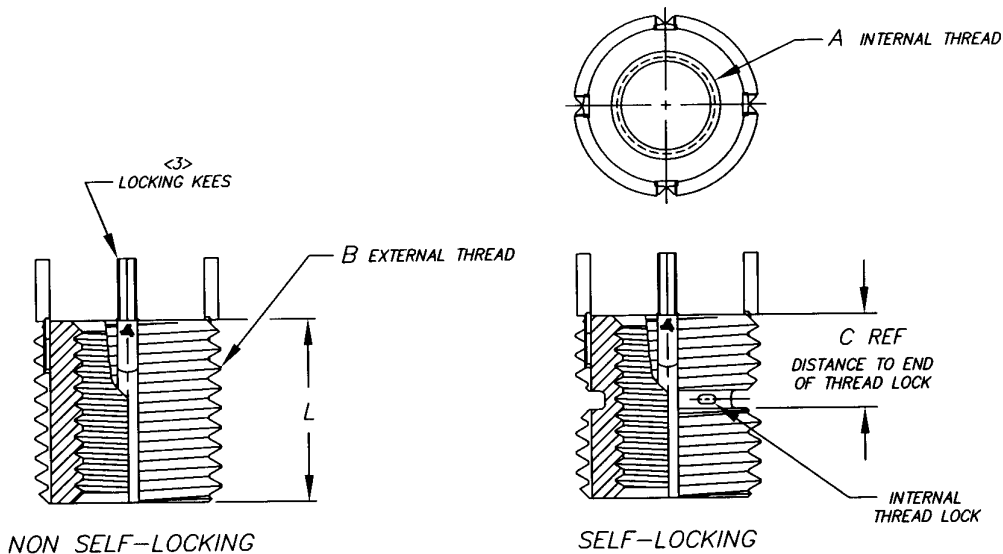


Camloc . Delron . Deutsch . Huck . K-Fast . Kaynar . Microdot . RAM . Rosan . Screwcorp . Tridair . Voi-Shan

MANUFACTURE OF THE PROPRIETARY PARTS SHOWN HERE WITHOUT WRITTEN CONSENT OF ALCOA FASTENING SYSTEMS IS ABSOLUTELY PROHIBITED.

