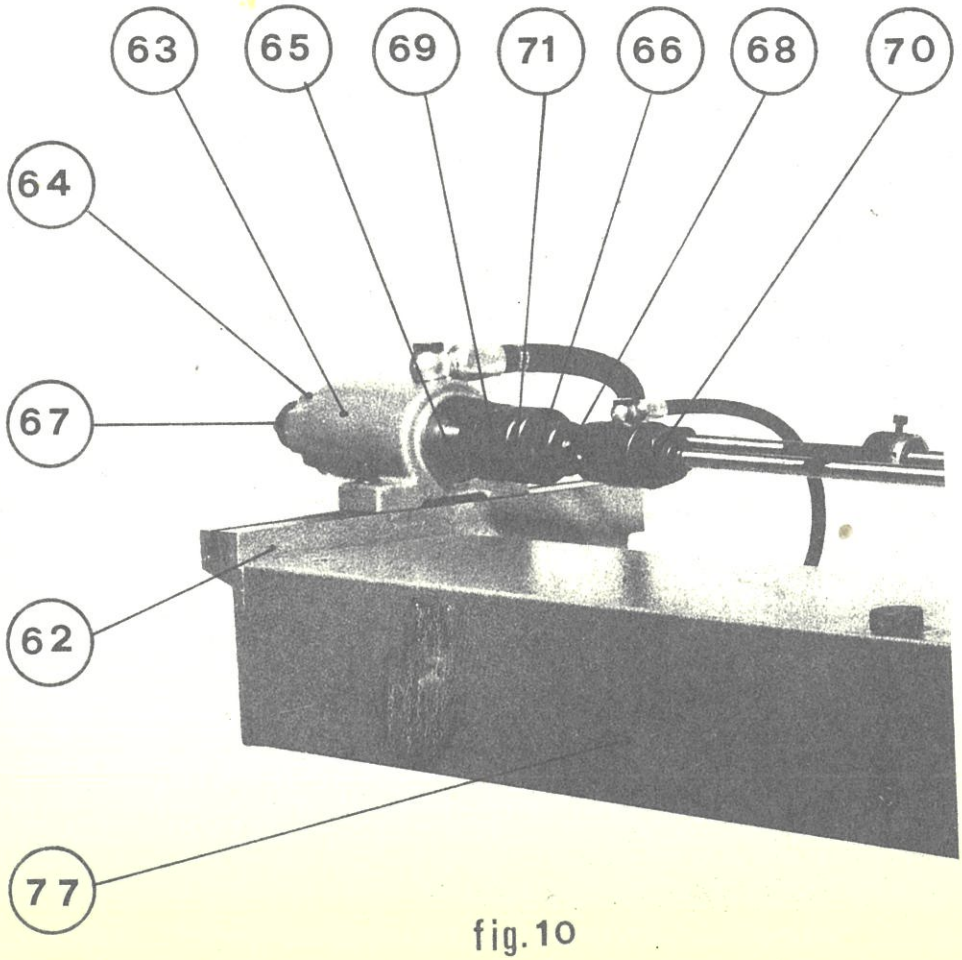

fig.10

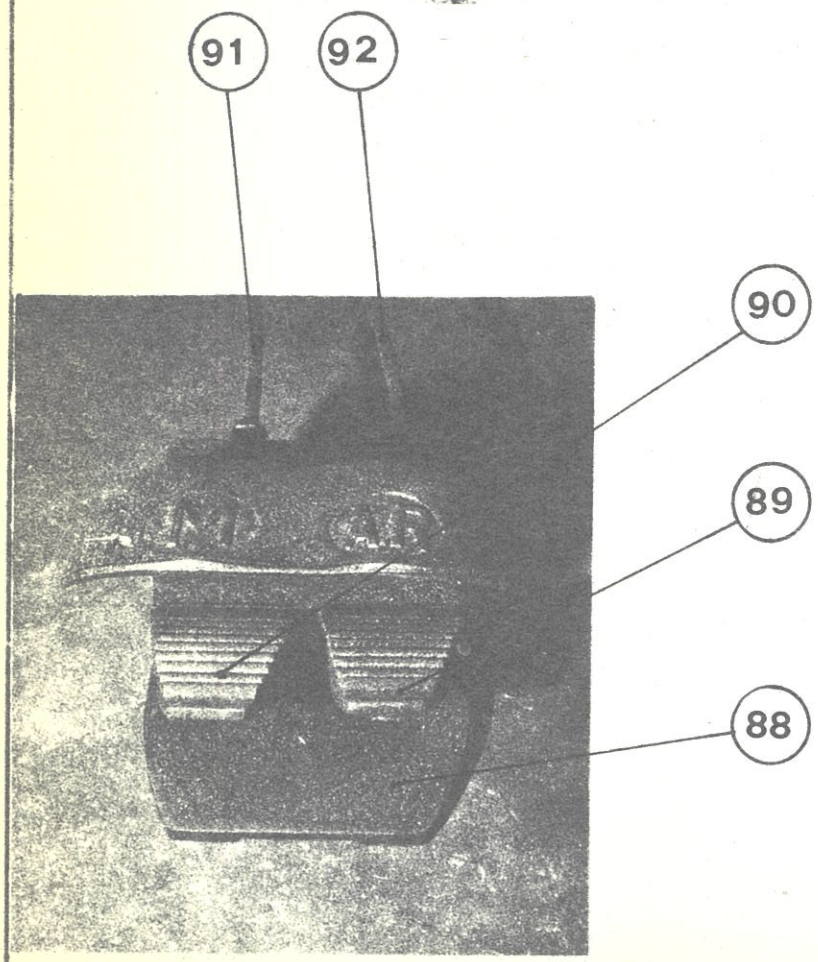

