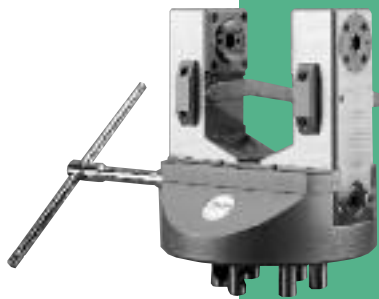




### MD/MDE

MD4x90° / MDE8x45°  
- Automatic indexing power chuck.  
Hydraulic feed.

E.13 - E.32



### MADV

Manual self-centering power chuck.  
Manual clamping and manual indexing.

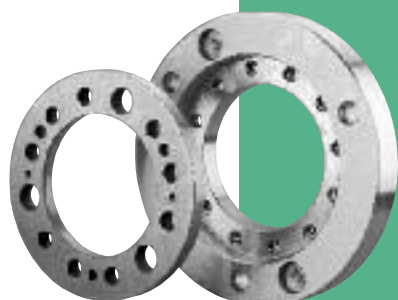
E.35 - E.38



### MADT

Semi-automatic self-centering power chuck.  
Draw rod clamping and manual indexing.

E.39 - E.42



### EQUIPMENT

Adapter plate for machine spindle.

E.43

### INDEXING CHUCKS

**M**echanical indexing power chucks are used by industries to work pieces with faces at right and axial angles using single loading and blockage.

**T**o work these profiles with traditional chucks every side needs a new clamping and a replacement : this causes precision and time lost.

**T**he complete working with indexing power chucks is made with only a rotation clamping, during rotation and indexing processes the workpiece is closed in the chuck.

**W**ith the automatic version it is happend without stopping chuck on the lathe.

**I**nitially conceived to work crosspieces and valve bodies, over the last years constant improvements have been made to their construction and quality; this has led to a vaster application in the automobile, aeronautical, industrial components and in all industrial sectors needing to work pieces with a crossed axis in a single hold.

**A**utomatic and semi-automatic indexing chucks are a good alternative to expensive special working machine or transfert machine with rotary table.

**M**anual power chucks are the best solution to work small series, prototype and equipment on lathe and on milling machines.

**V**ery precise references and technical specifications adopted permit fast retooling of the power chuck between jobs and fast mounting and dismounting on the machine.

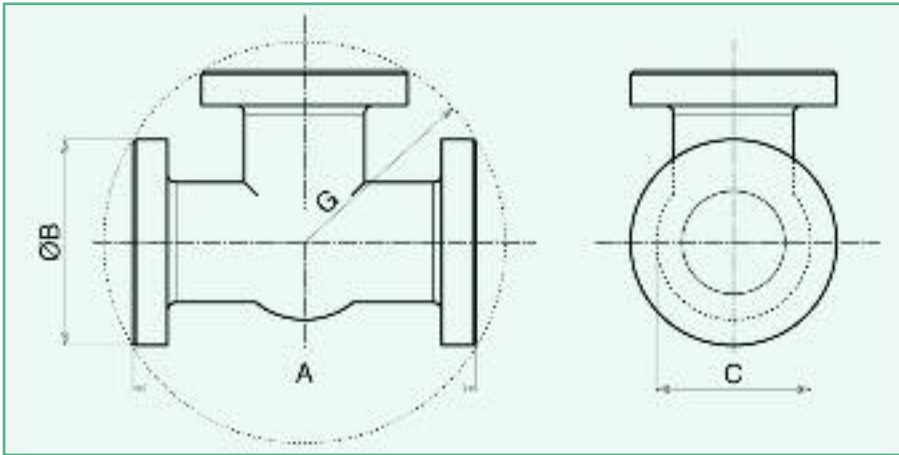
**W**ith this catalog we would help our customers giving all the technical informations and specifications they need about our indexing power chucks production.

**S**pecial chucks can be designed and manufactured on customer request.

**This photo shows some pieces which can be worked with indexing chucks**



## Workpiece sample scheme



For a first chuck selection it is most important to check the following dimensions:

- **G** = the biggest diagonal of the raw component.
- **C** = clamping area thickness + jaws thickness.