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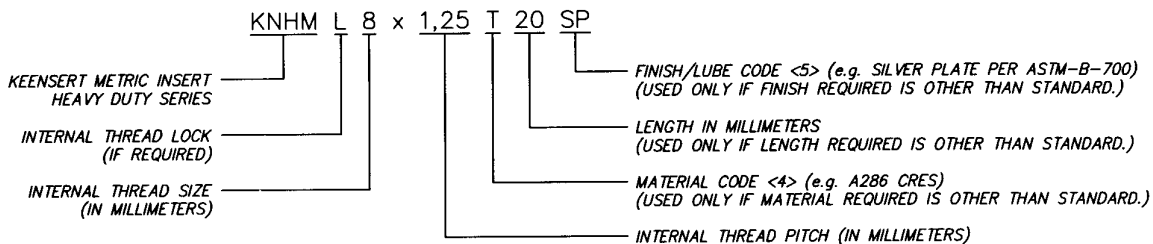
NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETERS.
- <2> THREADS ARE PER BRITISH STANDARD 3643. (I.S.O.)
- <3> INSERTS WITH INTERNAL THREAD SIZE 6 AND UNDER ARE FURNISHED WITH 2 LOCKING KEES. SIZE 7 AND ABOVE SIZES ARE FURNISHED WITH 4 LOCKING KEES.
- <4> MATERIAL CODES:
 - 4.1 STANDARD MATERIAL IS 303 CRES PER AMS 5640 OR ASTM-A-582, OR 303SE PER AMS 5640, AMS 5738 OR ASTM-A-582.
 - 4.2 OPTIONAL MATERIALS WITH THEIR DESIGNATED FINISH:
 - M = CHROME MOLY STEEL, TYPE 4140 PER AMS 5626 OR TYPE 8740 PER AMS 6322. 125 KSI MINIMUM TENSILE STRENGTH. IDENTIFIED BY TWO NON-PARALLEL DASH MARKS ON TOP OF INSERT. CAD PLATE PER AMS-QQ-P-416, TYPE I, CLASS 3.
 - MX = CHROME MOLY STEEL, TYPE 4140 PER AMS 5626 OR TYPE 8740 PER AMS 6322. 160 KSI MINIMUM TENSILE STRENGTH. IDENTIFIED BY TWO PARALLEL DASH MARKS ON TOP OF INSERT. CAD PLATE PER AMS-QQ-P-416, TYPE I, CLASS 3.
 - NIT = ARMCO, NITRONIC 60 CRES PER ASTM-A-479 OR AMS 5848. PASSIVATE PER AMS 2700. IDENTIFIED BY FOUR (4) DASH MARKS APPROXIMATELY 90° APART.
 - T = A286 CRES PER AMS 5731, AMS 5732 OR AMS 5737. 140 KSI MINIMUM TENSILE STRENGTH. IDENTIFIED BY ONE DASH MARK ON TOP OF INSERT. PASSIVATE PER AMS 2700.
 - TX = A286 CRES PER AMS 5731, AMS 5732 OR AMS 5737. 160 KSI MINIMUM TENSILE STRENGTH. IDENTIFIED BY LETTER "H" ON TOP OF INSERT. PASSIVATE PER AMS 2700.
 - TA = 6Al-4V TITANIUM ALLOY PER AMS 4928, AMS 4930 OR AMS 4967; OR 3Al-2.5V TITANIUM ALLOY PER AMS 4943 (MIL-T-9047) 100 KSI MINIMUM TENSILE.
 - TB = 6Al-4V TITANIUM ALLOY PER AMS 4930 OR AMS 4967. 160 KSI MINIMUM TENSILE STRENGTH. THIS MATERIAL CODE IS ONLY AVAILABLE FOR NON-LOCKING PARTS.
 - 4.3 KEE MATERIAL FOR ALL STANDARD AND SPECIAL MATERIAL INSERTS IS 302 CRES PER ASTM-A-580 (CHEMISTRY ONLY). CONTACT AFS ENGINEERING FOR OPTIONAL MATERIALS.
- <5> FINISH CODES:
 - NO CODE = PASSIVATE PER AMS 2700.
 - SP = SILVER PLATE PER ASTM-B-700, TYPE 1, GRADE A, CLASS N.
 - SX = CAD. PLATE PER AMS-QQ-P-416 TYPE I, CLASS 3.
 - SY = CAD. PLATE PER AMS-QQ-P-416 TYPE II, CLASS 3.
 - SZ = CAD. PLATE PER AMS-QQ-P-416 TYPE II, CLASS 2.

DRY FILM LUBRICANT ON ALL LOCKING INSERTS UNLESS SPECIFIED BY ADDING "NE" TO FINISH CODE.

6. PART NUMBER EXAMPLE:

KNHML8x1,25T20SP



APPROVED DATE 10-23-03	CURRENT DESIGN ACTIVITY: Alcoa Fastening Systems Tridair Products 3000 W. Lamita Blvd. Torrance, California 90505	TITLE: KEENSERT INSERT HEAVY DUTY, METRIC 03-066	CURRENT DESIGN ACTIVITY: CAGE CODE: 29372 SALES DRAWING NO. KNHM(L)
REV. LETTER AND DATE G 2/6/07 CA		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES & ASME Y14.5M TOLERANCES:	
DAF NUMBER 76886		ANGLES = ±3° DECIMALS .XX = ±.02 .XXX = ±.010	SHEET 1 OF 5

