

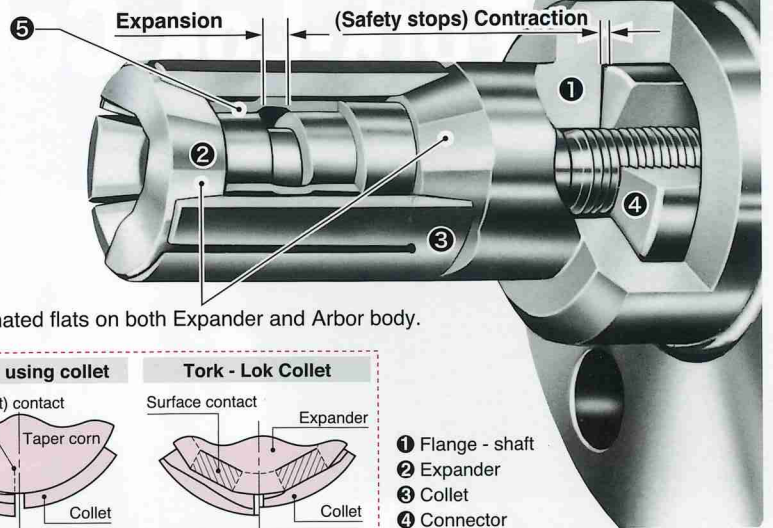
AC Tork-Lok Collets & Arbors

I.D. clamping has a disadvantage in terms of clamping torque, since machining for large-diameter work-pieces are processed by a small clamping diameter, and often high-precision processes are required, such as finishing. In Tork-Lok Collets, the contact faces of the chuck body and the collets are precisely finished into flat faces, which together work as a "Tork-Lok mechanism" allowing no slippage between the contact surfaces, even under large cutting torque. The part of the contact between COLLET and EXPANDER is strong in the abrasion because each flat surface is contacted. Also cutting dust hardly enters into the contact portion and it enables to maintain high accuracy for long term. The Tork-Lok Collet Arbor Chuck is adopted by a lot of customers, because of these excellent points such as "Pull-Back" function, high-accuracy and performance and plenty of stock. The standard series and short series are available, each of which includes Arbor models with rotating cylinders and Between Center types for spanner operation.

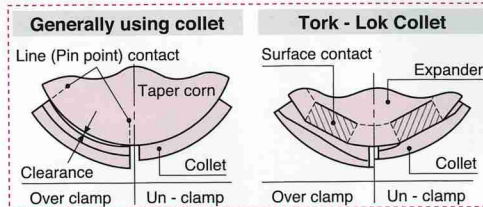
Notes for application of AC Tork-Lok

- The squareness and the parallelism are influenced by the accuracy of the reference end face of the work-piece, since the work-piece is pulled toward to the stop while it is clamped.
- It is necessary to set up the Collets on tapered portion of the Expander and the Arbor to be "flat surface contact." (Use a restrictor for short length work-pieces. See the lower right figure.)
- Fit the Expander tightly.
- When the draw bar thrust is not enough, it is effective to use a hydraulic tail stock.

Structure and Function



Precision mated flats on both Expander and Arbor body.



- 1 Flange - shaft
- 2 Expander
- 3 Collet
- 4 Connector
- 5 Dust - seal

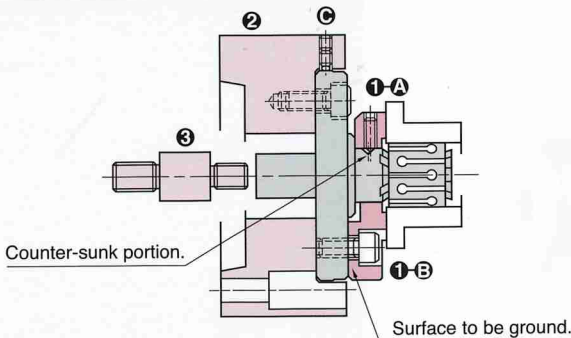
Advantages

- | | |
|-----------------------------------|------------------------|
| 1 "Tork-Lok" design | 5 Great accuracy |
| 2 Great torque transmission | 6 Less Collet breakage |
| 3 Geometrically sealed | 7 Self-releasing |
| 4 Work-piece "Pull-Back" function | 8 Sufficient stock |

Standard design of drawbar type chuck

● We are available to design special parts chucking layout such as stoppers on request basis.

Clamp with the whole portion of collet surface.



1-A Stopper

Please make the center of bolt hole be higher to adhere to the counter-sunk portion (3 points recommended) surface of the body.

1-B Stopper

Attach to the standard bolt hole (inch bolt) after grinding flange surface of the chuck body.

