



all Bushing and
Workholding Solutions
american®

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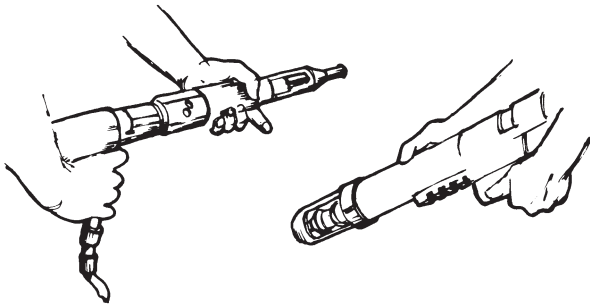
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APPLICATION

All American Drill Bushing Tips provide a fast, accurate method for portable/stationary mounting of drilling, tapping and other self-contained machining units on a jig/fixture. The threaded end of the drill bushing tip screws into the nose end of the drill unit. The helical flanges on the tip fit under the shoulders on the lock/screw strips on the jig, effectively holding the drilling unit in alignment position and absorbing drilling thrust and torque.

All tips conform to the drill size specified by the user. They are available for applications from 3/32" drill up through 1-15/32" diameter.

All American Drill Bushing Tips and accessories fit all standard automatic feed drill motors including Gardner-Denver, Keller, Aro, Buckeye, Quackenbush, Ingersoll-Rand, Etc.

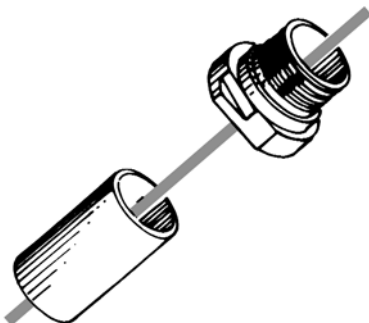


WITHOUT COLLAR

WITH COLLAR A21311

CONSTRUCTION:

All drill bushing tips are constructed by a two-piece method consisting of a collar and a pressed-in shank. The collar contains the screw threads, alignment diameter and the lock flange. The shank contains the A, B and C dimensions listed in the chart on pages 4 to 9. Maximum and minimum drill sizes (A) for drill bushing tips are shown in the column headings of the chart. Collars/shanks only of Two-piece drill bushing tips may be ordered separately for replacement purposes, see ordering information.



ORDERING INFORMATION

DRILL BUSHING TIP:

Specify the part number, add the drill sizes as a parenthetical suffix to the part number. Drill size should be specified as shown.

EXAMPLE: A-22110 (1/4)

NOTE:

There is an extra charge for all drill bushing tips specified to have smaller than the minimum drill size. Standard drill bushing tips are those with standard drill sizes and with sizes falling between the maximum and minimum sizes in (A.) An extra charge will be added for each special dimension (such as shank O.D./length) which may be specified.

SHANK ONLY:

To order bushings without the threaded collars, the letter "A" is omitted **EXAMPLE: 21310 (1/8)**

COLLAR ONLY:

Specify the Collar part number shown below collar drawing **EXAMPLE: 21000**

DRILL BUSHING TIP/SHANK ONLY WITH SPECIAL DRILL GUIDE HOLE CLEARANCE:

Specify the part number and add minimum and maximum drill guide hole size to four places as a parenthetical suffix to the part number **EXAMPLE: Shank 21104(.1260-1264) / Shank only 23522 (.6201-.6207)** Special sizes are supplied only at extra cost. Drill Guide Hole tolerances closer than standard are supplied on special quotations only.

ALL OTHER ITEMS:

Specify part number.

ACCESSORIES:

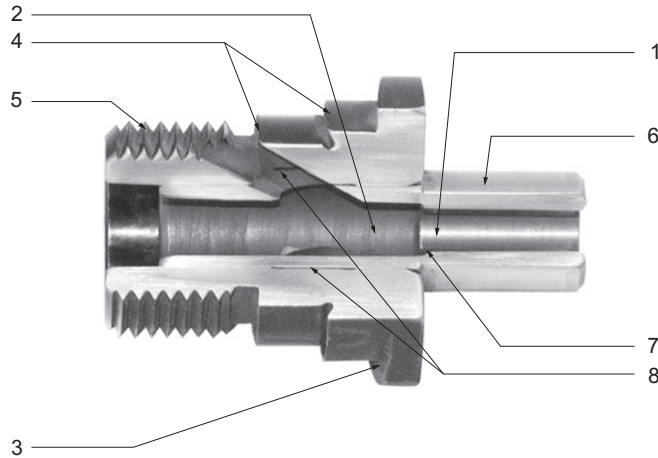
The accessories listed are designed to work with tips appearing in the same vertical column in which the accessory part numbers are shown.

SELECTION FOR JIG DESIGN REQUIREMENTS:

There are five drill bushing tip thread sizes listed which match those of the standard nose pieces. In each of the five drill bushing tip dimensional drawings, dimension "B" is the shank outside diameter. This shank slips into the lock liner bushing. Dimension "A" is the drill bit guide hole. This dimension is finished to A.N.S.I. drill specifications. Dimension "C" is the length of the shank extending from the collar to the end of the shank.

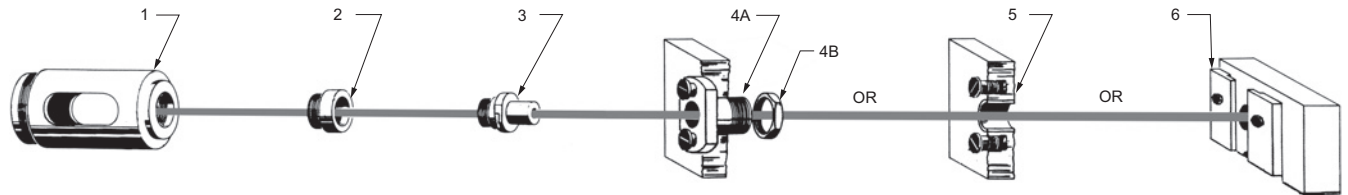
NOTE: These parts are considered as specials and are not returnable.

OUTSIDE FEATURES:



1. Drill guide hole is finished to A.N.S.I. specifications and to customers exact dimensional requirements.
2. Counterboring for chip clearance hole prevents jam-up of chips, working their way back into the nose piece and out of the nose piece slots.
3. Helical milling gives quick, positive lock of the drill bushing tip under the heads of the lock screws. A 30° turn locks or unlocks the drill bushing tip.
4. Square shoulder and concentric alignment diameter accurately line up the drill bushing tip with the axis of the tool.
5. Collar and threads are heat treated and hardened to produce strength and provide wear resistance. The shank is hardened for maximum wear resistance.
6. Marked with the part number and drill size for easy identification and simplicity in reordering.
7. Precision ground shank with entering bevel for easy insertion in lock liner bushing.
8. Coolant holes provide positive flow for chip removal and cooler drilled parts. NOTE: Coolant holes are available on 11000, 12000, 13000, 14000, 15000 series bushings.

MOUNTING DATA:



1. NOSE PIECE: Automatic mechanical/air-feed drills, tappers and back spotfacers are equipped with either a short or a long nose piece depending upon the length of the cutting tool holding device - i.e. drill chuk, tap chuck, morse taper adapter, etc.

2. REDUCER BUSHING: Reducer bushings are occasionally used to reduce the thread size in a specific nose piece to adapt it to accommodate smaller thread drill bushing tips.

3. DRILL BUSHING TIPS: Close fit between mating the shank of tip and the hole in the lock liner bushing holds tool alignment to produce straight close-tolerance holes.

4. LOCK LINER AND LOCK NUT: This is a conventional method for automatic, mechanical/air feed drills, tappers and back spotfacers to a jig face or fixture. A hole is bored in the jig to accommodate the lock liner bushing (4A). The lock nuts (4B) hold the lock liner in position in the jig.

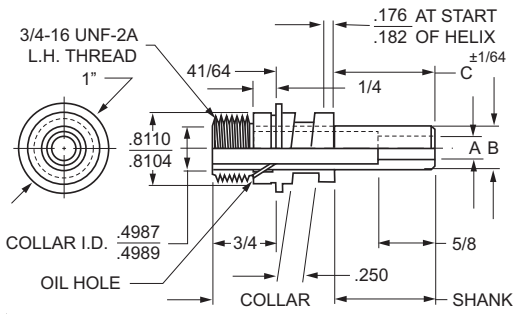
5. DIRECT JIG MOUNTING: An Alternate mounting method for holes so closely spaced that a lock liner bushings cannot be used has lock screws mounted directly in the jig. The shank of the drill bushing tip fits directly into the bored hole in the jig. Hardened headless liner bushings are available to press into the bored hole to provide a wearing surface and prolong the useful life on the jig.

6. LOCKING STRIP MOUNTING: A second mounting option for closely spaced holes employs a lock strip along each side of the row of holes in the jig. The flanges on the drill bushing tip lock under the extended edges of the lock strips when the tip is turned 30° to the left. Headless liner bushings pressed into the bored holes in the jig are recommended to forestall wear in the bored holes.

COOLANT FED AIR FEED BUSHINGS

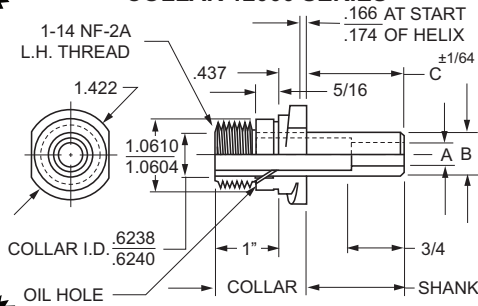
NEW

COLLAR 11000 SERIES



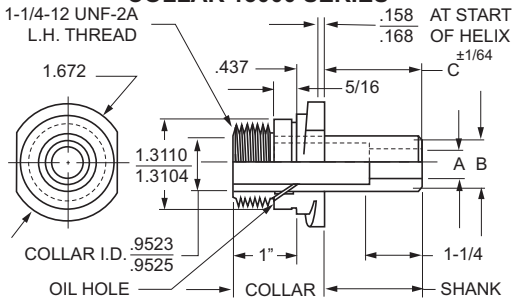
NEW

COLLAR 12000 SERIES



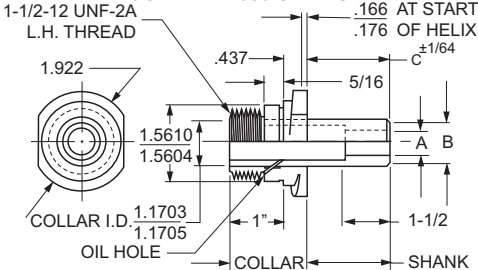
NEW

COLLAR 13000 SERIES



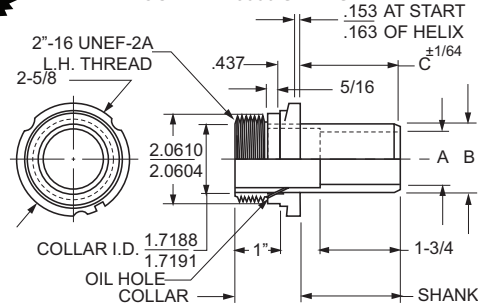
NEW

COLLAR 14000 SERIES



NEW

COLLAR 15000 SERIES



		COLLAR-11000 SERIES			COLLAR-12000 SERIES				
I.D. RANGE A	MAX. MIN.	.2500	.3125	.3750	.2812	.3437	.4062	.4688	.4688
		1/4	5/16	3/8	9/32	11/32	13/32	15/32	15/32
O.D. RANGE B	NOM. DEC. RANGE	3/8	7/16	1/2	7/16	1/2	9/16	5/8	3/4
		.3748	.4373	.4998	.4373	.4998	.5623	.6248	.7498
		.0938	.0938	.0938	.1875	.1875	.1875	.1875	.1875
LENGTH C - SHANK EXTENDS FROM COLLAR - INCHES	3/8	A-11101		A-11301	A-12101			A-12401	
	1/2	A-11102	A-11202	A-11302	A-12102	A-12202		A-12402	
	5/8	A-11103	A-11203	A-11303	A-12103	A-12203	A-12303	A-12403	
	3/4	A-11104	A-11204	A-11304	A-12104	A-12204	A-12304	A-12404	A-12504
	7/8	A-11105	A-11205	A-11305	A-12105	A-12205	A-12305	A-12405	A-12505
	1	A-11106	A-11206	A-11306	A-12106	A-12206	A-12306	A-12406	A-12506
	1-1/16	A-11107		A-11307					
	1-1/8	A-11108	A-11208	A-11308	A-12108	A-12208	A-12308	A-12408	A-12508
	1-3/16							A-12409	
	1-1/4	A-11110	A-11210	A-11310	A-12110	A-12210	A-12310	A-12410	A-12510
	1-3/8	A-11111	A-11211	A-11311	A-12111	A-12211	A-12311	A-12411	A-12511
	1-7/16								
	1-1/2	A-11113	A-11213	A-11313	A-12113	A-12213	A-12313	A-12413	A-12513
	1-5/8	A-11114	A-11214	A-11314	A-12114	A-12214	A-12314	A-12414	A-12514
	1-3/4	A-11115	A-11215	A-11315	A-12115	A-12215	A-12315	A-12415	A-12515
	1-7/8	A-11116	A-11216	A-11316	A-12116	A-12216	A-12316	A-12416	A-12516
	1-15/16								
	2	A-11118	A-11218	A-11318	A-12118	A-12218	A-12318	A-12418	A-12518
	2-1/8	A-11119	A-11219	A-11319	A-12119	A-12219	A-12319	A-12419	A-12519
	2-1/4	A-11120	A-11220	A-11320	A-12120	A-12200	A-12320	A-12420	A-12520
	2-3/8	A-11121	A-11221	A-11321	A-12121	A-12221	A-12321	A-12421	A-12521
	2-1/2	A-11122	A-11222	A-11322	A-12122	A-12222	A-12322	A-12422	A-12522
	2-5/8								
	2-3/4	A-11124	A-11224	A-11324	A-12124	A-12224	A-12324	A-12424	A-12524
	3	A-11125	A-11225	A-11325	A-12125	A-12225	A-12325	A-12425	A-12525
	3-1/4	A-11126	A-11226	A-11326	A-12126	A-12226	A-12326	A-12426	A-12526
	3-1/2				A-12127	A-12227	A-12327	A-12427	A-12527
	3-3/4				A-12128	A-12228	A-12328	A-12428	A-12528
	4				A-12129	A-12229	A-12329	A-12429	A-12529
	5			A-11330	A-12130	A-12230	A-12330	A-12430	A-12530
6	A-11131			A-12131	A-12231	A-12331	A-12431	A-12531	
LOCK LINER BUSHINGS		LL-21100 (Matches A-11107 tip)		LL-21300 (Matches A-11307 tip)				LL-22400 (Matches A-12409 tip)	
LOCK NUTS		14441		14442				14443	
HELICAL LINER BUSHINGS - METALS		HAL-13212	HAL-14808	HAL-14808	HAL-24808	HAL-24808	HAL-25210	HAL-25610	HAL-25410
HELICAL LINER BUSHINGS - PLASTICS		HALD-13212	HALD-14808	HALD-14808	HALD-24808	HALD-24808	HALD-25210	HALD-25610	HALD-25410
LOCK RINGS		LR-52101	LR-52103	LR-52103	LR-52105	LR-52105	LR-52104	LR-52105	LR-52107
LOCK LINERS		LL-21100	LL-21200	LL-21300	LL-22100	LL-22200	LL-22300	LL-22400	
LOCK SCREWS		16531	16531	16531	16532	16532	16532	16532	16532
HEADLESS BUSHINGS		19936	19937	19938	19937	19938	19939	19940	19941