fig. 12

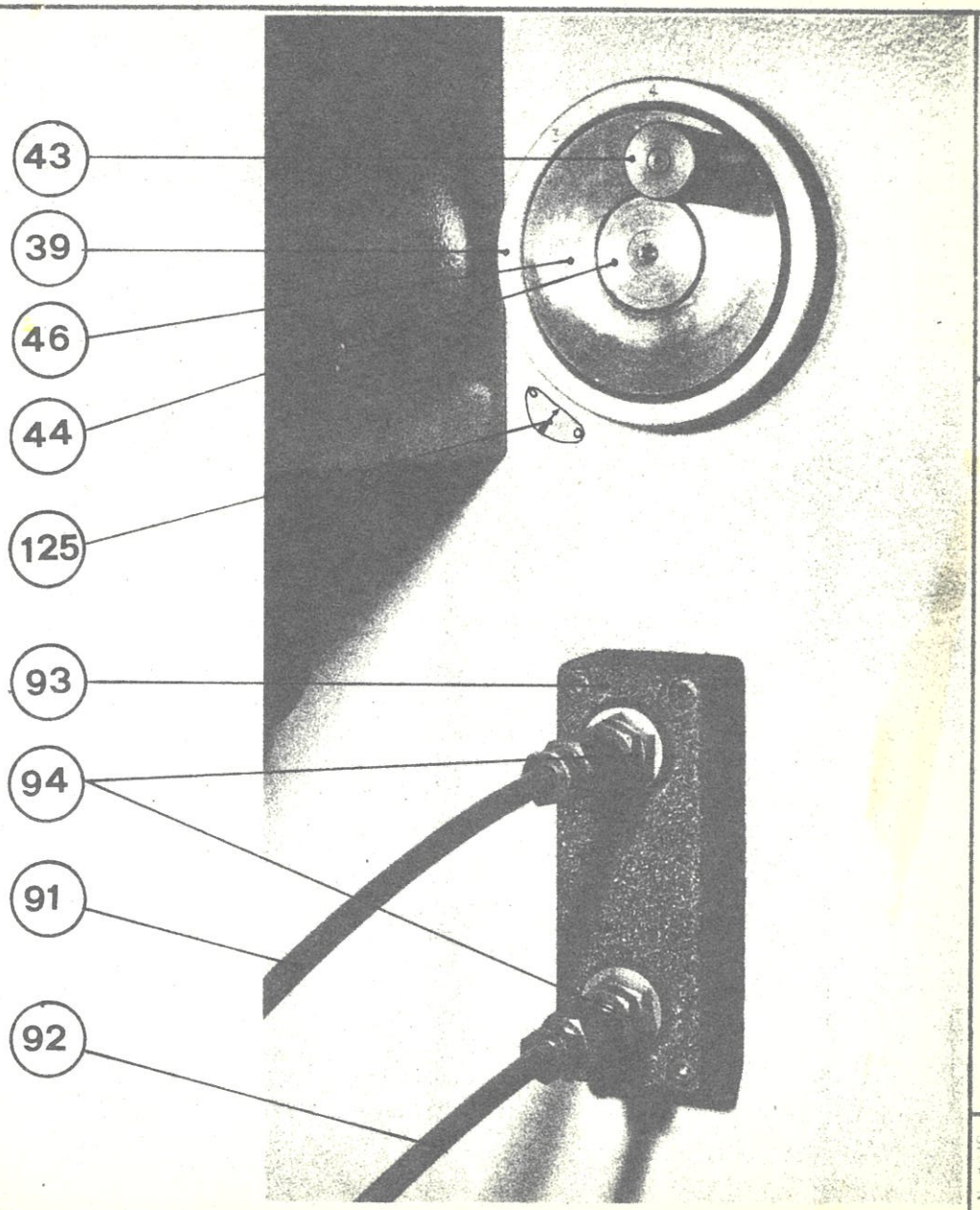

fig. 13

IBP

