



**HOWMET
AEROSPACE**

Keysert[®] and Keensert[®]

Commercial-Grade and Mil-Spec
Solid Threaded Inserts,
Tooling, and Kits





Keysert® and Keensert® Thread Repair Inserts

The Solid Alternative for Thread Repair

Designed to repair damaged threads or for use in original equipment, Keyserts® and Keenserts® provide easy installation and versatility.

Featuring a key-locking action that prevents rotation due to vibration or torsion, commercial-grade Keyserts and Keenserts can be used in a wide range of materials and applications.

Commercial-grade Keyserts are available in carbon and stainless steel, both inch and metric series, and are supplied in Thinwall, Heavy Duty, Extra Heavy Duty, and Solid styles. Keyserts are offered individually or in kits.

Available in stainless steel, Keenserts are manufactured and tested according to MIL-I-45914 rev A. This rigorous process includes testing internal and external threads (proof and pull-out), torque-out, locking torque (where applicable), non-destructive testing, and magnetic permeability testing. In addition, Keenserts offer complete traceability and are available in internal thread-locking and miniature sizes.

Features

- Installed with standard drills and taps
- Easy installation
- May be used in a variety of materials:
aluminum, magnesium, cold rolled steel
- Easy to remove
- Passivated to enhance corrosion-resistance and finish
- Counterbored internal thread on Inch Series Keenserts;
countersunk internal thread on Metric Series

Typical Applications

- Trucks, RVs
- Machinery, Small Engines
- Molds, Tool and Die
- MRO Tasks

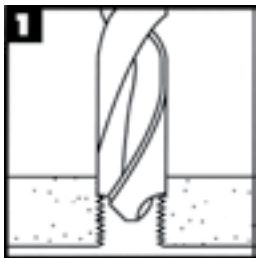
Important Note

- These inserts are not recommended for use in brittle materials, such as cast iron or plastic

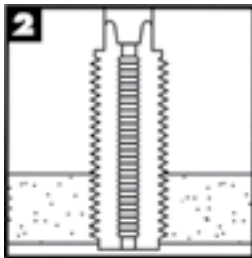


Installation and Removal

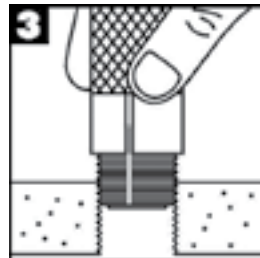
Installation Using Slotted Tool



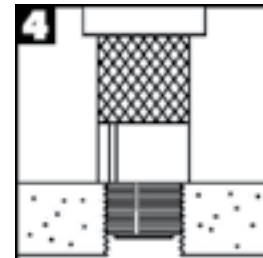
Drill out old threads with a standard drill. Note: Drill is oversize — see charts for proper dimensions. Chamfer the hole with a standard countersink (82°-100°).



Tap new threads with a standard tap. See charts for proper size and depth.



Screw in the insert until slightly below surface.



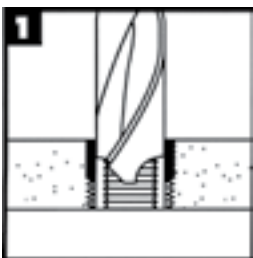
Drive keys down with several hammer taps on the proper installation tool.



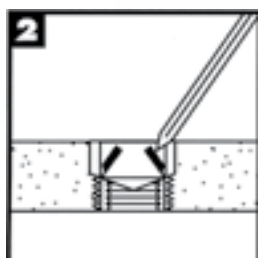
The slotted installation tool (right) has slots that fit over the keys to twist insert into tapped threads and then stake down. The sleeve-style tool (below) has a sleeve that fits over the outside of the keys to keep them from splaying during the staking process.



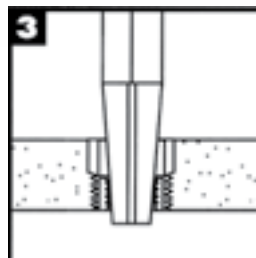
Removal



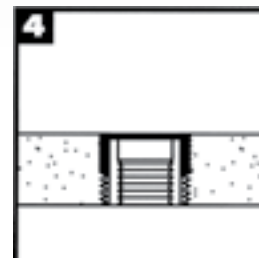
Drill out material between keys and internal thread with standard drill to specified depth (refer to charts for proper dimensions).



Deflect keys inward and break off.



Remove insert using an E-Z OUT or similar type tool.



Same size replacement insert may be installed in the original hole.



Carbon and Stainless Steel Bulk Keyserts

Thinwall — Inch Series											
INSERT					INSTALLATION					REMOVAL	
CARBON PART NO.	STAINLESS PART NO.	INTERNAL THREAD CLASS 3B	EXTERNAL THREAD (MOD.) CLASS 2A	LENGTH IN.	INSTALLATION TOOL PART NO.	TAP DRILL SIZE	C'SINK DIAMETER +.010/-0.000	THREAD TAP		DRILL	
								SIZE CLASS 2B	MIN. DEPTH	SIZE	DEPTH
73601	73606	10-24	5/16-18	0.31	72190	I	0.32	5/16-18	0.37	7/32	1/8
74601	74606	10-32									
73041	73046	1/4-20	3/8-16	0.37	72250	Q	0.38	3/8-16	0.43	9/32	3/16
74041	74046	1/4-28									
73051	73056	5/16-18	7/16-14	0.43	72312	X	0.44	7/16-14	0.50	11/32	3/16
74051	74056	5/16-24									
73061	73066	3/8-16	1/2-13	0.50	72375	29/64	0.51	1/2-13	0.56	13/32	3/16
74061	74066	3/8-24									
73071	73076	7/16-14	9/16-12	0.56	72375	33/64	0.57	9/16-12	0.62	15/32	3/16
74071	74076	7/16-20									
73081	73086	1/2-13	5/8-11	0.62	72500	37/64	0.63	5/8-11	0.68	17/32	3/16
74081	74086	1/2-20									
Heavy Duty — Inch Series											
73582	73587	8-32	5/16-18	0.31	70582	I	0.32	5/16-18	0.37	7/32	1/8
73602	73607	10-24	3/8-16	0.31	72190	Q	0.38	3/8-16	0.37	9/32	1/8
74602	74607	10-32									
73042	73047	1/4-20	7/16-14	0.37	72250	X	0.44	7/16-14	0.43	11/32	3/16
74042	74047	1/4-28									
73052	73057	5/16-18	1/2-13	0.43	72312	29/64	0.51	1/2-13	0.50	13/32	3/16
74052	74057	5/16-24									
73062	73067	3/8-16	9/16-12	0.50	72375	33/64	0.57	9/16-12	0.56	15/32	3/16
74062	74067	3/8-24									
73072	73077	7/16-14	5/8-11	0.62	72375	37/64	0.63	5/8-11	0.68	17/32	3/16
74072	74077	7/16-20									
73082	73087	1/2-13	3/4-16	0.62	72500	45/64	0.76	3/4-16	0.68	21/32	3/16
74082	74087	1/2-20									
73092	73097	9/16-12	3/4-16	0.81	72500	45/64	0.76	3/4-16	0.94	21/32	3/16
74092	74097	9/16-18									
73102	73107	5/8-11	7/8-14	0.87	72625	53/64	0.88	7/8-14	1.00	25/32	5/16
74102	74107	5/8-18									
73122	73127	3/4-10*	1 1/8-12	1.12	72875	1 1/16	1.14	1 1/8-12	1.31	31/32	5/16
74122	74127	3/4-16*									
73142	73147	7/8-9*	1 1/4-12	1.25	72875	1 3/16	1.27	1 1/4-12	1.44	13/32	5/16
74142	74147	7/8-14*									
73162	73167	1-8*	1 3/8-12	1.37	72100	1 5/16	1.39	1 3/8-12	1.56	17/32	5/16
74162	74167	1-12*									
74162-14		1-14*									
73182		1 1/8-7*	1 1/2-12	1.62	70182	1 7/16	1.52	1 1/2-12	1.84	1 11/32	5/16
74182		1 1/8-12*									
73202		1 1/4-7*	1 5/8-12	1.81	70202	1 9/16	1.64	1 5/8-12	2.06	1 15/32	5/16
74202		1 1/4-12*									
73242		1 1/2-6*	1 7/8-12	2.00	70242	1 13/16	1.89	1 7/8-12	2.28	1 23/32	5/16
74242		1 1/2-12*									