2 Adapter

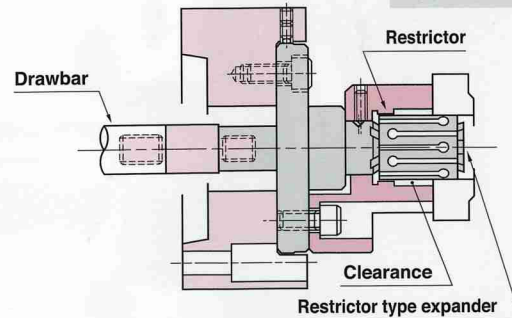
Provide the bolt for adjusting concentricity as 4 equally, also employ such as gunmetal for the contact portion to the body to avoid scratching and use insert two bolts to protect unfasten the bolt for safety.

3 Drawbar

Decide the diameter of draw bar stroke according to examining the amount of in and out of the drawbar stroke and the distance of the connector surface at the time of attaching the adapter and the body. Therefore, it is necessary to select the material which has the strength for pulling action.

When the work-piece clamping length is shorter than the collet length.

Restrictor type design



1 Restrictor (for un-clamping)

The work-piece which clamping length is short needs restrictor. For restrictor of the collet this stopper's I.D. should be finished within +0.05~0.1 of the upper limit of workpiece I.D. tolerance. The position where should be restricted is at collet lower taper portion.

2 Restrictor type expander (AC-**67)

This restrictor expander allows making over-clamping stroke smaller than standard expander, and preventing it from exceeding the limit of the un-clamping range. Please indicate us when you need the restrictor expander. However, if in case the work-piece clamping length is close to the maximum of collet clamping range, please use standard expander. You can distinguish the standard type (AC-**65) from the restrictor type by stamped of the center of the expander.

3 Clearance

If the restrictor portion effects until stop position, there is a possibility to break the collet at the time of un-clamping. Restrictor expander should be used at lower collet taper portion. Please keep more than 1mm clearance in diameter from the maximum of the collet's clamping range.

COLLET CHUCK

AC Drawbar models MM type

Standard series

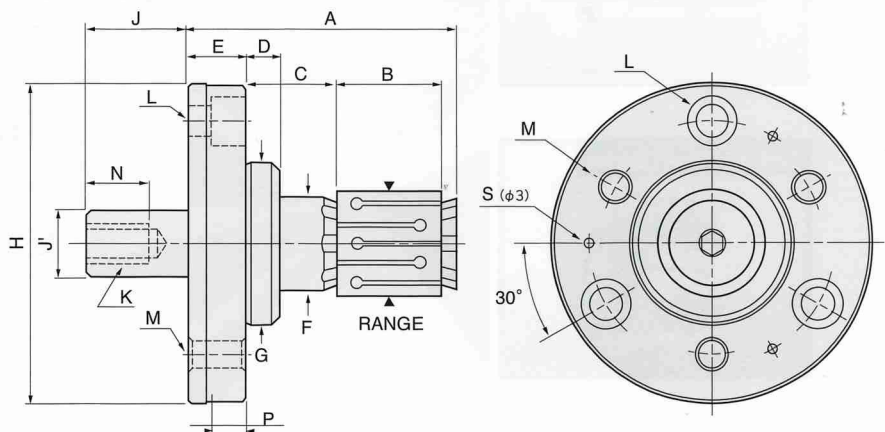


Standard series [2000 type]

New specification MM type Tork-Lok Collet Chuck series have not only featuring the same as existing inch specification Tork-Lok but also have following new specifications to enhance convenience.

- 1) Air sensing hole as standard spec.
- 2) Ground surface of Arbor body to fit stopper without any alteration.
Also body has stopper fixing thread by MM specifications.
- 3) New 3 fixing thread holes for spindle through adapter plate.
- 4) Connector has MM thread connect with draw bar bolt.
- 5) The same design as existing inch model is also available.

Dimension diagram



Dimensions

AC-2110-M · AC-2210-M · AC-2310-M are only for light cutting. If possible, please avoid using with a Restrictor Stopper system.