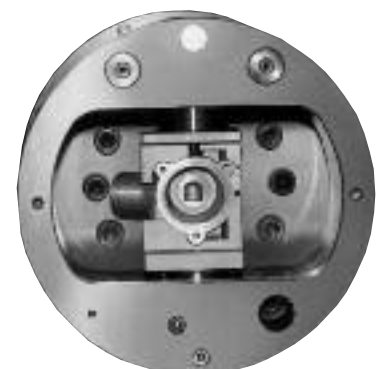
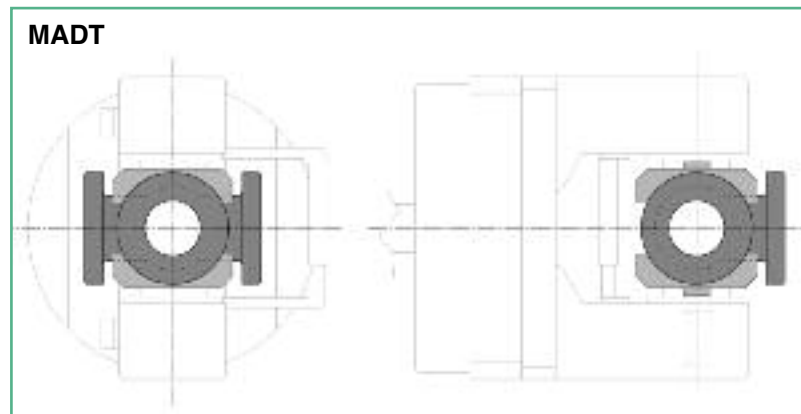
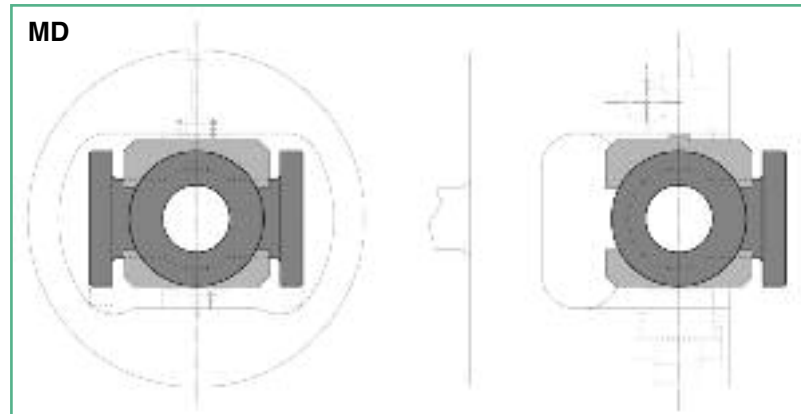
In the first following drawing it is represented a valve clamped in an automatic not self-centering power chuck MD.

In the second one a manual self-centering power chuck MADT (or MADV).

