



CONCENTRICITY: ϕM OF RECESS TO PITCH DIAM, WITHIN .010" FOR -4 AND BELOW, WITHIN .015" FOR -5 AND ABOVE.

HEAD MARKING SHALL BE DEPRESSED (.010 MAX) AND ARRANGED AS FOLLOWS:

MARK WITH BASIC PART NUMBER ("PMT" OPTIONAL) EXCEPT MARK .1120-40 SIZE WITH "4", .1380-32 SIZE WITH "6", .1640-32 SIZE WITH "8", AND OPTIONAL .1900-32 SIZE WITH "10". THESE SIZES ALSO TO BE MARKED "C" FOR A286 OR "W" FOR WASPALOY.

MARK WITH MANUFACTURER'S SYMBOL OR TRADEMARK (SYMBOL LOCATION OPTIONAL IN ANY SECTOR)
LENGTH DASH NUMBER AND "L" OR "P" WHEN APPLICABLE. (SEE NOTE II)
"L" IDENTIFIES SCREWS WITH OPTIONAL LOCKING ELEMENT.
"P" IDENTIFIES SCREWS WITH PATCH TYPE LOCKING ELEMENT ONLY.

MARK WITH RECESS DASH NUMBER, ENCIRCLED. RECESS NUMBER SHOULD BE APPROXIMATELY 25% LARGER THAN OTHER NUMERALS IN HEAD MARKING.

TABLE I - DIMENSIONS

ø DASH NUMBER	THREAD SIZE	NOTE 3 MAX. øA	NOTE 3 ABSOLUTE MIN. øA'	NOTE 3 MAX. B	MAX. øD	MAX. E	NOTE 8 F	H GAGE (4) PROTRUSION		NOTE 9 J	RADIUS R	MAX. U	+.0002 -.0000 øW GAGE	RECESS SIZE
								NOM.	TOL.					
-04	.1120-40	.226	.193	.044	.112	.010	.125	.0202	±.0010	.075	.012 .002	.031	.1740	MT-00
-06	.1380-32	.280	.246	.061	.138	.010	.156	.0232	±.0011	.094		.020 .010		.2208
-08	.1640-32	.331	.296	.072	.164	.012		.0186	±.0012		.039			
-3	.1900-32	.381	.338	.082	.190	.015		.0210	±.0013					
-4	.2500-28	.508	.456	.111	.250	.018	.178	.0299	±.0015	.107	.045		.4318	MT-1
-5	.3125-24	.635	.575	.138	.312	.021	.208	.0354	±.0017	.125	.025 .010	.052	.5449	MT-2
-6	.3750-24	.763	.692	.166	.375	.025		.0414	±.0019		.030 .015		.6580	MT-3

"WASPALLOY" IS A REGISTERED TRADEMARK OF UTC CORPORATION

© COPYRIGHT 2013 PHILLIPS SCREW COMPANY.
ALL RIGHTS RESERVED.

THIS DRAWING EMBODIES A CONFIDENTIAL AND PROPRIETARY DESIGN OWNED BY PHILLIPS SCREW COMPANY AND MAY NOT BE COPIED OR REPRODUCED, IN WHOLE OR IN PART, IN ANY FORM WHATSOEVER WITHOUT THE EXPRESS WRITTEN PERMISSION OF PHILLIPS SCREW COMPANY. THIS DRAWING AND DESIGN IS PROVIDED UNDER A CONFIDENTIAL RELATIONSHIP FOR A SPECIFIC PURPOSE AND THE RECIPIENT AGREES TO USE IT ONLY FOR SUCH PURPOSE. ALL PATENT, TRADEMARK, AND OTHER RIGHTS IN AND TO THIS DRAWING AND DESIGN ARE EXPRESSLY RESERVED BY PHILLIPS SCREW COMPANY, BELLINGHAM, MASSACHUSETTS, U.S.A.

TITLE: SCREW 100° FLAT HD., FULL THREAD
MORTORQ SPIRAL® DRIVE, A286 CRES AND WASPALOY
SELF-LOCKING AND NON-LOCKING

DRAWN G. LaMONICA	DATE 07-28-04	DRAWING NUMBER PMT-738
CHECKED: G. LaMONICA	DATE 03-13-06	SHEET 1 OF 4
PHILLIPS SCREW CO. 155 FARM STREET, BELLINGHAM, MA 02019 U.S.A. PHONE: 774-396-6190 FAX: 508-966-2326		

PHILLIPS II® PHILLIPS® POZIDRIV® ACR® POZISQUARE® PHILLIPS SQUARE-DRIV® TORQ-SET® TRI-WING® MORTORQ® HEXSTIX®
AND POZILOCK® ARE REGISTERED TRADEMARKS OF THE PHILLIPS SCREW COMPANY

REVISION
1/ AUTOCAD UPDATE 08-18-04
2/ REVISED 03-13-06
3/ REVISED 07-31-07
4/ REVISED 05-01-09
5/ REVISED 06-03-09
6/ REVISED 8-21-13