TABLE I

PART NUMBER	DIMENSIONS				
	A INTERNAL THREAD <2> CLASS 5H	B EXTERNAL THREAD <2> CLASS 4h	MIN. SHEAR ENGAG. AREA mm ²	L ± 0,3	C REF
KNHM4x0,7	M4x0,7	M8x1,25	104,9	8,0	8,0
KNHML4x0,7			83,1		
KNHM5x0,8	M5x0,8	M10x1,25	177,7	10,0	8,7
KNHML5x0,8			152,7		
KNHM6x1,0	M6x1,0	M12x1,25	266,7	12,0	9,5
KNHML6x1,0			242,5		
KNHM7x1,0	M7x1,0	M12x1,25	266,7	12,0	9,5
KNHML7x1,0			242,5		
KNHM8x1,0	M8x1,0	M14x1,5	341,6	14,0	10,0
KNHML8x1,0			316,4		
KNHM8x1,25	M8x1,25	M14x1,5	341,6	14,0	10,0
KNHML8x1,25			316,4		
KNHM10x1,25	M10x1,25	M16x1,5	470,2	16,0	10,0
KNHML10x1,25			441,4		
KNHM10x1,5	M10x1,5	M16x1,5	470,2	16,0	10,0
KNHML10x1,5			441,4		
KNHM12x1,25	M12x1,25	M18x1,5	608,5	18,0	10,7
KNHML12x1,25			561,8		
KNHM12x1,5	M12x1,5	M18x1,5	608,5	18,0	10,7
KNHML12x1,5			561,8		
KNHM12x1,75	M12x1,75	M18x1,5	608,5	18,0	10,7
KNHML12x1,75			561,8		
KNHM14x1,5	M14x1,5	M20x1,5	770,5	20,0	12,4
KNHML14x1,5			724,4		
KNHM14x2,0	M14x2,0	M20x1,5	770,5	20,0	12,4
KNHML14x2,0			724,4		
KNHM16x1,5	M16x1,5	M22x1,5	896,8	22,0	12,4
KNHML16x1,5			855,2		
KNHM16x2,0	M16x2,0	M22x1,5	896,8	22,0	12,4
KNHML16x2,0			855,2		
KNHM18x1,5	M18x1,5	M24x1,5	1084,4	24,0	16,8
KNHML18x1,5			1051,5		
KNHM18x2,0	M18x2,0	M24x1,5	1084,4	24,0	16,8
KNHML18x2,0			1051,5		
KNHM18x2,5	M18x2,5	M24x1,5	1084,4	24,0	16,8
KNHML18x2,5			1051,5		
KNHM20x1,5	M20x1,5	M30x2,0	1774,3	30,0	17,5
KNHML20x1,5			1736,4		
KNHM20x2,0	M20x2,0	M30x2,0	1774,3	30,0	17,5
KNHML20x2,0			1736,4		
KNHM20x2,5	M20x2,5	M30x2,0	1774,3	30,0	17,5
KNHML20x2,5			1736,4		
KNHM22x1,5	M22x1,5	M32x2,0	2045,9	32,0	18,3
KNHML22x1,5			2014,7		
KNHM22x2,0	M22x2,0	M32x2,0	2045,9	32,0	18,3
KNHML22x2,0			2014,7		
KNHM24x2,0	M24x2,0	M33x2,0	2189,4	33,0	19,0
KNHML24x2,0			2161,9		

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
APPROVED DATE 10-23-03	CURRENT DESIGN ACTIVITY: Alcoa Fastening Systems  Tridair Products 3000 W. Lomita Blvd. Torrance, California 90505	TITLE: KEENSERT INSERT HEAVY DUTY, METRIC 03-066	CURRENT DESIGN ACTIVITY: CAGE CODE: 29372 SALES DRAWING NO. KNHM(L)
REV. LETTER AND DATE G 2/6/07 		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES & ASME Y14.5M TOLERANCES:	ANGLES DECIMALS = ±3' .XX = ±.02 .XXX = ±.010
DAF NUMBER 76886			SHEET 2 OF 5

TABLE 1 (CONTINUED)

PART NUMBER	DIMENSIONS				
	A INTERNAL THREAD <2> CLASS 5H	B EXTERNAL THREAD <2> CLASS 4h	MIN. SHEAR ENGAG. AREA mm ²	L ± 0,3	C REF
KNHM24x3,0	M24x3,0	M33x2,0	2189,4	33,0	19,0
KNHML24x3,0			2161,9		
KNHM26x1,5	M26x1,5	M36x2,0	2733,6	36,0	20,9
KNHML26x1,5			2553,3		
KNHM30x1,5	M30x1,5	M39x2,0	3243,9	39,0	22,6
KNHML30x1,5			3025,4		
KNHM30x3,5	M30x3,5	M39x2,0	3243,9	39,0	22,6
KNHML30x3,5			3025,4		
KNHM36x4,0	M36x4,0	M45x2,0	T B D	45,0	24,3
KNHML36x4,0			T B D		

