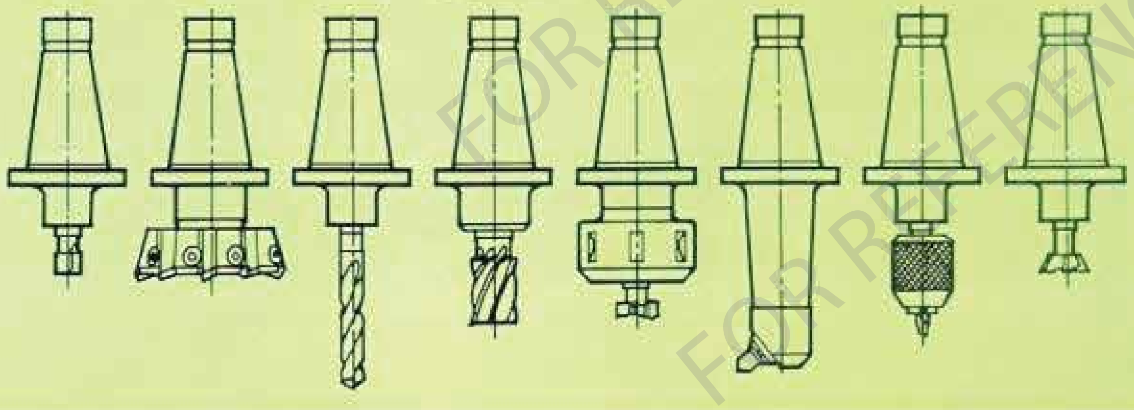
ELECTRO MECHANICAL ACTUATOR - UF

FOR QUICK CHANGE OF TOOLS ON MILLING MACHINES



The GMT Rotating Electro Mechanical Actuator, Model-UF has been developed as a time saver for quick and efficient clamping and declamping of arbors on milling machines, boring machines etc., which have steep, self-releasing taper on the spindle.

Where a number of tools are to be used for an operation, this EMA enables the work to be completed in a single set-up, instead of loading and unloading the work piece on the fixture a number of times corresponding to the number of tools used.

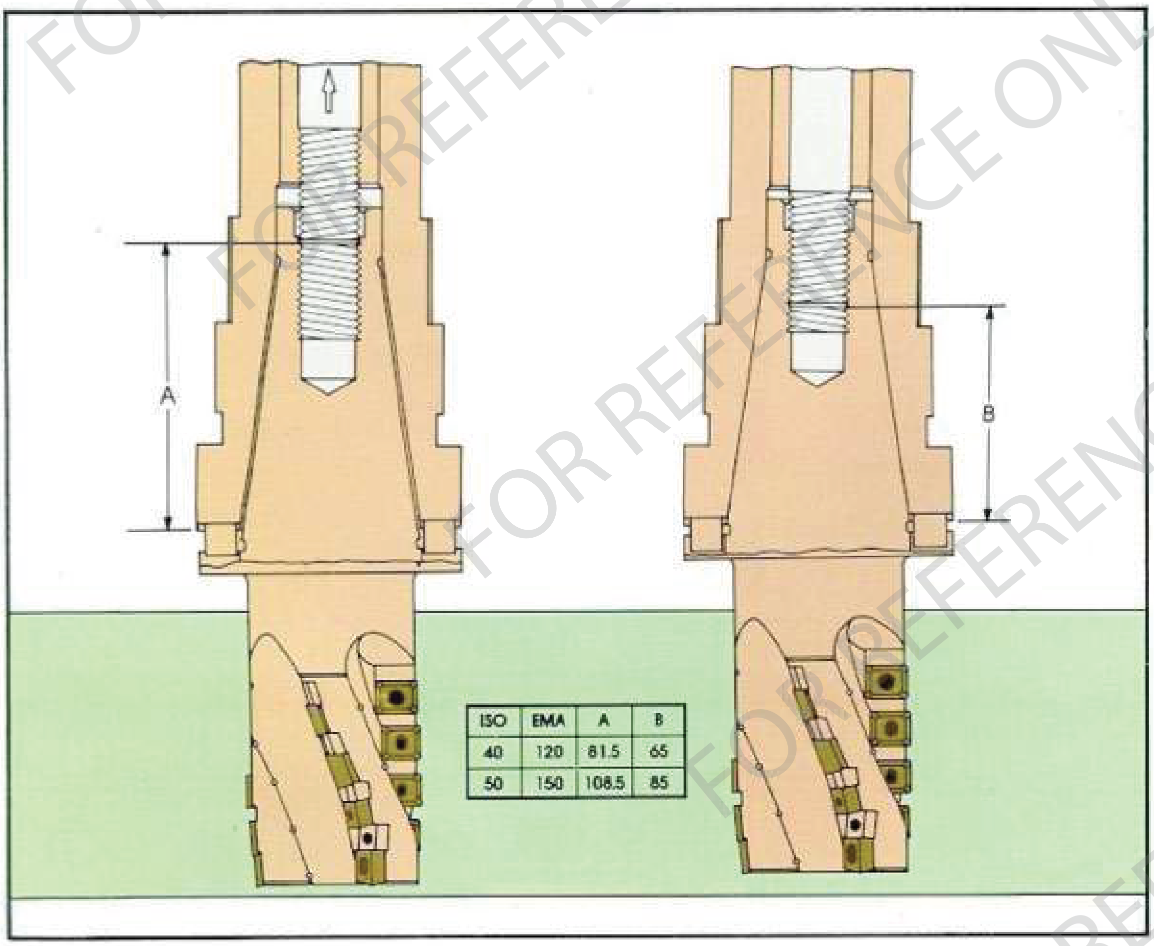
Use of this Electro Mechanical Actuator ensures fast and quick change of tool and cuts non-productive time drastically. It is easy to operate and its maintenance cost is low. Since the operation on the work piece is finished in one set-up, in process inventory is reduced. The use of the EMA reduces operator fatigue and increases his efficiency substantially.