* Class 2B Internal Thread fit

Technical Notes:

- Material: Inserts — C1215 or equivalent (carbon)
 303 stainless steel (stainless)
 Keys — 302 Stainless Steel
- Finish: Carbon Steel Inserts — Zinc Phosphate and Ferrocote 364-3 Oil
 Stainless Steel Inserts — Passivated
- Tolerances: ±0.010 inch or ±.25 mm unless specified otherwise
- Dimensions: Inch sizes are in inches, Metric sizes are in millimeters
- Keys: Inserts with internal thread size 5/16 or M7 and larger are furnished with 4 locking keys



Thinwall — Metric											
INSERT					INSTALLATION					REMOVAL	
CARBON PART NO.	STAINLESS PART NO.	INTERNAL THREAD CLASS 6H	EXTERNAL THREAD CLASS 6G	LENGTH IN.	INSTALLATION TOOL PART NO.	TAP DRILL SIZE	C'SINK DIAMETER +.25/-00	THREAD TAP		DRILL	
								SIZE CLASS 6H	MIN. DEPTH	SIZE	DEPTH
75051	75056	M5-8	M8-1.25	8.0	72190	6.9	8.25	M8-1.25	9.5	5.50	4.00
75061	75066	M6-1	M10-1.25	10.0	72250	8.8	10.25	M10-1.25	11.5	7.50	4.75
75081	75086	M8-1.25	M12-1.25	12.0	72312	10.8	12.25	M12-1.25	13.5	9.50	4.75
77081	77086	M8-1									
75101	75106	M10-1.5	M14-1.5	14.0	72375	12.8	14.25	M14-1.5	15.5	11.50	4.75
77101	77106	M10-1.25									
75121	75126	M12-1.75	M16-1.5	16.0	72500	14.75	16.25	M16-1.5	17.5	13.50	4.75
78121	78126	M12-1.25									
Heavy Duty — Metric											
75042	75047	M4-7	M8-1.25	8.0	71042	6.90	8.25	M8-1.25	9.5	5.50	4.00
75052	75057	M5-8	M10-1.25	10.0	72190	8.80	10.25	M10-1.25	12.5	7.50	4.75
75062	75067	M6-1	M12-1.25	12.0	72250	10.80	12.25	M12-1.25	14.5	9.50	4.75
75082	75087	M8-1.25	M14-1.5	14.0	72312	12.80	14.25	M14-1.5	16.5	11.50	4.75
77082	77087	M8-1									
75102	75107	M10-1.5	M16-1.5	16.0	72375	14.75	16.25	M16-1.5	18.5	13.50	4.75
77102	77107	M10-1.25									
75122	75127	M12-1.75	M18-1.5	18.0	72500	16.75	18.25	M18-1.5	20.5	15.50	4.75
78122	78127	M12-1.25									
75142	75147	M14-2	M20-1.5	20.0	71142	18.75	20.25	M20-1.5	22.5	17.50	4.75
77142	77147	M14-1.5									
75162	75167	M16-2	M22-1.5	22.0	72625	20.50	22.25	M22-1.5	24.5	17.75	6.35
77162	77167	M16-1.5									
78182	78187	M18-1.5	M24-1.5	24.0	71182	22.50	24.25	M24-1.5	26.5	19.75	6.35
75202	75207	M20-2.5	M30-2	30.0	72875	28.00	30.25	M30-2	34.5	25.75	6.35
78202	78207	M20-1.5									
78222	78227	M22-1.5	M32-2	32.0	71222	30.00	32.25	M32-2	36.5	27.75	6.35
75242	75247	M24-3	M33-2	33.0	71242	31.00	33.25	M33-2	37.5	28.75	6.35
77242	77247	M24-2									



Solid Keyserts

Solid threaded inserts are perfect for:

- relocating holes that have been drilled or tapped in the wrong place
- plugging holes or filling in holes that are too big



Solid Inch

INSERT				INSTALLATION					REMOVAL	
CARBON PART NO.	STAINLESS PART NO.	EXTERNAL THREAD (MOD.) CLASS 2A	LENGTH IN.	INSTALLATION TOOL PART NO.	TAP DRILL SIZE	C'SINK DIAMETER +.010/- .000	THREAD TAP		DRILL	
							SIZE CLASS 2B	MIN. DEPTH	SIZE	DEPTH
73054	73059	5/16-18	0.31	70054	I	0.32	5/16-18	0.37	7/32	1/8
73064	73069	3/8-16	0.31	70064	Q	0.38	3/8-16	0.37	9/32	1/8
73074	73079	7/16-14	0.37	70074	X	0.44	7/16-14	0.43	11/32	3/16
73084	73089	1/2-13	0.43	70084	29/64	0.51	1/2-13	0.50	13/32	3/16
73094	73099	9/16-12	0.50	70094	33/64	0.57	9/16-12	0.56	15/32	3/16
73104	73109	5/8-11	0.62	70104	37/64	0.63	5/8-11	0.68	17/32	3/16
73124	73129	3/4-16	0.68	70124	45/64	0.76	3/4-16	0.68	21/32	3/16
73144	73149	7/8-14	0.87	70144	53/64	0.88	7/8-14	1.00	25/32	5/16
74164	74169	1-12	0.87	70164	15/16	1.02	1-12	1.00	27/32	5/16
74184	74189	1 1/8-12	1.12	70184	1 1/16	1.14	1 1/8-12	1.31	31/32	5/16
74204	74209	1 1/4-12	1.25	70204	1 3/16	1.27	1 1/4-12	1.44	1 3/32	5/16
74224	74229	1 3/8-12	1.37	70224	1 5/16	1.39	1 3/8-12	1.56	1 7/32	5/16

Solid Metric

INSERT				INSTALLATION					REMOVAL	
CARBON PART NO.	STAINLESS PART NO.	EXTERNAL THREAD (MOD.) CLASS 6G	LENGTH IN.	INSTALLATION TOOL PART NO.	TAP DRILL SIZE	C'SINK DIAMETER +.25/- .00	THREAD TAP		DRILL	
							SIZE CLASS 6H	MIN. DEPTH	SIZE	DEPTH
75084	75089	M8-1.25	8.0	71084	6.90	8.25	M8-1.25	9.5	5.50	4.00
77104	77109	M10-1.25	10.0	71104	8.80	10.25	M10-1.25	12.5	7.50	4.75
78124	78129	M12-1.25	12.0	71124	10.80	12.25	M12-1.25	14.5	9.50	4.75
77144	77149	M14-1.5	14.0	71144	12.80	14.25	M14-1.5	16.5	11.50	4.75
77164	77169	M16-1.5	16.0	71164	14.75	16.25	M16-1.5	18.5	13.50	4.75
78184	78189	M18-1.5	18.0	71184	16.75	18.25	M18-1.5	20.5	15.50	4.75
78204	78209	M20-1.5	20.0	71204	18.75	20.25	M20-1.5	22.5	17.50	4.75
78224	78229	M22-1.5	22.0	71224	20.50	22.25	M22-1.5	24.5	17.75	6.35
78244	78249	M24-1.5	24.0	71244	22.50	24.25	M24-1.5	26.5	19.75	6.35
77304	77309	M30-2	30.0	71304	28.00	30.25	M30-2	34.5	25.75	6.35
77324	77329	M32-2	32.0	71324	30.00	32.25	M32-2	36.5	27.75	6.35

Extra Heavy Duty Keyserts

Extra Heavy Duty Keyserts are preferred where:

- extra strength / torque out is required
- parent material has sufficient space for a heavier wall
- larger hole needs to be reduced to a smaller size