TABLE II - RECESS DIMENSIONS

Ø DASH NUMBER	THREAD SIZE	RECESS SIZE	T MAX. REF.	ØM MAX. REF.	GAGE PENETRATION		TORQUE IN-LBS MIN (IO)	RAISED METAL MAX (IO)	TENSILE STRENGTH LBS. A286	TENSILE STRENGTH LBS. WASPALLOY
					MAX.	MIN.				
-04	.1120-40	MT-00	.045	.1210	.022	.015	13	.005	830	1,104
-06	.1380-32	MT-00	.052	.1210	.030	.021	30	.005	1,260	1,662
-08	.1640-32	MT-0	.065	.1704	.032	.023	50	.005	1,950	2,542
-3	.1900-32	MT-1	.078	.2405	.027	.020	60	.005	2,860	3,610
-4	.2500-28	MT-1	.095	.2405	.047	.038	140	.005	5,820	6,539
-5	.3125-24	MT-2	.117	.3080	.055	.046	220	.005	9,260	10,416
-6	.3750-24	MT-3	.142	.3537	.070	.061	520	.006	14,000	15,687

TABLE III

	DASH NUMBER FOR PREFERED LENGTH																						
DASH NO.	3	4	5	6	7	8	9	10	11	12	13	14	15	16	18	20	22	24	26	28	30	32	34 TO 96
LENGTH	.19	.25	.31	.38	.44	.50	.56	.62	.69	.75	.81	.88	.94	1.00	1.12	1.25	1.38	1.50	1.62	1.75	1.88	2.00	2.12 TO 6.00
LENGTH TOL.	+.00 -.03														+.00 -.06								+.00 -.09

MATERIAL: UNS N07001 (WASPALLOY) HEAT RESISTANT ALLOY WITH COMPOSITION PER AMS 5708 OR DTD5639 OR EN2959 OR EN3220
A286 CORROSION RESISTANT STEEL WITH COMPOSITION PER AMS 5731 OR AMS 5737.
LOCKING ELEMENT- PLASTIC PER MIL-F-18240 AND QPL-18240.

HEAT TREAT: WASPALLOY 175 KSI MINIMUM ULTIMATE TENSILE. HEAT TREAT: IF HOT FORMED, THE FORGING TEMPERATURE SHALL NOT EXCEED 1150°C AND SHALL BE AIR COOLED. PRIOR TO MACHINING, THE HEADED BLANKS SHALL BE SOLUTION HEAT TREATED AT A TEMPERATURE IN THE RANGE 1020 TO 1080°C FOR 1 TO 4 HOURS AND AIR COOLED OR FASTER. FINAL HEAT TREATMENT SHALL BE CARRIED AFTER COMPLETION OF MACHINING AND THREAD ROLLING. THE PARTS SHALL BE STABILISED AT 850°C+/-10°C FOR 4 HOURS AND AIR COOLED OR FASTER TO ROOM TEMPERATURE, THEN PRECIPITATION HEAT TREATED AT A TEMPERATURE OF 760°C+/-10°C FOR 16 HOURS IN AIR, ARGON OR EQUIVALENT AND COOLED TO ROOM TEMPERATURE IN AIR OR FASTER.

A286 CRES 160 KSI MINIMUM ULTIMATE TENSILE.

FINISH: UNPLATED SCREWS - PASSIVATE TO MEET REQUIREMENTS OF NAS4003.
PLATED SCREWS - CADMIUM PLATE PER QQ-P-416, TYPE 11, CLASS 2. EMBRITTLEMENT TEST PER QQ-P-416 DOES NOT APPLY. CADMIUM PLATED A286 CRES SCREWS SHALL BE IDENTIFIED WITH GREEN DYE OR PAINT ON THE THREAD END. MAXIMUM COVERAGE MAY INCLUDE THE CHAMFER PLUS ONE COMPLETE THREAD.
COATED SCREWS - ALUMINUM COATING PER NAS4006.

CODE: BASIC PART NUMBER = NON-LOCKING, PLATED SCREW.
FIRST DASH NUMBER INDICATES DIAMETER. SEE TABLE I AND II.
SECOND DASH NUMBER INDICATES LENGTH IN .0625 INCREMENTS (ROUNDED TO TWO DECIMAL PLACES). SEE TABLE III FOR TABULATIONS OF LENGTH DIMENSIONS. USE OF .25 INCH INCREMENTS IS RECOMMENDED FOR SCREWS OVER 3 INCHES LONG. INTERMEDIATE OR LONGER LENGTHS MAY BE SPECIFIED BY USE OF WHOLE DASH NUMBER ONLY.
ADD "A" AFTER DIAMETER DASH NUMBER FOR ALUMINUM COATED SCREWS. MAY BE USED WITH "L" OR "P" CODE.
ADD "L" AFTER DIAMETER DASH NUMBER FOR SELF-LOCKING SCREWS. OPTIONAL CONFIGURATION. DO NOT USE WITH "P" CODE.
ADD "U" AFTER DIAMETER DASH NUMBER FOR UNPLATED SCREWS. MAY BE USED WITH "L" OR "P" CODE.
ADD "P" AFTER DIAMETER DASH NUMBER FOR SELF-LOCKING SCREWS, PATCH TYPE LOCKING ELEMENT. DO NOT USE WITH "L" CODE.
WHEN MULTIPLE LETTER CODES ARE USED, SEQUENCE MUST BE IN ALPHABETICAL ORDER.
ADD "W" IN PLACE OF FIRST DASH TO INDICATE N07001 (WASPALLOY) MATERIAL

