



# Standard and Special Engineered Expanding Mandrels

# AHB

TOOLING & MACHINERY

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# STANDARD SABERTOOTH EXPANDING MANDRELS

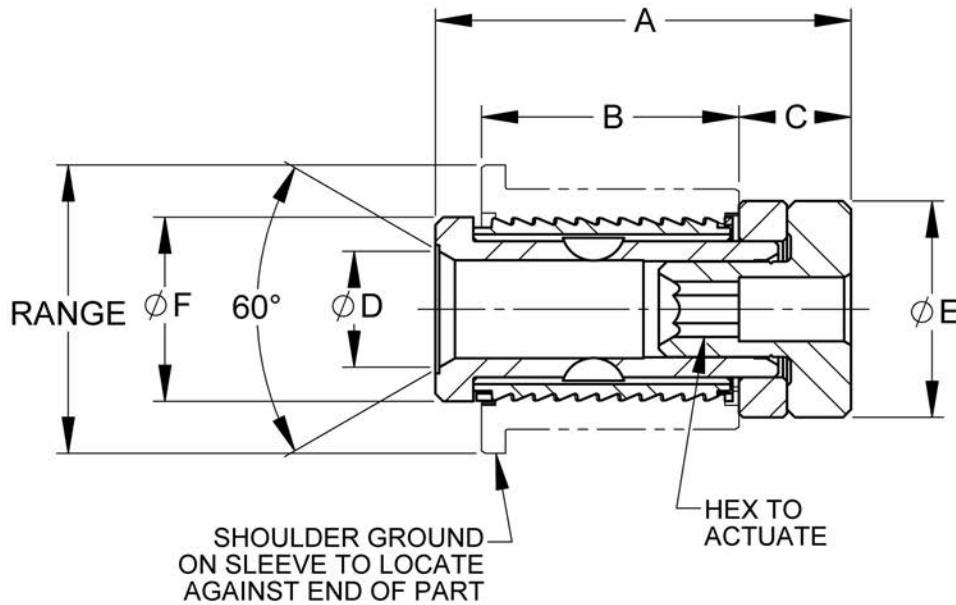
Sabertooth Expanding Mandrels are available in several variations to suit the specific need of almost every application. Mandrels can be actuated manually, using the drawbar or drawtube of the machine or by utilizing our own self-contained actuator assembly (pages 18-19). Sabertooth Mandrels are in stock and available for part diameters ranging from .500" up to 8.500" in diameter. Oversize sleeves are also available for all mandrels. Our Sabertooth Mandrels are designed and built with the following features that make Sabertooth the logical choice when applying an internal expanding mandrel in your operation.

## SABERTOOTH ADVANTAGES:

- Standard repetitive tolerances of .0008" T.I.R.
- Provides uniform expansion and eliminates bridging effect by using 96 pressure planes per linear inch of sleeve travel.
- Ideal for machining of thin walled parts since the expanding sleeve is supported the entire gripping length.
- Unlike single or double taper collet systems parts can be securely gripped anywhere on the sleeve without the need of a retainer ring.
- Our drive cage provides superior anti-rotation protection, by equalizing the torque transfer, superior to other systems which use a woodruff key to lock the expander.
- "In stock" for quick delivery.
- Wide gripping range — each mandrel can accept a wide range of part sizes.
- Accidental over-expansion is eliminated by our built-in safety features.
- Double-length Sabertooth mandrels are able to accommodate various part lengths by using one mandrel with a combination of sleeves, bushings and spacers.



- Headstock – Tailstock Mandrel
- Manual Actuation
- Single Sleeve



The BMCB style mandrel is used on a part which is being located in a blind I.D., or a tube shaped piece part, and the machine utilizes center for location and a drive dog. Perfect for grinding of long tubing or cylindrical parts. The BMCB fits inside the end of the part, and is manually actuated. The mandrel has a qualified center which locates on the machine headstock or tailstock

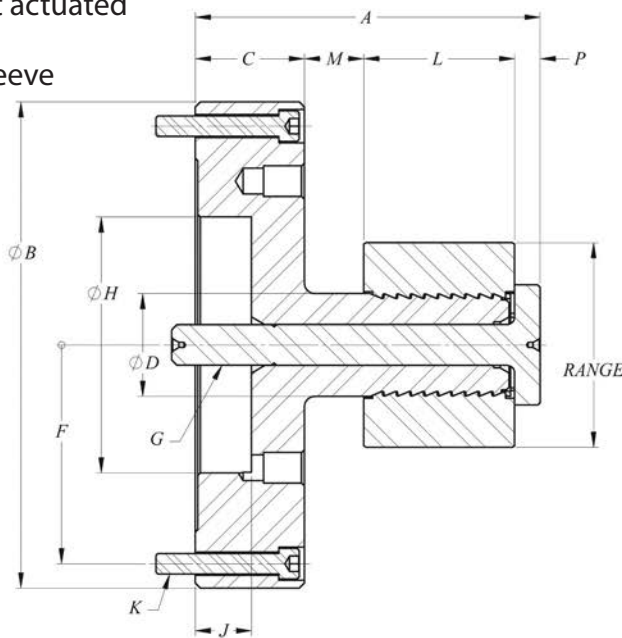
Order No.	Model	A	B	C	ØD	ØE	ØF	Hex Size	Range Limits
112859	BMCB-10	2.339	1.343	0.750	0.350	0.938	0.750	0.156	Ø1.00-Ø1.50
112865	BMCB-12	2.244	1.500	0.500	0.688	1.218	1.000	0.250	Ø1.25-Ø2.00
112868	BMCB-15	2.839	1.844	0.625	0.813	1.469	1.250	0.313	Ø1.50-Ø2.50
112870	BMCB-17	3.245	2.000	0.875	0.906	1.688	1.438	0.375	Ø1.75-Ø3.50
112877	BMCB-25	3.746	2.344	0.875	1.438	2.438	2.000	0.500	Ø2.50-Ø4.00
112885	BMCB-35	4.224	2.500	1.250	1.438	3.438	3.000	0.625	Ø3.50-Ø5.50
112889	BMCB-50	4.746	3.000	1.250	1.438	4.938	4.500	0.750	Ø5.00-Ø8.50

BMCB-6 and BMCB-8 available upon request

Sleeves must be ordered separately (See page 15)

Model	Assembly	Arbor	Nut	Washer	Drive Cage	Saber Bushing	Woodruff Key	Sleeve (not Incl.)	Actuation Wrench
BMCB-10	112859	112864	114874	114875	114073	112407	112074	112011	115081
BMCB-12	112865	112866	114880	112867	114074	112408	112705	112014	114883
BMCB-15	112868	112869	115082	115083	114170	114172	112708	114116	115084
BMCB-17	112870	112871	115039	115040	114072	112409	112708	112017	115041
BMCB-25	112877	112879	115311	115042	114075	112410	112709	112020	115043
BMCB-35	112885	112886	115034	115035	114145	112411	112710	112023	115036
BMCB-50	112889	112901	115326	115037	114473	112972	112711	112555	115038

- Adjustable flange mount (See stir-around page 12)
- Drawbolt actuated
- Single Sleeve



Related Products: American standard mounting plates page 16-17. Self-contained actuators page 18.