Extra Heavy Duty Inch											
INSERT					INSTALL					REMOVAL	
CARBON PART NO.	STAINLESS PART NO.	INTERNAL THREAD CLASS 3B	EXTERNAL THREAD (MOD.) CLASS 2A	LENGTH IN.	INSTALLATION TOOL PART NO.	TAP DRILL SIZE	C'SINK DIAMETER +.010/-.000	THREAD TAP		DRILL	
								SIZE CLASS 2B	MIN. DEPTH	SIZE	DEPTH
73563	73568	6-32	5/16-18	0.31	70563	I	0.32	5/16-18	0.37	7/32	1/8
73583	73588	8-32	3/8-16	0.31	70583	Q	0.38	3/8-16	0.37	9/32	1/8
73603	73608	10-24	7/16-14	0.31	70603	X	0.44	7/16-14	0.37	11/32	3/16
74603	74608	10-32									
73043	73048	1/4-20	1/2-13	0.37	70043	29/64	0.51	1/2-13	0.43	13/32	3/16
74043	74048	1/4-28									
73053	73058	5/16-18	9/16-12	0.43	70053	33/64	0.57	9/16-12	0.50	15/32	3/16
74053	74058	5/16-24									
73063	73068	3/8-16	5/8-11	0.50	70063	37/64	0.63	5/8-11	0.56	17/32	3/16
74063	74068	3/8-24									
73073	73078	7/16-14	3/4-16	0.62	70073	45/64	0.76	3/4-16	0.68	21/32	3/16
74073	74078	7/16-20									
73083	73088	1/2-13	7/8-14	0.68	70083	53/64	0.88	7/8-14	0.75	25/32	5/16
74083	74088	1/2-20									
73093	73098	9/16-12	7/8-14	0.81	70093	53/64	0.88	7/8-14	0.94	25/32	5/16
74093	74098	9/16-18									
73103	73108	5/8-11	1-12	0.87	70103	15/16	1.02	1-12	1.00	27/32	5/16
74103	74108	5/8-18									
73123	73128	3/4-10*	1 1/4-12	1.12	70123	13/16	1.27	1 1/4-12	1.31	13/32	5/16
74123	74128	3/4-16*									
73143	73148	7/8-9*	1 3/8-12	1.25	70143	15/16	1.39	1 3/8-12	1.44	17/32	5/16
74143	74148	7/8-14*									
73163	73168	1-8*	1 1/2-12	1.37	70163	17/16	1.52	1 1/2-12	1.56	1 11/32	5/16
74163	74168	1-12*									

* Class 2B Internal Thread fit



Tooling & 4-Piece Range Kits

Tooling-Only Range Kit

Keysert Tooling Range Kit/72000		
KEYSERT TOOL NO.	INSTALLS INCH SERIES (TW & HD)	INSTALLS METRIC SERIES (TW & HD)
72190	#10	M5
72250	1/4"	M6
72312	5/16"	M8
72375	3/8"-7/16"	M10
72500	1/2"-9/16"	M12
72625	5/8"	M16
72875	3/4"-7/8"	M20
72100	1"	N/A



4-Piece Range Kits

UNC Carbon Steel Thinwall/76003				
SIZE	KEYSERT INSERT NO.	NO. OF PIECES	KEYSERT TOOL NO.	NO. OF PIECES
1/4-20	73041	12	72250	1
5/16-18	73051	12	72312	1
3/8-16	73061	12	72375	1
1/2-13	73081	6	72500	1

UNC Stainless Steel Thinwall/76004				
SIZE	KEYSERT INSERT NO.	NO. OF PIECES	KEYSERT TOOL NO.	NO. OF PIECES
1/4-20	73046	12	72250	1
5/16-18	73056	12	72312	1
3/8-16	73066	12	72375	1
1/2-13	73086	6	72500	1

Metric Coarse Carbon Steel Thinwall/75003				
SIZE	KEYSERT INSERT NO.	NO. OF PIECES	KEYSERT TOOL NO.	NO. OF PIECES
M5-0.8	75051	12	72190	1
M6-1.0	75061	12	72250	1
M8-1.25	75081	12	72312	1
M10-1.5	75101	12	72375	1

Metric Coarse Stainless Steel Thinwall/75004				
SIZE	KEYSERT INSERT NO.	NO. OF PIECES	KEYSERT TOOL NO.	NO. OF PIECES
M5-0.8	75056	12	72190	1
M6-1.0	75066	12	72250	1
M8-1.25	75086	12	72312	1
M10-1.5	75106	12	72375	1

6-Piece & Master Range Kits

6-Piece Range Kits

UNC Carbon Steel Heavy-Duty/70003				
SIZE	KEYSERT INSERT NO.	NO. OF PIECES	KEYSERT TOOL NO.	NO. OF PIECES
1/4-20	73042	20	70042	1
5/16-18	73052	15	70052	1
3/8-16	73062	10	70062	1
1/2-13	73082	6	70082	1
5/8-11	73102	3	70102	1
3/4-10	73122	3	70122	1
UNC Stainless Steel Heavy-Duty/70004				
SIZE	KEYSERT INSERT NO.	NO. OF PIECES	KEYSERT TOOL NO.	NO. OF PIECES
1/4-20	73047	20	70042	1
5/16-18	73057	15	70052	1
3/8-16	73067	10	70062	1
1/2-13	73087	6	70082	1
5/8-11	73107	3	70102	1
3/4-10	73127	3	70122	1

UNF Carbon Steel Heavy-Duty/71003				
SIZE	KEYSERT INSERT NO.	NO. OF PIECES	KEYSERT TOOL NO.	NO. OF PIECES
1/4-28	74042	20	70042	1
5/16-24	74052	15	70052	1
3/8-24	74062	10	70062	1
1/2-20	74082	6	70082	1
5/8-18	74102	3	70102	1
3/4-16	74122	3	70122	1
UNF Stainless Steel Heavy-Duty/71004				
SIZE	KEYSERT INSERT NO.	NO. OF PIECES	KEYSERT TOOL NO.	NO. OF PIECES
1/4-28	74047	20	70042	1
5/16-24	74057	15	70052	1
3/8-24	74067	10	70062	1
1/2-20	74087	6	70082	1
5/8-18	74107	3	70102	1
3/4-16	74127	3	70122	1

Master Range Kits

UNC Carbon Steel Heavy-Duty/73003				
SIZE	KEYSERT INSERT NO.	NO. OF PIECES	KEYSERT TOOL NO.	NO. OF PIECES
1/4-20	73042	20	70042	1
5/16-18	73052	15	70052	1
3/8-16	73062	10	70062	1
7/16-14	73072	10	70072	1
1/2-13	73082	6	70082	1
9/16-12	73092	5	70092	1
5/8-11	73102	3	70102	1
3/4-10	73122	3	70122	1
7/8-9	73142	3	70142	1
1-8	73162	2	70162	1
UNC Stainless Steel Heavy-Duty/73004				
SIZE	KEYSERT INSERT NO.	NO. OF PIECES	KEYSERT TOOL NO.	NO. OF PIECES
1/4-20	73047	20	70042	1
5/16-18	73057	15	70052	1
3/8-16	73067	10	70062	1
7/16-14	73077	10	70072	1
1/2-13	73087	6	70082	1
9/16-12	73097	5	70092	1
5/8-11	73107	3	70102	1
3/4-10	73127	3	70122	1
7/8-9	73147	3	70142	1
1-8	73167	2	70162	1

UNF Carbon Steel Heavy-Duty/74003				
SIZE	KEYSERT INSERT NO.	NO. OF PIECES	KEYSERT TOOL NO.	NO. OF PIECES
1/4-28	74042	20	70042	1
5/16-24	74052	15	70052	1
3/8-24	74062	10	70062	1
7/16-20	74072	10	70072	1
1/2-20	74082	6	70082	1
9/16-18	74092	5	70092	1
5/8-18	74102	3	70102	1
3/4-16	74122	3	70122	1
7/8-14	74142	3	70142	1
1-12	74162	2	70162	1
UNF Stainless Steel Heavy-Duty/74004				
SIZE	KEYSERT INSERT NO.	NO. OF PIECES	KEYSERT TOOL NO.	NO. OF PIECES
1/4-28	74047	20	70042	1
5/16-24	74057	15	70052	1
3/8-24	74067	10	70062	1
7/16-20	74077	10	70072	1
1/2-20	74087	6	70082	1
9/16-18	74097	5	70092	1
5/8-18	74107	3	70102	1
3/4-16	74127	3	70122	1
7/8-14	74147	3	70142	1
1-12	74167	2	70162	1