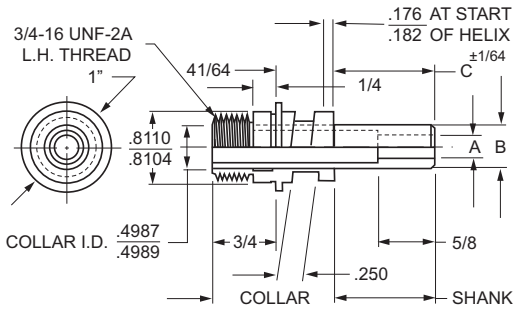
COOLANT FED AIR FEED BUSHINGS



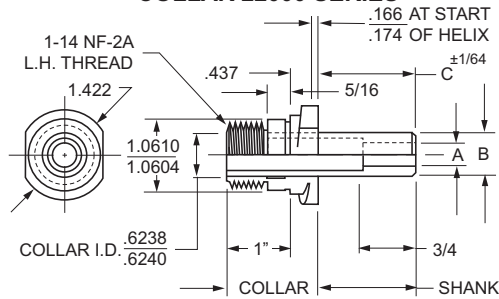
COLLAR-13000 SERIES						COLLAR-14000 SERIES										COLLAR-15000 SERIES					
.4688	.5312	.5937	.6562	.7187	.7187	.4062	.5312	.5937	.6562	.7187	.9062	.9375	1.0000	1.0625	1.0313	1.1562	1.2812	1.4688	1.4688		
15/32	17/32	19/32	21/32	23/32	23/32	13/32	17/32	19/32	21/32	25/32	29/32	15/16	1	1-1/16	1-1/32	1-5/32	1-9/32	1-15/32	1-15/32		
1/4	1/4	1/4	1/4	1/4	1/4	5/16	5/16	5/16	5/16	5/16	5/16	5/16	5/16	5/16	3/8	3/8	3/8	3/8	3/8		
.2500	.2500	.2500	.2500	.2500	.2500	.3125	.3125	.3125	.3125	.3125	.3125	.3125	.3125	.3125	.3750	.3750	.3750	.3750	.3750		
5/8	3/4	13/16	7/8	1	1-1/8	5/8	3/4	13/16	7/8	1	1-1/8	1-1/4	1-3-8	1-1/2	1-1/4	1-3/8	1-1/2	1-3/4	2		
.6248	.7498	.8123	.8748	.9998	1.1248	.6248	.7498	.8123	.8748	.9998	1.1248	1.2498	1.2498	1.4998	1.2498	1.3748	1.4998	1.7498	1.9998		
.6245	.7495	.8120	.8745	.9995	1.1245	.6245	.7495	.8120	.8745	.9995	1.1245	1.2495	1.2495	1.4995	1.2495	1.3745	1.4995	1.7495	1.9995		
																				3/8	
																				1/2	
						A-14103														5/8	
A-13004	A-13104	A-13204	A-13304			A-14104	A-14304	A-14204												3/4	
A-13005	A-13105	A-13205	A-13305			A-14105	A-14305	A-14205	A-14405											7/8	
A-13006	A-13106	A-13206	A-13306	A-13406	A-13506	A-14106	A-14306	A-14206	A-14406	A-14506	A-14606			A-14806					1		
																				1-1/16	
A-13008	A-13108	A-13208	A-13308	A-13408	A-13508	A-14108	A-14308	A-14208	A-14408	A-14508	A-14608		A-14908						1-1/8		
																				1-3/16	
A-13010	A-13110	A-13210	A-13310	A-13410	A-13510	A-14110	A-14310	A-14210	A-14410	A-14510	A-14610	A-14710	A-14910		A-15110				1-1/4		
A-13011	A-13111	A-13211	A-13311	A-13411	A-13511	A-14111	A-14311	A-14211	A-14411	A-13511	A-13611	A-14711	A-13911	A-14811	A-15111	A-15211			1-3/8		
			A-13312																1-7/16		
A-13013	A-13113	A-13213	A-13313	A-13413	A-13513	A-14113	A-14313	A-14213	A-14413	A-14513	A-14613	A-14713	A-14913	A-14813	A-15113	A-15213	A-15313		1-1/2		
A-13014	A-13114	A-13214	A-13314	A-13414	A-13514	A-14114	A-14314	A-14214	A-14414	A-14514	A-14614	A-14714	A-14914	A-14814	A-15114	A-15214	A-15314		1-5/8		
A-13015	A-13115	A-13215	A-13315	A-13415	A-13515	A-14115	A-14315	A-14215	A-14415	A-14515	A-14615	A-14715	A-14915	A-14815	A-15115	A-15215	A-15315	A-15415	1-3/4		
A-13016	A-13116	A-13216	A-13316	A-13416	A-13516	A-14116	A-14316	A-14216	A-14416	A-14516	A-14616	A-14716	A-14916	A-14816	A-15116	A-15216	A-15316	A-15416	1-7/8		
					A-13517						A-14617			A-14817					1-15/16		
A-13018	A-13118	A-13218	A-13318	A-23418	A-13518	A-14118	A-14318	A-14218	A-14418	A-14518	A-14618	A-14718	A-14918	A-14818	A-15118	A-15218	A-15318	A-15418	A-15518	2	
A-13019	A-13119	A-13219	A-13319	A-13419	A-13519	A-14119	A-14319	A-14219	A-14419	A-14519	A-14619	A-14719	A-14919	A-14819	A-15119	A-15219	A-15319	A15419	A-15519	2-1/8	
A-13020	A-13120	A-13220	A-13320	A-13420	A-13520	A-14120	A-14320	A-14220	A-14420	A-14520	A-14620	A-14720	A-14920	A-14820	A-15120	A-15220	A-15320	A-15420	A-15520	2-1/4	
A-13021	A-13121	A-13221	A-13321	A-13421	A-13521	A-14121	A-14321	A-14221	A-14421	A-14521	A-14621	A-14721	A-14921	A-14821	A-15121	A-15221	A-15321	A-15421	A-15521	2-3/8	
A-13022	A-13122	A-13222	A-13322	A-13422	A-13522	A-14122	A-14322	A-14222	A-14422	A-14522	A-14622	A-14722	A-14922	A-14822	A-15122	A-15222	A-15322	A-15422	A-15522	2-1/2	
																			A-15523	2-5/8	
A-13024	A-13124	A-13224	A-13324	A-13424	A-13524	A-14124	A-14324	A-14224	A-14424	A-14524	A-14624	A-14724	A-14924	A-14824	A-15124	A-15224	A-15324	A-15424	A-15524	2-3/4	
A-13025	A-13125	A-13225	A-13325	A-13425	A-13525	A-14125	A-14325	A-14225	A-14425	A-14525	A-14625	A-14725	A-14925	A-14825	A-15125	A-15225	A-15325	A-15425	A-15525	3	
A-13026	A-13126	A-13226	A-13326	A-13426	A-13526	A-14126	A-14326	A-14226	A-14426	A-14526	A-14626	A-14726	A-14926	A-14826	A-15126	A-15226	A-15326	A-15426	A-15526	3-1/4	
A-13027	A-13127	A-13227	A-13327	A-13427	A-13527	A-14127	A-14327	A-14227	A-14427	A-14527	A-14627	A-14727	A-14927	A-14827	A-15127	A-15227	A-15327	A-15427	A-15527	3-1/2	
A-13028	A-13128	A-13228	A-13328	A-13428	A-13528	A-14128	A-14328	A-14228	A-14428	A-14528	A-14628	A-14728	A-14928	A-14828	A-15128	A-15228	A-15328	A-15428	A-15528	3-3/4	
A-13029	A-13129	A-13229	A-13329	A-13429	A-13529	A-14129	A-14329	A-14229	A-14429	A-14529	A-14629	A-14729	A-14929	A-14829	A-15129	A-15229	A-15329	A-15429	A-15529	4	
A-13030	A-13130	A-13230	A-13330	A-13430	A-13530	A-14130	A-14330	A-14230	A-14430	A-14530	A-14630	A-14730	A-14930	A-14830	A-15130	A-15230	A-15330	A-15430	A-15530	5	
A-13031	A-13131	A-13231	A-13331	A-13431	A-13531	A-14131	A-14331	A-14231	A-14431	A-14531	A-13631	A-14731	A-14931	A-14831	A-15131	A-15231	A-15331	A-15431	A-15531	6	
			LL-23300 (Matches A-13312 tip)		LL-23500 (Matches A-13517 tip)						LL-24600 (Matches A-14617 tip)		LL-24800 (Matches A-14817 tip)					LL-25500 (Matches A-15523 tip)			
			14445		14446						14446		14447						14448		
HAL-35610	HAL-36410	HAL-36410	HAL-38016	HAL-39616	HAL-39624	HAL-45616	HAL-46416	HAL-48016	HAL-48016	HAL-48016	HAL-48816	HAL-49616	HAL-411216	HAL-412816	HAL-25100	HAL-25200	HAL-25300	HAL-25400	HAL-25500		
HALD-35610	HALD-36410	HALD-36410	HALD-38016	HALD-39616	HALD-39624	HALD-45616	HALD-46416	HALD-46016	HALD-48016	HALD-48016	HALD-48816	HALD-49616	HALD-41216	HALD-412816	HALD-25100	HALD-25200	HALD-25300	HALD-25400	HALD-25500		
LR-52108	LR-52107	LR-52107	LR-52109	LR-52110	LR-52110	LR-52105	LR-52107	LR-52107	LR-52109	LR-52109	LR-52110	LR-52112	LR-52116	LR-52118	LR-52121	LR-52121	LR-52121	LR-52121	LR-52121		
	LL-23100	LL-23200	LL-23300	LL-23400	LL-23500	LL-24100	LL-24300	LL-24300	LL-24400	LL-24500	LL-24600	LL-24700		LL-24800	LL-25100	LL-25200	LL-25300	LL-25400	LL-25500		
16532	16532	16532	16532	16532	16532	16532	16532	16532	16532	16532	16532	16532	16532	16532	16530	16530	16530	16530	16530		
19940	19942	19943	19944	19945	19946	19947	19949	19950	19950	19951	19946	19952	19954	19955	19953	19954	19955	19956			

AIR FEED BUSHINGS

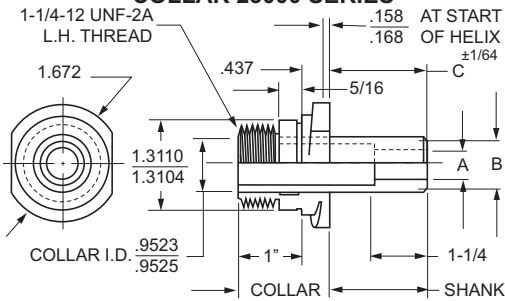
COLLAR 21000 SERIES



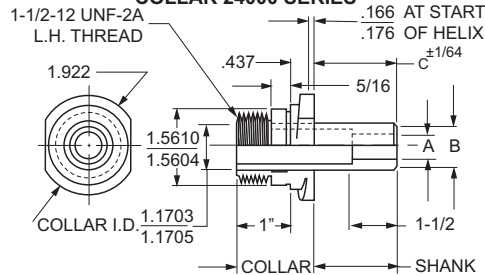
COLLAR 22000 SERIES



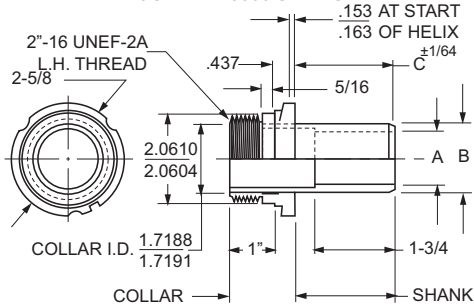
COLLAR 23000 SERIES



COLLAR 24000 SERIES



COLLAR 25000 SERIES



NOTE: These parts are considered as specials and are not returnable.