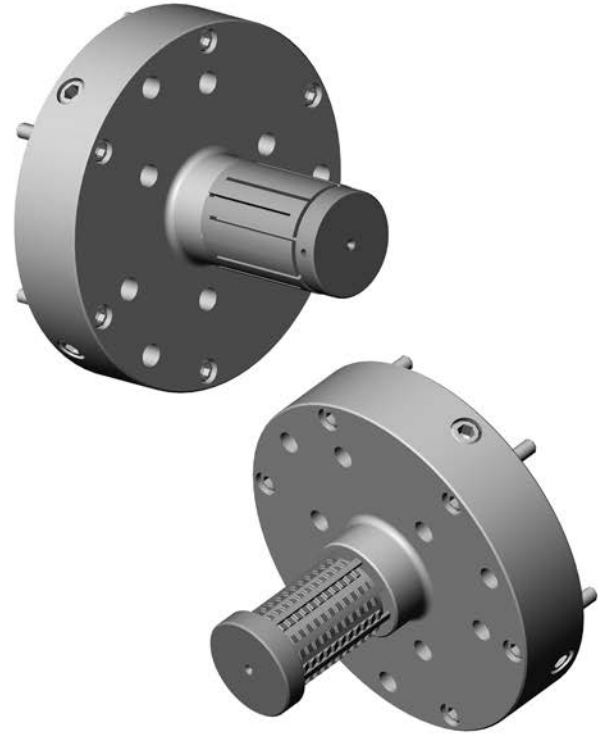
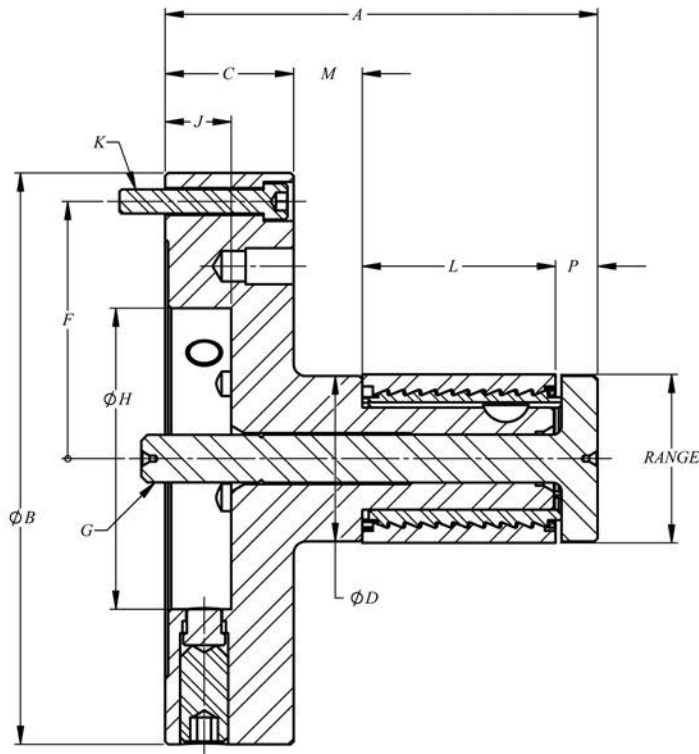
Order No.	Model	A	B	C	D +0000 -0005	F	G	H	J	K	L	M	P	Range Limits	Maximum Drawbar Force In Lbs.*
113110	MD-6	2.698	5.937	1.340	0.438	2.672	#10-32	3.128 3.123	0.687	1/4-20 x 1.50	.750	.483	.125	.50-1.00	800
113124	MD-8	3.301	5.937	1.340	0.719	2.672	1/4-28	3.128 3.123	0.687	1/4-20 x 1.50	1.000	.774	.187	.75-1.25	1,100
113088	MD-10	3.334	5.937	1.340	0.764	2.672	3/8-24	3.128 3.123	0.687	1/4-20 x 1.50	1.344	.450	.200	1.00-1.50	2,600
112531	MD-12	3.747	5.937	1.340	1.013	2.672	7/16-20	3.128 3.123	0.687	1/4-20 x 1.50	1.500	.607	.300	1.25-2.00	3,600
114171	MD-15	4.218	5.937	1.340	1.256	2.672	1/2-20	3.128 3.123	0.687	1/4-20 x 1.50	1.844	.722	.312	1.50-2.50	4,800
112881	MD-17	4.572	5.937	1.340	1.450	2.672	1/2-20	3.128 3.123	0.687	1/4-20 x 1.50	2.000	.857	.375	1.75-3.50	4,800
112532	MD-25	4.947	5.937	1.340	2.013	2.672	3/4-16	3.128 3.123	0.687	1/4-20 x 1.50	2.344	.888	.375	2.50-4.00	11,200
112446	MD-35	5.509	9.000	1.590	3.013	4.094	1-14	4.753 4.748	0.750	3/8-16 x 1.75	2.500	.982	.437	3.50-5.50	13,000
113312	MD-50	6.500	9.000	1.590	4.513	4.094	1-14	4.753 4.748	0.750	3/8-16 x 1.75	3.000	1.355	.625	5.00-8.50	13,000

\* Many applications require less than the full recommended force

Sleeves must be ordered separately (See Page 15)

Model	Assembly No.	Arbor	Flange	Drawbolt	Drive Cage	Sleeve (not incl.)
MD-6	113110	113111	112219	115874	114143	113102
MD-8	113124	113125	112219	112070	114144	113116
MD-10	113088	112009	N/A	112065	114073	112011
MD-12	112531	112012	N/A	112066	114074	112014
MD-15	114171	114118	N/A	114169	114170	114116
MD-17	112881	112015	N/A	112067	114072	112017
MD-25	112532	112018	N/A	112068	114075	112020
MD-35	112446	112021	N/A	112069	114145	112023
MD-50	113312	113345	N/A	112971	114473	112555

- Adjustable flange mount (See stir-around page 12)
- Drawbolt actuated
- Single Sleeve



Related Products: American standard mounting plates page 16-17. Self-contained actuators page 18.

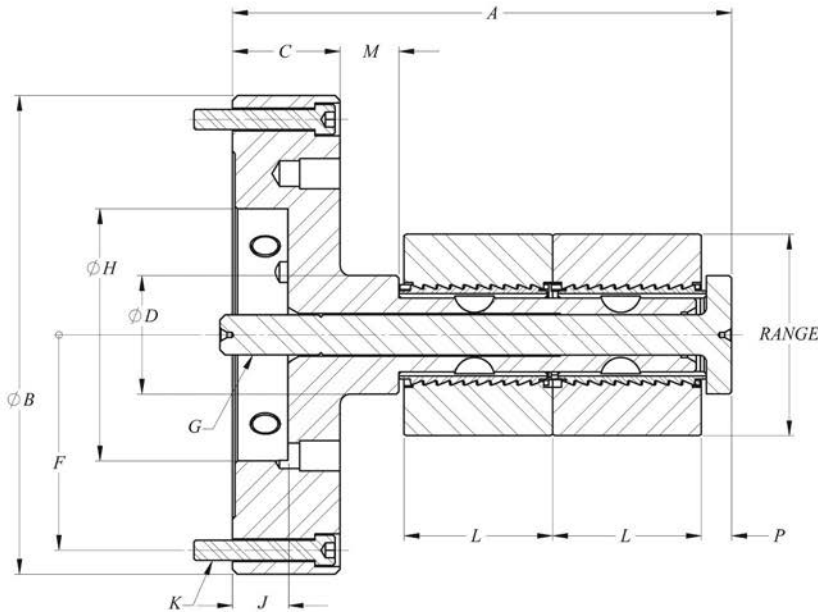
Order No.	Model	A	ØB	C	ØD +0.000 -0.005	F	G	ØH +0.005 -0.000	J	K	L	M	P	Range Limits	Maximum Drawbar Force In Lbs.*
112428	MLD-10	3.435	5.937	1.340	0.9680	2.672	.250-28	3.123	0.688	1/4-20 x 1.500	1.343	0.455	0.252	Ø1.000-1.500	2,600
114369	MLD-12	3.821	5.937	1.340	1.2180	2.672	.438-20	3.123	0.688	1/4-20 x 1.500	1.500	0.679	0.372	Ø1.250-2.000	3,600
114173	MLD-15	4.281	5.937	1.340	1.4690	2.672	.500-20	3.123	0.688	1/4-20 x 1.500	1.844	0.794	0.384	Ø1.500-2.500	4,800
114134	MLD-17	4.501	5.937	1.340	1.7190	2.672	.500-20	3.123	0.688	1/4-20 x 1.500	2.000	0.929	0.447	Ø1.750-3.500	4,800
114310	MLD-25	5.021	5.937	1.340	2.3430	2.672	.750-16	3.123	0.688	1/4-20 x 1.500	2.344	0.959	0.447	Ø2.500-4.000	11,200
114149	MLD-35	5.583	9.000	1.590	3.3430	4.094	1.000-14	4.748	0.750	3/8-16 x 1.750	2.500	1.054	0.509	Ø3.500-5.500	13,000
114135	MLD-50	6.624	9.000	1.590	4.9690	4.094	1.000-14	4.748	0.750	3/8-16 x 1.750	3.000	1.407	0.697	Ø5.000-8.500	13,000

\* Many applications require less than the full recommended force

Sleeves must be ordered separately (See Page 15)

Model	Assembly No.	Arbor	Drawbolt	Drive Cage	Saber Bushing	Woodruff Key	Sleeve (not incl.)
MLD-10	112428	112412	112070	114073	112407	112704	112011
MLD-12	114369	112413	112066	114074	112408	112705	112014
MLD-15	114173	114174	114169	114170	114172	112708	114116
MLD-17	114134	112414	112067	114072	112409	112708	112017
MLD-25	114310	112415	112068	114075	112410	112709	112020
MLD-35	114149	112416	112069	114145	112411	112710	112023
MLD-50	114135	112970	112971	114473	112972	112711	112555

- Adjustable flange mount (See stir-around page 12)
- Drawbolt actuated
- Double sleeve



Related Products: American standard mounting plates page 16-17. Self-contained actuators page 18.