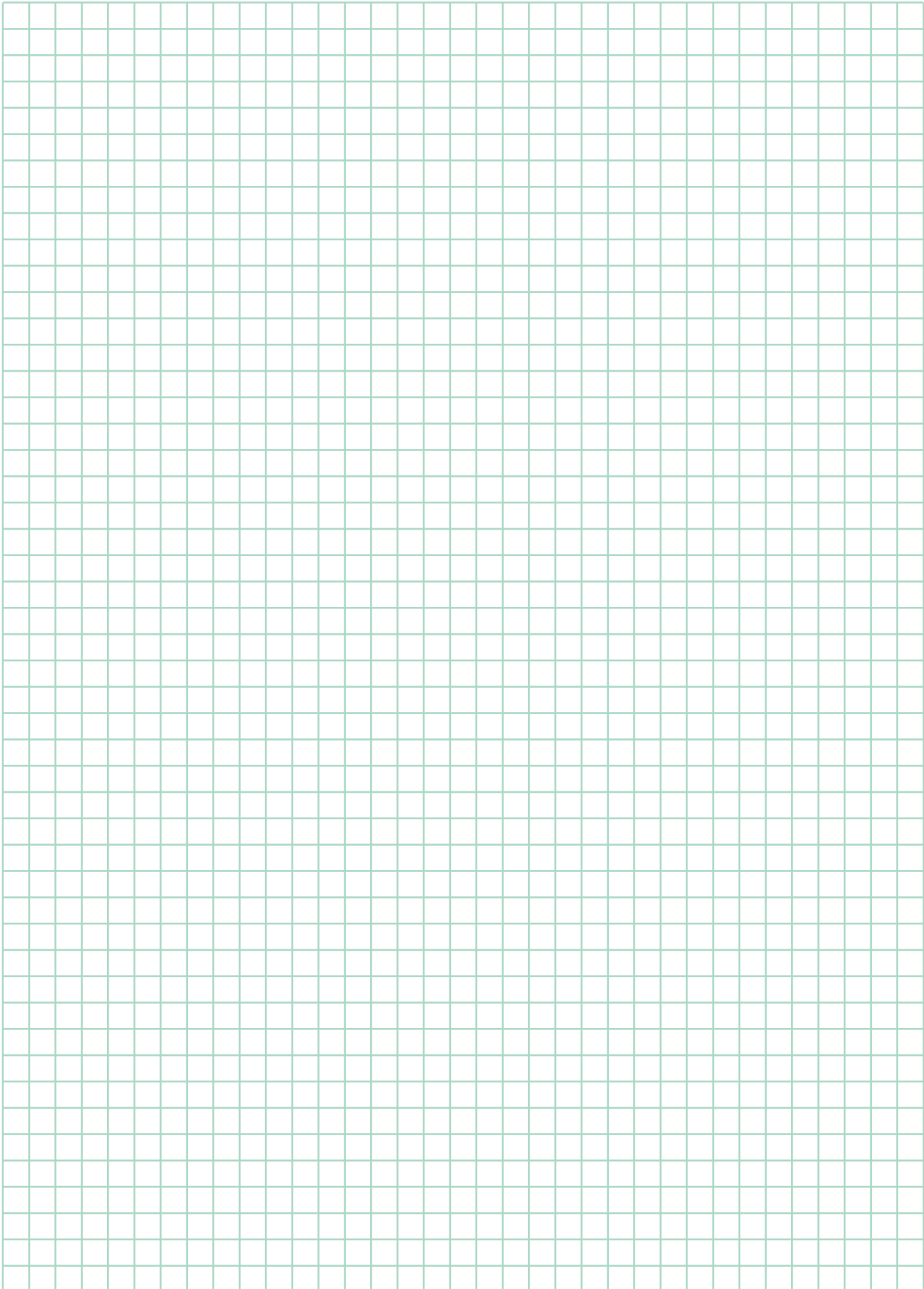
Other parameters to select the chuck are :

- profile shape
- working
- workpiece loading
- clamping stroke
- tools accessibility
- rotation speeds
- clamping force
- and other.

The experience of Tecnomors technicians can help you in this decision process; please contact them for every information you need.



MD 300 power chuck jaws set photograph





## MADV/MADT

Chucks serie MAD are self-centering.

In version MADT jaws clamping is automatic trough a draw rod and a rear cylinder, in version MADV jaws clamping is manual thanks to an operating key.

Chucks MADT and MADV have booth manual indexing system.

In MADT and MADV power chucks manufacture and design we have applied the experience and the technology maturated in particular in indexing power chuck design.

The originality of these indexing self-centering power chucks comes to the costant improvements **tecnomors** done since the early 1960's after the first chuck prototype realisation.

The main MAD power chucks features are:



- 1.1** - made in special high resistance hardened and cementing 60HRC steel UNI18NiCrMo5, to maintain a high degree of precision, reliability and quality.
- 1.2** - jaws sideways execution with gib allows a good sliding surface finish with possibility to recover clearances consequent to wear.
- 1.3** - indexing movement simple and reliable: a conical shutter guarantees the mechanical indexing. Indexing precision  $\pm 1'30''$ .
- 1.4** - shaft guide system with two lines of big filled cylindrical pre-loaded roller radially and with a strong axial ball bearing axially.
- 1.5** - seals against contamination by coolant, chips and dust.
- 1.6** - constant and long lasting precision.
- 1.7** - easy installation to the machine.
- 1.8** - standard with 4 indexing  $90^\circ$  + 1 indexing  $45^\circ$ .

On request special indexing positions available (8x $45^\circ$ , 6x $60^\circ$ ).

**2.1 - MADT specifications :**

- self-centering clamping.
- big clamping capacity.
- versions with long jaw for workpieces that need a big radius of revolution.
- quick and easy installation to the machine, it is request only the connection to the hydraulic cylinder on the lathe.

**2.2 - MADT benefits:**

- manufacturing of different pieces and also of small series.
- workpieces with big radius of revolution and flanges with big diameter.
- could be apply in the same machine with a conventional 3 jaws power chuck thanks to the quick retooling increasing unit flexibility and productivity.
- the indexing device allowing a quick change between the multiple working axes.
- good tools accessibility thanks to the chuck shape.