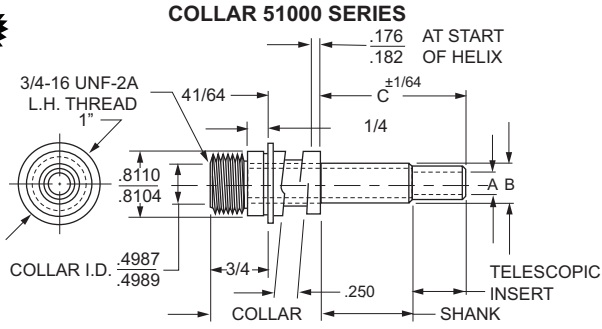
		COLLAR-21000 SERIES			COLLAR-22000 SERIES				
I.D. RANGE A	MAX.	.2500	.3125	.3750	.2812	.3437	.4062	.4688	.4688
	MIN.	1/4	5/16	3/8	9/32	11/32	13/32	15/32	15/32
		3/32	3/32	3/32	3/16	3/16	3/16	3/16	3/16
O.D. RANGE B	NOM. DEC. RANGE	.0938	.0938	.0938	.1875	.1875	.1875	.1875	.1875
		3/8	7/16	1/2	7/16	1/2	9/16	5/8	3/4
		.3748	.4373	.4998	.4373	.4998	.5623	.6248	.7498
LENGTH C - SHANK EXTENDS FROM COLLAR - INCHES	3/8	A-21101		A-21301	A-22101			A-22401	
	1/2	A-21102	A-21202	A-21302	A-22102	A-22202		A-22402	
	5/8	A-21103	A-21203	A-21303	A-22103	A-22203	A-22303	A-22403	
	3/4	A-21104	A-21204	A-21304	A-22104	A-22204	A-22304	A-22404	A-22504
	7/8	A-21105	A-21205	A-21305	A-22105	A-22205	A-22305	A-22405	A-22505
	1	A-21106	A-21206	A-21306	A-22106	A-22206	A-22306	A-22406	A-22506
	1-1/16	A-21107		A-21307					
	1-1/8	A-21108	A-21208	A-21308	A-22108	A-22208	A-22308	A-22408	A-22508
	1-3/16							A-22409	
	1-1/4	A-21110	A-21210	A-21310	A-22110	A-22210	A-22310	A-22410	A-22510
	1-3/8	A-21111	A-21211	A-21311	A-22111	A-22111	A-22311	A-22411	A-22511
	1-7/16								
	1-1/2	A-21113	A-21213	A-21313	A-22113	A-22213	A-22313	A-22413	A-22513
	1-5/8	A-21114	A-21214	A-21314	A-22114	A-22214	A-22314	A-22414	A-22514
	1-3/4	A-21115	A-21215	A-21315	A-22115	A-22215	A-22315	A-22415	A-22515
	1-7/8	A-21116	A-21216	A-21316	A-22116	A-22216	A-22316	A-22416	A-22516
	1-15/16								
	2	A-21118	A-21218	A-21318	A-22118	A-22218	A-22318	A-22418	A-22518
	2-1/8	A-21119	A-21219	A-21319	A-22119	A-22219	A-22319	A-22419	A-22519
	2-1/4	A-21120	A-21220	A-21320	A-22120	A-22200	A-22320	A-22420	A-22520
	2-3/8	A-21121	A-21221	A-21321	A-22121	A-22221	A-22321	A-22421	A-22521
	2-1/2	A-21122	A-21222	A-21322	A-22122	A-22222	A-22322	A-22422	A-22522
	2-5/8								
	2-3/4	A-21124	A-21224	A-21324	A-22124	A-22224	A-22324	A-22424	A-22524
	3	A-21125	A-21225	A-21325	A-22125	A-22225	A-22325	A-22425	A-22525
	3-1/4	A-21126	A-21226	A-21326	A-22126	A-22226	A-22326	A-22426	A-22526
	3-1/2				A-22127	A-22227	A-22327	A-22427	A-22527
	3-3/4				A-22128	A-22228	A-22328	A-22428	A-22528
	4				A-22129	A-22229	A-22329	A-22429	A-22529
	5			A-21330	A-22130	A-22230	A-22330	A-22430	A-22530
	6	A-21131			A-22131	A-22231	A-22331	A-22431	A-22531
	STANDARD LINER BUSHINGS		LL-21100 (Matches A-21107 tip)		LL-21300 (Matches A-21307 tip)			LL-22400 (Matches A-22409 tip)	
	LOCK LINERS		14441		14442			14443	
	HELICAL LINER BUSHINGS - METALS		HAL-13212	HAL-14808	HAL-14808	HAL-24808	HAL-24808	HAL-25210	HAL-25610
	HELICAL LINER BUSHINGS - PLASTICS		HALD-13212	HALD-14808	HALD-14808	HALD-24808	HALD-24808	HALD-25210	HALD-25610
	LOCK RINGS		LR-52101	LR-52103	LR-52103	LR-52105	LR-52105	LR-52104	LR-52105
LOCK LINERS		LL-21100	LL-21200	LL-21300	LL-22100	LL-22200	LL-22300	LL-22400	
LOCK SCREWS		16531	16531	16531	16532	16532	16532	16532	
HEADLESS BUSHINGS		19936	19937	19938	19937	19938	19939	19940	

AIR FEED BUSHINGS

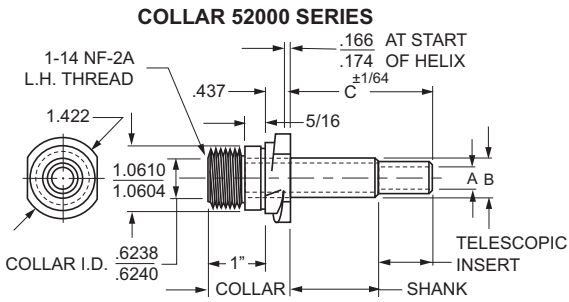
COLLAR-23000 SERIES						COLLAR-24000 SERIES									COLLAR-25000 SERIES					
.4688	.5312	.5937	.6562	.7187	.7187	.4062	.5312	.5937	.6562	.7812	.9062	.9375	1.0000	.9375	1.0313	1.1562	1.2812	1.4688	1.4688	
15/32	17/32	19/32	21/32	23/32	23/32	13/32	17/32	19/32	21/32	25/32	29/32	15/16	1	15/16	1-1/32	1-5/32	1-9/32	1-15/32	1-15/32	
1/4	1/4	1/4	1/4	1/4	1/4	5/16	5/16	5/16	5/16	5/16	5/16	5/16	5/16	5/16	3/8	3/8	3/8	3/8	3/8	
.2500	.2500	.2500	.2500	.2500	.2500	.3125	.3125	.3125	.3125	.3125	.3125	.3125	.3125	.3125	.3750	.3750	.3750	.3750	.3750	
5/8	3/4	13/16	7/8	1	1-1/8	5/8	3/4	13/16	7/8	1	1-1/8	1-1/4	1-3/8	1-1/2	1-1/4	1-3/8	1-1/2	1-3/4	2	
.6248	.7498	.8123	.8748	.9998	1.1248	.6248	.7498	.8123	.8748	.9998	1.1248	1.2498	1.3748	1.4998	1.2498	1.3748	1.4998	1.7498	1.9998	
.6245	.7495	.8120	.8745	.9995	1.1245	.6245	.7495	.8120	.8745	.9995	1.1245	1.2495	1.3745	1.4995	1.2495	1.3745	1.4995	1.7495	1.9995	
																				3/8
																				1/2
						A-24103														5/8
A-23004	A-23104	A-23204	A-23304			A-24104	A-24304	A-24204												3/4
A-23005	A-23105	A-23205	A-23305			A-24105	A-24305	A-24205	A-24405											7/8
A-23006	A-23106	A-23206	A-23306	A-23406	A-23506	A-24106	A-24306	A-24206	A-24406	A-24506	A-24606		A-24906	A-24806						1
																				1-1/16
A-23008	A-23108	A-23208	A-23308	A-23408	A-23508	A-24108	A-24308	A-24208	A-24408	A-24508	A-24608		A-24908							1-1/8
																				1-3/16
A-23010	A-23110	A-23210	A-23310	A-23410	A-23510	A-24110	A-24310	A-24210	A-24410	A-24510	A-24610	A-24710		A-25110						1-1/4
A-23011	A-23111	A-23211	A-23311	A-23411	A-23511	A-24111	A-24311	A-24211	A-24411	A-23511	A-23611	A-24711	A-24911	A-24811	A-25111	A-25211				1-3/8
			A-23312																	1-7/16
A-23013	A-23113	A-23213	A-23313	A-23413	A-23513	A-24113	A-24313	A-24213	A-24413	A-24513	A-24613	A-24713	A-24913	A-24813	A-25113	A-25213	A-25313			1-1/2
A-23014	A-23114	A-23214	A-23314	A-23414	A-23514	A-24114	A-24314	A-24214	A-24414	A-24514	A-24614	A-24714	A-24914	A-24814	A-25114	A-25214	A-25314			1-5/8
A-23015	A-23115	A-23215	A-23315	A-23415	A23515	A-24115	A-24315	A-24215	A-24415	A24515	A24615	A24715	A24915	A24815	A-25115	A-25215	A-25315	A-25415		1-3/4
A-23016	A-23116	A-23216	A-23316	A-23416	A-23516	A-24116	A-24316	A-24216	A-24416	A-24516	A-24616	A-24716	A-24916	A-24816	A-25116	A-25216	A-25316	A-25416		1-7/8
					A-23517						A-24617			A-24817						1-15/16
A-23018	A-23118	A-23218	A-23318	A-23418	A-23518	A-24118	A-24318	A-24218	A-24418	A-24518	A-24618	A-24718	A-24918	A-24818	A-25118	A-25218	A-25318	A-25418	A-25518	2
A-23019	A-23119	A-23219	A-23319	A23419	A-23519	A-24119	A-24319	A-24219	A24419	A-24519	A-24619	A-24719	A-24919	A-24819	A-25119	A-25219	A-25319	A25419	A-25519	2-1/8
A-23020	A-23120	A-23220	A-23320	A-23420	A-23520	A-24120	A-24320	A-24220	A-24420	A-24520	A-24620	A-24720	A-24920	A-24820	A-25120	A-25220	A-25320	A-25420	A-25520	2-1/4
A-23021	A-23121	A-23221	A-23321	A-23421	A-23521	A-24121	A-24321	A-24221	A-24421	A-24521	A-24621	A-24721	A-24921	A-24821	A-25121	A-25221	A-25321	A-25421	A-25521	2-3/8
A-23022	A-23122	A-23222	A-23322	A-23422	A-23522	A-24122	A-24322	A-24222	A-24422	A-24522	A-24622	A-24722	A-24922	A-24822	A-25122	A-25222	A-25322	A-25422	A-25522	2-1/2
																			A-25523	2-5/8
A-23024	A-23124	A-23224	A-23324	A-23424	A-23524	A-24124	A-24324	A-24224	A-24424	A-24524	A-24624	A-24724	A-24924	A-24824	A-25124	A-25224	A-25324	A-25424	A-25524	2-3/4
A-23025	A-23125	A-23225	A-23325	A-23425	A-23525	A-24125	A-24325	A-24225	A-24425	A-24525	A-24625	A-24725	A-24925	A-24825	A-25125	A-25225	A-25325	A-25425	A-25525	3
A-23026	A-23126	A-23226	A-23326	A-23426	A-23526	A-24126	A-24326	A-24226	A-24426	A-24526	A-24626	A-24726	A-24926	A-24826	A-25126	A-25226	A-25326	A-25426	A-25526	3-1/4
A-23027	A-23127	A-23227	A-23327	A-23427	A-23527	A-24127	A-24327	A-24227	A-24427	A-24527	A-24627	A-24727	A-24927	A-24827	A-25127	A-25227	A-25327	A-25427	A-25527	3-1/2
A-23028	A-23128	A-23228	A-23328	A-23428	A-23528	A-24128	A-24328	A-24228	A-24428	A-24528	A-24628	A-24728	A-24928	A-24828	A-25128	A-25228	A-25328	A-25428	A-25528	3-3/4
A-23029	A-23129	A-23229	A-23329	A-23429	A-23529	A-24129	A-24329	A-24229	A-24429	A-24529	A-24629	A-24729	A-24929	A-24829	A-25129	A-25229	A-25329	A-25429	A-25529	4
A-23030	A-23130	A-23230	A-23330	A-23430	A-23530	A-24130	A-24330	A-24230	A-24430	A-24530	A-24630	A-24730	A-24930	A-24830	A-25130	A-25230	A-25330	A-25430	A-25530	5
A-23031	A-23131	A-23231	A-23331	A-23431	A-23531	A-24131	A-24331	A-24231	A-24431	A-24531	A-24631	A-24731	A-24931	A-24831	A-25131	A-25231	A-25331	A-25431	A-25531	6
			LL-23300 (Matches A-23312 tip)		LL-23500 (Matches A-23517 tip)						LL-24600 (Matches A-24617 tip)			LL-24800 (Matches A-24817 tip)					LL-25500 (Matches A-25523 tip)	
			14445		14446						14446			14447					14448	
HAL-35610	HAL-36410	HAL-36410	HAL-38016	HAL-39616	HAL-39624	HAL-45616	HAL-46416	HAL-48016	HAL-48016	HAL-48016	HAL-48816	HAL-49616	HAL-411216	HAL-412816	HAL-25100	HAL-25200	HAL-25300	HAL-25400	HAL-25500	
HALD-35610	HALD-36410	HALD-36410	HALD-38016	HALD-39616	HALD-39624	HALD-45616	HALD-46416	HALD-46416	HALD-48016	HALD-48016	HALD-48816	HALD-49616	HALD-411216	HALD-412816	HALD-25100	HALD-25200	HALD-25300	HALD-25400	HALD-25500	
LR-52108	LR-52107	LR-52107	LR-52109	LR-52112	LR-52110	LR-52105	LR-52107	LR-52107	LR-52109	LR-52109	LR-52110	LR-52112	LR-52116	LR-52118	LR-52121	LR-52121	LR-52121	LR-52121	LR-52121	
	LL-23100	LL-23200	LL-23300	LL-23400	LL-23500	LL-24100	LL-24300	LL-24300	LL-24400	LL-24500	LL-24600	LL-24700		LL-24800	LL-25100	LL-25200	LL-25300	LL-25400	LL-25500	
16532	16532	16532	16532	16532	16532	16532	16532	16532	16532	16532	16532	16532	16532	16532	16530	16530	16530	16530	16530	
19940	19942	19943	19944	19945	19946	19947	19949	19943	19950	19951	19946	19952	19954	19955	19953	19954	19955	19956		