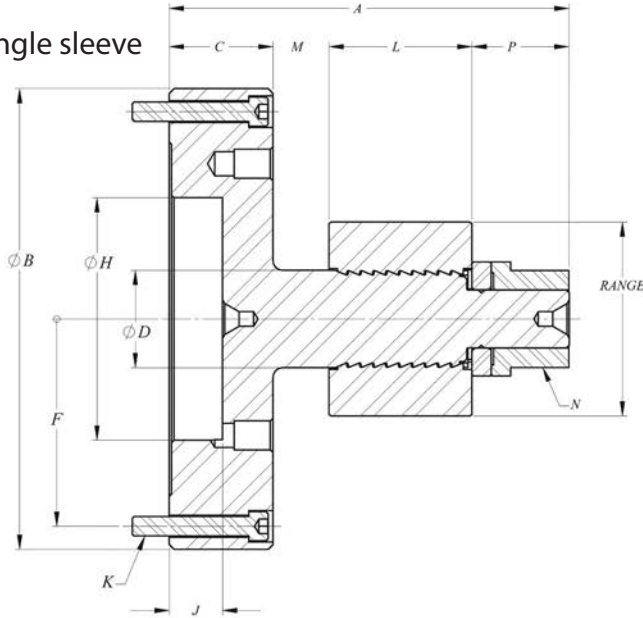
Order No.	Model	A	B	C	D +0000 -0005	F	G	H	J	K	L	M	P	Range Limits	Maximum Drawbar Force In Lbs.*
114370	M2LD-12	5.391	5.937	1.340	1.218	2.672	7/16-20	3.128 3.123	0.687	1/4-20 x 1.50	1.500	.679	.372	1.25-2.00	3,600
114394	M2LD-15	6.206	5.937	1.340	1.469	2.672	1/2-20	3.128 3.123	0.687	1/4-20 x 1.50	1.844	.794	.384	1.50-2.50	4,800
114415	M2LD-17	6.716	5.937	1.340	1.719	2.672	1/2-20	3.128 3.123	0.687	1/4-20 x 1.50	2.000	.929	.447	1.75-3.50	4,800
114433	M2LD-25	7.434	5.937	1.340	2.343	2.672	3/4-16	3.128 3.123	0.687	1/4-20 x 1.50	2.344	.959	.447	2.50-4.00	11,200
114452	M2LD-35	8.153	9.000	1.590	3.343	4.094	1-14	4.753 4.748	0.750	3/8-16 x 1.75	2.500	1.054	.509	3.50-5.50	13,000
114490	M2LD-50	9.694	9.000	1.590	4.969	4.094	1-14	4.753 4.748	0.750	3/8-16 x 1.75	3.000	1.407	.697	5.00-8.50	13,000

\* Many applications require less than the full recommended force

Sleeves must be ordered separately (See Page 15)

Model	Assembly No.	Arbor	Drawbolt	Drive Cage	SaberBushing	Sleeve (not incl.)
M2LD-12	114370	114371	114124	(2) 114074	(2) 112408	(2) 112014
M2LD-15	114394	114395	114177	(2) 114170	(2) 114172	(2) 114116
M2LD-17	114415	114416	114308	(2) 114072	(2) 112409	(2) 112017
M2LD-25	114433	114434	114221	(2) 114075	(2) 112410	(2) 112020
M2LD-35	114452	114453	114451	(2) 114145	(2) 112411	(2) 112023
M2LD-50	114490	114491	114489	(2) 114473	(2) 112972	(2) 112555

- Adjustable flange mount (See stir-around page 12)
- Nut actuated
- Single sleeve



Related Products: American standard mounting plates page 16-17

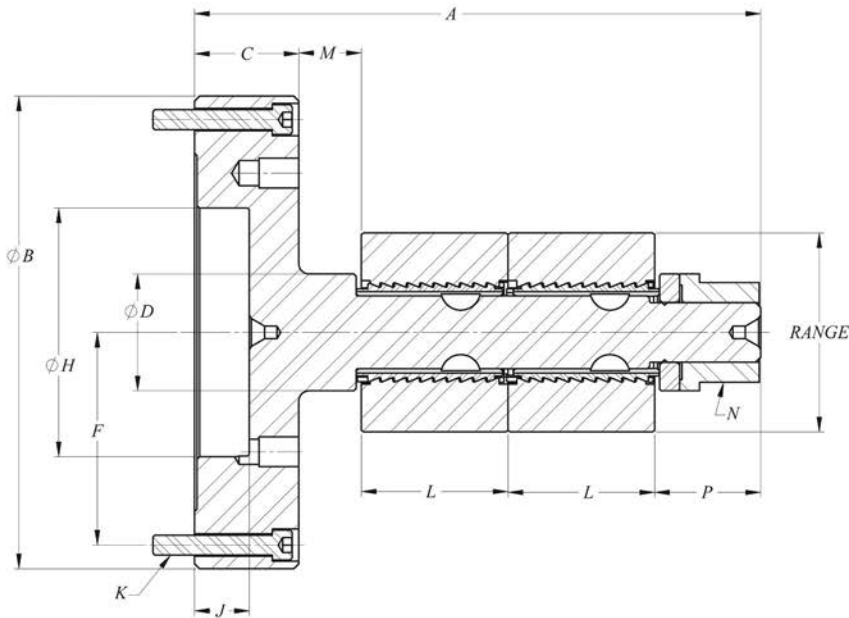
Order No.	Model	A	B	C	D +0.000 -0.005	F	H	J	K	L	M	N NUT FLATS	P	Range Limits
113106	MFN-6	3.025	5.937	1.340	.438	2.672	3.128 3.123	.687	1/4-20 x 1.50	.750	.487	.375	.488	.50-1.00
113120	MFN-8	3.899	5.937	1.340	.719	2.672	3.128 3.123	.687	1/4-20 x 1.50	1.000	.797	.625	.762	.75-1.25
113079	MFN-10	3.812	5.937	1.340	.764	2.672	3.128 3.123	.687	1/4-20 x 1.50	1.344	.450	.688	.678	1.00-1.50
114359	MFN-12	4.375	5.937	1.340	1.013	2.672	3.128 3.123	.687	1/4-20 x 1.50	1.500	.607	.875	.928	1.25-2.00
114292	MFN-15	5.156	5.937	1.340	1.256	2.672	3.128 3.123	.687	1/4-20 x 1.50	1.844	.722	1.250	1.250	1.50-2.50
112907	MFN-17	5.500	5.937	1.340	1.450	2.672	3.128 3.123	.687	1/4-20 x 1.50	2.000	.857	1.250	1.303	1.75-3.50
112916	MFN-25	6.197	5.937	1.340	2.013	2.672	3.128 3.123	.687	1/4-20 x 1.50	2.344	.888	1.812	1.625	2.50-4.00
114108	MFN-35	7.011	9.000	1.590	3.013	4.094	4.753 4.748	.750	3/8-16 x 1.75	2.500	.984	2.250	1.937	3.50-5.50
114478	MFN-50	8.250	9.000	1.590	4.513	4.094	4.753 4.748	.750	3/8-16 x 1.75	3.000	1.335	Spanner	2.325	5.00-8.50

\* Many applications require less than the full recommended force

Sleeves must be ordered separately (See Page 15)

Model	Assembly No.	Arbor	Flange	Nut	Washer	Drive Cage	Sleeve (not incl.)
MFN-6	113106	113107	112219	112436	113356	114143	113102
MFN-8	113120	113121	112219	112437	112824	114144	113116
MFN-10	113079	113086	N/A	112242	112046	114073	112011
MFN-12	114359	114360	N/A	112438	112047	114074	112014
MFN-15	114292	114293	N/A	114186	114185	114170	114116
MFN-17	112907	112908	N/A	112439	112043	114072	112017
MFN-25	112916	112915	N/A	112440	112045	114075	112020
MFN-35	114108	114109	N/A	112441	112044	114145	112023
MFN-50	114478	114479	N/A	112442	112582	114473	112555

- Adjustable flange mount (See stir-around page 12)
- Nut actuated
- Double sleeve



Related Products: American standard mounting plates page 16-17.