Cross-Reference Index

Carbon Steel Cross-Reference Index							
KEYSERT PART NO.	ALTERNATE PART NO.		KEYSERT PART NO.	ALTERNATE PART NO.		KEYSERT PART NO.	ALTERNATE PART NO.
73041	RKKA 1/4-20		73601	RKKA 10-24		74202	RKK1 1/4-12
73042	RKK 1/4-20		73602	RKK 10-24		74242	RKK1 1/2-12
73051	RKKA 5/16-18		74041	RKKA 1/4-28		74601	RKKA 10-32
73052	RKK 5/16-18		74042	RKK 1/4-28		74602	RKK 10-32
73061	RKKA 3/8-16		74051	RKKA 5/16-24		75051	KNM 5x0.8F
73062	RKK 3/8-16		74052	RKK 5/16-24		75061	KNM 6x1F
73071	RKKA 7/16-14		74061	RKKA 3/8-24		75081	KNM 8x1.25F
73072	RKK 7/16-14		74062	RKK 3/8-24		75101	KNM 10x1.5F
73081	RKKA 1/2-13		74071	RKKA 7/16-20		75121	KNM 12x1.75F
73082	RKK 1/2-13		74072	RKK 7/16-20		77081	KNM 8x1F
73092	RKK 9/16-12		74081	RKKA 1/2-20		77101	KNM 10x1.25F
73102	RKK 5/8-11		74082	RKK 1/2-20		78121	KNM 12x1.25F
73122	RKK 3/4-10		74092	RKK 9/16-18		75142	KNHM 14x2F
73142	RKK 7/8-9		74102	RKK 5/8-18		77142	KNHM 14x1.5F
73162	RKK 1-8		74122	RKK 3/4-16		77162	KNHM 16x1.5F
73182	RKK 1 1/8-7		74142	RKK 7/8-14		78182	KNHM 18x1.5F
73202	RKK 1 1/4-7		74162-14	RKK 1-14		78202	KNHM 20x1.5F
73242	RKK 1 1/2-6		74162	RKK 1-12		78222	KNHM 22x1.5F
73582	RKK 8-32		74182	RKK 1 1/8-12		77242	KNHM 24x2F

Miniature and Lightweight Keenserts

Miniature Inserts														
PART NO.		DIMENSIONS					INSTALLATION						REMOVAL	
NON-LOCKING	INTERNAL THREAD LOCKING	INTERNAL THREAD CLASS 3B	EXTERNAL THREAD		L	T	TAP DRILL SIZE +.003-.001	C'SINK DIAMETER +.010/-.000	THREAD TAP		INSTALLATION TOOL PART NO.	ALTERNATE INSTALLATION TOOL	DRILL	
			SIZE	SHEAR ENGAG.					†SIZE UNF-2B	MIN. DEPTH			SIZE	DEPTH
MS51830-101	MS51830-101L	2-56 UNJC	8-32 UNC-3A	.0157	.12	.088	.134	.166	†8-32	.140	LDS-02	TKNC-02*	#33 (.113)	1/16
MS51830-102	MS51830-102L	4-40 UNJC	10-32 UNF-2A	.0302	.17	.125	.161	.194	10-32	.160	LDS-04	TKNC-04*	#29 (.136)	3/32
MS51830-103	MS51830-103L	6-32 UNJC	12-28 UNF-2A	.0329	.17	.125	.187	.220	12-28	.160	LDS-06	TKNC-06*	#21 (.159)	
MS51830-104	MS51830-104L	8-32 UNJC	1/4-28 UNF-2A	.0669	.22	.175	.228	.255	1/4-28	.210	LDS-08	TKNC-08*	#8 (.199)	1/8

Lightweight Inserts - Non-Locking													
PART NO.		DIMENSIONS					INSTALLATION						REMOVAL
NON-LOCKING	INTERNAL THREAD CLASS 3B	EXTERNAL THREAD		L	A	TAP DRILL DIAMETER	C'SINK DIAMETER +.010/-.000	THREAD TAP		INSTALLATION TOOL PART NO.	ALTERNATE INSTALLATION TOOL	DRILL	
		SIZE CLASS 2A (MOD.)	SHEAR ENGAG.					SIZE CLASS 2B	MIN. DEPTH			SIZE	DEPTH
MS51830-201	10-32	5/16-18	.1517	.31	-	.272	.323	5/16-18	.37	LDS-3	TD1032L*	7/32	5/32
MS51830-105	10-24				-					LDS-3	TD1024L*		
MS51830-202	1/4-28	3/8-16	.2371	.37	-	.332	.385	3/8-16	.43	LDS-4	TD428L*	9/32	3/16
MS51830-106	1/4-20				-					LDS-4	TD420L*		
MS51830-203	5/16-24	7/16-14	.3049	.43	-	.397	.447	7/16-14	.50	LDS-5	TD524L*	11/32	3/16
MS51830-107	5/16-18				-					LDS-5	TD518L*		
MS51830-204	3/8-24	1/2-13	.4299	.50	-	.453	.510	1/2-13	.56	LDS-6	TD624L*	13/32	3/16
MS51830-108	3/8-16				-					LDS-6	TD616L*		
MS51830-205	7/16-20	9/16-12	.5665	.56	-	.516	.572	9/16-12	.62	LDS-7	TD720L*	15/32	3/16
MS51830-109	7/16-14				-					LDS-7	TD714L*		
MS51830-206	1/2-20	5/8-11	.7175	.62	-	.578	.635	5/8-11	.68	LDS-8	TD820L*	17/32	3/16
MS51830-110	1/2-13				-					LDS-8	TD813L*		

Lightweight Inserts - Locking													
PART NO.		DIMENSIONS					INSTALLATION						REMOVAL
NON-LOCKING	INTERNAL THREAD CLASS 3B	EXTERNAL THREAD		L	A	TAP DRILL DIAMETER	C'SINK DIAMETER +.010/-.000	THREAD TAP		INSTALLATION TOOL PART NO.	ALTERNATE INSTALLATION TOOL	DRILL	
		SIZE CLASS 2A (MOD.)	SHEAR ENGAG.					SIZE CLASS 2B	MIN. DEPTH			SIZE	DEPTH
MS51830-201L	10-32	5/16-18	.0945	.31	.31	.272	.323	5/16-18	.37	LDS-3	TD1032L*	7/32	5/32
MS51830-105L	10-24				.31					LDS-3	TD1024L*		
MS51830-202L	1/4-28	3/8-16	.1726	.37	.33	.332	.385	3/8-16	.43	LDS-4	TD428L*	9/32	3/16
MS51830-106L	1/4-20				.36					LDS-4	TD420L*		
MS51830-203L	5/16-24	7/16-14	.2321	.43	.34	.397	.447	7/16-14	.50	LDS-5	TD524L*	11/32	3/16
MS51830-107L*	5/16-18				.37					LDS-5	TD518L*		
MS51830-204L	3/8-24	1/2-13	.3366	.50	.36	.453	.510	1/2-13	.56	LDS-6	TD624L*	13/32	3/16
MS51830-108L	3/8-16				.40					LDS-6	TD616L*		
MS51830-205L	7/16-20	9/16-12	.4606	.56	.41	.516	.572	9/16-12	.62	LDS-7	TD720L*	15/32	3/16
MS51830-109L	7/16-14				.45					LDS-7	TD714L*		
MS51830-206L*	1/2-20	5/8-11	.5906	.62	.42	.578	.635	5/8-11	.68	LDS-8	TD820L*	17/32	3/16
MS51830-110L	1/2-13				.47					LDS-8	TD813L*		

* Indicates minimum activity-limited availability. Minimums may apply.