TELESCOPING AIR FEED BUSHINGS

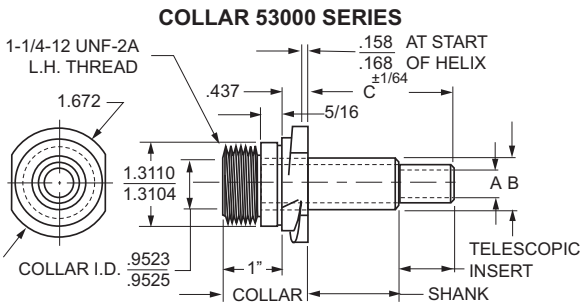
NEW



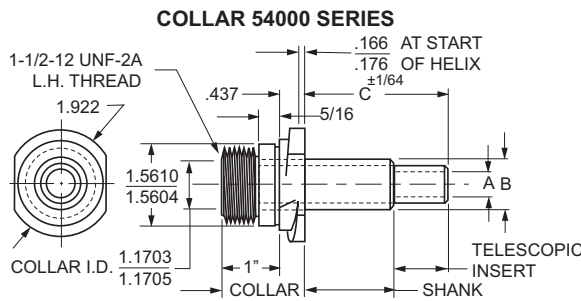
NEW



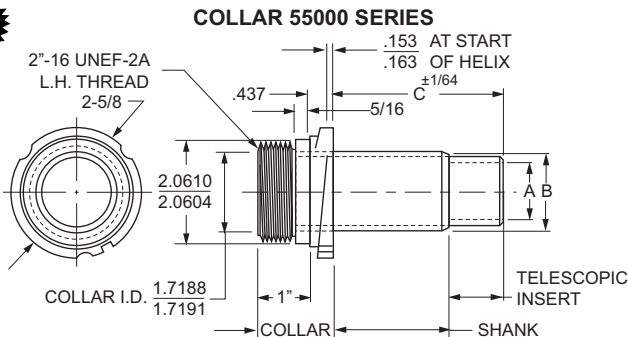
NEW



NEW



NEW



		COLLAR-51000 SERIES			COLLAR-52000 SERIES			
I.D. RANGE A	MAX.	.1360	.1875	.2344	.3160	.3750	.4219	.4219
	MIN.	.29	3/16	15/64	0	3/8	27/64	27/64
		3/32	3/32	3/32	3/16	3/16	3/16	3/16
O.D. RANGE B	NOM. DEC. RANGE	.0938	.0938	.0938	.1875	.1875	.1875	.1875
		3/8	7/16	1/2	5/8	3/4	13/16	7/8
		.3748	.4373	.4998	.6248	.7498	.8123	.8748
		.3745	.4370	.4995	.6245	.7495	.8120	.8745
LENGTH C - SHANK EXTENDS FROM COLLAR - INCHES	5/8 1	A-51106	A-51206	A-51306	A-52406	A-52506	A-52606	A-52706
	7/8 1-1/2	A-51113	A-51213	A-51313	A-52413	A-52513	A-52613	A-52713
	1-3/8 2	A-51118	A-51218	A-51318	A-52418	A-52518	A-52618	A-52718
	1-7/8 2-1/2	A-51122	A-51222	A-51322	A-52422	A-52522	A-52622	A-52722
	2-1/4 3	A-51125	A-51225	A-51325	A-52425	A-52525	A-52625	A-52725
	2-3/4 3-1/2	A-51127	A-51227	A-51327	A-52427	A-52527	A-52627	A-52727
	3-1/4 4	A-51129	A-51229	A-51329	A-52429	A-52529	A-52629	A-52729
	3-3/4 4-1/2	A-51129B	A-51229B	A-51329B	A-52429B	A-52529B	A-52629B	A-52729B
	4-1/4 5	A-51130	A-51230	A-51330	A-52430	A-52530	A-52630	A-52730
	4-3/4 5-1/2	A-51130B	A-51230B	A-51330B	A-52430B	A-52530B	A-52630B	A-52730B
	5-1/4 6	A-51131	A-51231	A-51331	A-52431	A-52531	A-52631	A-52731
	HELICAL LINER BUSHINGS - METALS		HAL-13212	HAL-14808	HAL-14808	HAL-25610	HAL-26410	HAL-26416
HELICAL LINER BUSHINGS - PLASTICS		HALD-13212	HALD-14808	HALD-14808	HALD-25610	HALD-26410	HALD-26416	HALD-27216
LOCK RINGS		LR-52101	LR-52103	LR-52103	LR-52105	LR-52107	LR-52107	LR-52108
LOCK LINERS		LL-21100	LL-21200	LL-21300	LL-21400			
LOCK SCREWS		16531	16531	16531	16532	16532	16532	16532
HEADLESS BUSHINGS		19936	19937	19938	19940	19941	19943	19944

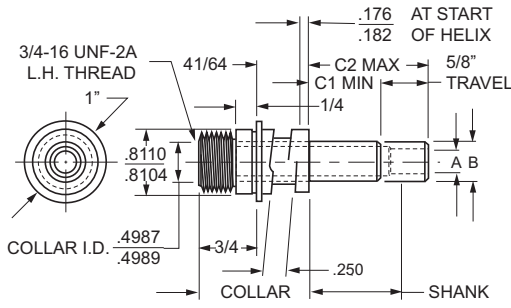
TELESCOPING AIR FEED BUSHINGS



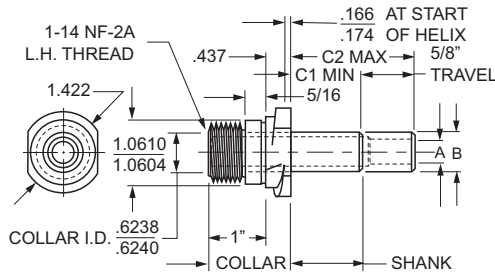
COLLAR-53000 SERIES							COLLAR-54000 SERIES						COLLAR-55000 SERIES					
.4219	.4375	.4688	.5000	.5937	.5937	.8125	.4375	.5937	.7187	.8125	.9062	1.0625	.8125	.9062	1.0625	1.2500	1.4062	
27/64	7/16	15/32	1/2	19/32	23/32	13/16	7/16	19/32	23/32	13/16	29/32	1-1/16	13/16	29/32	1-1/16	1-1/4	1-13/32	
3/16	3/16	3/16	3/16	3/16	3/16	3/16	5/16	5/16	5/16	5/16	5/16	5/16	3/8	3/8	3/8	3/8	3/8	
.1875	.1875	.1875	.1875	.1875	.1875	.1875	.3125	.3125	.3125	.3125	.3125	.3125	.3750	.3750	.3750	.3750	.3750	
5/8	3/4	13/16	7/8	1	1-1/8	1-1/4	13/16	1	1-1/8	1-1/4	1-3/8	1-1/2	1-1/4	1-3/8	1-1/2	1-3/4	2	
.6248	.7498	.8123	.8748	.9998	1.1248	1.2498	.8123	.9998	1.1248	1.2498	1.3748	1.4998	1.2498	1.3748	1.4998	1.7498	1.9998	
.6245	.7495	.8120	.8745	.9995	1.1245	1.2495	.8120	.9995	1.1245	1.2495	1.3745	1.4995	1.2495	1.3745	1.4995	1.7495	1.9995	
A-53006	A-53106	A-53206	A-53306	A-53406	A-53506	A-53606	A-54206	A-54506	A-54606	A-54706	A-54906	A-54806	A-55106	A-55206	A-55306	A-55406	A-55506	5/8 1
A-53013	A-53113	A-53213	A-53313	A-53413	A-53513	A-53613	A-54213	A-54513	A-54613	A-54713	A-54913	A-54813	A-55113	A-55213	A-55313	A-55413	A-55513	7/8 1-1/2
A-53018	A-53118	A-53218	A-53318	A-53418	A-53518	A-53618	A-54218	A-54518	A-54618	A-54718	A-54918	A-54818	A-55118	A-55218	A-55318	A-55418	A-55518	1-3/8 2
A-53022	A-53122	A-53222	A-53322	A-53422	A-53522	A-53622	A-54222	A-543522	A-54622	A-54722	A-54922	A-54822	A-55122	A-55222	A-55322	A-55422	A-55522	1-7/8 2-1/2
A-53025	A-53125	A-53225	A-53325	A-53425	A-53525	A-53625	A-54225	A-54525	A-54625	A-54725	A-54925	A-54825	A-55125	A-55225	A-55325	A-55425	A-55525	2-1/4 3
A-53027	A-53127	A-53227	A-53327	A-53427	A-53527	A-53627	A-54227	A-54527	A-54627	A-54727	A-54927	A-54827	A-55127	A-55227	A-55327	A-55427	A-55527	2-3/4 3-1/2
A-53029	A-53129	A-53229	A-53329	A-53429	A-53529	A-53629	A-54229	A-54529	A-54629	A-54729	A-54929	A-54829	A-55129	A-55229	A-55329	A-55429	A-55529	3-1/4 4
A-53029B	A-53129B	A-53229B	A-53329B	A-53429B	A-53529B	A-53629B	A-54229B	A-54529B	A-54629B	A-54729B	A-54929B	A-54829B	A-55129B	A-55229B	A-55329B	A-55429B	A-55529B	3-3/4 4-1/2
A-53030	A-53130	A-53230	A-53330	A-53430	A-53530	A-53630	A-54230	A-54530	A-54630	A-54730	A-54930	A-54830	A-55130	A-55230	A-55330	A-55430	A-55530	4-1/4 5
A-53030B	A-53130B	A-53230B	A-53330B	A-53430B	A-53530B	A-53630B	A-54230B	A-54530B	A-54630B	A-54730B	A-54930B	A-54830B	A-55130B	A-55230B	A-55330B	A-55430B	A-55530B	4-3/4 5-1/2
A-53031	A-53131	A-53231	A-53331	A-53431	A-53531	A-53631	A-54231	A-54531	A-54631	A-54731	A-54931	A-54831	A-55131	A-55231	A-55331	A-55431	A-55531	5-1/4 6
HAL-35610	HAL-36410	HAL-36410	HAL-38016	HAL-39616	HAL-38816	HAL-39616	HAL-48016	HAL-48016	HAL-48816	HAL-49616	HAL-411216	HAL-412816	HAL-25100	HAL-25200	HAL-25300	HAL-25400	HAL-25500	
HALD-35610	HALD-36410	HALD-36410	HALD-38016	HALD-39616	HALD-38816	HALD-39616	HALD-48016	HALD-48116	HALD-48016	HALD-48816	HALD-411216	HALD-412816	HALD-25100	HALD-25200	HALD-25300	HALD-25400	HALD-25500	
LR-52108	LR-52107	LR-52107	LR-52112	LR-52112	LR-52110	LR-52111	LR-52109	LR-52109	LR-52110	LR-52112	LR-52116	LR-52118	LR-52120	LR-52120	LR-52120	LR-52120	LR-52121	
	LL-23100	LL-23200	LL-23300	LL-23400	LL-23500		LL-24500	LL-24500	LL-24600	LL-24700		LL-24800	LL-25100	LL-25200	LL-25300	LL-25400	LL-25500	
16532	16532	16532	16532	16532	16532	16532	16532	16532	16532	16532	16532	16530	16530	16530	16530	16530	16530	
19940	19942	19943	19944	19945	19946	19952	19945	19945	19946	19954	19955	19952	19954	19955	19956	19957		

TELESCOPING AIR FEED BUSHINGS

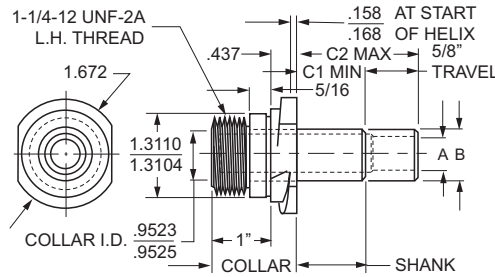
COLLAR 91000 SERIES



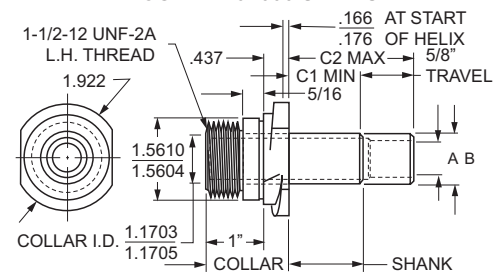
COLLAR 92000 SERIES



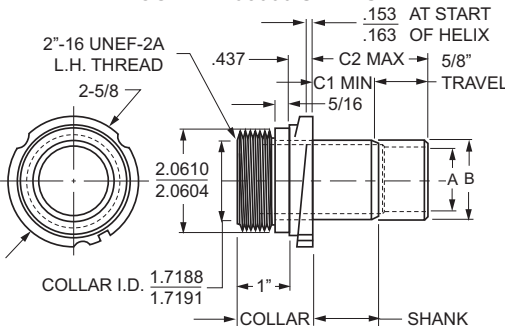
COLLAR 93000 SERIES



COLLAR 94000 SERIES



COLLAR 95000 SERIES



NOTE: These parts are considered as specials and are not returnable.