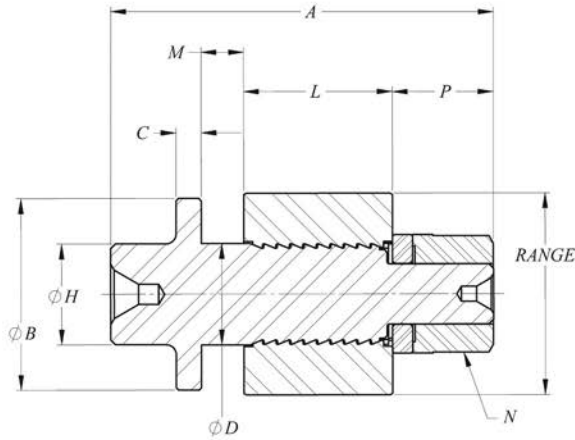
Order No.	Model	A	B	C	D +0000 -.0005	F	H	J	K	L	M	N NUT FLATS	P	Range Limits
114336	M2FLN-10	5.281	5.937	1.340	.969	2.672	3.128 3.123	.687	1/4-20 x 1.50	1.344	.525	.688	.728	1.00-1.50
114365	M2FLN-12	5.966	5.937	1.340	1.218	2.672	3.128 3.123	.687	1/4-20 x 1.50	1.500	.679	.875	.947	1.25-2.00
114387	M2FLN-15	7.144	5.937	1.340	1.469	2.672	3.128 3.123	.687	1/4-20 x 1.50	1.844	.794	1.250	1.322	1.50-2.50
114411	M2FLN-17	7.591	5.937	1.340	1.719	2.672	3.128 3.123	.687	1/4-20 x 1.50	2.000	.929	1.250	1.322	1.75-3.50
114431	M2FLN-25	8.684	5.937	1.340	2.343	2.672	3.128 3.123	.687	1/4-20 x 1.50	2.344	.959	1.812	1.697	2.50-4.00
114449	M2FLN-35	9.653	9.000	1.590	3.343	4.094	4.753 4.748	.750	3/8-16 x 1.75	2.500	1.054	2.250	2.009	3.50-5.50
114484	M2FLN-50	11.319	9.000	1.590	4.969	4.094	4.753 4.748	.750	3/8-16 x 1.75	3.000	1.407	Spanner	2.322	5.00-8.50

Sleeves must be ordered separately (See Page 15)

Model	Assembly No.	Arbor	Nut	Washer	Drive Cage	SaberBushing	Sleeve (not incl.)
M2FLN-10	114336	114337	112242	112046	(2) 114073	(2) 112407	(2) 112011
M2FLN-12	114365	114366	112438	112047	(2) 114074	(2) 112408	(2) 112014
M2FLN-15	114387	114388	114186	114185	(2) 114170	(2) 114172	(2) 114116
M2FLN-17	114411	114412	112439	112043	(2) 114072	(2) 112409	(2) 112017
M2FLN-25	114431	114432	112440	112045	(2) 114075	(2) 112410	(2) 112020
M2FLN-35	114449	114450	112441	112044	(2) 114145	(2) 112411	(2) 112023
M2FLN-50	114484	114485	112442	112582	(2) 114473	(2) 112972	(2) 112555



- Between centers
- Nut actuated
- Single sleeve

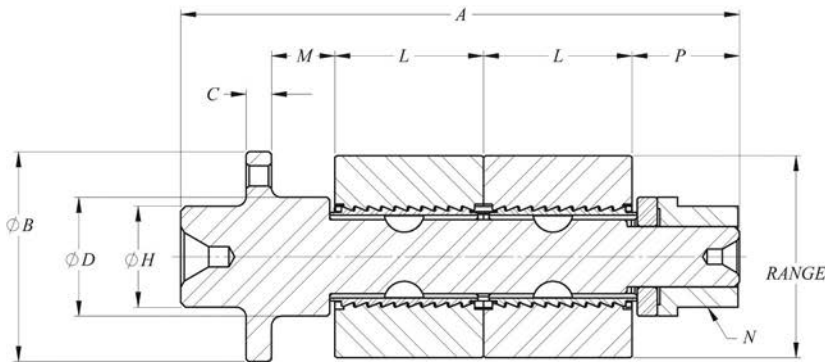


Order No.	Model	A	B	C	D +0000 -0005	H	L	M	N NUT FLATS	P	Range Limits
113100	MC-6	2.750	1.536	.313	.438	.625	.750	.489	.375	.488	.50-1.00
113114	MC-8	3.437	1.844	.313	.719	.750	1.000	.800	.625	.762	.75-1.25
113083	MC-10	3.406	1.875	.313	.764	.750	1.344	.478	.688	.709	1.00-1.50
113060	MC-12	4.062	2.125	.313	1.013	1.000	1.500	.634	.875	.928	1.25-2.00
114198	MC-15	4.750	2.375	.313	1.256	1.250	1.844	.531	1.250	1.250	1.50-2.50
112856	MC-17	5.500	2.875	.313	1.450	1.250	2.000	.697	1.250	1.303	1.75-3.50
112952	MC-25	6.322	3.375	.313	2.013	1.375	2.344	.790	1.812	1.625	2.50-4.00
112953	MC-35	7.321	4.875	.563	3.013	1.500	2.500	1.196	2.250	1.937	3.50-5.50
112581	MC-50	9.250	5.938	.563	4.513	3.000	3.000	1.365	Spanner	2.385	5.00-8.50

Sleeves must be ordered separately (See Page 15)

Model	Assembly No.	Arbor	Nut	Washer	Drive Cage	Sleeve (not incl.)
MC-6	113100	113101	112436	113356	114143	113102
MC-8	113114	113115	112437	112824	114144	113116
MC-10	113083	112010	112242	112046	114073	112011
MC-12	113060	112013	112438	112047	114074	112014
MC-15	114198	114117	114186	114185	114170	114116
MC-17	112856	112016	112439	112043	114072	112017
MC-25	112952	112019	112440	112045	114075	112020
MC-35	112953	112022	112441	112044	114145	112023
MC-50	112581	112398	112442	112582	114473	112555

- Between centers
- Nut actuated
- Double sleeve

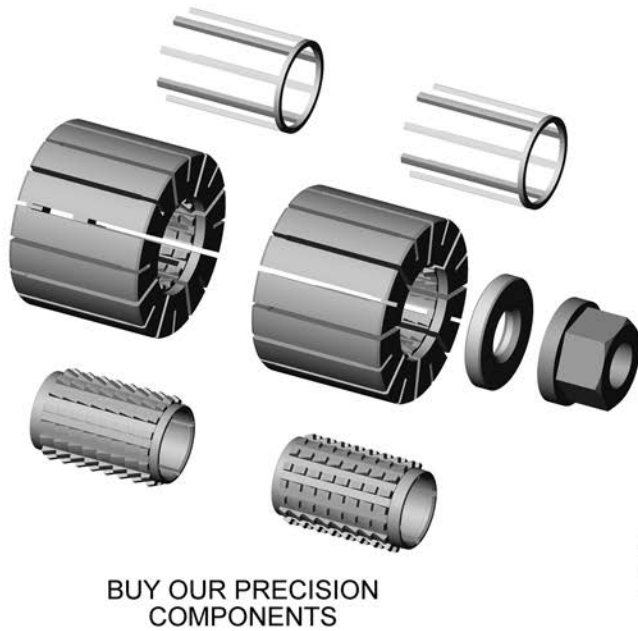


Order No.	Model	A	B	C	D +0000 -.0005	H	L	M	N NUT FLATS	P	Range Limits
114334	M2LC-10	4.816	2.094	.313	.969	.750	1.344	.525	.688	.728	1.00-1.50
114357	M2LC-12	5.626	2.344	.313	1.218	1.000	1.500	.679	.875	.947	1.25-2.00
114381	M2LC-15	6.929	2.594	.313	1.469	1.250	1.844	.794	1.250	1.322	1.50-2.50
114137	M2LC-17	7.751	2.875	.313	1.719	1.250	2.000	.929	1.250	1.322	1.75-3.50
114425	M2LC-25	8.907	3.469	.313	2.343	1.375	2.344	.959	1.812	1.697	2.50-4.00
114445	M2LC-35	9.751	4.875	.563	3.343	1.500	2.500	1.054	2.250	2.009	3.50-5.50
114474	M2LC-50	12.229	6.406	.563	4.969	3.000	3.000	1.407	Spanner	3.322	5.00-8.50