**2.3** - a special tecnomors device with titled plane transmits the clamping force to the jaws.

**2.4** - Chuck is supplied without driving cylinder. See the specific chapter to check cylinder and chuck size.

**3.1 - MADV specifications:**

- self-centering clamping.
- big clamping capacity.
- versions with long jaw for workpieces that need a big radius of revolution.
- it can be used on every tools machine (lathe, fresatrice, etc.)

**3.2 - MADV benefits:**

- the big jaws stroke makes really the clamping of complex profiles that couldn't be good clamping with an automatic chuck.
- prototypes, samples and series also of big pieces realisation.

**3.3** - a central screw supported by axial sliding bearing transmits the clamping force to the jaws.

MADV jaws set photograph



### Indexing system

In MADV chucks to obtain shaft revolution it is necessary to stop chuck rotation.

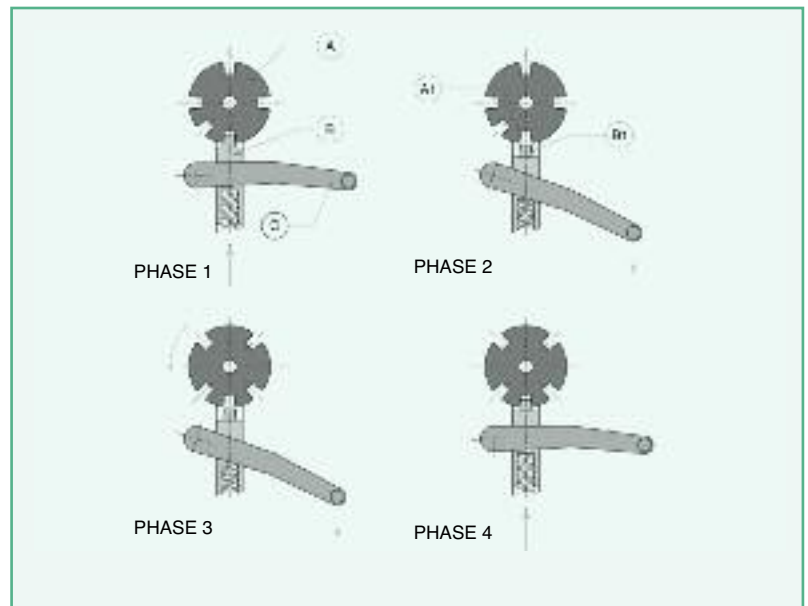
The main parts of this device are:

- **A** = indexing shaft (driven by 2 lines of cylindrical pre-loaded rollers supported by an axial ball bearing).
- **A1** = indexing notch.
- **B** = indexing shutter with spring.
- **B1** = conical tooth.
- **C** = shutter stop lever.

The mechanism is in each jaw. The particular releasing lever allows to pilot the two shutters at the same time.

Rotation and indexing in the following diagram described:

- phase 1 = indexed chuck : the shutter tooth is connected in the shaft notch.
- stop of the rotation of the chuck
- phase 2 = shutter realase: let the releasing



- lever to disconnect the shutter.
- phase 3 = rotation: the rotation is manual working on the piece in the jaws.
- phase 4 = indexing: lever release allows spring shutter connection.

The realasing lever device is designed to use the centrifugal force in rotation as indexing force.

Indexing precision 0°01'30".

### Clamping system

The main parts of the blocking device are:

- lead screw **A**
- jaws **B**
- the chuck body **C**
- axial unit of centering **D**
- safety pins **E**.

The chucks MADV are manual clamped.

The opening and the clamping of the jaws is allowed rotating the lead screw with a key or with a screw driver.

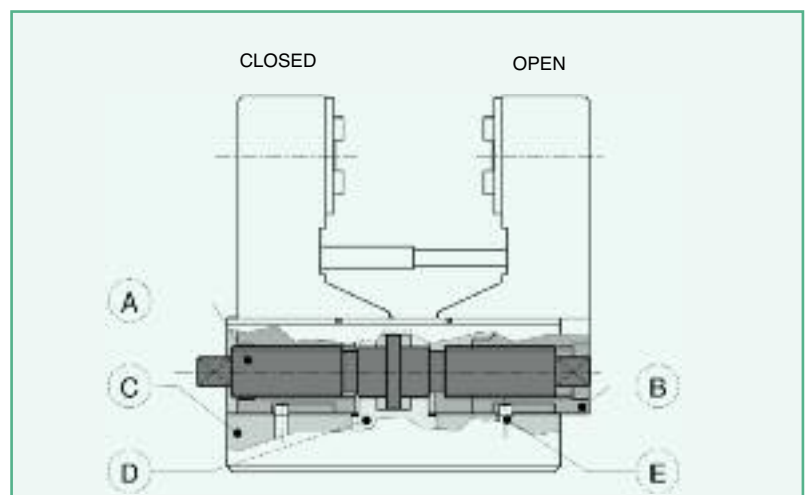
Respect the clamping couple values you find in the specifications.