Heavy Duty Keenserts

Heavy Duty Inserts - Non-Locking																
PART NO.	DIMENSIONS						INSTALLATION						REMOVAL			
	NON-LOCKING	INTERNAL THREAD CLASS 3B	EXTERNAL THREAD		L	C' BORE DEPTH	A	TAP DRILL DIAMETER	C'SINK DIAMETER +.010/-0.000	THREAD TAP		INSTALLATION TOOL PART NO.	ALTERNATE INSTALLATION TOOL	DRILL		
			*SIZE CLASS 2A (MOD.)	SHEAR ENGAG.						SIZE CLASS 2B	MIN. DEPTH			SIZE	DEPTH	
MS51831-201	10-32	3/8-16	0.1901	0.31	0.07	-	0.332	0.385	3/8-16	0.37	HDS-3	THD1032L*	9/32	1/8		
MS51831-101	10-24										HDS-3	THD1024L*				
MS51831-202*	1/4-28	7/16-14	0.2842	0.37			-	0.397	0.447	7/16-14	0.43	HDS-4	THD428L*	11/32		
MS51831-102	1/4-20											HDS-4	THD420L*			
MS51831-203	5/16-24	1/2-13	0.3588	0.43			-	0.453	0.510	1/2-13	0.50	HDS-5	THD524L*	13/32		
MS51831-103	5/16-18											HDS-5	THD518L*			
MS51831-204	3/8-24	9/16-12	0.4975	0.50	-	0.516	0.572	9/16-12	0.56	HDS-6	THD624L*	15/32				
MS51831-104	3/8-16									HDS-6	THD616L*					
MS51831-205	7/16-20	5/8-11	0.7172	0.62	0.10	-	0.578	0.635	5/8-11	0.68	HDS-7	THD720L*	17/32	3/16		
MS51831-105	7/16-14										HDS-7	THD714L*				
MS51831-206	1/2-20	11/16-11 NS	0.8884	0.68			-	0.641	0.700	11/16-11 NS	0.75	HDS-8	THD820L*		19/32	
MS51831-106	1/2-13											HDS-8	THD813L*			
MS51831-207	9/16-18	13/16-16	1.2493	0.81			-	0.766	0.822	13/16-16 UN	0.94	HDS-9	THD918L*		23/32	
MS51831-107*	9/16-12											HDS-9	THD912L*			
MS51831-208	5/8-18	7/8-14	1.4866	0.87	-	0.828	0.885	7/8-14 UNF	1.00	HDS-10	THD1018L*	25/32				
MS51831-108	5/8-11									HDS-10	THD1011L*					
MS51831-209	3/4-16	1-1/8-12	2.4901	1.12	0.10	-	1.062	1.145	1-1/8-12 UNF	1.31	HDS-12	THD1216L*	31/32	5/16		
MS51831-109	3/4-10										HDS-12	THD1210L*				
MS51831-210*	7/8-14	1-1/4-12	3.1370	1.25			-	1.187	1.270	1-1/4-12 UNF	1.44	HDS-14	THD1414L*		1-3/32	
MS51831-110*	7/8-9											HDS-14	THD1409L*			
MS51831-211	1-12	1-3/8-12	3.8381	1.37			-	1.312	1.395	1-3/8-12 UNF	1.56	HDS-16	THD1612L*		1-7/32	
MS51831-111*	1-8											HDS-16	THD1608L*			

Heavy Duty Inserts - Locking														
MS51831-201L	10-32	3/8-16	0.1156	0.31	0.07	0.31	0.332	0.385	3/8-16	0.37	HDS-3	THD1032L*	9/32	1/8
MS51831-101L	10-24					0.31					HDS-3	THD1024L*		
MS51831-202L	1/4-28	7/16-14	0.1970	0.37		0.33	0.397	0.447	7/16-14	0.43	HDS-4	THD428L*	11/32	
MS51831-102L	1/4-20										0.36	HDS-4		
MS51831-203L	5/16-24	1/2-13	0.2608	0.43		0.34	0.453	0.510	1/2-13	0.50	HDS-5	THD524L*	13/32	
MS51831-103L	5/16-18										0.37	HDS-5		
MS51831-204L	3/8-24	9/16-12	0.3843	0.50	0.37	0.516	0.572	9/16-12	0.56	HDS-6	THD624L*	15/32		
MS51831-104L	3/8-16									0.41	HDS-6			THD616L*
MS51831-205L*	7/16-20	5/8-11	0.5831	0.62	0.42	0.578	0.635	5/8-11	0.68	HDS-7	THD720L*	17/32	3/16	
MS51831-105L	7/16-14									0.46	HDS-7			THD714L*
MS51831-206L	1/2-20	11/16-11 NS	0.7368	0.68	0.42	0.641	0.700	11/16-11 NS	0.75	HDS-8	THD820L*	19/32		
MS51831-106L	1/2-13									0.47	HDS-8			
MS51831-207L	9/16-18	13/16-16	1.0247	0.81	0.48	0.766	0.822	13/16-16 UN	0.94	HDS-9	THD918L*	23/32		
MS51831-107L*	9/16-12									0.54	HDS-9			
MS51831-208L*	5/8-18	7/8-14	1.2415	0.87	0.49	0.828	0.885	7/8-14 UNF	1.00	HDS-10	THD1018L*	25/32		
MS51831-108L	5/8-11									0.57	HDS-10			THD1011L*
MS51831-209L	3/4-16	1-1/8-12	2.4478	1.25	0.68	1.062	1.145	1-1/8-12 UNF	1.44	HDS-12	THD1216L*	31/32	5/16	
MS51831-109L*	3/4-10									0.75	HDS-12			THD1210L*
MS51831-210L*	7/8-14	1-1/4-12	3.0775	1.37	0.69	1.187	1.270	1-1/4-12 UNF	1.56	HDS-14	THD1414L*	1-3/32		
MS51831-110L*	7/8-9									0.77	HDS-14			
MS51831-211L*	1-12	1-3/8-12	3.7929	1.50	0.78	1.312	1.395	1-3/8-12 UNF	1.68	HDS-16	THD1612L*	1-7/32		
MS51831-111L*	1-8									0.86	HDS-16			

* Indicates minimum activity-limited availability. Minimums may apply.

Extra Heavy Duty Keenserts

Extra Heavy Duty Inserts - Non-Locking																	
PART NO.	DIMENSIONS						INSTALLATION						REMOVAL				
	NON-LOCKING	INTERNAL THREAD CLASS 3B	EXTERNAL THREAD		L	C' BORE DEPTH	A	TAP DRILL DIAMETER	C'SINK DIAMETER +.010/-0.000	THREAD TAP		INSTALLATION TOOL PART NO.	ALTERNATE INSTALLATION TOOL	DRILL			
			*SIZE CLASS 2A (MOD.)	SHEAR ENGAG.						SIZE CLASS 2B	MIN. DEPTH			SIZE	DEPTH		
MS51832-201	10-32	7/16-14	0.2299	0.31	.07	-	0.397	0.447	7/16-14	0.37	XHDS-3	THXD*	11/32	3/16			
MS51832-101*	10-24										XHDS-3	THXD*					
MS51832-202*	1/4-28	1/2-13	0.2997	0.37					-	0.453	0.510	1/2-13	0.44		XHDS-4	THXD*	13/32
MS51832-102	1/4-20								XHDS-4						THXD*		
MS51832-203*	5/16-24	9/16-12	0.4163	0.43					-	0.516	0.572	9/16-12	0.50		XHDS-5	THXD*	17/32
MS51832-103*	5/16-18								XHDS-5						THXD*		
MS51832-204*	3/8-24	5/8-11	0.5584	0.50					-	0.578	0.635	5/8-11	0.56		XHDS-6	THXD*	19/32
MS51832-104	3/8-16								XHDS-6						THXD*		
MS51832-205*	7/16-20	11/16-11 NS	0.8000	0.62					-	0.641	0.700	11/16-11 NS	0.68		XHDS-7	THXD*	23/32
MS51832-105*	7/16-14								XHDS-7						THXD*		
MS51832-206*	1/2-20	13/16-16	1.0293	0.68	-	0.766	0.822	13/16-16 UNF	0.75	XHDS-8	THXD*	25/32					
MS51832-106	1/2-13				XHDS-8					THXD*							
MS51832-207*	9/16-18	7/8-14	1.3761	0.81	-	0.828	0.885	7/8-14 UNF	0.94	XHDS-9	THXD*	27/32					
MS51832-107*	9/16-12				XHDS-9					THXD*							
MS51832-208*	5/8-18	1-12	1.6420	0.87	-	0.937	1.020	1-12 UNF	1.00	XHDS-10	THXD*	1-3/32					
MS51832-108*	5/8-11				XHDS-10					THXD*							
MS51832-209*	3/4-16	1-1/4-12	2.7966	1.12	-	1.187	1.270	1-1/4-12 UNF	1.31	XHDS-12	THXD*	1-7/32					
MS51832-109*	3/4-10				XHDS-12					THXD*							
MS51832-210*	7/8-14	1-3/8-12	3.4652	1.25	-	1.312	1.395	1-3/8-12 UNF	1.44	XHDS-14	THXD*	1-7/32					
MS51832-110*	7/8-9				XHDS-14					THXD*							
MS51832-211*	1-12	1-1/2-12	4.2374	1.37	-	1.437	1.520	1-1/2-12 UNF	1.56	XHDS-16	THXD*	1-11/32					
MS51832-111*	1-8				XHDS-16					THXD*							
Extra Heavy Duty Inserts - Locking																	
MS51832-201L*	10-32	7/16-14	0.1403	0.31	.07	.31	0.397	0.447	7/16-14	0.37	XHDS-3	THXD*	11/32	3/16			
MS51832-101L*	10-24					XHDS-3					THXD*						
MS51832-202L*	1/4-28	1/2-13	0.2005	0.37		.33	0.453	0.510	1/2-13	0.44	XHDS-4	THXD*	13/32				
MS51832-102L*	1/4-20					XHDS-4					THXD*						
MS51832-203L*	5/16-24	9/16-12	0.3029	0.43		.36	0.516	0.572	9/16-12	0.50	XHDS-5	THXD*	17/32				
MS51832-103L*	5/16-18					XHDS-5					THXD*						
MS51832-204L*	3/8-24	5/8-11	0.4243	0.50		.37	0.578	0.635	5/8-11	0.56	XHDS-6	THXD*	19/32				
MS51832-104L*	3/8-16					XHDS-6					THXD*						
MS51832-205L*	7/16-20	11/16-11 NS	0.6498	0.62		.41	0.641	0.700	11/16-11 NS	0.68	XHDS-7	THXD*	23/32				
MS51832-105L*	7/16-14					XHDS-7					THXD*						
MS51832-206L*	1/2-20	13/16-16	0.8642	0.68	.42	0.766	0.822	13/16-16 UNF	0.75	XHDS-8	THXD*	25/32					
MS51832-106L*	1/2-13				XHDS-8					THXD*							
MS51832-207L*	9/16-18	7/8-14	1.1131	0.81	.47	0.828	0.885	7/8-14 UNF	0.94	XHDS-9	THXD*	27/32					
MS51832-107L*	9/16-12				XHDS-9					THXD*							
MS51832-208L*	5/8-18	1-12	1.2770	0.87	.51	0.937	1.020	1-12 UNF	1.00	XHDS-10	THXD*	1-3/32					
MS51832-108L*	5/8-11				XHDS-10					THXD*							
MS51832-209L*	3/4-16	1-1/4-12	2.5505	1.25	.57	1.187	1.270	1-1/4-12 UNF	1.44	XHDS-12	THXD*	1-7/32					
MS51832-109L*	3/4-10				XHDS-12					THXD*							
MS51832-210L*	7/8-14	1-3/8-12	3.2769	1.37	.63	1.312	1.395	1-3/8-12 UNF	1.56	XHDS-14	THXD*	1-7/32					
MS51832-110L*	7/8-9				XHDS-14					THXD*							
MS51832-211L*	1-12	1-1/2-12	4.2135	1.50	.70	1.437	1.520	1-1/2-12 UNF	1.68	XHDS-16	THXD*	1-11/32					
MS51832-111L*	1-8				XHDS-16					THXD*							