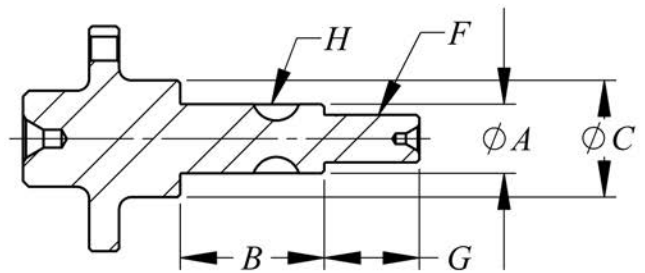
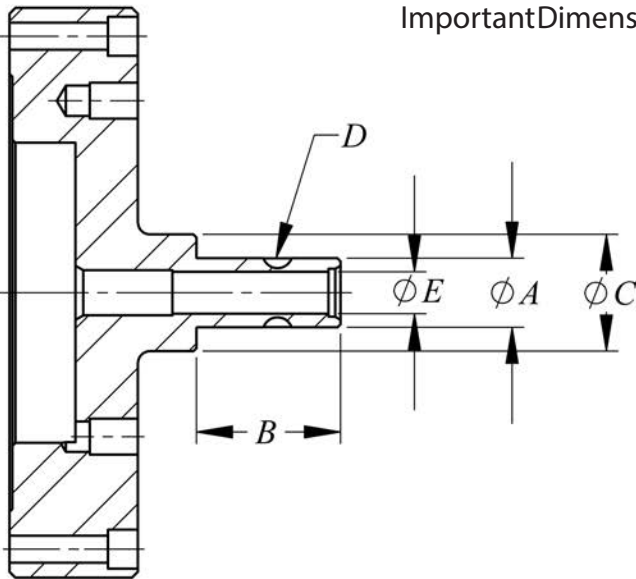
Sleeves must be ordered separately (See Page 15)

Model	Assembly No.	Arbor	Nut	Washer	Drive Cage	SaberBushing	Sleeve (not incl.)
M2LC-10	114334	114335	112242	112046	(2) 114073	(2) 112407	(2) 112011
M2LC-12	114357	114358	112438	112047	(2) 114074	(2) 112408	(2) 112014
M2LC-15	114381	114382	114186	114185	(2) 114170	(2) 114172	(2) 114116
M2LC-17	114137	114138	112439	112043	(2) 114072	(2) 112409	(2) 112017
M2LC-25	114425	114426	112440	112045	(2) 114075	(2) 112410	(2) 112020
M2LC-35	114445	114446	112441	112044	(2) 114145	(2) 112411	(2) 112023
M2LC-50	114474	114475	112442	112582	(2) 114473	(2) 112972	(2) 112555

# DO IT YOURSELF MANDRELS



Important Dimensions for do-it-yourself mandrels



Series No.	Range Limits	Ø A	B*	Ø C	D** Keyseat	Ø E	F thread	G***	H** Keyseat
10	Ø1.00-1.50	.4992-.4991	1.344	.969	202	.250-.251	.375-24	.728	204
12	Ø1.25-2.00	.7187-.7186	1.500	1.218	202	.4375-.4385	.500-20	.947	204
15	Ø1.50-2.50	.9149-.9148	1.844	1.469	304	.500-.501	.750-16	1.322	304
17	Ø1.75-3.50	1.0615-1.0614	2.000	1.719	304	.500-.501	.750-16	1.322	304
25	Ø2.50-4.00	1.5615-1.5614	2.344	2.343	405	.750-.751	1.250-12	1.697	405
35	Ø3.50-5.50	2.3740-2.3739	2.500	3.343	505	1.000-1.001	1.500-12	2.009	505
50	Ø5.00-8.50	3.8745-3.8744	3.000	4.969	808	1.000-1.001	3.250-12	2.322	808

\* Length shown is for (1) Saber bushing. If additional bushings and/or spacers are used, "b" dimension is equal to their total length.

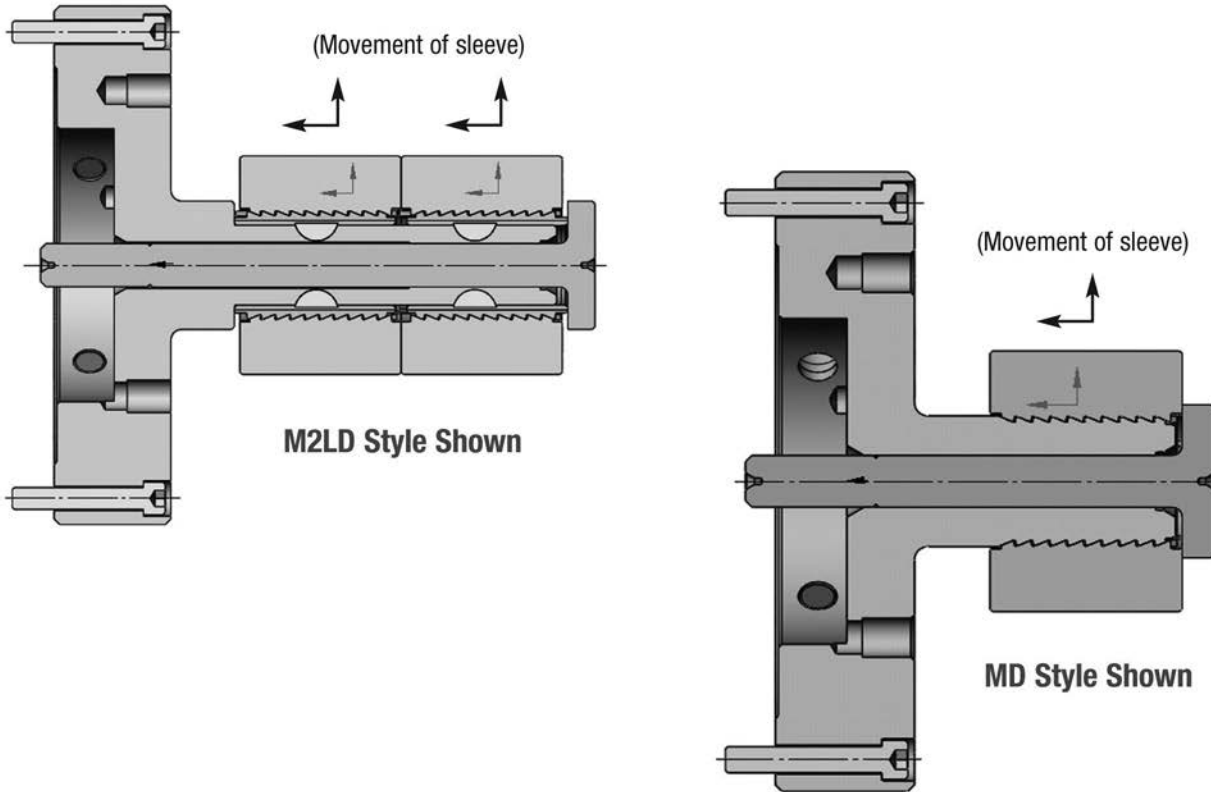
\*\* (2) recommended per Saber bushing at 180°

\*\*\* Length shown is for (1) saber bushing. Add .072 for each additional one.

## HOW IT WORKS

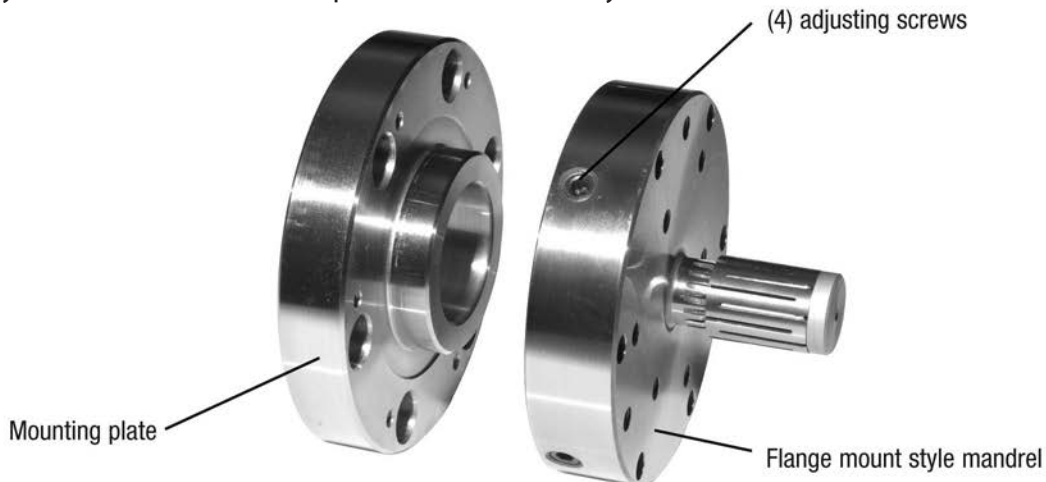
### HOW SABERTOOTH WORKS

By drawing a slotted sleeve over a precision ground series of tapered saber-teeth, the sleeve expands evenly inside the internal diameter of the piece part, while at the same time, the "pull back" action of the mechanism moves the part against its locating surface for a strong grip and accurate positioning.