UNIVERSAL BROWN 32

020/1

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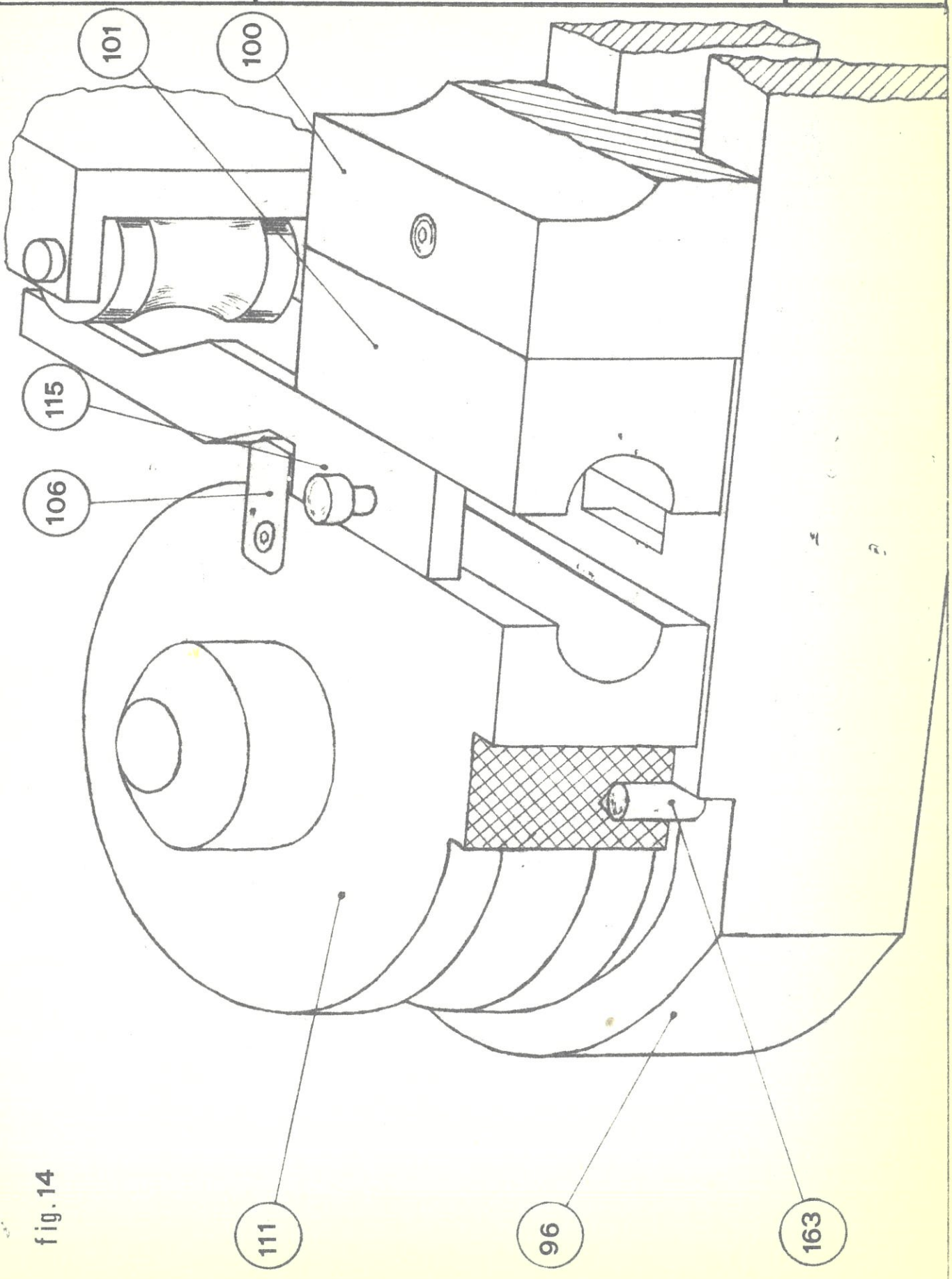
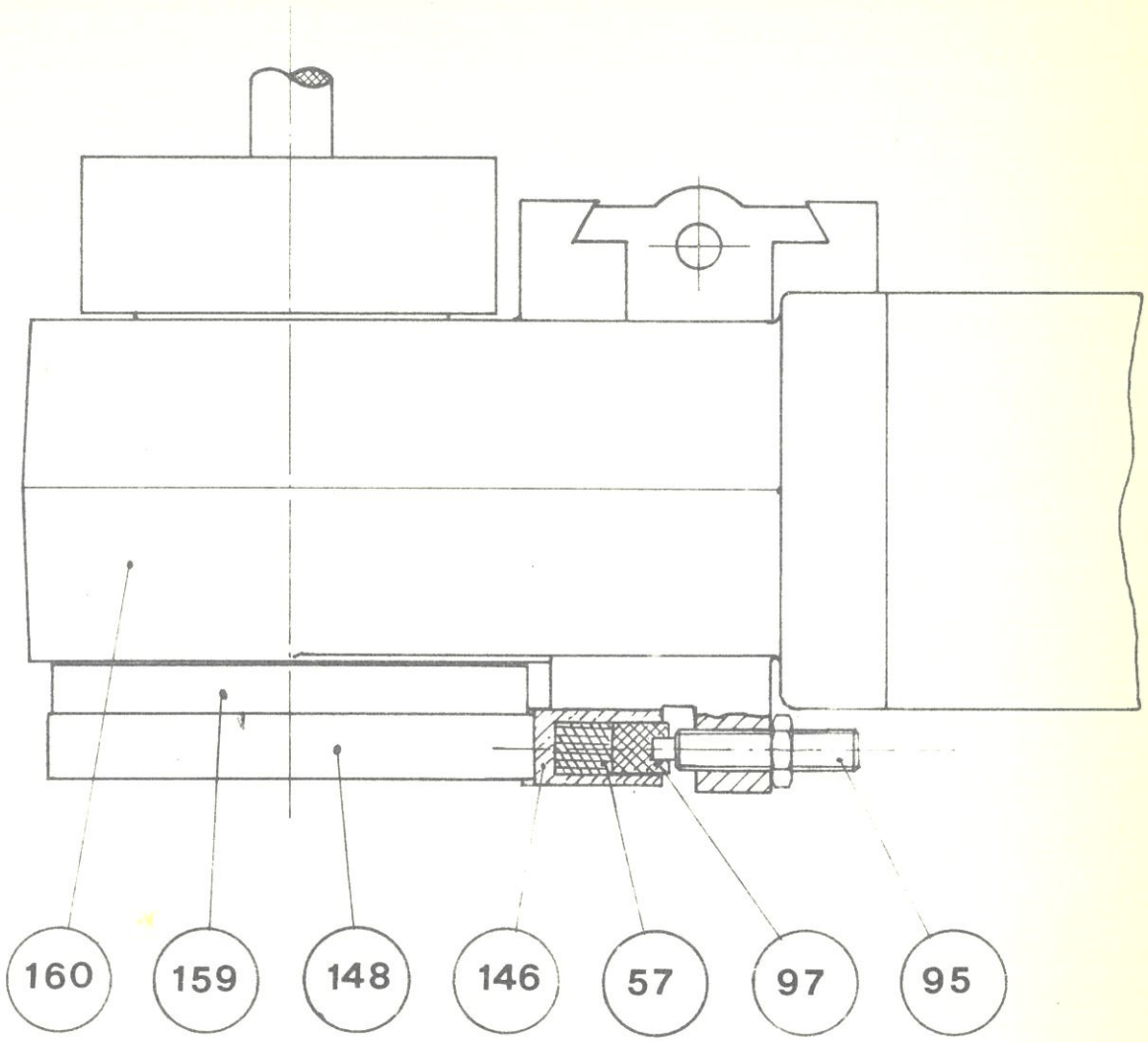