The screw **A** is fixed with the centering unit **D** that contains the axial ball bearing.

The torque applied to the drilled screw **A**, gives the movement and the clamping of the jaws **B**.

Safety device :

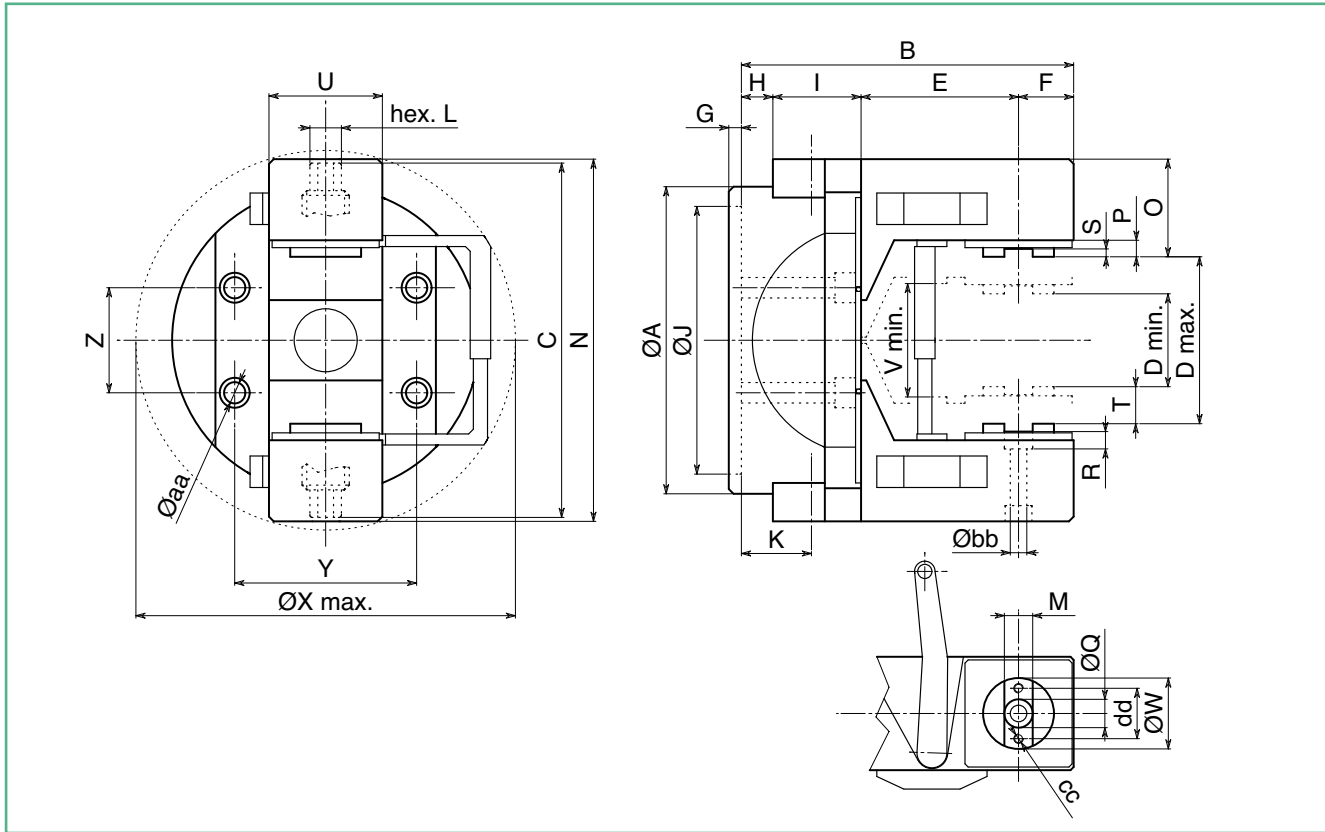
The safety screws **E** keep the jaws securely in the chuck body in the eventually event of a lead screw broken.