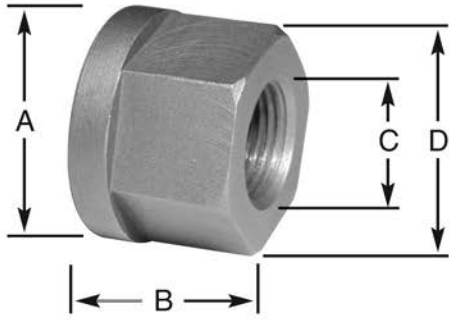


### STIR-AROUND

All our flange mount-style mandrels feature (4) adjustment screws on the O.D. so that the assembly can be trued to your machine to insure optimum concentricity.



## GROUND FLANGE NUT



Series No.	Flange Nut Order No.	A	B	C	D
6	112436	.468	.312	1/4-28	.375
8	112437	.718	.500	3/8-24	.625
10	112242	.875	.500	3/8-24	.688
12	112438	1.125	.688	1/2-20	.875
15	114186	1.468	1.000	3/4-16	1.250
17	112439	1.625	1.000	3/4-16	1.250
25	112440	2.250	1.250	1-1/4-12	1.812
35	112441	2.750	1.500	1-1/4-12	2.250
50	112442	4.937	1.500	3-1/4-12	*Spanner

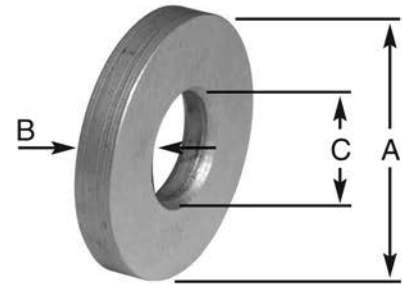
**FLANGE KIT**  
Make your adjustable flange mandrel for use with standard mounting plates.

Series No.	Flange Nut Order No.
6 thru 25	112520
35 thru 50	112521

**EACH KIT INCLUDES:**  
(6) Mounting screws.  
(6) Adjustable screws.  
(6) Pressure plugs  
Print showing flange dimensions.

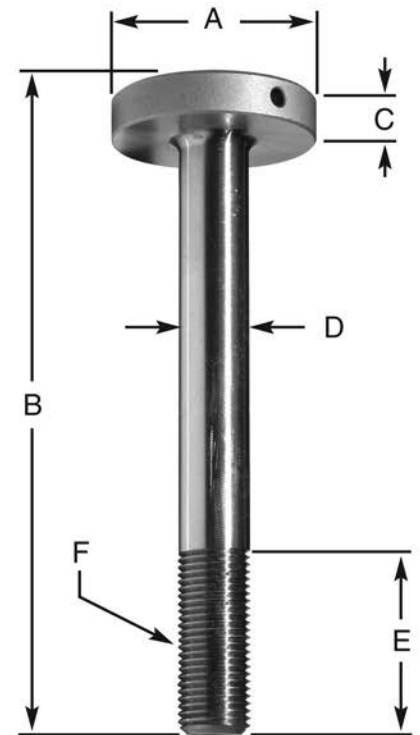
## GROUND FLAT WASHER

Series No.	Washer Order No.	A	B	C
6	113356	.484	.125	.252
8	112824	.718	.156	.376
10	112046	.968	.156	.376
12	112047	1.218	.187	.503
15	114185	1.468	.250	.753
17	112043	1.718	.250	.753
25	112045	2.437	.375	1.253
35	112044	3.437	.437	1.503
50	112582	4.937	.750	3.265



## DRAW BOLT

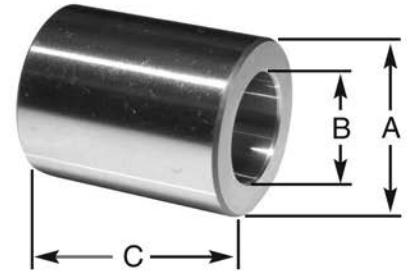
Order No.	Mandrel Used With	A	B	C	D	E	F
115874	MD-6	.484	2.652	.125	.190/.189	.687	#10-32
112070	MD8-MLD10	.718	3.571	.187	.248/.245	1.000	1/4-28
112065	MD-10	.968	3.585	.200	.373/.370	1.000	3/8-24
112066	MD12-MLD12	1.218	4.000	.300	.436/.432	1.250	7/16-20
114169	MD15-MLD15	1.468	4.500	.312	.498/.494	1.250	1/2-20
112067	MD17-MLD17	1.718	4.750	.375	.498/.494	1.250	1/2-20
112068	MD25-MLD25	2.343	5.187	.375	.748/.744	1.312	3/4-16
112069	MD35-MLD35	3.343	5.750	.437	.998/.994	1.375	1-14
112971	MD50-MLD50	4.696	6.812	.625	.998/.994	1.625	1-14
114124	M2LD-12	1.218	5.500	.300	.436/.432	1.250	7/16-20
114177	M2LD-15	1.468	6.343	.312	.498/.494	1.250	1/2-20
114308	M2LD-17	1.718	6.812	.375	.498/.494	1.250	1/2-20
114221	M2LD-25	2.343	7.562	.375	.748/.744	1.312	3/4-16
114451	M2LD-35	3.343	8.250	.437	.998/.994	1.375	1-14
114489	M2LD-50	4.969	9.812	.625	.998/.994	1.625	1-14





## SABER BUSHING

Series No.	Bushing Order No.	I.D.	Length
10	112407	.5000/.4995	1.344
12	112408	.7195/.7190	1.500
15	114172	.9157/.9152	1.844
17	112409	1.0623/1.0618	2.000
25	112410	1.5623/1.5618	2.344
35	112411	2.3748/2.3743	2.500
50	112972	3.8756/3.8750	3.000



## SPACER

Spacer Order No.	Series No.	A	B	C
116500	10	.969	.502	.250
116501	10	.968	.502	.500
116502	10	.968	.502	1.000
116530	10	.968	.502	1.344
116536	10	.968	.502	2.000
116503	12	1.218	.721	.250
116504	12	1.218	.721	.500
116505	12	1.218	.721	1.000
116531	12	1.218	.721	1.500
116506	12	1.218	.721	2.000
116507	15	1.468	.917	.250
116508	15	1.468	.917	.500
116509	15	1.468	.917	1.000
116532	15	1.468	.917	1.844
116510	15	1.468	.917	2.000
116511	17	1.718	1.064	.250
116512	17	1.718	1.064	.500
116513	17	1.718	1.064	.625
116514	17	1.718	1.064	1.000
116515	17	1.718	1.064	2.000
116516	25	2.437	1.564	.250
116517	25	2.437	1.564	.500
116518	25	2.437	1.564	1.000
116519	25	2.437	1.564	2.000
116533	25	2.437	1.564	2.344
116520	35	3.437	2.376	.250
116521	35	3.437	2.376	.500
116522	35	3.437	2.376	1.000
116523	35	3.437	2.376	2.000
116534	35	3.437	2.376	2.500
116537	50	4.937	3.878	.250
116524	50	4.937	3.878	.500
116525	50	4.937	3.878	1.000
116526	50	4.937	3.878	2.000
116535	50	4.937	3.878	3.000

## DRAWBAR INSERT



Insert I.D. Thread	O.D. Thread	Insert Order No.
1/4—28	1"—14	113487-1
1/4—28	1"—14	113487-1
3/8—24	1"—14	113487-2
7/16—20	1"—14	113487-3
1/2—20	1"—14	113487-4
3/4—16	1"—14	113487-5

## DRIVE CAGE



Series No.	Drive Cage Order No.
6	114143
8	114144
10	114073
12	114074
15	114170
17	114072
25	114075
35	114145
50	114473



## WOODRUFF KEY

Key Order No.	Application
112704	Series 10 Draw Bolt Actuated
112705	Series 12 Draw Bolt Actuated
112706	Series 10 Nut Actuated Series 12 Nut Actuated
112708	All Series 15 and 17
112709	All Series 25
112710	All Series 35
112711	All Series 50

## SLEEVE DATA

Cameron stocks a large inventory of Sabertooth expanding sleeves. These sleeves are completely finished with the exception of the gripping diameter. Upon receipt of an order, sleeves are drawn from stock and ground to suit the customer's requirements. Optional features shown below are available on all sleeves for an additional charge.