* Indicates minimum activity-limited availability. Minimums may apply.



Lightweight Metric Keenserts

Lightweight Metric Inserts - Non-Locking														
PART NO.	DIMENSIONS					INSTALLATION						REMOVAL		
	NON-LOCKING	INTERNAL THREAD CLASS 5H	EXTERNAL THREAD		L Ⓟ 0.3	A	TAP DRILL DIAMETER	C'SINK DIAMETER +.25/-00	THREAD TAP		INSTALLATION TOOL PART NO.	ALTERNATE INSTALLATION TOOL	DRILL	
			SIZE CLASS 4H	SHEAR ENGAG.					SIZE CLASS 6H	MIN. DEPTH			SIZE	DEPTH
KNM 5x0.8	M 5x0.8	M 8x1.25	104.9	8.0	-	6.9	8.25	M 8x1.25	9.5	LDSM5	TM-5*	5.50	4.00	
KNM 6x1.0	M 6x1.0	M 10x1.25	177.7	10.0	-	8.8	10.25	M 10x1.25	11.5	LDSM6	TM-6*	7.50	4.75	
KNM 8x1.25	M 8x1.25	M 12x1.25	266.7	12.0	-	10.8	12.25	M 12x1.25	13.5	LDSM8	TM-8*	9.50		
KNM 8x1.0	M 8x1.0	M 12x1.25	266.7	12.0	-	10.8	12.25	M 12x1.25	13.5	LDSM8	TM-8*	9.50		
KNM 10x1.5	M 10x1.5	M 14x1.5	341.6	14.0	-	12.8	14.25	M 14x1.5	15.5	LDSM10	TM-10*	11.50		
KNM 10x1.25*	M 10x1.25	M 14x1.5	341.6	14.0	-	12.8	14.25	M 14x1.5	15.5	LDSM10	TM-10*	11.50		
KNM 12x1.75*	M 12x1.75	M 16x1.5	470.2	16.0	-	14.75	16.25	M 16x1.5	17.5	LDSM12	TM-12*	13.50		
KNM 12x1.25*	M 12x1.25	M 16x1.5	470.2	16.0	-	14.75	16.25	M 16x1.5	17.5	LDSM12	TM-12*	13.50		
Lightweight Metric Inserts - Locking														
KNML 5x0.8	M 5x0.8	M 8x1.25	83.1	8.0	7.6	6.9	8.25	M 8x1.25	9.5	LDSM5	TM-5*	5.50	4.00	
KNML 6x1.0	M 6x1.0	M 10x1.25	152.7	10.0	8.2	8.8	10.25	M 10x1.25	11.5	LDSM6	TM-6*	7.50	4.75	
KNML 8x1.25	M 8x1.25	M 12x1.25	242.5	12.0	9.5	10.8	12.25	M 12x1.25	13.5	LDSM8	TM-8*	9.50		
KNML 8x1.0	M 8x1.0	M 12x1.25	242.5	12.0	9.0	10.8	12.25	M 12x1.25	13.5	LDSM8	TM-8*	9.50		
KNML 10x1.5	M 10x1.5	M 14x1.5	316.4	14.0	10.0	12.8	14.25	M 14x1.5	15.5	LDSM10	TM-10*	11.50		
KNML 10x1.25*	M 10x1.25	M 14x1.5	316.4	14.0	9.5	12.8	14.25	M 14x1.5	15.5	LDSM10	TM-10*	11.50		
KNML 12x1.75	M 12x1.75	M 16x1.5	441.4	16.0	11.20	14.75	16.25	M 16x1.5	17.5	LDSM12	TM-12*	13.50		
KNML 12x1.25*	M 12x1.25	M 16x1.5	441.4	16.0	10.20	14.75	16.25	M 16x1.5	17.5	LDSM12	TM-12*	13.50		

* Indicates minimum activity-limited availability. Minimums may apply.