Normally these screws are used to reduce the opening stroke of the jaws.

Never remove these screws.

Chuck size MADV 170 - MADV 450



Specifications

Code	MADV 170	MADV 180	MADV 195	MADV 230	MADV 250	MADV 275	MADV 315	MADV 350	MADV 425	MADV 450
Stroke per jaw mm	23.5	22.5	23.5	32	33	40.5	45	51	66	70
Max. couple to clamping screw Nm	60	80	90	95	115	120	120	140	145	185
Real static clamping force per jaw * daN	900	1200	1350	1450	1750	1800	1800	2100	2200	2800
Ripetibility ± mm	0.015	0.015	0.015	0.015	0.015	0.015	0.015	0.015	0.015	0.015
Max. speed rotation g/1	1700	1550	1500	1300	1100	1000	850	750	550	450
Moment of Inertia J Kgm2	0.07	0.13	0.16	0.29	0.55	0.70	0.90	1.40	2.90	9.80
Weight version C Kg	16	21	23	30	44	51	64	76	110	165
Weight version L kg	-	-	-	32	46	54	69	80	115	180

- Note :

- \* The real clamping force is taken with a load cell between the jaws during a non rotation period.
- All dimentions are indicative and subject to variation for technical upgrading. We reserve the right to make alterations without prior notification.

**Dimensions**

Code Version *	MADV 170		MADV 180		MADV 195		MADV 230		MADV 250		MADV 275		MADV 315		MADV 350		MADV 425		MADV 450	
	C	L	C	L	C	L	C	L	C	L	C	L	C	L	C	L	C	L	C	L
Ø A	170		184		195		230		248		275		315		350		425		445	
B	180	-	199	-	211	-	221	241	254	279	266	301	282	322	319	354	346	396	435	470
C	198		222		228		262		290		315		345		385		455		525	
D min (closed)	48		55		59		74		89		99		120		138		178		180	
D max (open)	95		100		106		138		155		180		210		240		310		320	
E	85	-	90	-	100	-	105	125	125	150	135	170	145	185	175	210	190	240	240	275
F	27		35		35		35		44		44		44		48		55		65	
G	8		8		8		10		10		10		10		10		12		12	
H	20		20		20		25		25		25		28		30		35		45	
I	48		54		56		56		60		62		65		66		66		85	
Ø J H6	140		170		170		220		220		220		220		220		300		300	
K	41		44.5		44.5		49.5		52		52		55		58		63		80	
L	15		17		17		17		17		17		17		19		19		21	
M H7	16		18		18		18		22		22		22		22		25		25	
N (open)	198		224		230		262		295		320		350		395		470		510	
O	51.5		62		62		62		70		70		70		77.5		80		95	
P	9.5		10.5		10.5		10.5		12		12		12		13.5		14		14	
Ø Q H7	16		18		18		18		22		22		22		22		25		25	
R	10.5		11		11		11		12.5		12.5		12.5		14		14.5		14	
S	4.5		5		5		5		5.5		5.5		5.5		5.5		6		6	
T (stroke)	23.5		22.5		23.5		32		33		40.5		45		51		66		70	
U	58		72		72		72		90		90		90		98		110		130	
V min	55		64		68		83		99		109		130		149		190		194	
Ø W	35		45		45		45		63		63		63		70		80		85	
X	206	-	235	-	241	-	272	278	308	328	333	373	360	415	407	477	483	560	575	630
Y	90.76		115.53		115.53		148.44		148.44		148.44		148.44		148.44		203.52		203.52	
Z	52.40		66.70		66.70		85.70		85.70		85.70		85.70		85.70		117.50		117.50	
aa	11		13		13		17		17		17		17		17		21		21	
bb	8.50		10.50		10.50		10.50		12.50		12.50		12.50		14.50		14.50		14.50	
cc	-		M6		M6		M6		M8		M8		M8		M10		M10		M10	
dd	-		32		32		32		45		45		45		50		60		60	

ARTICLE CODE	DV170VBA	DV180VCA	DV195VDA	DV230VEA	DV230VFA	DV250VGA	DV250VHA	DV275VIA	DV275VLA	DV315VRA	DV315VSA	DV350VMA	DV350VNA	DV425VOA	DV425VPA	DV450VTA	DV450VUA
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**- Note :**