**Stack Grinding:** When ordering sleeves for our double-length mandrel assemblies, it is recommended that the sleeves are purchased with saber bushings and drive cages and ground-in sets to insure uniform expansion.

### STANDARD SABERTOOTH SLEEVE DATA

Mandrel Series	Part Number	*Stock Range	Maximum Expansion	Gripping Length	**Load Clearance
#6	113102	.50" - 1.00"	.014"	.750"	.006"
#8	113116	.75" - 1.25"	.022"	1.000"	.006"
#10	112011	1.00" - 1.50"	.042"	1.344"	.010"
#12	112014	1.25" - 2.00"	.042"	1.500"	.010"
#15	114116	1.50" - 2.50"	.042"	1.844"	.010"
#17	112017	1.75" - 3.50"	.042"	2.000"	.010"
#25	112020	2.50" - 4.00"	.042"	2.344"	.010"
#35	112023	3.50" - 5.50"	.042"	2.500"	.010"
#50	112555	5.00" - 8.50"	.042"	3.000"	.010"

\* Oversize sleeves are available upon request, prices based on quantity.

\*\* Standard load clearances are shown. Sleeves can be ground to a specified "relaxed" diameter upon request, or additional load clearance can be requested.

**Options available:** Sleeves can be ordered with the following options:

**Sealed Slots** – The slots on the sleeve are filled with a rubber compound to prevent contaminant from interfering with the taper area.

**Torque Plus Coating** – This special coating increases gripping strength and increases sleeve life.

**Splined Parts** – Sleeves can be precision ground to locate off of the pitch, minor or major diameter of the part.



**Sealed Slots**

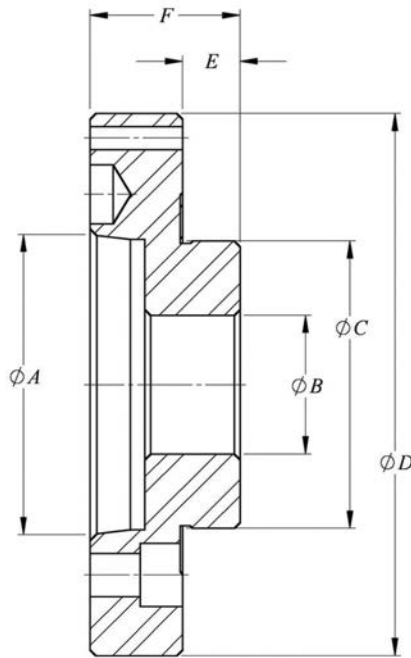


**Torque Plus Coating**



**Splined Sleeves**

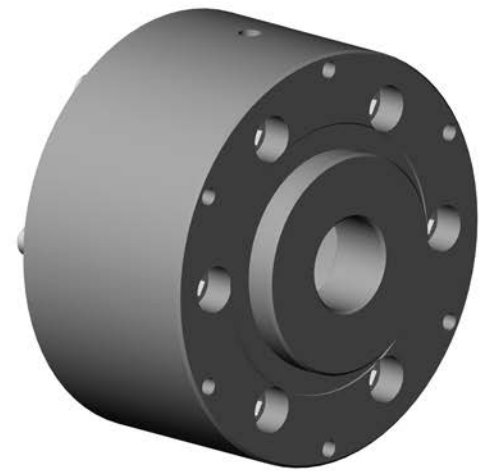
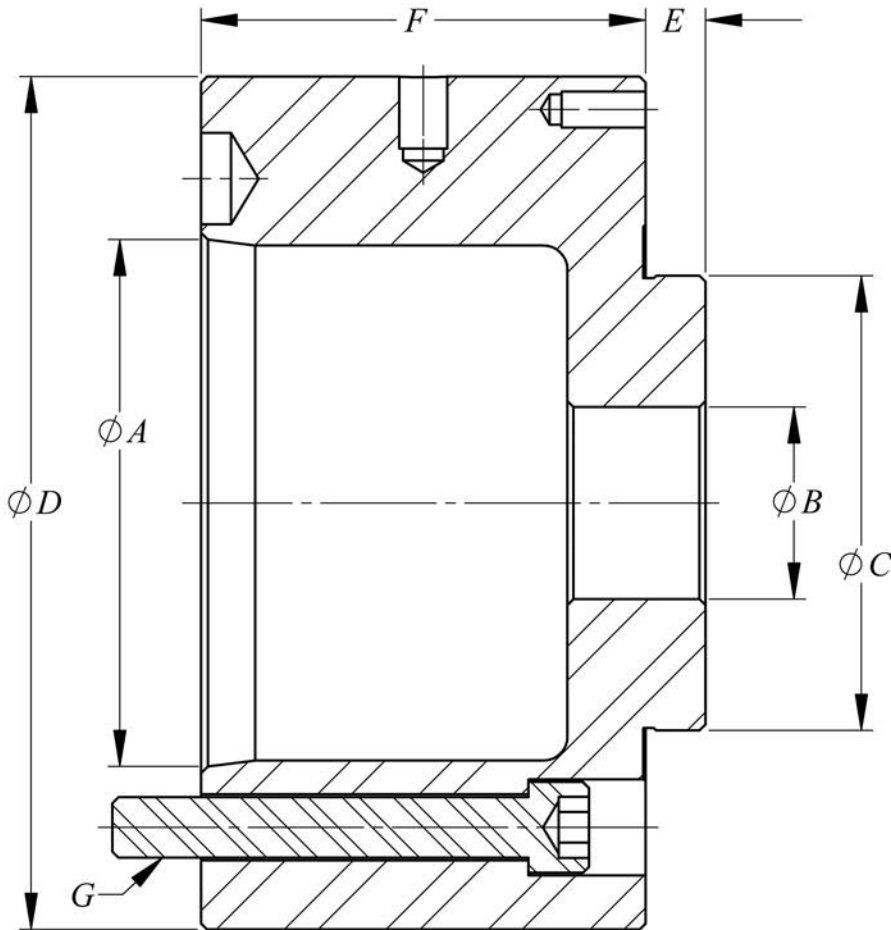
Our standard low profile mounting plates are designed to fit spindles with American standard tapers. The "C" diameter fits inside our flange-style mandrels that feature concentricity adjustment for minimum run-out using (4) stir-around screws on the flange of the mandrels. (See illustration page 12)



	Spindle Nose	Part Number	Ø A +.0000 -.0005	Ø B	Ø C +.000 -.004	Ø D	E	F
Models 6 thru 25	A-3	09300	2.1250	1.50	3.109	5.88	.62	1.63
	A-4	09301	2.5000	1.50	3.109	5.88	.62	1.63
	A-5	09302	3.2500	1.50	3.109	5.88	.62	1.63
	A-6	09303	4.1875	2.13	3.109	6.38	.62	1.66
	A-8	09336	5.5000	2.52	3.109	8.88	.62	1.97
	A-11	09339	7.7500	2.00	3.109	10.63	.62	2.06
Model 35 and 50	A-4	09361	2.5000	2.52	4.730	8.88	.71	1.72
	A-5	09362	3.2500	2.52	4.730	8.88	.71	1.72
	A-6	09363	4.1875	2.52	4.730	8.88	.71	1.97
	A-8	09364	5.5000	2.00	4.730	8.88	.62	1.97
	A-11	09347	7.7500	2.50	4.730	10.63	.71	2.09
	A-15	09900	11.250	2.56	4.730	15.00	.70	2.25