fig. 14



RESTRAINING DISPOSING

The purposes of the restraining disposing is to guarantee the pipe clamping , by means of counter die carriage, before the arm does the bending action , and to guarantee the opening of the counterdie carriage it self before the arm begines the return stroke after every bending action. It has also the secondary purpose to increase the clamping strength to all advantage of the keeping of the pipe.

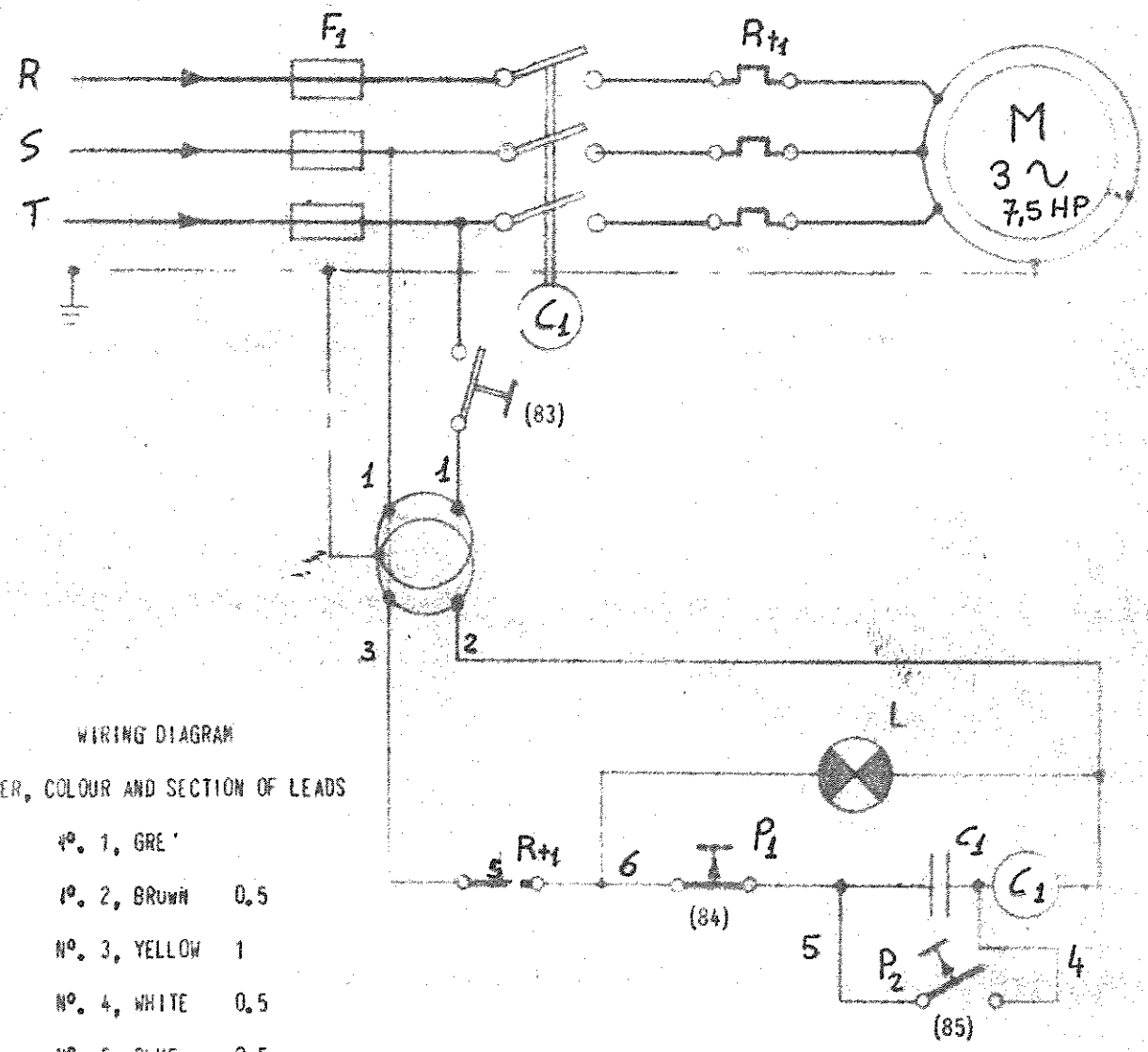
This disposing is such formed :

- A disc of tempered stell locked on stiffening aem(159)
- A bronze skate(146) shuffling on disk (148)
- A elastic rubber plug
- Regulation screw (160) with restraining regulation cap. (159)

If it is necessary to increase the efficiente of the restrain it is sufficient to screw (160)
To disassembly , it is sufficient to unscrew the screw(160) and all the other pieces are free to be easily taken off.

ELECTRICAL EQUIPMENT

This consists of: an asynchroneous three-phase, 5,5 HP 1400 R.P.M. electric motor, key type switch to turn on motor, thermal relay switch, one set of three fuses, pilot light ad two on/off pushbuttons.



WIRING DIAGRAM

NUMBER, COLOUR AND SECTION OF LEADS

N°. 1,	GRE'	
N°. 2,	BRUWN	0.5
N°. 3,	YELLOW	1
N°. 4,	WHITE	0.5
N°. 5,	BLUE	0.5
N°. 6,	ORANGE	0.5

FUSES: 20 A for 380 V
25 A for 220 V

THERMAL RELAYS: 6/12 A for 380 V, CALIBRATED for V. 380 at 9,2 A
10/16 A for 220 V. CALIBRATED for V. 220 at 15.5 A

TRANSFORMER: 35 VA 220/280,380-410 50 cycles

N° R.S.T. WHITE 2, for 220 V
WHITE 4 for 220 V

HYDRAULIC EQUIPMENT

Roller carriage control cylinder (157)
Double-acting, controlling closing and opening of pipe guide roller carriage.

Control cylinder (121)
Double-acting, rotates the clamp turning arm in both directions.

Core control cylinder (65)
Single-acting, spring return, controlling core expulsion.

Core lubrication pump (158)
Hydraulic control on the supply piston, single-acting and spring return.

Filter (141)
The filter purifies the oil before, it passes to the hydraulic equipment. It is connected to the pump through the intake tube. At every oil change, it is recommended that the filter be dismantled and cleaned thoroughly by washing with fuel oil and dried by compressed air.