Heavy Duty Metric Keenserts

Heavy Duty Metric Inserts - Non-Locking														
PART NO.	DIMENSIONS					INSTALLATION						REMOVAL		
	NON-LOCKING	INTERNAL THREAD CLASS 5H	EXTERNAL THREAD		L Ⓟ 0.3	A	TAP DRILL DIAMETER	C'SINK DIAMETER +.25/-00	THREAD TAP		INSTALLATION TOOL PART NO.	ALTERNATE INSTALLATION TOOL	DRILL	
			SIZE CLASS 4H	SHEAR ENGAG.					SIZE CLASS 6H	MIN. DEPTH			SIZE	DEPTH
KNHM 4x0.7	M 4x0.7	M 8x1.25	104.9	8.0	-	6.9	8.25	M 8x1.25	9.5	HDSM4	THM-4*	5.50	4.00	
KNHM 5x0.8	M 5x0.8	M 10x1.25	177.7	10.0	-	8.8	10.25	M 10x1.25	12.5	HDSM5	THM-5*	7.50	4.75	
KNHM 6x1.0	M 6x1.0	M 12x1.25	266.7	12.0	-	10.8	12.25	M 12x1.25	14.5	HDSM6	THM-6*	9.50		
KNHM 8x1.25	M 8x1.25	M 14x1.5	341.6	14.0	-	12.8	14.25	M 14x1.5	16.5	HDSM8	THM-8*	11.50		
KNHM 8x1.0	M 8x1.0	M 14x1.5	341.6	14.0	-	12.8	14.25	M 14x1.5	16.5	HDSM8	THM-8*	11.50		
KNHM 10x1.5	M 10x1.5	M 16x1.5	470.2	16.0	-	14.75	16.25	M 16x1.5	18.5	HDSM10	THM-10*	13.50		
KNHM 10x1.25*	M 10x1.25	M 16x1.5	470.2	16.0	-	14.75	16.25	M 16x1.5	18.5	HDSM10	THM-10*	13.50		
KNHM 12x1.75	M 12x1.75	M 18x1.5	608.5	18.0	-	16.75	18.25	M 18x1.5	20.5	HDSM12	THM-12*	15.50		
KNHM 12x1.5*	M 12x1.5	M 18x1.5	608.5	18.0	-	16.75	18.25	M 18x1.5	20.5	HDSM12	THM-12*	15.50		
KNHM 12x1.25*	M 12x1.25	M 18x1.5	608.5	18.0	-	16.75	18.25	M 18x1.5	20.5	HDSM12	THM-12*	15.50		
KNHM 14x2.0*	M 14x2.0	M 20x1.5	770.5	20.0	-	18.75	20.25	M 20x1.5	22.5	HDSM14	THM-14*	17.50		
KNHM 14x1.5*	M 14x1.5	M 20x1.5	770.5	20.0	-	18.75	20.25	M 20x1.5	22.5	HDSM14	THM-14*	17.50		
KNHM 16x2.0	M 16x2.0	M 22x1.5	896.8	22.0	-	20.50	22.25	M 22x1.5	24.5	HDSM16	THM-16*	17.75		
KNHM 16x1.5*	M 16x1.5	M 22x1.5	896.8	22.0	-	20.50	22.25	M 22x1.5	24.5	HDSM16	THM-16*	17.75		
KNHM 18x1.5*	M 18x1.5	M 24x1.5	1084.4	24.0	-	22.50	24.25	M 24x1.5	26.5	HDSM18	THM-18*	19.75		
KNHM 20x2.5*	M 20x2.5	M 30x2.0	1774.3	30.0	-	28.00	30.25	M 30x2.0	34.5	HDSM20	THM-20*	25.75		
KNHM 20x1.5*	M 20x1.5	M 30x2.0	1774.3	30.0	-	28.00	30.25	M 30x2.0	34.5	HDSM20	THM-20*	25.75		
KNHM 22x1.5*	M 22x1.5	M 32x2.0	2045.9	32.0	-	30.00	32.25	M 32x2.0	36.5	HDSM22	THM-22*	27.75		
KNHM 24x3.0*	M 24x3.0	M 33x2.0	2189.4	33.0	-	31.00	33.25	M 33x2.0	37.5	HDSM24	THM-24*	28.75		
KNHM 24x2.0*	M 24x2.0	M 33x2.0	2189.4	33.0	-	31.00	33.25	M 33x2.0	37.5	HDSM24	THM-24*	28.75		
Heavy Duty Metric Inserts - Locking														
KNHML 4x0.7*	M 4x0.7	M 8x1.25	83.1	8.0	8.0	6.9	8.25	M 8x1.25	9.5	HDSM4	THM-4*	5.50	4.00	
KNHML 5x0.8*	M 5x0.8	M 10x1.25	152.7	10.0	8.7	8.8	10.25	M 10x1.25	12.5	HDSM5	THM-5*	7.50	4.75	
KNHML 6x1.0	M 6x1.0	M 12x1.25	242.5	12.0	9.5	10.8	12.25	M 12x1.25	14.5	HDSM6	THM-6*	9.50		
KNHML 8x1.25	M 8x1.25	M 14x1.5	316.4	14.0	10.0	12.8	14.25	M 14x1.5	16.5	HDSM8	THM-8*	11.50		
KNHML 8x1.0*	M 8x1.0	M 14x1.5	316.4	14.0	10.0	12.8	14.25	M 14x1.5	16.5	HDSM8	THM-8*	11.50		
KNHML 10x1.5	M 10x1.5	M 16x1.5	441.4	16.0	10.0	14.75	16.25	M 16x1.5	18.5	HDSM10	THM-10*	13.50		
KNHML 10x1.25*	M 10x1.25	M 16x1.5	441.1	16.0	10.0	14.75	16.25	M 16x1.5	18.5	HDSM10	THM-10*	13.50		
KNHML 12x1.75	M 12x1.75	M 18x1.5	561.8	18.0	10.7	16.75	18.25	M 18x1.5	20.5	HDSM12	THM-12*	15.50		
KNHML 12x1.5*	M 12x1.5	M 18x1.5	561.8	18.0	10.7	16.75	18.25	M 18x1.5	20.5	HDSM12	THM-12*	15.50		
KNHML 12x1.25*	M 12x1.25	M 18x1.5	561.8	18.0	10.7	16.75	18.25	M 18x1.5	20.5	HDSM12	THM-12*	15.50		
KNHML 14x2.0*	M 14x2.0	M 20x1.5	724.4	20.0	12.4	18.75	20.25	M 20x1.5	22.5	HDSM14	THM-14*	17.50		
KNHML 14x1.5*	M 14x1.5	M 20x1.5	724.4	20.0	12.4	18.75	20.25	M 20x1.5	22.5	HDSM14	THM-14*	17.50		
KNHML 16x2.0*	M 16x2.0	M 22x1.5	855.2	22.0	12.4	20.50	22.25	M 22x1.5	24.5	HDSM16	THM-16*	17.75		
KNHML 16x1.5*	M 16x1.5	M 22x1.5	855.2	22.0	12.4	20.50	22.25	M 22x1.5	24.5	HDSM16	THM-16*	17.75		
KNHML 18x1.5*	M 18x1.5	M 24x1.5	1051.5	24.0	16.8	22.50	24.25	M 24x1.5	26.5	HDSM18	THM-18*	19.75		
KNHML 20x2.5*	M 20x2.5	M 30x2.0	1736.4	30.0	17.5	28.00	30.25	M 30x2.0	34.5	HDSM20	THM-20*	25.75		
KNHML 20x1.5*	M 20x1.5	M 30x2.0	1736.4	30.0	17.5	28.00	30.25	M 30x2.0	34.5	HDSM20	THM-20*	25.75		
KNHML 22x1.5*	M 22x1.5	M 32x2.0	2014.7	32.0	18.3	30.00	32.25	M 32x2.0	36.5	HDSM22	THM-22*	27.75		
KNHML 24x3.0*	M 24x3.0	M 33x2.0	2161.9	33.0	19.0	31.00	33.25	M 33x2.0	37.5	HDSM24	THM-24*	28.75		
KNHML 24x2.0*	M 24x2.0	M 33x2.0	2161.9	33.0	19.0	31.00	33.25	M 33x2.0	37.5	HDSM24	THM-24*	28.75		

* Indicates minimum activity-limited availability. Minimums may apply.



Pneumatic Keensert Tooling

Characteristics

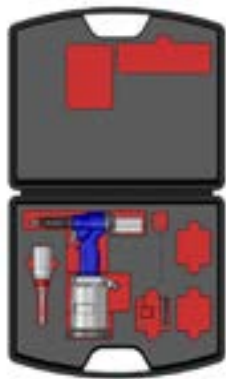
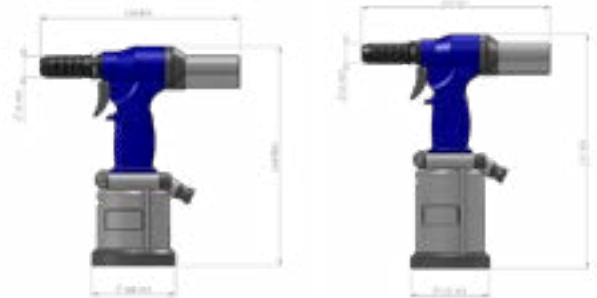
- The hydro-pneumatic Power Tool 3352PTC-1 is designed to install metric Keenserts from sizes M5 to M12, the slightly bigger 3352PTC-2 has a larger stroke to install M5 to M24 sized Keenserts. A specific nosepiece is required for each size.
- Individual adjustments can be made using the integrated force control depending on size of the Keensert and hardness of the surrounding material.
- One button operation allows for quick, consistent, and reliable installation.
- The hydro-pneumatic system is low maintenance, ergonomic and lightweight.
- Both tools can install Keenserts into alloys, light materials, steel and cast iron up to a maximum of 30 HRC or 1000 MPa.



Manual Keensert tools are available in inch and metric sizes for all Keensert inserts. Kits are available with an assortment of Keensert insert sizes with matching tools.