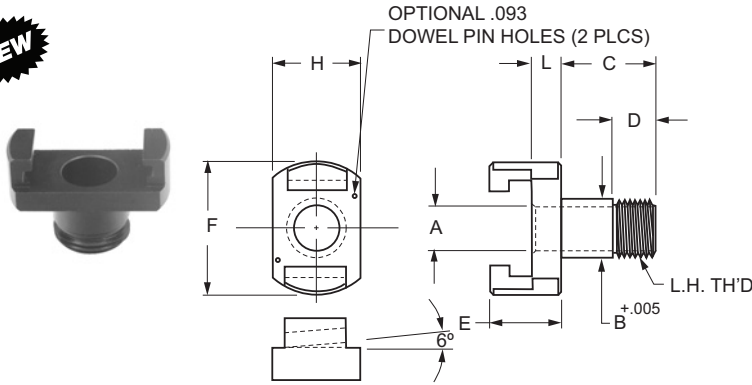
		COLLAR-91000 SERIES			COLLAR-92000 SERIES					
I.D. RANGE A	MAX.	.2500	.3125	.3750	.2812	.3437	.4062	.4688	.5000	
	MIN.	1/4	5/16	3/8	9/32	11/32	13/32	15/32	1/2	
O.D. RANGE B	NOM. DEC. RANGE	3/8	7/16	1/2	7/16	1/2	9/16	5/8	3/4	
		.3748	.4373	.4998	.4373	.4998	.5623	.6248	.7498	
		.3745	.4370	.4995	.4370	.4995	.5620	.6245	.7495	
LENGTH C - SHANK EXTENDS FROM COLLAR - INCHES	0	1/2	A-91102	A-91202	A-91302	A-92102	A-92202	A-92302	A-92402	A-92502
	0	5/8	A-91103	A-91203	A-91303	A-92103	A-92203	A-92303	A-92403	A-92503
	1/8	3/4	A-91104	A-91204	A-91304	A-92104	A-92204	A-92304	A-92404	A-92504
	1/4	7/8	A-91105	A-91205	A-91305	A-92105	A-92205	A-92305	A-92405	A-92505
	3/4	1	A-91106	A-91206	A-91306	A-92106	A-92206	A-92306	A-92406	A-92506
	7/16	1-1/16	A-91107	A-91207	A-91307	A-92107	A-92207	A-92307	A-92407	A-92507
	1/2	1-1/8	A-91108	A-91208	A-91308	A-92108	A-92208	A-92308	A-92408	A-92508
	9/16	1-3/16	A-91109	A-91209	A-91309	A-92109	A-92209	A-92309	A-92409	A-92509
	5/8	1-1/4	A-91110	A-91210	A-91310	A-92110	A-92210	A-92310	A-92410	A-92510
	3/4	1-3/8	A-91111	A-91211	A-91311	A-92111	A-92211	A-92311	A-92411	A-92511
	13/16	1-7/16	A-91112	A-91212	A-91312	A-92112	A-92212	A-92312	A-92412	A-92512
	7/8	1-1/2	A-91113	A-91213	A-91313	A-92113	A-92213	A-92313	A-92413	A-92513
	1	1-5/8	A-91114	A-91214	A-91314	A-92114	A-92214	A-92314	A-92414	A-92514
	1-1/8	1-3/4	A-91115	A-91215	A-91315	A-92115	A-92215	A-92315	A-92415	A-92515
	1-1/4	1-7/8	A-91116	A-91216	A-91316	A-92116	A-92216	A-92316	A-92416	A-92516
	1-5/16	1-15/16	A-91117	A-91217	A-91317	A-92117	A-92217	A-92317	A-92417	A-92517
	1-3/8	2	A-91118	A-91218	A-91318	A-92118	A-92218	A-92318	A-92418	A-92518
	1-1/2	2-1/8	A-91119	A-91219	A-91319	A-92119	A-92219	A-92319	A-92419	A-92519
	1-5/8	2-1/4	A-91120	A-91220	A-91320	A-92120	A-92220	A-92320	A-92420	A-92520
	1-3/4	2-3/8	A-91121	A-91221	A-91321	A-92121	A-92221	A-92321	A-92421	A-92521
	1-7/8	2-1/2	A-91122	A-91222	A-91322	A-92122	A-92222	A-92322	A-92422	A-92522
	2	2-5/8	A-91123	A-91223	A-91323	A-92123	A-92223	A-92323	A-92423	A-92523
	2-1/8	2-3/4	A-91124	A-91224	A-91324	A-92124	A-92224	A-92324	A-92424	A-92524
	2-3/8	3	A-91125	A-91225	A-91325	A-92125	A-92225	A-92325	A-92425	A-92525
	5-5/8	3-1/4	A-91126	A-91226	A-91326	A-92126	A-92226	A-92326	A-92426	A-92526
	2-7/8	3-1/2	A-91127	A-91227	A-91327	A-92127	A-92227	A-92327	A-92427	A-92527
	3-1/8	3-3/4	A-91128	A-91228	A-91328	A-92128	A-92228	A-92328	A-92428	A-92528
	3-3/8	4	A-91129	A-91229	A-91329	A-92129	A-92229	A-92329	A-92429	A-92529
	3-5/8	4-1/4	A-91129A	A-91229A	A-91329A	A-92129A	A-92229A	A-92329A	A-92429A	A-92529A
	3-7/8	4-1/2	A-91129B	A-91229B	A-91329B	A-92129B	A-92229B	A-92329B	A-92429B	A-92529B
4-1/8	4-3/4	A-91129C	A-91229C	A-91329C	A-92129C	A-92229C	A-92329C	A-92429C	A-92529C	
4-3/8	5	A-91130	A-91230	A-91330	A-92130	A-92230	A-92330	A-92430	A-92530	
4-5/8	5-1/4	A-91130A	A-91230A	A-91330A	A-92130A	A-92230A	A-92330A	A-92430A	A-92530A	
4-7/5	5-1/2	A-91130B	A-91230B	A-91330B	A-92130B	A-92230B	A-92330B	A-92430B	A-92530B	
5-1/8	5-3/4	A-91130C	A-91230C	A-91330C	A-92130C	A-92230C	A-92330C	A-92430C	A-92530C	
5-3/8	6	A-91131	A-91231	A-91331	A-92131	A-92231	A-92331	A-92431	A-92531	
HELICAL LINER BUSHINGS - METALS		HAL-13212	HAL-14808	HAL-14808	HAL-24808	HAL-24808	HAL-25210	HAL-25610	HAL-26410	
HELICAL LINER BUSHINGS - PLASTICS		HALD-13212	HALD-14808	HALD-14808	HALD-24808	HALD-24808	HALD-25210	HALD-25610	HALD-26410	
LOCK RINGS		LR-52101	LR-52103	LR-52103	LR-52105	LR-52105	LR-52104	LR-52105	LR-52107	
LOCK LINERS		LL-21100	LL-21200	LL-21300	LL-22100	LL-22200	LL-22300	LL-22400		
LOCK SCREWS		16531	16531	16531	16532	16532	16532	16532	16532	
HEADLESS BUSHINGS		19936	19937	19938	19937	19938	19939	19940	19941	

TELESCOPING AIR FEED BUSHINGS

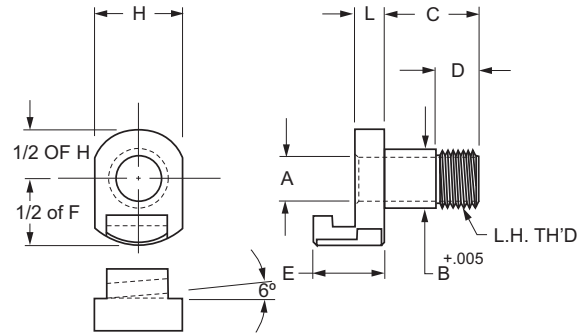
COLLAR-93000 SERIES						COLLAR-94000 SERIES						COLLAR-95000 SERIES							
.4688	.5312	.5937	.6562	.7187	.7187	.8125	.5312	.5937	.6562	.7812	.9062	.9375	1.0313	1.1562	1.2812	1.4688			
15/32	17/32	19/32	21/32	23/32	23/32	13/32	17/32	19/16	21/32	25/32	29/32	15/16	1-1/32	1-5/32	1-9/32	1-15/32			
1/4	1/4	1/4	1/4	1/4	1/4	5/16	5/16	5/16	5/16	5/16	5/16	5/16	3/8	3/8	3/8	3/8			
.2500	.2500	.2500	.2500	.2500	.2500	.3125	.3125	.3125	.3125	.3125	.3125	.3125	.3750	.3750	.3750	.3750			
5/8	3/4	13/16	7/8	1	1-1/8	5/8	3/4	13/16	7/8	1	1-1/8	1-1/4	1-1/4	1-3/8	1-1/2	1-3/4			
.6248	.7498	.8123	.8748	.9998	1.1248	.6248	.7498	.8123	.8748	.9998	1.1248	1.2498	1.2498	1.3748	1.4998	1.7498			
.6245	.7495	.8120	.8745	.9995	1.1245	.6245	.7495	.8120	.8745	.9995	1.1245	1.2495	1.2495	1.3745	1.4995	1.7495			
A-93002	A-93102	A-93202	A-92302	A-93402	A-93502	A-94102	A-94302	A-94202	A-94402	A-94502	A-94602	A-94702	A-95102	A-95202	A-95302	A-95402	0	1/2	
A-93003	A-93103	A-93203	A-93303	A-93403	A-93503	A-94103	A-94303	A-94203	A-94403	A-94503	A-94603	A-94703	A-95103	A-95203	A-95303	A-95403	0	5/8	
A-93004	A-93104	A-93204	A-93304	A-93404	A-93504	A-94104	A-94304	A-94204	A-94404	A-94504	A-94604	A-94704	A-95104	A-95204	A-95304	A-95404	1/8	3/4	
A-93005	A-93105	A-93205	A-93305	A-93405	A-93505	A-94105	A-94305	A-94205	A-94405	A-94505	A-94605	A-94705	A-95105	A-95205	A-95305	A-95405	1/4	7/8	
A-93006	A-93106	A-93206	A-93306	A-93406	A-93506	A-94106	A-94306	A-94206	A-94406	A-94506	A-94606	A-94706	A-95106	A-95206	A-95306	A-95406	3/4	1	
A-93007	A-93107	A-93207	A-93307	A-93407	A-93507	A-94107	A-94307	A-94207	A-94407	A-94507	A-94607	A-94707	A-95107	A-95207	A-95307	A-95407	7/16	1-1/16	
A-93008	A-93108	A-93208	A-93308	A-93408	A-93508	A-94108	A-94308	A-94208	A-94408	A-94508	A-94608	A-94708	A-95108	A-95208	A-95308	A-95408	1/2	1-1/8	
A-93009	A-93109	A-93209	A-93309	A-93409	A-93509	A-94109	A-94309	A-94209	A-94409	A-94509	A-94609	A-94709	A-95109	A-95209	A-95309	A-95409	9/16	1-3/16	
A-93010	A-93110	A-93210	A-93310	A-93410	A-93510	A-94110	A-94310	A-94210	A-94410	A-94510	A-94610	A-94710	A-95110	A-95210	A-95310	A-95410	5/8	1-1/4	
A-93011	A-93111	A-93211	A-93311	A-93411	A-93511	A-94111	A-94311	A-94211	A-94411	A-94511	A-94611	A-94711	A-95111	A-95211	A-95311	A-95411	3/4	1-3/8	
A-93012	A-93112	A-93212	A-93312	A-93412	A-93512	A-94112	A-94312	A-94212	A-94412	A-94512	A-94612	A-94712	A-95112	A-95212	A-95312	A-95412	13/16	1-7/16	
A-93013	A-93113	A-93213	A-93313	A-93413	A-93513	A-94113	A-94313	A-94213	A-94413	A-94513	A-94613	A-94713	A-95113	A-95213	A-95313	A-95413	7/8	1-1/2	
A-93014	A-93114	A-93214	A-93314	A-93414	A-93514	A-94114	A-94314	A-94214	A-94414	A-94514	A-94614	A-94714	A-95114	A-95214	A-95314	A-95414	1	1-5/8	
A-93015	A-93115	A-93215	A-93315	A-93415	A-93515	A-94115	A-94315	A-94215	A-94415	A-94515	A-94615	A-94715	A-95115	A-95215	A-95315	A-95415	1-1/8	1-3/4	
A-93016	A-93116	A-93216	A-93316	A-93416	A-93516	A-94116	A-94316	A-94216	A-94416	A-94516	A-94616	A-94716	A-95116	A-95216	A-95316	A-95416	1-1/4	1-7/8	
A-93017	A-93117	A-93217	A-93317	A-93417	A-93517	A-94117	A-94317	A-94217	A-94417	A-94517	A-94617	A-94717	A-95117	A-95217	A-95317	A-95417	1-5/16	1-15/16	
A-93018	A-93118	A-93218	A-93318	A-93418	A-93518	A-94118	A-94318	A-94218	A-94418	A-94518	A-94618	A-94718	A-95118	A-95218	A-95318	A-95418	1-3/8	2	
A-93019	A-93119	A-93219	A-93319	A-93419	A-93519	A-94119	A-94319	A-94219	A-94419	A-94519	A-94619	A-94719	A-95119	A-95219	A-95319	A-95419	1-1/2	2-1/8	
A-93020	A-93120	A-93220	A-93320	A-93420	A-93520	A-94120	A-94320	A-94220	A-94420	A-94520	A-94620	A-94720	A-95120	A-95220	A-95320	A-95420	1-5/8	2-1/4	
A-93021	A-93121	A-93221	A-93321	A-93421	A-93521	A-94121	A-94321	A-94221	A-94421	A-94521	A-94621	A-94721	A-95121	A-95221	A-95321	A-95421	1-3/4	2-3/8	
A-93022	A-93122	A-93222	A-93322	A-93422	A-93522	A-94122	A-94322	A-94222	A-94422	A-94522	A-94622	A-94722	A-95122	A-95222	A-95322	A-95422	1-7/8	2-1/2	
A-93023	A-93123	A-93223	A-93323	A-93423	A-93523	A-94123	A-94323	A-94223	A-94423	A-94523	A-94623	A-94723	A-95123	A-95223	A-95323	A-95423	2	2-5/8	
A-93024	A-93124	A-93224	A-93324	A-93424	A-93524	A-94124	A-94324	A-94224	A-94424	A-94524	A-94624	A-94724	A-95124	A-95224	A-95324	A-95424	2-1/8	2-3/4	
A-93025	A-93125	A-93225	A-93325	A-93425	A-93525	A-94125	A-94325	A-94225	A-94425	A-94525	A-94625	A-94725	A-95125	A-95225	A-95325	A-95425	2-3/8	3	
A-93026	A-93126	A-93226	A-93326	A-93426	A-93526	A-94126	A-94326	A-94226	A-94426	A-94526	A-94626	A-94726	A-95126	A-95226	A-95326	A-95426	5-5/8	3-1/4	
A-93027	A-93127	A-93227	A-93327	A-93427	A-93527	A-94127	A-94327	A-94227	A-94427	A-94527	A-94627	A-94727	A-95127	A-95227	A-95327	A-95427	2-7/8	3-1/2	
A-93028	A-93128	A-93228	A-93328	A-93428	A-93528	A-94128	A-94328	A-94228	A-94428	A-94528	A-94628	A-94728	A-95128	A-95228	A-95328	A-95428	3-1/8	3-3/4	
A-93029	A-93129	A-93229	A-93329	A-93429	A-93529	A-94129	A-94329	A-94229	A-94429	A-94529	A-94629	A-94729	A-95129	A-95229	A-95329	A-95429	3-3/8	4	
A-93029A	A-93129A	A-93229A	A-93329A	A-93429A	A-93529A	A-94129A	A-94329A	A-94229A	A-94429A	A-94529A	A-94629A	A-94729A	A-95129A	A-95229A	A-95329A	A-95429A	3-5/8	4-1/4	
A-93029B	A-93129B	A-93229B	A-93329B	A-93429B	A-93529B	A-94129B	A-94329B	A-94229B	A-94429B	A-94529B	A-94629B	A-94729B	A-95129B	A-95229B	A-95329B	A-95429B	3-7/8	4-1/2	
A-93029C	A-93129C	A-93229C	A-93329C	A-93429C	A-93529C	A-94129C	A-94329C	A-94229C	A-94429C	A-94529C	A-94629C	A-94729C	A-95129C	A-95229C	A-95329C	A-95429C	4-1/8	4-3/4	
A-93030	A-93130	A-93230	A-93330	A-93430	A-93530	A-94130	A-94330	A-94230	A-94430	A-94530	A-94630	A-94730	A-95130	A-95230	A-95330	A-95430	4-3/8	5	
A-93030A	A-93130A	A-93230A	A-93330A	A-93430A	A-93530A	A-94130A	A-94330A	A-94230A	A-94430A	A-94530A	A-94630A	A-94730A	A-95130A	A-95230A	A-95330A	A-95430A	4-5/8	5-1/4	
A-93030B	A-93130B	A-93230B	A-93330B	A-93430B	A-93530B	A-94130B	A-94330B	A-94230B	A-94430B	A-94530B	A-94630B	A-94730B	A-95130B	A-95230B	A-95330B	A-95430B	4-7/5	5-1/2	
A-93030C	A-93130C	A-93230C	A-93330C	A-93430C	A-93530C	A-94130C	A-94330C	A-94230C	A-94430C	A-94530C	A-94630C	A-94730C	A-95130C	A-95230C	A-95330C	A-95430C	5-1/8	5-3/4	
A-93031	A-93131	A-93231	A-93331	A-93431	A-93531	A-94131	A-94331	A-94231	A-94431	A-94531	A-94631	A-94731	A-95131	A-95231	A-95331	A-95431	5-3/8	6	
HAL-35610	HAL-36410	HAL-36410	HAL-38016	HAL-39616	HAL-39624	HAL-45616	HAL-46416	HAL-48016	HAL-48016	HAL-48016	HAL-48816	HAL-49616	HAL-25100	HAL-25200	HAL-25300	HAL-25400			
HALD-35610	HALD-36410	HALD-36410	HALD-38016	HALD-39616	HALD-39624	HALD-45616	HALD-46416	HALD-48016	HALD-48016	HALD-48016	HALD-48816	HALD-49616	HALD-25100	HALD-25200	HALD-25300	HALD-25400			
LR-52108	LR-52107	LR-52107	LR-52109	LR-52112	LR-52112	LR-52105	LR-52107	LR-52109	LR-52109	LR-52109	LR-52110	LR-52112	LR-52121	LR-52121	LR-52121	LR-52121			
	LL-23100	LL-23200	LL-23300	LL-23400	LL-23500	LL-24100	LL-24300	LL-24400	LL-24400	LL-24500	LL-24600	LL-24700	LL-25100	LL-25200	LL-25300	LL-25400			
16532	16532	16532	16532	16532	16532	16532	16532	16532	16532	16532	16532	16532	16530	16530	16530	16530			
19940	19942	19943	19944	19945	19946	19940	19942	19943	19944	19945	19946	19952	19952	19954	19955	19956			