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APPROVED DATE 10-23-03	CURRENT DESIGN ACTIVITY: Alcoa Fastening Systems 	TITLE: KEENSERT INSERT HEAVY DUTY, METRIC 03-066	CURRENT DESIGN ACTIVITY: CAGE CODE: 29372 SALES DRAWING NO. KNHM(L)
REV. LETTER AND DATE G 2/6/07 CA	Tridair Products 3000 W. Lamita Blvd Torrance, California 90505	UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES & ASME Y14.5M TOLERANCES:	
DAF NUMBER 76886		ANGLES = ±3° DECIMALS .XX = ±02 .XXX = ±010	SHEET 3 OF 5

TABLE II

PART NUMBER	INSTALLATION DATA					REMOVAL DATA	
	TAP DRILL DIA	C'SINK DIA	THREAD TAP		INSTALLATION TOOL PART NUMBER	DRILL	
			SIZE CLASS 6H	MIN. DEPTH		SIZE	DEPTH
KNHM4x0,7	7,000	8,50	M8x1,25	9,5	THM-4	5,50	4,00
KNHML4x0,7	6,875	8,25					
KNHM5x0,8	8,900	10,50	M10x1,25	12,5	THM-5	7,50	4,75
KNHML5x0,8	8,775	10,25					
KNHM6x1,0	10,900	12,50	M12x1,25	14,5	THM-6	9,50	4,75
KNHML6x1,0	10,775	12,25					
KNHM7x1,0	10,900	12,50	M12x1,25	14,5	TRKHM-6	9,50	4,75
KNHML7x1,0	10,775	12,25					
KNHM8x1,0	12,930	14,50	M14x1,5	16,5	THM-8	11,50	4,75
KNHML8x1,0	12,775	14,25					
KNHM8x1,25	12,930	14,50	M14x1,5	16,5	THM-8	11,50	4,75
KNHML8x1,25	12,775	14,25					
KNHM10x1,25	14,880	16,50	M16x1,5	18,5	THM-10	13,50	4,75
KNHML10x1,25	14,725	16,25					
KNHM10x1,5	14,880	16,50	M16x1,5	18,5	THM-10	13,50	4,75
KNHML10x1,5	14,725	16,25					
KNHM12x1,25	16,880	18,50	M18x1,5	20,5	THM-12	15,50	4,75
KNHML12x1,25	16,725	18,25					
KNHM12x1,5	16,880	18,50	M18x1,5	20,5	THM-12	15,50	4,75
KNHML12x1,5	16,725	18,25					
KNHM12x1,75	16,880	18,50	M18x1,5	20,5	THM-12	15,50	4,75
KNHML12x1,75	16,725	18,25					
KNHM14x1,5	18,880	20,50	M20x1,5	22,5	THM-14	17,50	4,75
KNHML14x1,5	18,725	20,25					
KNHM14x2,0	18,880	20,50	M20x1,5	22,5	THM-14	17,50	4,75
KNHML14x2,0	18,725	20,25					
KNHM16x1,5	20,630	22,50	M22x1,5	24,5	THM-16	17,75	6,35
KNHML16x1,5	20,475	22,25					
KNHM16x2,0	20,630	22,50	M22x1,5	24,5	THM-16	17,75	6,35
KNHML16x2,0	20,475	22,25					
KNHM18x1,5	22,630	24,50	M24x1,5	26,5	THM-18	19,75	6,35
KNHML18x1,5	22,475	24,25					
KNHM18x2,0	22,630	24,50	M24x1,5	26,5	THM-18	19,75	6,35
KNHML18x2,0	22,475	24,25					
KNHM18x2,5	22,630	24,50	M24x1,5	26,5	THM-18	19,75	6,35
KNHML18x2,5	22,475	24,25					
KNHM20x1,5	28,130	30,50	M30x2,0	34,5	THM-20	25,75	6,35
KNHML20x1,5	27,975	30,25					
KNHM20x2,0	28,130	30,50	M30x2,0	34,5	THM-20	25,75	6,35
KNHML20x2,0	27,975	30,25					
KNHM20x2,5	28,130	30,50	M30x2,0	34,5	THM-20	25,75	6,35
KNHML20x2,5	28,975	30,25					
KNHM22x1,5	30,130	32,50	M32x2,0	36,5	THM-22	27,75	6,35
KNHML22x1,5	29,975	32,25					
KNHM22x2,0	30,130	32,50	M32x2,0	36,5	THM-22	27,75	6,35
KNHML22x2,0	29,975	32,25					
KNHM24x2,0	31,130	33,50	M33x2,0	37,5	THM-24	28,75	6,35
KNHML24x2,0	30,975	33,25					