Hydraulic vane pump (140)
This is connceted to the electric motor. It takes oil from the base and transmits it to the distributor block; from here the oil passes directly and indirectly to the various cylinders controlling the movements of the machine.

Control valve (128)
This is used to distribute oil under pressure to the units governing the working phase, and then to the units governing the return phase.

Zequence valve (149, Fig. 6)
The function of the sequence valve (149) is to close the guide roller carriage, move the programmer control boss (28) forward before the clamp carriage closes (100).

Sequnece valve (147 Fig. 8)
This is inserted on the line governing the return phase at the end of each bend operation. Its function is to activate the expulsion of the core by means of the cylinder (63) before the clamp carriage (100) and the guide roller carriage (103) open.

Flow regulating valve (143, Fig. 8)

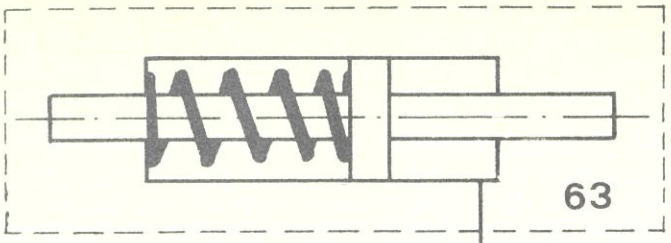
Thi is inserted downstream from sequence valve (149). By turning the knurled knob, the flow of oil to the meter cylinder (121) can be increased or decreased, thus speeding up or slowing down the die arm (96) and consequently the bending process.

Safety return valve (144 Fig. 6)

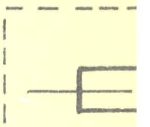
This is inserted on the line governing the return stroke of the die turning arm (96). Its function is to discharge oil in the tank if the arm is prevented from moving in the return stoke or if the valve (128) fails to operate on completion of the return stroke.

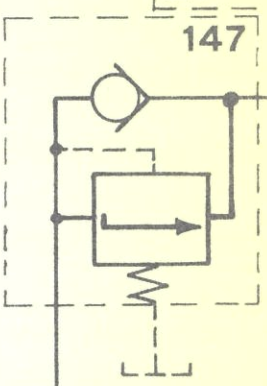
Pressure limiting valve (142)

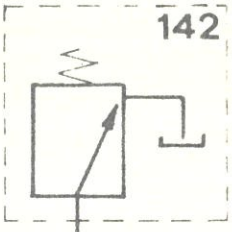
This is inserted downstream from the pump and regulates the maximum operating pressure of the whole hydraulic system, thus restricting the maximum permissible pressure on mechanical parts of the machine. It can be adjusted by the spcial hadwheel. The maximum operating pressure should be 95 kg/cm^2; this pressure can be read from the gauge (137). There is a cock (138) between the pressure limiting valve and the gauge, which isolates the gauge from the hydraulic circuit once the operating pressure has been checked.