ONE PIECE AIR FEED LOCK LINER: The one piece lock liner construction is more rigid than the lock screw type. Closer hole proximity is possible with the style. This locknut or imbedment type holds the drill units thrust and torque better than lock screws alone.

NEW

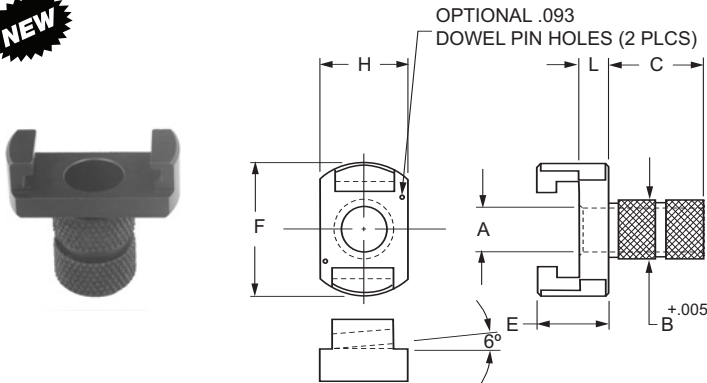


TYPE - HAL

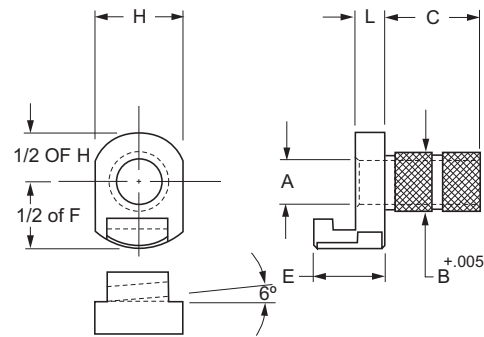


TYPE - HAL1

NEW



TYPE - HALD



TYPE - HALD1

Use HAL for the version for use with Metals and HALD for use with Plastic.

NOTE: Add DP for the optional dowel pin holes. Use HALDP or HALDDP respectively.

HELICAL AIR FEED LOCK LINERS													
P/N	A	B	C	*D	E	F	H	L	*LH THREAD	*LOCK NUT NO.**	MATCHING TIP	DRILL SIZE MIN	DRILL SIZE MAX
HAL-13208-3/8	.3752 / .3756	.4990	1/2	1/4	39/64	1-1/8	.505	.250	1/2-20	LR-52101	21000	3/32	1/4
HAL-13212-3/8	.3752 / .3756	.4990	3/4	5/16	39/64	1-1/8	.505	.250	1/2-20	LR-52101	21000	3/32	1/4
HAL-14808-7/16	.4377 / .4380	.7490	1/2	1/4	39/64	1-1/8	.755	.250	3/4-16	LR-52103	21000	3/32	5/16
HAL-14812-7/16	.4377 / .4380	.7490	3/4	5/16	39/64	1-1/8	.755	.250	3/4-16	LR-52103	21000	3/32	5/16
HAL-14808-1/2	.5002 / .5006	.7490	1/2	1/4	39/64	1-1/8	.755	.250	3/4-16	LR-52103	21000	3/32	3/8
HAL-14812-1/2	.5002 / .5006	.7490	3/4	5/16	39/64	1-1/8	.755	.250	3/4-16	LR-52103	21000	3/32	3/8
HAL-14816-1/2	.5000 / .5006	.7490	1	5/16	39/64	1-1/8	.755	.250	3/4-16	LR-52103	21000	3/32	3/8
HAL-24808-7/16	.4377 / .4381	.7490	1/2	1/4	39/64	1-13/16	.755	.250	3/4-16	LR-52103	22000	3/16	9/32
HAL-24812-7/16	.4377 / .4381	.7490	3/4	5/16	39/64	1-13/16	.755	.250	3/4-16	LR-52103	22000	3/16	9/32
HAL-24808-1/2	.5002 / .5006	.7490	1/2	1/4	39/64	1-13/16	.755	.250	3/4-16	LR-52103	22000	3/16	11/32
HAL-24812-1/2	.5002 / .5006	.7490	3/4	5/16	39/64	1-13/16	.755	.250	3/4-16	LR-52103	22000	3/16	11/32
HAL-25210-9/16	.5627 / .5631	.8117	5/8	5/16	39/64	1-13/16	.816	.250	13/16-16	LR-52104	22000	3/16	13/32
HAL-25612-1/2	.5002 / .5006	.8740	3/4	5/16	39/64	1-13/16	.880	.250	7/8-14	LR-52105	22000	3/16	11/32

* For use with HAL and HAL-1

NOTE: These parts are considered as specials and are not returnable.

** Order the Lock Ring separately.

AIR FEED ACCESSORIES

HELICAL AIR FEED LOCK LINERS - CONTINUED

P/N	A	B	C	*D	E	F	H	L	*LH THREAD	*LOCK NUT NO.**	MATCHING TIP	DRILL SIZE MIN	DRILL SIZE MAX
HAL-25610-5/8	.6252 .6256	.8740	5/5	5/16	39/64	1-13/16	.880	.250	7/8-14	LR-52105	22000	3/16	15/32
HAL-25612-5/8	.6252 .6256	.8740	3/4	5/16	39/64	1-13/16	.880	.250	7/8-14	LR-52105	22000	3/16	15/32
HAL-26410-3/4	.7503 .7507	.9990	5/8	5/16	39/64	1-13/16	1.005	.250	1-14	LR-52107	22000	3/16	15/32
HAL-26412-3/4	.7503 .7507	.9990	3/4	5/16	39/64	1-13/16	1.005	.250	1-14	LR-52107	22000	3/16	15/32
HAL-26416-3/4	.7503 .7507	.9990	1	5/16	39/64	1-13/16	1.005	.250	1-14	LR-52107	22000	3/16	15/32
HAL-26416-13/16	.8127 .8131	.9990	1	5/16	39/64	1-13/16	1.005	.250	1-14	LR-52107	22000	3/16	15/32
HAL-27216-7/8	.8753 .8757	1.1240	1	5/16	39/64	1-13/16	1.130	.250	1-1/8-16	LR-52108	22000	3/16	15/32
HAL-35610-5/8	.6252 .6256	.8740	5/8	1	5/8	2-1/8	1.005	.250	7/8-14	LR-52105	23000	1/4	17/32
HAL-35616-5/8	.6252 .6256	.8740	1	5/16	5/8	2-1/8	1.005	.250	7/8-14	LR-52105	23000	1/4	17/32
HAL-36410-3/4	.7503 .7507	.9990	5/8	5/16	5/8	2-1/8	1.005	.250	1-14	LR-52107	23000	1/4	17/32
HAL-36416-3/4	.7503 .7507	.9990	1	5/16	5/8	2-1/8	1.005	.250	1-14	LR-52107	23000	1/4	17/32
HAL-36410-13/16	.8125 .8132	.9990	5/8	5/16	5/8	2-1/8	1.005	.250	1-14	LR-52107	23000	1/4	19/32
HAL-36416-13/16	.8125 .8132	.9990	1	5/16	5/8	2-1/8	1.005	.250	1-14	LR-52107	23000	1/4	19/32
HAL-38016-7/8	.8753 .8757	1.2490	1	5/16	5/8	2-1/8	1.255	.250	1-1/4-12	LR-52109	23000	1/4	21/32
HAL-38816-1-1/8	1.1254 1.1257	1.3740	1	5/16	5/8	2-1/8	1.380	.250	1-3/8-16	LR-52110	23000	1/4	23/32
HAL-38820-1-1/8	1.1254 1.1257	1.3740	1-1/4	5/16	5/8	2-1/8	1.380	.250	1-3/8-16	LR-52110	23000	1/4	23/32
HAL-39616-1	1.0004 1.0007	1.4990	1	5/16	5/8	2-1/8	1.505	.250	1-1/2-16	LR-52112	23000	1/4	23/32
HAL-39616-1-1/4	1.2505 1.2509	1.4990	1	5/16	5/8	2-1/8	1.505	.250	1-1/2-16	LR-52112	23000	1/4	23/32
HAL-39620-1-1/4	1.2505 1.2509	1.4990	1-1/4	5/16	5/8	2-1/8	1.505	.250	1-1/2-16	LR-52112	23000	1/4	23/32
HAL-39624-1	1.0004 1.0007	1.4990	1-1/2	5/16	5/8	2-1/8	1.505	.250	1-1/2-16	LR-52112	23000	1/4	23/32
HAL-39624-1-1/8	1.1254 1.1257	1.4990	1-1/2	5/16	5/8	2-1/8	1.505	.250	1-1/2-16	LR-52112	23000	1/4	23/32
HAL-39628-1-1/4	1.2505 1.2507	1.4990	1-3/4	5/16	5/8	2-1/8	1.505	.250	1-1/2-16	LR-52112	23000	1/4	23/32
HAL-45616-5/8	.6252 .6256	.8740	1	5/16	5/8	2-7/16	.880	.250	7/8-14	LR-52105	24000	5/16	13/32
HAL-45624-5/8	.6252 .6256	.8740	1-1/2	5/16	5/8	2-7/16	.880	.250	7/8-14	LR-52105	24000	5/16	13/32
HAL-45616-3/4	.7503 .7507	.9990	1	5/16	5/8	2-7/16	1.005	.250	1-14	LR-52107	24000	5/16	17/32
HAL-45624-3/4	.7503 .7507	.9990	1-1/2	5/16	5/8	2-7/16	1.005	.250	1-14	LR-52107	24000	5/16	17/32
HAL-48016-13/16	.8128 .8132	1.2490	1	5/16	5/8	2-7/16	1.255	.250	1-1/4-12	LR-52109	24000	5/16	19/32
HAL-48024-13/16	.8128 .8132	1.2490	1-1/2	5/16	5/8	2-7/16	1.255	.250	1-1/4-12	LR-52109	24000	5/16	19/32
HAL-48016-7/8	.8753 .8757	1.2490	1	5/16	5/8	2-7/16	1.255	.250	1-1/4-12	LR-52109	24000	5/16	21/32
HAL-48024-7/8	.8753 .8757	1.2490	1-1/2	5/16	5/8	2-7/16	1.255	.250	1-1/4-12	LR-52109	24000	5/16	21/32
HAL-48016-1	1.0004 1.0007	1.2490	1	5/16	5/8	2-7/16	1.255	.250	1-1/4-12	LR-52109	24000	5/16	25/32
HAL-48024-1	1.0004 1.0007	1.2490	1-1/2	5/16	5/8	2-7/16	1.255	.250	1-3/8-16	LR-52119	24000	5/16	25/32