Model No.	Clamping range (Collet necessary Qty)	A	B	C	D	E	F	G	H
AC-2110-M	12.70 ~ 16.64 (10)	63.3	22.4	20.2	10.3	19.08~19.03	11.91	31.737~31.725	85.738~85.725
AC-2210-M	15.06 ~ 19.82 (12)	68.4	26.9	20.8	10.3	19.08~19.02	15.47	31.737~31.725	85.738~85.725
AC-2310-M	18.23 ~ 25.38 (18)	75.3	31.8	22.7	10.3	19.08~19.02	18.26	31.737~31.725	85.738~85.725
AC-2410-M	22.22 ~ 31.73 (12)	91.0	36.6	29.4	15.1	22.23~22.20	21.44	44.437~44.425	104.788~104.775
AC-2510-M	28.57 ~ 41.25 (16)	98.7	41.1	32.5	15.1	22.22~22.21	27.79	44.437~44.425	104.787~104.775
AC-2610-M	37.28 ~ 53.14 (20)	105.2	46.0	34.2	13.5	22.23~22.20	36.12	63.487~63.475	123.838~123.825
AC-2710-M	49.19 ~ 72.22 (29)	113.2	50.8	37.4	11.9	22.23~22.20	47.22	63.487~63.475	123.838~123.825
AC-2810-M	65.07 ~ 91.27 (33)	122.6	57.2	40.4	11.9	22.23~22.20	62.31	76.187~76.175	139.713~139.700
AC-2910-M	84.12~113.47 (37)	126.3	63.5	37.8	9.5	22.23~22.20	80.98	92.062~92.050	139.713~139.700

Model No.	J (Stroke)		J'	N	P	K	L (3 Equal dimension)	M (3 Equal dimension)	S (3 Equal dimension)
	Max.	Min.							
AC-2110-M	23.26	18.26	14.27	15.7	11.2	M10 x 1.5P	M10 63.50 P.C.D.	M8 x 1.25P 60.30 P.C.D.	φ3 63.50 P.C.D.
AC-2210-M	23.26	18.26	14.27	15.7	11.2	M10 x 1.5P	M10 63.50 P.C.D.	M8 x 1.25P 60.30 P.C.D.	φ3 63.50 P.C.D.
AC-2310-M	23.26	18.26	14.27	15.7	11.2	M10 x 1.5P	M10 63.50 P.C.D.	M8 x 1.25P 60.30 P.C.D.	φ3 63.50 P.C.D.
AC-2410-M	36.75	30.99	19.05	19.0	13.4	M12 x 1.75P	M12 79.38 P.C.D.	M10 x 1.5P 73.03 P.C.D.	φ3 79.38 P.C.D.
AC-2510-M	36.75	30.99	19.05	19.0	13.4	M12 x 1.75P	M12 79.38 P.C.D.	M10 x 1.5P 73.03 P.C.D.	φ3 79.38 P.C.D.
AC-2610-M	46.18	40.39	24.59	32.0	13.4	M16 x 2.0P	M12 95.25 P.C.D.	M10 x 1.5P 92.08 P.C.D.	φ3 95.25 P.C.D.
AC-2710-M	46.18	40.39	24.59	32.0	13.4	M16 x 2.0P	M12 95.25 P.C.D.	M10 x 1.5P 92.08 P.C.D.	φ3 95.25 P.C.D.
AC-2810-M	46.18	40.39	24.59	31.7	13.4	M16 x 2.0P	M12 114.30 P.C.D.	M10 x 1.5P 92.08 P.C.D.	φ3 114.30 P.C.D.
AC-2910-M	46.18	40.39	24.59	31.7	13.4	M16 x 2.0P	M12 114.30 P.C.D.	M10 x 1.5P 114.30 P.C.D.	φ3 114.30 P.C.D.

* Please inform us of your requesting Expander to be used. If there is no request, Standard Expander will be provided.

Component parts

Arbor model	Connector	Retaining-rings	Lock-pins	Flange-shaft	Dust-seal	Standard-Expander	*Restrictor-Expander
AC-2110-M	AC-162-A-M	AC-8186	AC-8185	AC-159-M	AC-190	AC-165-M	AC-167-M
AC-2210-M	AC-162-A-M	AC-8186	AC-8185	AC-259-M	AC-291	AC-265-M	AC-267-M
AC-2310-M	AC-362-A-M	AC-8186	AC-8185	AC-359-M	AC-391	AC-365-M	AC-367-M
AC-2410-M	CAT. AC-462-A-M	CAT. AC-8486	CAT. AC-8485	CAT. AC-459-M	CAT. AC-491	CAT. AC-465-M	CAT. AC-467-M
AC-2510-M	AC-562-A-M	AC-8486	AC-8485	AC-559-M	AC-591	AC-565-M	AC-567-M
AC-2610-M	No. AC-662-A-M	No. AC-8686	No. AC-8685	No. AC-659-M	No. AC-691	No. AC-665-M	No. AC-667-M
AC-2710-M	AC-662-A-M	AC-8686	AC-8685	AC-759-M	AC-791	AC-765-M	AC-767-M
AC-2810-M	AC-862-A-M	AC-8686	AC-8685	AC-859-M	AC-890	AC-865-M	AC-867-M
AC-2910-M	AC-862-A-M	AC-8686	AC-8685	AC-959-M	AC-990	AC-965-M	AC-967-M

* Whenever the restricted stopper is used, the Restrictor Expander must be used.