When using GMT rotating electro mechanical actuator for clamping, the following requirements must be met:

1) The spindle must be provided with a self-release taper to ISO standards. Morse and metric tapers are not suitable.

2) The spindle rear end must allow the mounting of flange for mounting the EMA.

OPERATION:
When power is switched on, it flows to the stator through the slip ring. The sliding rotor of the brake motor is energized. The magnetic field so produced, pulls the rotor axially and releases the brake. On release of the brake, the rotor shaft rotates at the rated speed. The torque passes from the pinion fixed to the rotor shaft via double planet gears fitted in a cage. This cage is supported at both the ends by means of ball bearings. The drive going through the pinion can go either through the internal notched gear or through the internal output gear.



ISO	EMA	A	B
40	120	81.5	65
50	150	108.5	85

Rotation of the notched gear is blocked by a shell and spring, compressed by the face cam on the graduated collar through radius pressure piece. The spring forces a double angled shell into the tapered slot on the slotted ring. This slotted ring is coupled to the notched gear by the dogs. As this slipping clutch is blocked, the drive goes through the output gear. This output gear provides a large ratio of reduction and consequently a large increase in the torque.

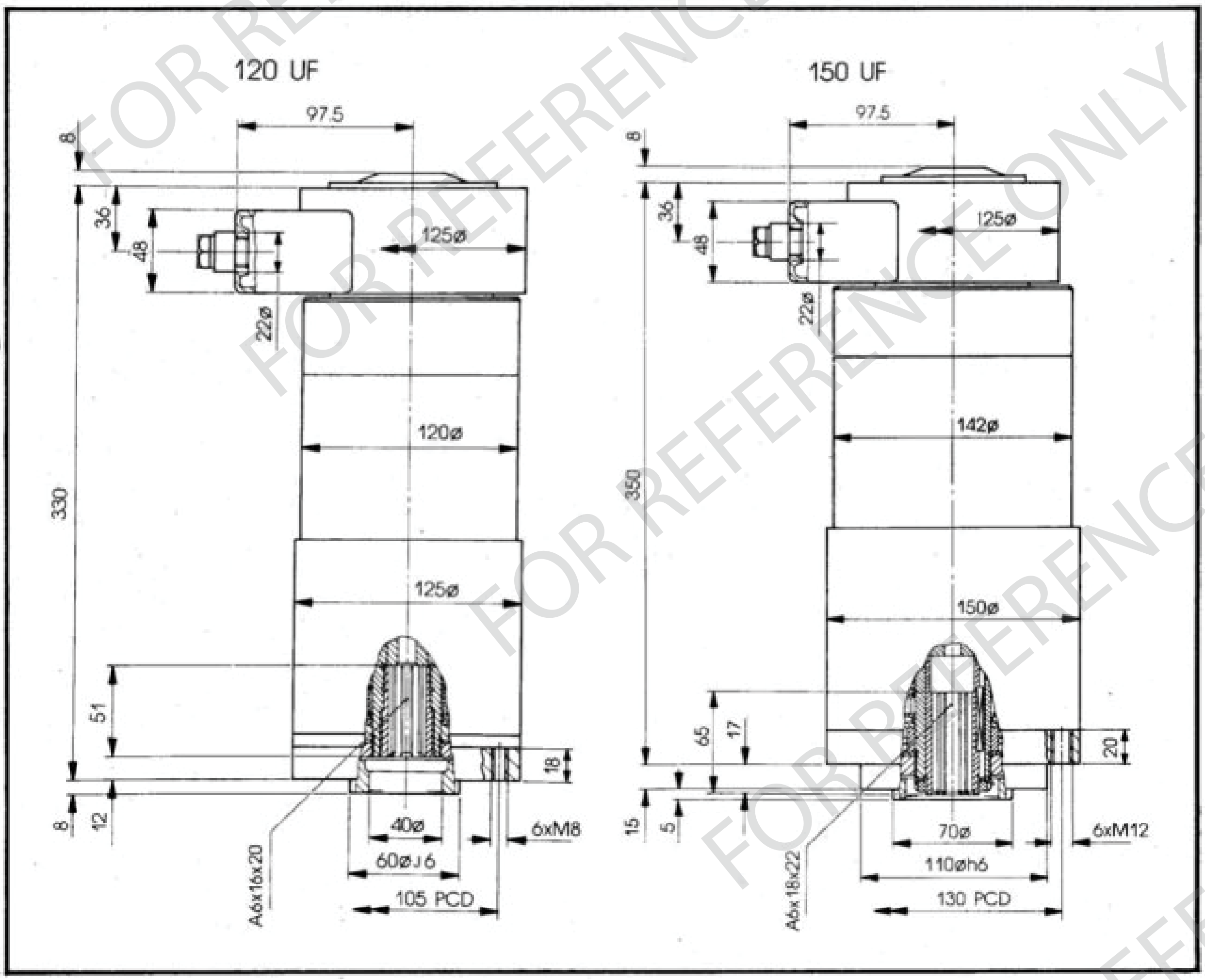
CLAMPING:
The tool is introduced into the spindle taper, until the thread in the ISO arbor contacts the thread on the drawbar. The slot in the ISO arbor is engaged to the tenon in the spindle to prevent rotation of tool holder on load.