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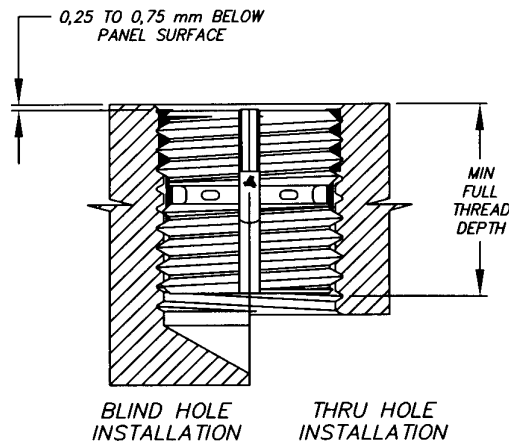
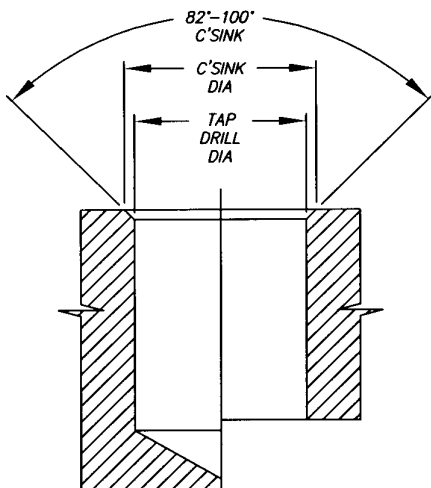
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REV. LETTER AND DATE G 2/6/07 C 1		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES & ASME Y14.5M TOLERANCES:	ANGLES = ±3° DECIMALS .XX = ±.02 .XXX = ±.010
DAF NUMBER 76886			SHEET 4 OF 5

TABLE II (CONTINUED)

PART NUMBER	INSTALLATION DATA				REMOVAL DATA		
	TAP DRILL DIA	C'SINK DIA	THREAD TAP		INSTALLATION TOOL PART NUMBER	DRILL	
			SIZE CLASS 6H	MIN. DEPTH		SIZE	DEPTH
KNHM24x3,0	31,130	33,50	M33x2,0	37,5	THM-24	28,75	6,35
KNHML24x3,0	30,975	33,25					
KNHM26x1,5	34,130	36,50	M36x2,0	40,5	THM-26	31,75	6,35
KNHML26x1,5	33,975	36,25					
KNHM30x1,5	37,130	39,50	M39x2,0	43,5	THM-30	34,75	6,35
KNHML30x1,5	36,975	39,25					
KNHM30x3,5	37,130	39,50	M39x2,0	43,5	THM-30	34,75	6,35
KNHML30x3,5	36,975	39,25					
KNHM36x4,0	43,130	45,50	M45x2,0	49,5	THM-36	40,75	6,35
KNHML36x4,0	42,975	45,25					



7. INSTALLATION PROCEDURES:

- 7.1 PREPARE PANEL IN ACCORDANCE WITH THE DIMENSIONS SHOWN IN TABLE II.
- 7.2 SCREW IN INSERT WITH FINGERS OR INSTALLATION TOOL. INSERT IS DESIGNED TO STOP AT CORRECT DEPTH.
- 7.3 DRIVE LOCKING KEES DOWN USING THE INSTALLATION TOOL.

8. REMOVAL PROCEDURES:

- 8.1 USE THE DRILL SIZES AND DEPTHS SPECIFIED IN TABLE II TO REMOVE MATERIAL BETWEEN THE KEES.
- 8.2 DEFLECT KEES INWARD AND BREAK OFF.
- 8.3 REMOVE INSERT WITH AN "EASY OUT" TYPE TOOL.

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REV. LETTER AND DATE G 2/6/07C.A		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES & ASME Y14.5M TOLERANCES:	
DAF NUMBER 76886		ANGLES = ±3° DECIMALS .XX = ±0.02 .XXX = ±0.010	SHEET 5 OF 5