Technical Data and Standards

Technical Data		
TOOL	3352PT1	3352PT2
AIR WORKING PRESSURE	6 BAR/90 PSI	6 BAR/90 PSI
MIN – MAX AIR PRESSURE	5 - 7 BAR/70 - 100 PSI	5 - 7 BAR/70 - 100 PSI
AIR CONSUMPTION PER CYCLE AT 6 BAR	5 LITER/1.3 GALLONS	5 LITER/1.3 GALLONS
MAX STROKE	6.5 MM/0.26 INCH	8 MM/0.31 INCH
MAX FORCE	19,000 N/4,300 lbf	19,000 N/4,300 lbf
WEIGHT (WITHOUT NOSEPIECE)	1.800 Kg/4 POUNDS	2.200 Kg/4.85 POUNDS
VIBRATIONS	< 2.5 M/S ² /8.2 FT/S ²	< 2.5 M/S ² /8.2 FT/S ²
NOISE LEVEL	76 dB (A)	76 dB (A)



1



2



3



4



5



6

Standard Accessories

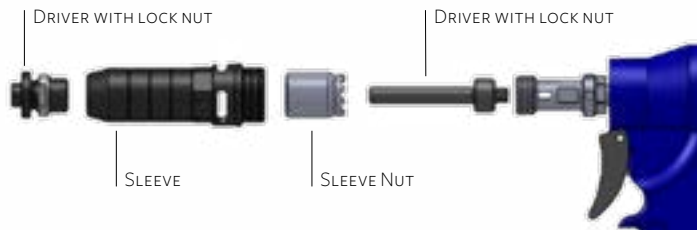
REF	CODE	QTY	DESCRIPTION
1	3352PTC-1 OR 3352PTC-2	1	POWER TOOL COMPLETE, CONSISTS OF:
	3352PT1 OR 3352PT2	1	POWER TOOL
2	3352-3064400	1	OIL BOTTLE (TYPE ISO VG 32 100CC)
3	3352-1010	1	PLASTIC TOOL CASE
4	3352-0207300	1	TOOL WRENCH
5	3352-2533800	1	REMOVAL BOLT
6	3352-4154200	1	ALLEN WRENCH 3,0MM
	MNL-3352-1	1	INSTRUCTION MANUAL
	MNL-3352-2	1	INSTALLATION MANUAL



Nosepieces & Installation

< M12

The Power Tools 3352PTC-1 and 3352PTC-2 comes without nosepieces, these have to be ordered separately according to the users needs.



> M12

Metric nosepieces from M16 to M24 are designed differently and sold as a set only.



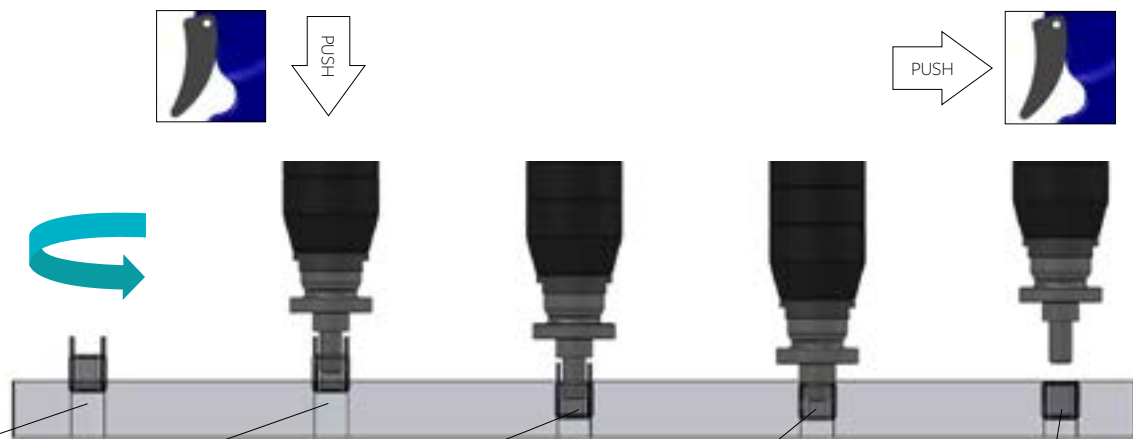
Mandrel, Driver and Lock Nut are part of the nose piece set for Keenserts <M12

The nosepieces are a modular 3 piece design meaning next to the nosepiece set each component is available as an individual part. The customer can transform a nosepiece for a regular Keenserts into a heavy type nose piece by just buying and replacing one part.

Due to the countersink with imperial Keenserts these nosepieces cannot install locking-type Keenserts.



Installation Sequence



1. Screw in the Keenserts by hand for about one to two turns.
2. Push the outer thread of the mandrel into the inner thread of the Keenserts. The screw-in process will start automatically activated by the pushing force.
3. Do not press the trigger yet. The screw-in operation stops automatically once the insert reaches its final position (when the thicker part of the Kees touch the countersunk surface).
4. Do not press the trigger yet. The screw-in operation stops automatically once the insert reaches its final position (when the thicker part of the Kees touch the countersunk surface).
5. Keep the trigger pressed, after the Kees are pressed in the mandrel will rotate counterclockwise until it gets out of the Keenserts. Then release the trigger.

Available Nosepieces

Available Metric Nosepieces				
KEENSERTS SIZE	NOSEPIECE SET	SPARE PART MANDREL	SPARE PART DRIVER	SPARE PART LOCK NUT
THINWALL METRIC SERIES				
KNM 5x0.8	3352TM5x0.8AY	3352S04M5x0.8BY	3352S05M5AY	3352S03-1AY
KNM 6x1.0	3352TM6x1.0AY	3352S04M6x1.0BY	3352S05M6AY	
KNM 8x1.25	3352TM8x1.25AY	3352S04M8x1.25BY	3352S05M8AY	
KNM 10x1.5	3352TM10x1.5AY	3352S04M10x1.5BY	3352S05M10AY	
KNM 12x1.75	3352TM12x1.75AY	3352S04M12x1.75BY	3352S05M12AY	
HEAVY-DUTY METRIC SERIES (3352-PTC1 REQUIRED)				
KNHM 5x0.8	3352THM5x0.8AY	3352S04M5x0.8BY	3352S05HM5AY	3352S03-1AY
KNHM 6x1.0	3352THM6x1.0AY	3352S04M6x1.0BY	3352S05HM6AY	
KNHM 8x1.25	3352THM8x1.25AY	3352S04M8x1.25BY	3352S05HM8AY	
KNHM 10x1.5	3352THM10x1.5AY	3352S04M10x1.5BY	3352S05HM10AY	
KNHM 12x1.75	3352THM12x1.75AY	3352S04M12x1.75BY	3352S05HM12AY	
HEAVY-DUTY METRIC SERIES (3352PTC-2 REQUIRED)				
KNHM 16x2.0	3352THM16x2.0AY	AVAILABLE AS SET ONLY		
KNHM 18x1.5	3352THM18x1.5AY			
KNHM 20x2.5	3352THM20x2.5AY			
KNHM 24x3.0	3352THM24x3.0AY			

Available Imperial Nosepieces				
KEENSERTS SIZE	NOSEPIECE SET	SPARE PART MANDREL	SPARE PART DRIVER	SPARE PART LOCK NUT
THINWALL IMPERIAL SERIES				
MS51830-201	3352T1032AY	3352S01-1032BY	3352S02-10AY	3352S03-1AY
MS51830-105	3352T1024AY	3352S01-1024BY		
MS51830-202	3352T428AY	3352S01-428BY	3352S02-1/4AY	
MS51830-106	3352T420AY	3352S01-420BY		
MS51830-203	3352T524AY	3352S01-524BY	3352S02-5/16AY	
MS51830-107	3352T518AY	3352S01-518BY		
MS51830-204	3352T624AY	3352S01-624BY	3352S02-3/8AY	
MS51830-108	3352T616AY	3352S01-616BY		
MS51830-205	3352T720AY	3352S01-720BY	3352S02-7/16AY	
MS51830-109	3352TH714AY	3352S01-714BY		
HEAVY-DUTY IMPERIAL SERIES				
MS51831-201	3352TH1032AY	3352S01-1032BY	3352S02-H10AY	3352S03-1AY
MS51831-101	3352TH1024AY	3352S01-1024BY		
MS51831-202	3352TH428AY	3352S01-428BY	3352S02-H1/4AY	
MS51831-102	3352TH420AY	3352S01-420BY		
MS51831-203	3352TH524AY	3352S01-524BY	3352S02-H5/16AY	
MS51831-103	3352TH518AY	3352S01-518BY		
MS51831-204	3352TH624AY	3352S01-624BY	3352S02-H3/8AY	
MS51831-104	3352TH616AY	3352S01-616BY		
MS51831-205	3352TH720AY	3352S01-720BY	3352S02-H7/16AY	
MS51831-105	3352TH714AY	3352S01-714BY		



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