* For use with HAL and HAL-1
Next Page

** Order the Lock Ring separately.

Continued

HELICAL AIR FEED LOCK LINERS - CONTINUED

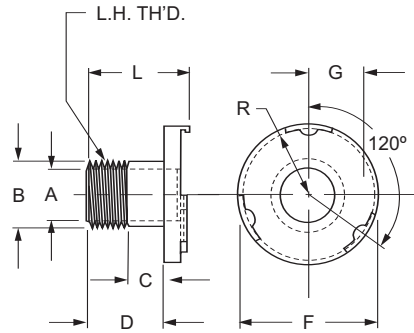
P/N	A	B	C	*D	E	F	H	L	*LH THREAD	*LOCK NUT NO.**	MATCHING TIP	DRILL SIZE MIN	DRILL SIZE MAX
HAL-48816-1-1/8	1.1254 1.1257	1.3750	1	5/16	5/8	2-7/16	1.380	.250	1-3/8-16	LR-52110	24000	5/16	29/32
HAL-48824-1-1/8	1.1254 1.1257	1.3750	1-1/2	5/16	5/8	2-7/16	1.380	.250	1-1/2-16	LR-52110	24000	1/4	29/32
HAL-49616-1-1/4	1.2505 1.2509	1.4990	1	5/16	5/8	2-7/16	1.505	.250	1-1/2-16	LR-52112	24000	1/4	23/32
HAL-49620-1-1/4	1.2505 1.2509	1.4990	1-1/4	5/16	5/8	2-7/16	1.505	.250	1-1/2-16	LR-52112	24000	5/16	23/32
HAL-49624-1-1/4	1.2505 1.2509	1.4990	1-1/2	5/16	5/8	2-7/16	1.505	.250	1-1/2-16	LR-42112	24000	5/16	15/16
HAL-411216-1-3/8	1.3756 1.3760	1.7490	1	5/16	5/8	2-7/16	1.755	.250	1-3/4-16	LR-42116	24000	5/16	15/16
HAL-411224-1-3/8	1.3756 1.3760	1.7490	1-1/2	5/16	5/8	2-7/16	1.755	.250	1-3/4-16	LR-52116	24000	5/16	15/16
HAL-412816-1-1/2	1.5006 1.5010	1.9990	1	5/16	5/8	2-7/16	2.005	.250	2-16	LR-52118	24000	5/16	15/16
HAL-412824-1-1/2	1.5006 1.5010	1.9990	1-1/2	5/16	5/8	2-7/16	2.005	.250	2-16	LR-52118	24000	5/16	15/16

* For use with HAL and HAL-1

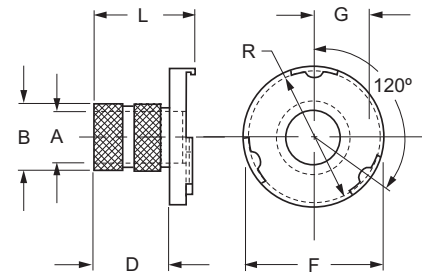
** Order the Lock Ring separately.

This series of Lock Liners is for use with A-15000, A-25000 and A-55000. Use HAL for the version for use with Metals and HALD for use with Plastic.

NEW



TYPE - HAL



TYPE - HALD

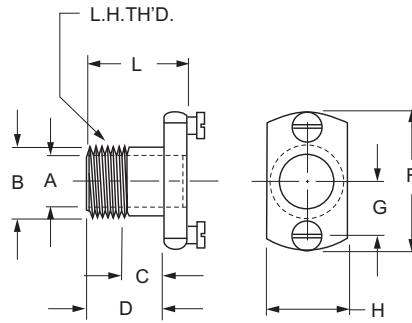
HELICAL AIR FEED LOCK LINERS

P/N	A	B	C	*D	E	F	H	L	*LH THREAD	*LOCK NUT NO.**	MATCHING TIP	DRILL SIZE MIN	DRILL SIZE MAX
HAL-25100	1.2505 1.2509	2.4990	2.00	5/8	5/8	3-3/8	3.375	.250	2-1/2-16	LR-52121	25100	3/8	1-1/32
HAL-25200	1.3756 1.3760	2.4990	2.00	5/8	5/8	3-3/8	3.375	.250	2-1/2-16	LR-52121	25200	3/8	1-5/32
HAL-25300	1.5006 1.5010	2.4990	2.00	5/8	5/8	3-3/8	3.375	.250	2-1/2-16	LR-52121	25300	3/8	1-9/32
HAL-25400	1.7508 1.7512	2.4990	2.00	5/8	5/8	3-3/8	3.375	.250	2-1/2-16	LR-52121	25400	3/8	1-15/32
HAL-25500	2.0010 2.0015	2.4990	2.00	5/8	5/8	3-3/8	3.375	.250	2-1/2-16	LR-52121	25500	3/8	1-15/32

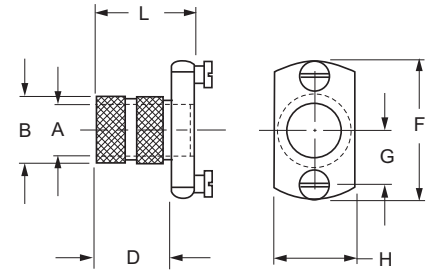
** Order the lock ring separately. **NOTE:** These parts are considered as specials and are not returnable.

AIR FEED ACCESSORIES

NEW



TYPE - LL



TYPE - LLD

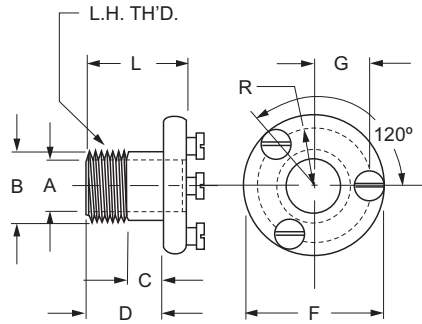
Use LL for the version for use with Metals and LLD for use with Plastic.

AIR FEED LOCK LINERS															
NEW P/N	OLD P/N	A MONINAL	A ACTUAL	B MONINAL	B ACTUAL	C	D	F	G	H	L	LH THREAD	LOCK RING NO.**	MATCHING TIP	MATCHING TIP
LL-21100	A-16520	3/8	.3750 .3756	1/2	.4995 .4989	7/16	3/4	1-3/4	5/8	3/4	1-1/16	1/2-20	LR-52101	A-16500, A-11100 A-11107, A-21100 A-51100, A-91100	16531(2)
LL-21200	-	7/16	.4375 .4381	3/4	.7495 .7489	7/16	3/4	1-3/4	5/8	1	1-1/16	3/4-16	LR-52103	A-11200, A-21200 A-51200, A-91200	2 LOCK LL-21000
LL-21300	A-16521	1/2	.5000 .5006	3/4	.7495 .7489	7/16	3/4	1-3/4	5/8	1	1-1/16	3/4-16	LR-52103	A-16501, A-13100 A-11307, A-21100 A-51300, A-91300	
LL-22100	-	7/16	.4375 .4381	7/8	.8745 .8739	7/16	3/4	2-7/16	59/64	1-1/8	1-3/16	7/8-14	LR-52105	A-12100, A-22100 A-92100	16532(2)
LL-22200	-	1/2	.5000 .5006	7/8	.8745 .8739	7/16	3/4	2-7/16	59/64	1-1/8	1-3/16	7/8-14	LR-52105	A-12200, A-22200 A-92200	2 LOCK
LL-22300	-	9/16	.5625 .5631	7/8	.8745 .8739	7/16	3/4	2-7/16	59/64	1-1/8	1-3/16	7/8-14	LR-52105	A-12300, A-22300 A-92300	LL-22000
LL-22400	A-16522	5/8	.6250 .6256	7/8	.8745 .8739	7/16	3/4	2-7/16	59/64	1-1/8	1-3/16	7/8-14	LR-52105	A-16502, A-12400 A-12409, A-22400 A-52400, A-92400	
LL-23100	-	3/4	.7500 .7506	1-1/4	1.2495 1.2485	9/16	1	2-11/16	1-3/64	1-1/2	1-7/16	1-1/4-12	LR-52109	A-13100, A-23100 A-53100, A-93100	16532(2)
LL-23200	-	13/16	.8125 .8131	1-1/4	1.2495 1.2485	9/16	1	2-11/16	1-3/64	1-1/2	1-7/16	1-1/4-12	LR-52109	A-13200, A-23200 A-53200, A-93200	2 LOCK
LL-23300	A-16523	7/8	.8750 .8756	1-1/4	1.2495 1.2485	9/16	1	2-11/16	1-3/64	1-1/2	1-7/16	1-1/4-12	LR-52109	A-16503, A-13300 A-13312, A-23300 A-53300, A-93300	LL-23000
LL-23400	-	1	1.0000 1.0010	1-1/2	1.4990 1.4980	27/32	1-1/2	2-11/16	1-3/64	1-3/4	1-15/16	1-1/2-12	LR-52111	A-13400, A-23400 A-53400, A-93400	
LL-23500	A-16524	1-1/8	1.1250 1.1260	1-1/2	1.4990 1.4980	27/32	1-1/2	2-11/16	1-3/64	1-3/4	1-15/16	1-1/2-12	LR-52111	A-16504, A-13500 A-13517, A-23500 A-53500, A-93500	
LL-24100	-	5/8	.6250 .6256	1-1/2	1.4990 1.4980	27/32	1-1/2	3	1-11/16	1-3/4	1-15/16	1-1/2-12	LR-52111	A-14100, A-24100 A-54100, A-94100	
LL-24300	-	3/4	.7500 .7506	1-1/2	1.4990 1.4980	27/32	1-1/2	3	1-11/16	1-3/4	1-15/16	1-1/2-12	LR-52111	A-14300, A-24300 A-54300, A-94300	16532(2)
LL-24400	-	7/8	.8750 .8756	1-1/2	1.4990 1.4980	27/32	1-1/2	3	1-11/16	1-3/4	1-15/16	1-1/2-12	LR-52111	A-14400, A-24400 A-54400, A-94400	2 LOCK
LL-24500	-	1	1.0000 1.0010	1-1/2	1.4990 1.4980	27/32	1-1/2	3	1-11/16	1-3/4	1-15/16	1-1/2-12	LR-52111	A-14500, A-24500 A-54500, A-94500	LL-24000
LL-24600	A-16525	1-1/8	1.1250 1.1260	1-1/2	1.4990 1.4980	27/32	1-1/2	3	1-11/16	1-3/4	1-15/16	1-1/2-12	LR-52111	A-16505, A-14600 A-14617, A-24600 A-54600, A-94600	
LL-24700	-	1-1/4	1.2500 1.2510	2	1.9990 1.9980	27/32	1-1/2	3	1-11/16	2-1/2	1-15/16	2"-16	LR-52118	A-14700, A-24700 A-54700, A-94700	
LL-24800	A-16526	1-1/2	1.5000 1.5010	2	1.9990 1.9980	27/32	1-1/2	3	1-11/16	2-1/2	1-15/16	2"-16	LR-52118	A-16506, A-14800 A-14817, A-24800 A-54800, A-94800	

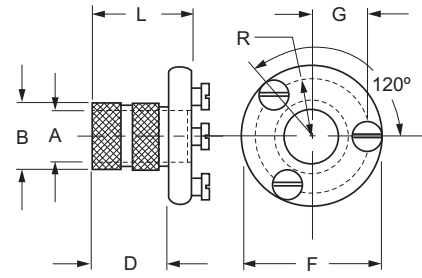
** Order the lock ring separately. **NOTE:** These parts are considered as specials and are not returnable.

AIR FEED ACCESSORIES

This series of Lock Liners is for use with A-15000, A-25000, A-55000 and A-95000. Use LL for the version for use with Metals and LLD for use with Plastic.



TYPE - LL

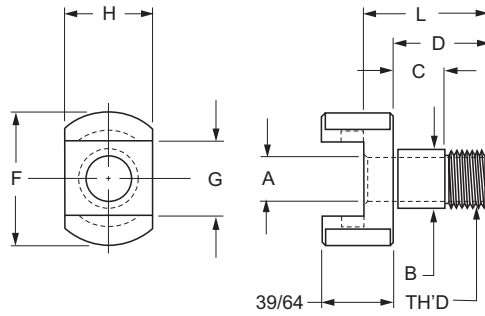


TYPE - LLD

AIR FEED LOCK LINERS														
NEW P/N	OLD P/N	A MONINAL	A ACTUAL	B MONINAL	B ACTUAL	C	D	F	G	L	LH THREAD	LOCK RING NO.**	MATCHING TIP	MATCHING TIP
LL-25100	-	1-1/4	1.2500 1.2510	2-1/2	2.4990 2.4980	1-3/8	2	3-3/4	1-9/16	2-5/8	2-1/2-16	LR-52121	A-15100, A-25100 A-55100, A-95100	
LL-25200	-	1-3/8	1.3750 1.3760	2-1/2	2.4990 2.4980	1-3/8	2	3-3/4	1-9/16	2-5/8	2-1/2-16	LR-52121	A-15200, A-25200 A-55200, A-95200	16530(3)
LL-25300	-	1-1/2	1.5000 1.5010	2-1/2	2.4990 2.4980	1-3/8	2	3-3/4	1-9/16	2-5/8	2-1/2-16	LR-52121	A-15300, A-25300 A-55300, A-95300	3 LOCK
LL-25400	-	1-3/4	1.7500 1.7510	2-1/2	2.4990 2.4980	1-3/8	2	3-3/4	1-9/16	2-5/8	2-1/2-16	LR-52121	A-15400, A-25400 A-55400, A-95400	LL-25000
LL-25500	A-16533	2	2.0000 2.0015	2-1/2	2.4990 2.4980	1-3/8	2	3-3/4	1-9/16	2-5/8	2-1/2-16	LR-52121	A-16513, A-15500 A-15523, A-25500 A-55500	

** Order the lock ring separately.

NOTE: These parts are considered as specials and are not returnable.