When the actuator is switched on, rotation of the internal output gear with the spline causes the stopnut to slide and the drawbar screws into the ISO arbor. This continues till the stopnut butts on the face of the output gear. At the same time the taper on the arbor completely engages with the taper in the spindle and cannot move any further. Once the drawbar rotation is complete, the slipping clutch slips and gives the characteristic "Click-Click" sound indicating that tool clamping is over.

DECLAMPING:
For declamping the tool, the machine spindle is stopped and the foot switch is operated. The drawbar moves outwards till the shoulder bears against the face of the output gear and forces the arbor out gently. The footswitch is released when the tool is declamped.

CLAMPING - DECLAMPING RATIO:

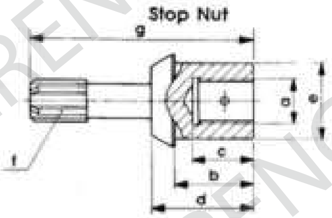
The clamping - declamping ratio in model UF is 1: 2. This is achieved by maintaining the angle of the shell in the declamping direction steeper than the angle in clamping direction.

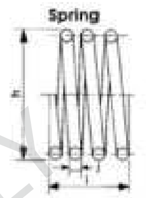


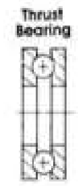
PERFORMANCE DETAILS

MODEL		07-05	07-24
SIZE Ø		120	150
Speed	RPM	174	100
Clamping torque	Nm	35	100
Declamping torque	Nm	65	210
Weight	Kg	15	23
Mass moment of Inertia	Kgm^2	0.027	0.070
Permissible Imbalance	gm	15	20
Volt	V	415	415
Amp	A	0.8	1.5
Power	Kw	0.45	0.8
Frequency	Hz	50	50
Duty Cycle	ED	40%	40%
Switching	cy/hr	250	250

ACCESSORIES







ISO	EMA	PART NO	a	b	c	d	e	f	g	PART No.	h	i	J	SKF Bearing No.
40	120 UF	ASM1	M16X1.5	18	20	28	27	B6X 16 X 20	78	DF1	34	40	3	51204
50	150 UF	ASM3	M20X1.5	20	22	32	30	B6X 18 X 22	97	DF2	37.5	47.5	3.5	51105

CONTROLS:

GMT offers two types of controls for operating these models of Electro Mechanical Actuators.

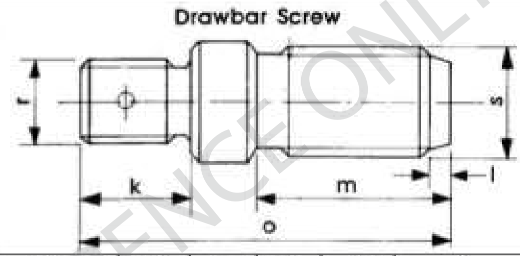
1. SIMPLE CONTROL:

When the foot switch is pressed, the motor starts rotating in a clockwise direction during clamping and in an anti-clockwise direction during declamping. When the preset torque is reached, the EMA emits an audible characteristic "Click-Click" sound, which indicates to the operator that clamping is complete.

2. SWITCH OFF DEVICE:

The switch off device with control panel ensures:

a. Auto shut off when set clamping force is reached
b. Reliable repetitive clamping force.
c. Machine starts only after the tool is fully clamped.
d. Actuator / Machine Interlock.
e. Operator safety.
f. Low cost automation feasible.
g. Interfacing of EMA Switch off device with the machine Control Panel feasible.



ISO	EMA	k	l	m	o	r	s
50	150 UF	25	5	63	103	M18 X15	M24

Offered only for 150 UF

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