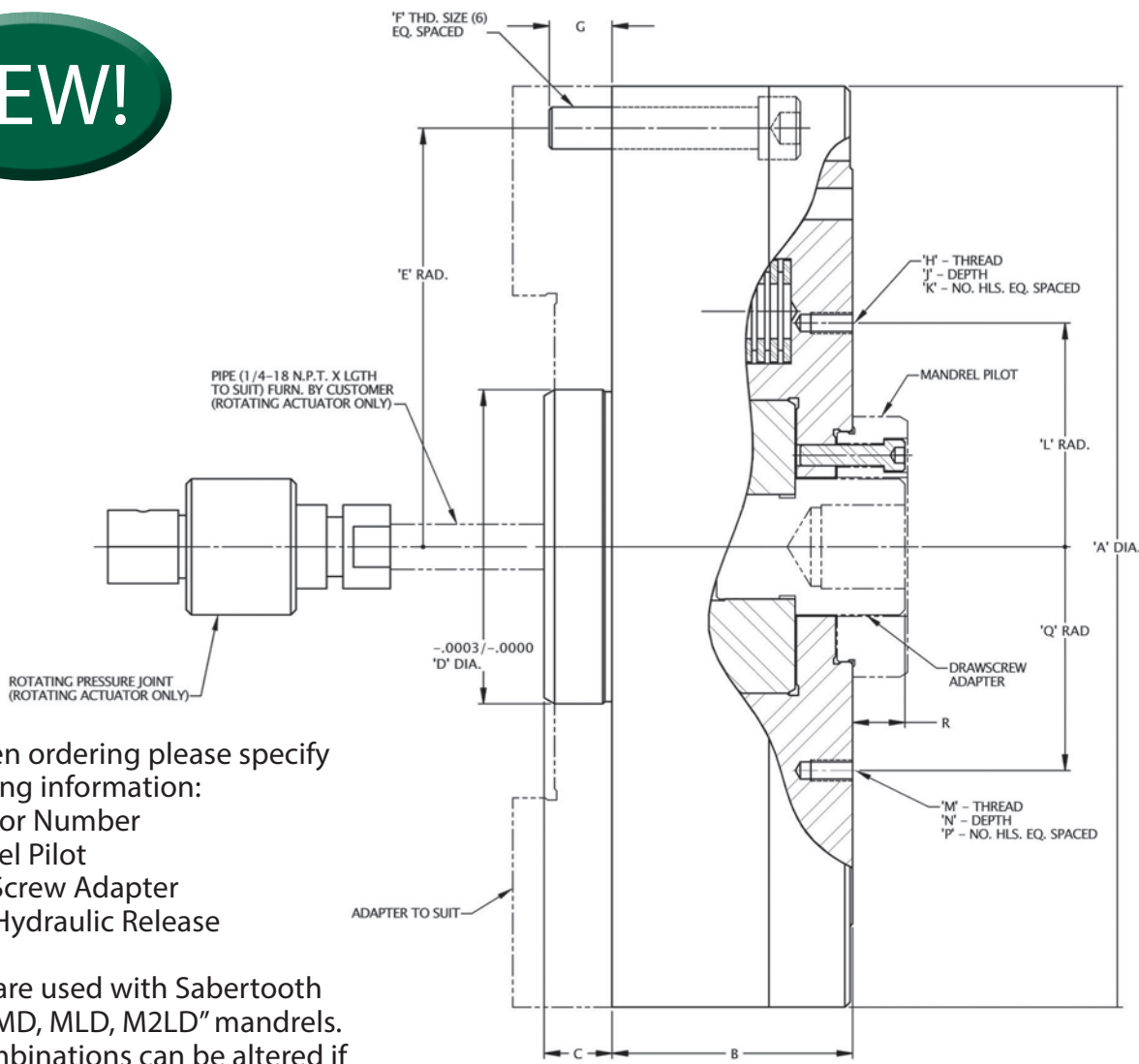
Our standard mounting plates are designed to fit to spindles with American standard tapers. The "C" diameter fits inside our flange style mandrels that feature concentricity adjustment for minimum run-out using (4) stir-around screws on the flange of the mandrels. (See illustration page 12)



	Spindle Nose	Part Number	Ø A +.0000 -.0005	Ø B	Ø C +.000 -.004	Ø D	E	F	G
Models 6 thru 25	A-5	09302-1	3.2500	1.50	3.109	5.88	.62	2.44	M10-1.5
	A-6	09303-1	4.1875	2.13	3.109	6.38	.62	3.97	M12-1.75
	A-8	09336-1	5.500	2.52	3.109	8.88	.62	4.63	M16-2.0
	A-11	09339-1	7.7500	2.00	3.109	10.63	.62	5.81	M20-2.5
Model 35 and 50	A-6	09363-1	4.1875	2.52	4.730	8.88	.71	3.88	M12-1.75
	A-8	09364-1	5.500	2.00	4.730	8.88	.62	4.63	M16-2.0
	A-11	09347-1	7.7500	2.50	4.730	10.63	.71	5.81	M20-2.5
	A-15	09900-1	11.2500	2.56	4.730	15.00	.70	5.93	M22-2.5

# SELF-CONTAINED ACTUATORS

**NEW!**



**NOTE:** When ordering please specify the following information:

1. Actuator Number
2. Mandrel Pilot
3. Draw Screw Adapter
4. Air or Hydraulic Release

Actuators are used with Sabertooth standard "MD, MLD, M2LD" mandrels. Spring combinations can be altered if needed due to available release pressure.

Standard A2 Spindle Mounting Plates Available

Actuator No.	Actuator Style	A	B	C	D	F	G	H	J	K	L	M	N	P	Q	R		Chucking Pressure
																Min	Max	
05560	Rotating	7.75	2.50	0.56	2.75	.375-16	0.63	.250-20	0.50	6	2.672	N/A	N/A	N/A	N/A	0.47	0.63	1,920
05599	Stationary	7.75	2.50	0.56	2.75	.375-16	0.63	.250-20	0.50	6	2.672	N/A	N/A	N/A	N/A	0.47	0.63	1,920
05501	Rotating	11.00	2.88	0.81	3.75	.500-13	0.75	.250-20	0.50	6	2.672	.375-16	0.75	6	4.094	0.50	0.63	4,338
05500	Stationary	11.00	2.88	0.81	3.75	.500-13	0.75	.250-20	0.50	6	2.672	.375-16	0.75	6	4.094	0.50	0.63	4,338

Standard Mandrel	Thread Size	Drawscrew Adapter				Mandrel Pilot
		Actuator/05560	Actuator/05599	Actuator/05501	Actuator/05500	
MD-6	10-32	05590	05590	05580	05580	05570
MD-8	.250-28	05591	05591	05581	05581	05570
MD-10	.375-24	05595	05595	05582	05582	05570
MD-10, M2LD-12	.437-20	05596	05596	05583	05583	05570
MD-15, MD-17, M2LD-15, M2LD-17	.500-20	05597	05597	05584	05584	05570
MD-25, M2LD-25	.750-16	05598	05598	05585	05585	05570
MD-35, MD-50, M2LD-35, M2LD-50	1.000-14			05586	05586	05571

Sabertooth Self-Contained Actuators offer the user versatility in applying standard expanding mandrels in an application where no machined drawbar is available. With the capability to adapt to other types of machine tools and fixturing, these self-contained cylinders expand the mandrels allowing for "hands off" clamping and unclamping of the part. These actuators are designed to accept all standard "MD" and "M2LD" style Sabertooth mandrels.

## Added Versatility Three Ways...

- **MACHINE VERSATILITY**

Sabertooth actuators allow the user to reap the benefits of collet workholding throughout their shop. They are adaptable to machines such as grinders, horizontal and vertical machining centers, balancers, fixtures and many other rotating and non-rotating applications.

- **GRIP FORCE SAFETY AND VERSATILITY**

By using the concept of spring chucking to generate grip force and air or hydraulic pressure for relaxing the collet, Sabertooth actuators provide safer workholding by not relying on air or hydraulic systems to hold the part. Also grip force can be easily adjusted to specific needs by changes in spring combinations.

- **MOUNTING VERSATILITY**

Additional versatility is offered by our design which allows for piloted mounting to tombstones and subplates or with the use of intermediate adapters on other types of machines. Air and hydraulic ports are located on both the side and rear of actuators for collet release system connections. Front mounted inducer ring styles for low rpm rotating are available for quote.





**SPEEDGRIPCHUCK:** Internal and external gripping collet chucks, diaphragm chucks, finger chucks, and between center mandrels.

**CAMERON:** Internal and external hydraulic chucks and arbors with collet chucks from our Sabertooth line.

**MADISON FACED DRIVER:** Standard drivers and pins along with special design faced drivers and our Hydra-Drive line for extreme accuracy requirements.

Our workholding equipment is very versatile and ideal for turning, drilling and milling operations, gear cutting and finishing, balancing, inspection equipment, and many uses on fixtures and tombstones.

Our standard lines offer in stock chucks, collets, mandrels, actuators, adapters, drivers, and pins for immediate delivery.

Many applications can be fully accommodated using our off-the-shelf standard items.

Our engineers will custom-design solutions for your special workholding applications and have a multitude of existing drawings available for your review.

[www.speedgrip.com](http://www.speedgrip.com)