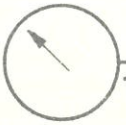


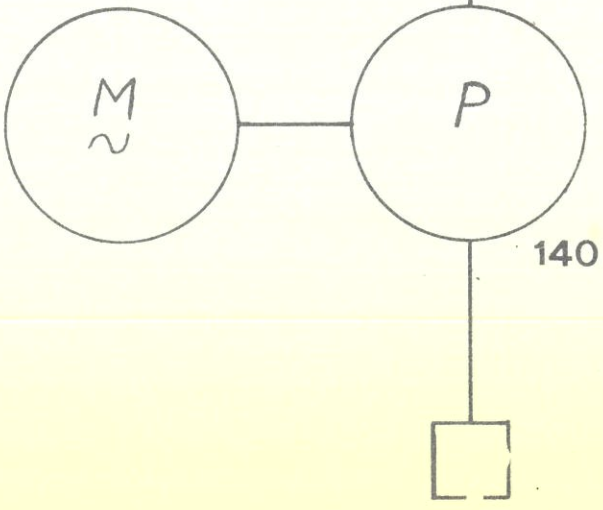
CORE CONTROL DEVICE









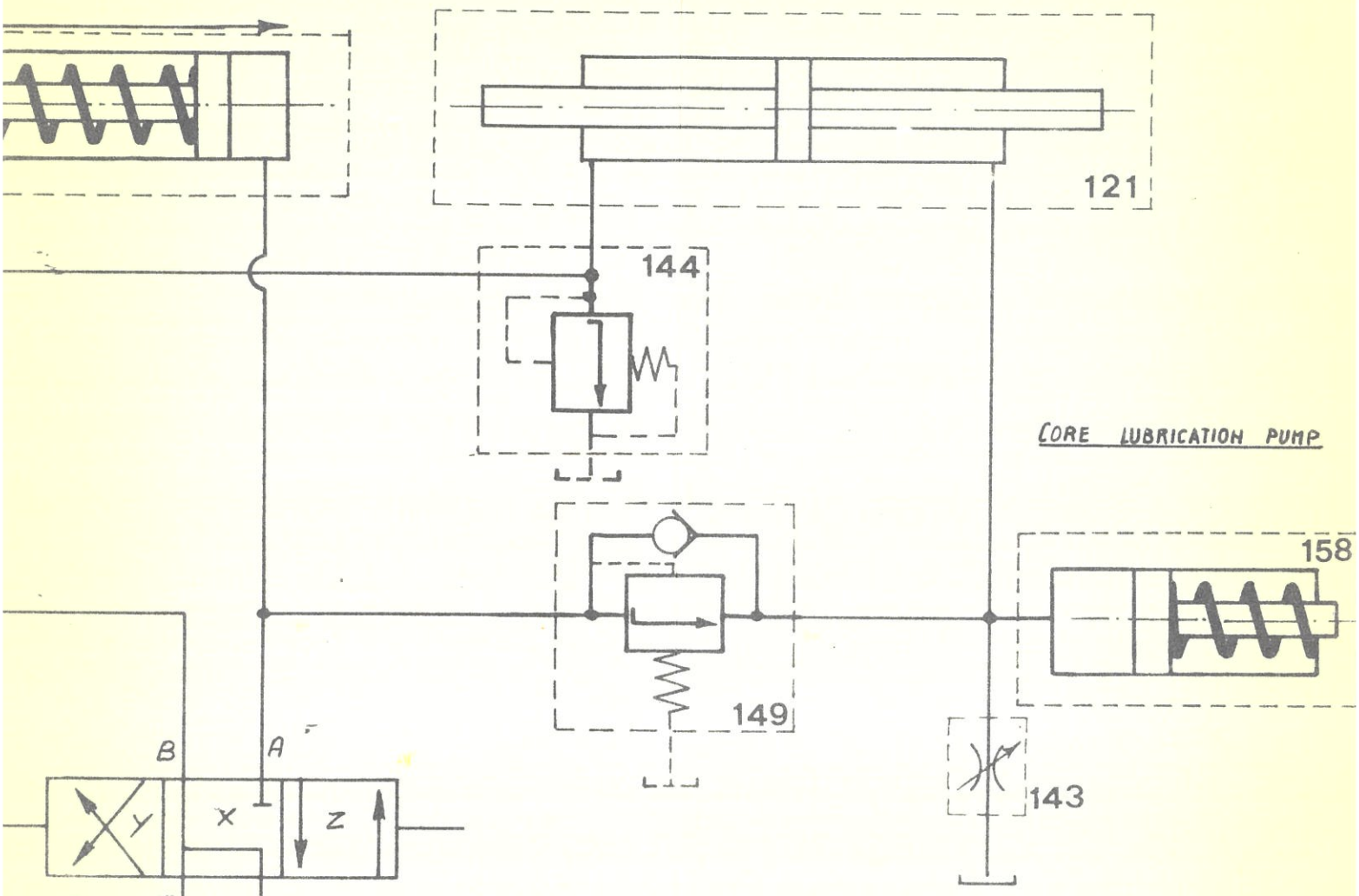


DESCRIPTION OF THE OPERATIO

Controlling the valve (128) so as to determine th
the pump goes through the duct (A) to the roller
then to the motor cylinder , thus the operating p
When the arm reaches the preset angle amplitude ,
is determined. Then by passing through duct (B)
core. When the latter reaches the end of its extr
increase in pressure in the duct, the sequence va
thus enables the oil to flow to the motor piston
WHEn the die rotation arm reaches zero condition
therefore the motor piston remains locked and the
zero under the action of the spring. Furthermore
The end of return stroke safety valve (141) act
owing to seem discrepancy condition (x) is not ob
end of return stroke of the counterdie arm.

IDER WITH ROLLER CARRIASE

MOTOR CYLINDER



Posiz.	Pezzi	DENOMINAZIONE	Posiz.	Pezzi	
140	1	Blade pump - capacity [illegible]			
143	1	Flow adyustment valve			
128	1	Distributing control valve	121	1	Motor cylinder
142	1	Maxiaum pressure valve	147	1	Core extraction sequence valve
149	1	Sequence valve	158	1	Core lubrication pump
144	1	Safety valve at end of return stroke	157	1	Cylinder with roller carriage
137	1	Pressure control ameter	63	1	Core control device

ondition (Z) , the flow of
riage control cylinder and
e is reached.
valve(128) condition (y)
es direct to drive out the
ion stroke there is an
(149) is released and
determine the return phase.
is determined is valve (128)
re drive piston goes back to
pump is put in shortcircuit.
draining the duct when,
ed in valve (100) at the

Impianto oleodinamico

DENOMINAZIONE | MATERIALE | TRATTAMENTO

IBP PEDRAZZOLI
BASSANO DEL GRAPPA

SCALA	FIRME	DATE	N. pezzi per macch.	N. pezzi da eseguire
/	DIS.	23/6/64	/	
	VER.			