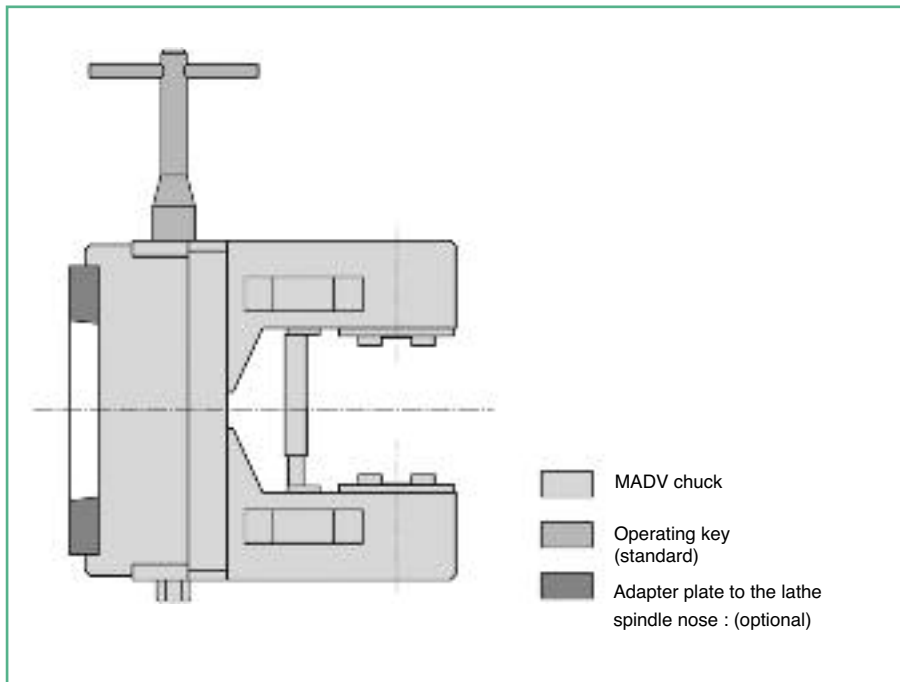
All the dimensions are in millimeter.

\* Version : C = Standard Jaw / L = Long Jaw (Long jaw up size MADV 230).

X = overall dimensions during rotation with max. jaw opening.

All dimensions are indicative and subject to variation for technical upgrading. We reserve the right to make alterations without prior notification.

Supply diagram



Standard supply includes:

- MADV chuck.
- Operating key.
- Clamping screws.

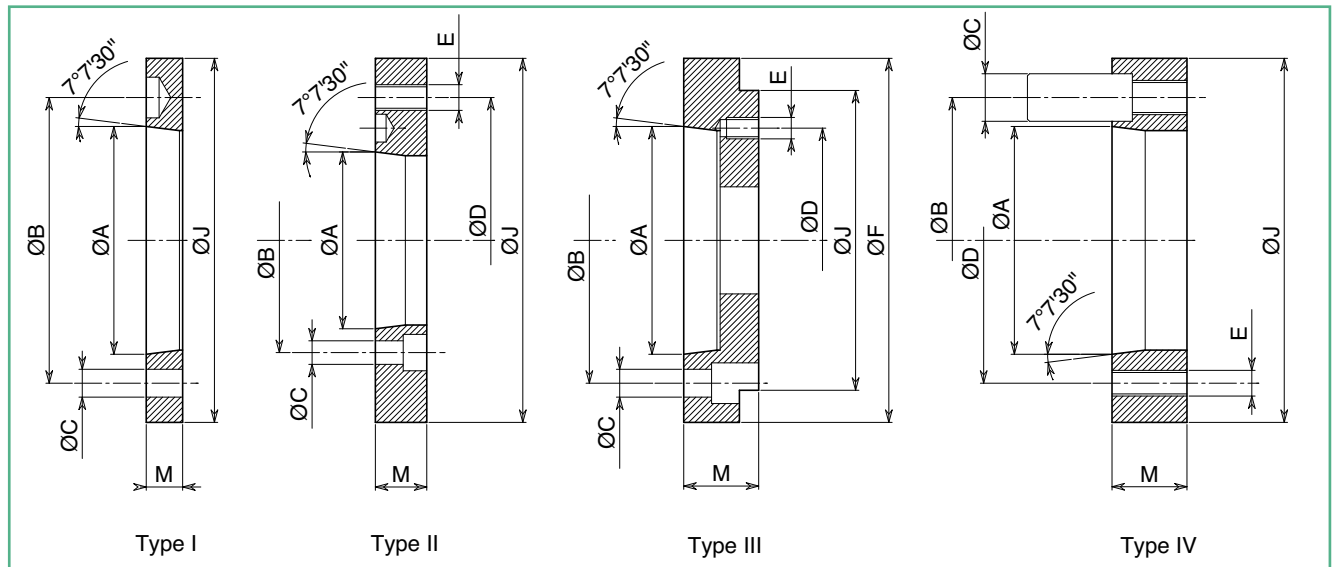
Components supplied on request:

- Adapter plate to the lathe spindle nose.
- Clamping rough jaws.
- Clamping shaped grips.

Photograph of MADV with jaws and operating key.



Adapter plate to the late spindle nose - DIN55026 / ISO-A 702/1



Dimensions

ARTICLE CODE	Spindle nose	ØA	ØB	ØC	ØD	E	ØF	ØJ h7	M	Type	PD2 kgm2	Weight Kg
FA 145 ABA	ASA 5"	82.563	104.8	11.5	-	-	-	140	15	I	0.003	1
FA 175 BCA	ASA 5"	82.563	104.8	11.5	133.4	M12	-	170	24	II	0.012	2.7
FA 225 BDA	ASA 5"	82.563	104.8	11.5	171.4	M16	-	220	24	II	0.038	5.5
FA 176 AEA	ASA6"	106.375	133.4	13.5	-	-	-	170	17	I	0.007	1.5
FA 226 BFA	ASA 6"	106.375	133.4	13.5	171.4	M16	-	220	24	II	0.035	5
FA 306 BGA	ASA 6"	106.375	133.4	13.5	235	M20	-	300	30	II	0.135	11
FA 146 CHA	ASA 6"	106.375	133.4	13.5	104.8	M10	165	140	35	III	0.018	3.7
FA 228 AIA	ASA 8"	139.719	171.4	17	-	-	-	220	19	I	0.022	2.7
FA 308 BLA	ASA 8"	139.719	171.4	17	235	M20	-	300	30	II	0.16	11.5
FA 178 CMA	ASA 8"	139.719	171.4	17	133.4	M12	210	170	40	III	0.038	6.2
FA 301 ANA	ASA 11"	196.869	235	21	-	-	-	300	21	I	0.09	5.5
FA 221 COA	ASA 11"	196.869	235	21	171.4	M16	280	220	45	III	0.13	11.8
FC 145 DPA	Cam Lock 5"	82.563	104.8	19	104.8	M10	-	140	30	IV	0.007	2.2
FC 175 DQA	Cam Lock 5"	82.563	104.8	19	133.4	M12	-	170	30	IV	0.016	3.7
FC 176 DRA	Cam Lock 6"	106.375	133.4	22.2	133.4	M12	-	170	35	IV	0.020	3.9
FC 226 DSA	Cam Lock 6"	106.375	133.4	22.2	171.4	M16	-	220	35	IV	0.055	7.5
FC 306 DTA	Cam Lock 6"	106.375	133.4	22.2	235	M20	-	300	35	IV	0.20	15
FC 228 DUA	Cam Lock 8"	139.719	171.4	25.4	171.4	M16	-	220	40	IV	0.06	7.2
FC 308 DVA	Cam Lock 8"	139.719	171.4	25.4	235	M20	-	300	40	IV	0.22	16
FC 301 DZA	Cam Lock 11"	196.869	235	30.2	235	M20	-	300	45	IV	0.22	14.5

Note :

- Type I = adapter plate with direct fixing ( the chuck boring is like that on the lather spindle nose). The adapter plate is fixed on the chuck that is connected direct to the lathe spindle nose with screws.
- Type II = reduction adapter plate, indirect fixing ( the lathe spindle nose dimension is smaller that the standard of the chuck).
- Type III = augmentation adapter plate, indirect fixing ( the lathe spindle nose dimension is bigger that the standard of the chuck). In these cases (type II and type III) the adapter plate is fixed on the machine spindle nose. The chuck is connected after to the adapter plate.
- Type IV = cam-lock adapter plate (special on request)
- We supply adapter plate with clamping screws.
- All dimensions are indicative and subject to variation for technical upgrading. We reserve the right to make alterations without prior notification.