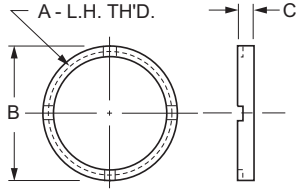
AIR FEED LOCK LINERS											
P/N	A	B	C	D	F	G	H	L	LH THREAD	LOCK NUT NO.**	MATCHING TIP
AFL-16520	.3750 .3755	.4995 .4990	7/16	3/4	1-1/8	.625	3/4	1	1/2-20	14441	A-21106
AFL-16521	.5000 .5005	.7495 .7490	7/16	3/4	1-3/16	.625	7/8	1	3/4-16	14442	A-21306
AFL-16522	.6250 .6255	.8740 .8740	7/16	3/4	1-13/16	1.218	1-1/8	1	7/8-14	14443	A-22406
AFL-16523	.8750 .8755	1.2495 1.2490	9/16	1	2-1/8	1.468	1-3/8	1-1/4	1-1/4-12	14445	A-23310
AFL-16524	1.1252 1.1258	1.4990 1.4985	27/32	1-1/2	2-1/8	1.468	1-5/8	1-3/4	1-1/2-12	14446	A-23515
AFL-16525	1.1252 1.1258	1.4990 1.4985	27/32	1-1/2	2-7/16	1.718	1-5/8	1-3/4	1-1/2-12	14446	A-24615
AFL-16526	1.5002 1.5008	1.9990 1.9985	27/32	1-1/2	2-7/16	1.718	2-1/8	1-3/4	2"-16	14447	A-24815

** Order the lock nut separately.

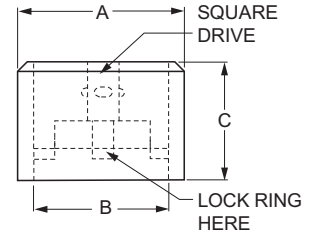
NOTE: These parts are considered as specials and are not returnable.

AIR FEED ACCESSORIES

NEW



NEW



AIR FEED LOCK RINGS			
P/N	DIMENSIONS		
	A	B	C
LR-52101	1/2-20	3/4	1/4
LR-52103	3/4-16	1	1/4
LR-52104	13/16-16	1-3/16	1/4
LR-52105	7/8-14	1-1/4	1/4
LR-52107	1-14	1-3/8	1/4
LR-52108	1-1/8-16	1-1/2	1/4
LR-52109	1-1/4-12	1-3/4	3/8
LR-52110	1-3/8-16	1-3/4	5/16
LR-52111	1-1/2-12	1-3/4	5/16
LR-52112	1-1/2-16	1-3/4	1/4
LR-52116	1-3/4-16	2-3/8	1/4
LR-52117	1-7/8-16	2-3/8	1/4
LR-52118	2-16	2-1/2	1/4
LR-52121	2-1/2-16	3	5/16

AIR FEED LOCK RING SOCKETS				
P/N	DIMENSIONS			
	A	B	C	SOCKET HANDLE
LRS-52101	1	3/4	3/4	LRSH-5
LRS-52103	1-1/4	1	3/4	LRSH-5
LRS-52104	1-7/16	1-3/16	3/4	LRSH-5
LRS-52105	1-1/2	1-1/4	3/4	LRSH-5
LRS-52107	1-5/8	1-3/8	3/4	LRSH-5
LRS-52108	1-3/4	1-1/2	3/4	LRSH-5
LRS-52109	2	1-3/4	3/4	LRSH-5
LRS-52110	2	1-3/4	1	LRSH-6
LRS-52111	2	1-3/4	1	LRSH-6
LRS-52112	2	1-3/4	1	LRSH-6
LRS-52116	2-5/8	2-3/8	1	LRSH-6
LRS-52117	2-5/8	2-3/8	1	LRSH-6
LRS-52118	2-3/4	2-1/2	1	LRSH-6
LRS-52121	3-1/4	3	1	LRSH-6

NOTE: Other sizes are available upon request.

NOTE: Other sizes are available upon request.



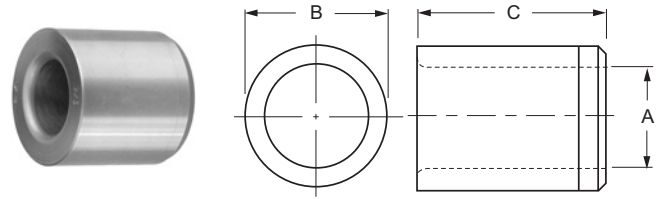
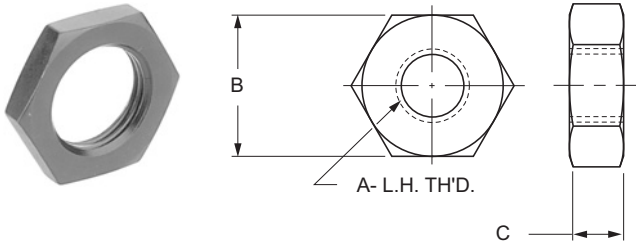
LRSH - 5 LOCK RING HANDLES

This handle is for use with the 1/4" socket size. For use with LR-52101 through LR-52109



LRSH - 6 LOCK RING HANDLES

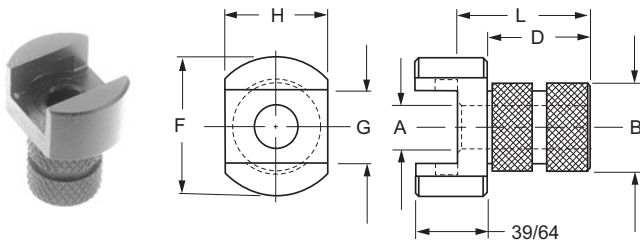
This handle is for use with the 1/2" socket size. For use with LR-52110 through LR-52127.



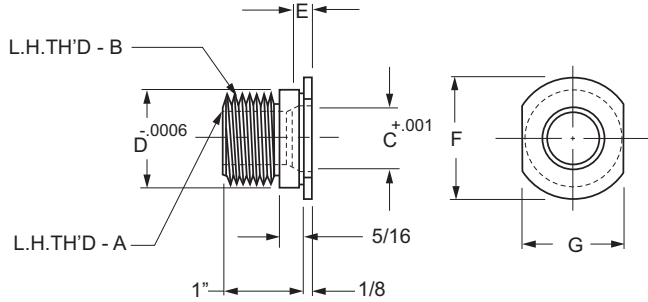
AIR FEED LOCK NUTS			
P/N	A	B	C
14441	1/2-20	3/4	1/4
14442	3/4-16	1	1/4
14443	7/8-14	1-1/4	1/4
14445	1-1/4-12	1-3/4	3/8
14446	1-1/2-12	2	1/2
14447	2"-16	2-1/2	1/2
14448	2-1/2-16	3	1/2

AIR FEED LINERS				
P/N	ANSI SYMBOL	DIMENSIONS		
		A	B	C
19936	P40-16	3/8	5/8	1
19937	P40-16	7/16	3/4	1
19938	P40-16	1/2	3/4	1
19939	P56-16	9/16	7/8	1
19940	P56-16	5/8	7/8	1
19941	P64-16	3/4	1	1
19942	P64-22	3/4	1	1-3/8
19943	P88-22	13/16	1-3/8	1-3/8
19944	P88-22	7/8	1-3/8	1-3/8
19945	P88-22	1	1-3/8	1-3/8
19946	P122-28	1-1/8	1-3/4	1-3/4
19947	P56-28	5/8	7/8	1-3/4
19949	P64-28	3/4	1	1-3/4
19950	P88-28	7/8	1-3/8	1-3/4
19951	P88-28	1	1-3/8	1-3/4
19952	P112-28	1-1/4	1-3/4	1-3/4
19953	P112-40	1-1/4	1-3/4	2-1/2
19954	P112-40	1-3/8	1-3/4	2-1/2
19955	P144-40	1-1/2	2-1/4	2-1/2
19956	P144-40	1-3/4	2-1/4	2-1/2

ONE PIECE AIR FEED LOCK LINER: The one piece lock liner construction is more rigid than the lock screw type. Closer hole proximity is possible with the style. Both locknut and imbedment type hold the drill units thrust and torque better than lock screws alone.



AIR FEED LOCK LINERS FOR PLASTIC TOOLING								
P/N	A	B	D	F	G	H	L	MATCHING TIP
AFD-375	.3750 .3755	3/4	7/8	1-3/16	.625	7/8	1-1/8	A-21108
AFD-500	.5000 .5005	3/4	7/8	1-3/16	.625	7/8	1-1/8	A-21308
AFD-750	.7500 .7505	1-1/8	7/8	1-13/16	1.218	1-1/8	1-1/8	A-22508

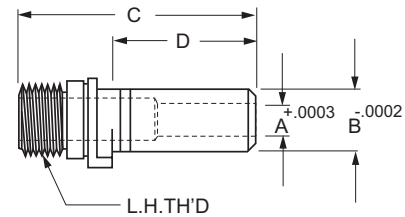
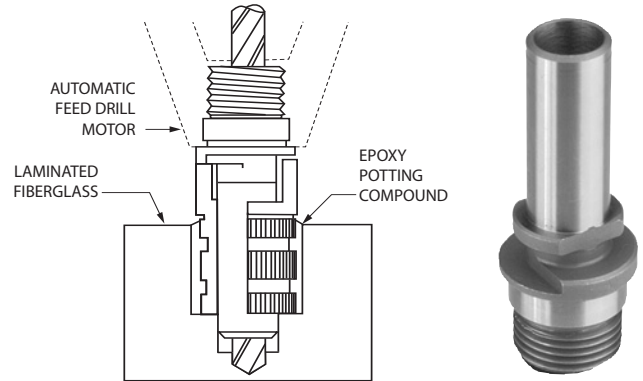


AIR FEED REDUCER BUSHINGS

P/N	A	B	C	D	E	F	G
17952	3/4-16	1"-14	.8125	1.0610	9/32	1-3/8	1-1/16
25018	3/4-16	1-1/4-12	.8125	1.3110	9/32	1-5/8	1-5/16
25583	1"-14	1-1/4-12	1.0625	1.3110	11/32	1-5/8	1-5/16
25582	3/4-16	1-1/2-12	.8125	1.5610	9/32	1-15/16	1-9/16
20032	1"-14	1-1/2-12	1.0625	1.5610	11/32	1-15/16	1-9/16
20017	1-1/4-12	1-1/2-12	1.3125	1.5610	11/32	1-15/16	1-9/16
27910	1-1/2-12	2"-16	1.5625	2.0610	11/32	2-1/2	2-1/16

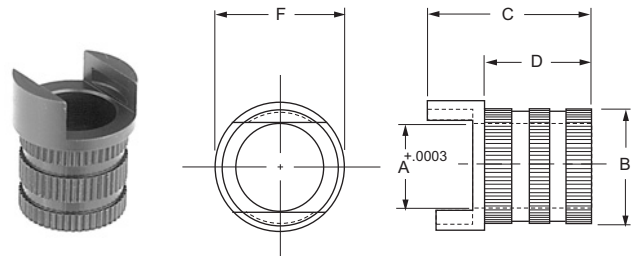
NOTE: C and D diameters concentric within .001 T.I.R.
NOTE: These parts are considered as specials and are not returnable.
NOTE: Tolerances on the inside and outside diameters if the airfeed liners are the same as the ANSI Press Fit bushings. See catalog or web site.
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All American Precision Adapter Tips and Lock Liner bushings are designed for fiberglass and plastic tooling requiring the use of automatic feed drill motors. The Adapter tip fits all standard automatic feed drill motors such as Keller, Aro, Buckeye and Quackenbush. A close tolerance is maintained when drilling rivet holes in Stainless Steel, Titanium, Nickel and other hard materials.



AIR FEED ADAPTOR TIPS

P/N	A	B	C	D	LH THREAD
AT-1	.191 .205	.3437	2-7/16	1-9/16	3/4-16
AT-2	.191 .285	.4375	2-7/16	1-9/16	3/4-16
AT-3	.281 .431	.5625	2-7/16	1-9/16	3/4-16
AT-4	.281 .625	.7500	2-7/16	1-9/16	1"-14

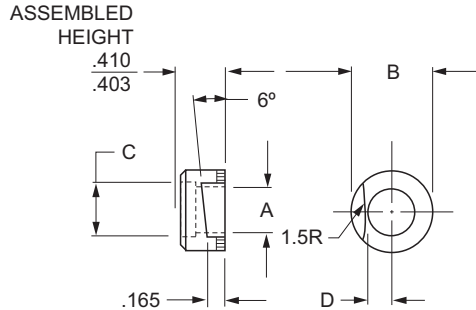


AIR FEED TIP LOCK LINERS

P/N	A	B	C	D	E
LL-1	.3440	9/16	1-3/8	7/8	11/16
LL-2	.4377	11/16	1-3/8	7/8	13/16
LL-3	.5627	13/16	1-3/8	7/8	15/16
LL-4	.7502	1	1-3/8	7/8	1-1/8

AIR FEED ACCESSORIES

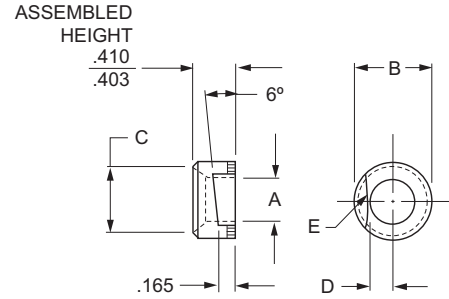
- Directly interchangeable with standard lock screws.
- Greater strength eliminates costly replacement of bent and/or broken lock screws.
- Angular clamping surface is normal to locking flange of Air Feed Tip - provides a mating surface in proper alignment with locking flange.
- Clamping base serrations bite into the jig plate which prevents rotation of clamp under heavy torque loads.
- Mounting screws furnished with clamps are of heat treated alloy steel.



-AIR FEED CLAMPS - SOCKET HEAD					
P/N	A	B	C	D	BUTTON HEAD SOCKET SCREW (FURNISHED)
AFC-2	21/64	5/8	29/64	.188	5/16-18 x 5/8
AFC-3	25/64	3/4	33/64	.219	3/8-16 x 3/4



NEW



AIR FEED CLAMPS - FLAT HEAD						
P/N	A	B	C	D	E	FLAT HEAD SOCKET SCREW (FURNISHED)
AFF-2	21/64	5/8	19/32	.188	1.5	5/16-18 x 1
AFF-3	25/64	3/4	23/32	.219	1.5	3/8-16 x 1
AFF-4	21/64	5/8	19/32	.188	1.5	5/16-18 x 1-1/2
AFF-5	21/64	5/8	19/32	.188	1.5	5/16-18 x 2
AFF-6	25/64	3/4	23/32	.219	2.0	3/8-16 x 2
AFF-7	25/64	3/4	23/32	.219	2.5	3/8-16 x 2