Curvatubi oleodinamica Universal 32

DISEGNO N. 022·036·0

SOSTITUITO DAL N°

SOSTITUISCE IL N°

~ Grezza
▽ Grezza tranciata
▽ Sgrossata d'utensile
▽▽ Finita d'utensile
▽▽▽ Rettificata

pezzi per macch.	Tipo macc.	MODIFICHE

Troubles that can hamper normal running and their elimination

	Trouble	Possible Causes	Amendment
1.	Counterdie arm that rotates before the counterdie jaw clamps the pipe	Little or void efficience of the restraining of piping.	Increase pushing strength of the rubber plug (148) operating on the screw (160), till trouble is taken off.
2.	Delayed or even inefficient extraction of the core	Unsatisfactory adjustment of the sequence valve (149) (figure 6)	Increase the efficiency of this valve by gradually tightening the screw until the object has been reached.
3.	Too slow or even lacking rotation of the counterdie arm even if the ammeter (137) indicates pressure	Flow adjustment valve (143) (figure 8) too open or pressure control valve (22) badly adjusted	Close the valve (143) by screwing the appropriate handle or increase working pressure by tightening the screw of valve (142).
4.	Slow return of the counterdie arm holder device (81°)	Safety valve at the end of return stroke too open (144) (figure 8)	Gradually lock the knurled head screw of valve (144) until the return speed is equal to the maximum working speed. Check wheter the arm (96) can be stopped in the return phase, without excessive stress. On the contrary loosen the plug of valve (144) sufficiently.
5.	The machine does not stop at the preset grade on a determined bend but goes on the 180°.	Control lever (28) in a wrong position, or the scheduler drum (30) out of phase. Pin coupling piston valve to the valve of the rocker lever either broken or extracted (7).	Put the lever (28) back in the correct position. Correct the power factor of the scheduling drum (30) in conformity with the instructions under the heading "Bend Scheduling". Replace the pin or the rocker.
6.	By pressing the pedal on the "running" side the machine does not start although the motor is engaged.	The motor pump unit is performing reverse rotation. Valve control steel cable (128) either loose at the connections or broken.	Exchange two phases at the line inlet. Secure the steel cable at the connections or replace it.
7.	The motor does not start when the switch (83) is turned, or it is under excessive stress during operation with a tendency to a fall in revs. and to become superheated.	Fused electric valve. Motor with worn winding.	Check the fuses in the fuse-holder and replace the inefficient ones. Wind the electric motor again.
8.	The core does not return to zero at the end of the return stroke but stays in the extracted position, and only goes back to zero by stopping the motor-pump unit or by pressing the pedal on the "running" side it returns as soon as the working phase starts.	The rocker lever (7) does not become released by the disc (25) of drum (30) or, even if released the lever (7) does not put the stem of valve (128) back in the center position. Thus the return phase is still engaged and the core remains backwards. A broken core return spring located in the body of core (83).	Check the movement of the rocker lever (7) and see that it is released. Adjust the lever (7) release by actuating the dowel screw (131) so that the stem of the valve (128) is returned each time to the central position. Replace the core return spring control if it is broken.

Troubles that can hamper normal running and their elimination

	Trouble	Possible Causes	Amendment
9.	At the end of the return stroke, the counterdie arm begins to move again and the machine performates a new operating stroke	The stop lever (152) does not return on her normal position during the work stroke under the action of her control spring. Lever control spring either too weak or broken. Stop lever (152) broken.	Verify the stop lever (152) be free to rotate on her ax. Replace stop lever spring Replace stop lever.
10.	Pressing the pedal (A.R.) of the pedal keys (55), during a working stroke, the counterdie arm does not stop or reverses its movement, but prosecutes till the bend angle fixed on the scheduler drum.	Control steel cable (91) either loose at the cannections or broken. Volontary stop and return control lever (129) either extracted from its pivot or broken.	Secure the steel cable at the connections or replace it. Replace le lever on its pivot or replace it if broken.
11.	Predisposing the scheduler for an automatic sequence of bends, it does not perform the said sequence but does the machine performs always the same bend.	The release pin (9) does not restrains on the toothed sprocket (22) during the left movement of the latter because either too worn or broken. Toothed sprocket (22) too worn.	Replace the release pin (9). Replace the toothed sprocket (22).

If the trouble cannot be eliminated by the means indicated above or if they are of a different nature, the cause of the defect may depend on the electric equipment or hydraulic system, and in this case it is advisable to have expert opinion.

industria meccanica brevetti pedrazzoli s. p. a.