"WASPALLOY" IS A REGISTERED TRADEMARK OF UTC CORPORATION

©COPYRIGHT 2013 PHILLIPS SCREW COMPANY.
ALL RIGHTS RESERVED.

THIS DRAWING EMBODIES A CONFIDENTIAL AND PROPRIETARY DESIGN OWNED BY PHILLIPS SCREW COMPANY AND MAY NOT BE COPIED OR REPRODUCED, IN WHOLE OR IN PART, IN ANY FORM WHATSOEVER WITHOUT THE EXPRESS WRITTEN PERMISSION OF PHILLIPS SCREW COMPANY. THIS DRAWING AND DESIGN IS PROVIDED UNDER A CONFIDENTIAL RELATIONSHIP FOR A SPECIFIC PURPOSE AND THE RECIPIENT AGREES TO USE IT ONLY FOR SUCH PURPOSE. ALL PATENT, TRADEMARK, AND OTHER RIGHTS IN AND TO THIS DRAWING AND DESIGN ARE EXPRESSLY RESERVED BY PHILLIPS SCREW COMPANY, BELLINGHAM, MASSACHUSETTS, U.S.A.

TITLE: SCREW 100° FLAT HD., FULL THREAD
MORTORQ SPIRAL® DRIVE, A286 CRES AND WASPALLOY
SELF-LOCKING AND NON-LOCKING

DRAWN G. LoMONICA	DATE 07-28-04	DRAWING NUMBER PMT-738
CHECKED: G. LoMONICA	DATE 03-13-06	SHEET 2 OF 4

PHILLIPS SCREW CO. 155 FARM STREET, BELLINGHAM, MA 02019 U.S.A.
PHONE: 774-396-6190 FAX: 508-966-2326

PHILLIPS II® PHILLIPS® POZIDRIV® ACR® POZISQUARE® PHILLIPS SQUARE-DRIV® TORQ-SET® TRI-WING® MORTORQ® HEXSTIX®
AND POZILOCK® ARE REGISTERED TRADEMARKS OF THE PHILLIPS SCREW COMPANY

REVISION
1/ AUTOCAD UPDATE 08-18-04
2/ REVISED 03-13-06
3/ REVISED 09-11-07
4/ REVISED 03-14-08
5/ REVISED 07-02-08
6/ REVISED 05-01-09
7/ REVISED 06-03-09
8/ REVISED 8-21-13

EXAMPLE OF PART NUMBER:

PMT738W3-IO = SCREW, .1900-32 THREAD, .62 LENGTH, NON LOCKING, WASPALOY PER UNS N07001
PMT738-3-IO = SCREW, .1900-32 THREAD, .62 LENGTH, NON-LOCKING, PLATED.
PMT738-3AIO = SCREW, .1900-32 THREAD, .62 LENGTH, NON-LOCKING, ALUMINUM COATED.
PMT738-3LIO = SCREW, .1900-32 THREAD, .62 LENGTH, SELF-LOCKING, OPTIONAL CONFIGURATION, PLATED.
PMT738-3LIUO = SCREW, .1900-32 THREAD, .62 LENGTH, SELF-LOCKING, OPTIONAL CONFIGURATION, UNPLATED.
PMT738-3PUIO = SCREW, .1900-32 THREAD, .62 LENGTH, SELF-LOCKING, PATCH TYPE, UNPLATED.

NOTES:

- (1) DIAMETER OF UNTHREADED PORTION OF SCREW SHALL NOT BE LESS THAN MINIMUM PITCH DIAMETER NOR MORE THAN MAXIMUM MAJOR DIAMETER OF THREAD.
- (2) DASH 3 LENGTH IS NOT PRACTICAL FOR SIZE .1900-32 AND LARGER. DASH 4 IS NOT PRACTICAL FOR SIZE .2500-28 AND LARGER. DASH 5 LENGTH IS NOT PRACTICAL FOR SIZES .3125-24 AND .3750-24.
- (3) DIMENSIONS A, A', AND B ARE INCLUDED FOR ENGINEERING REFERENCE ONLY AND ARE NOT TO BE USED FOR INSPECTION. VALUES A, A', AND B ARE CALCULATED LIMITS RESULTING FROM TOLERANCES ON W, H, E, AND HEAD ANGLE.
- (4) DIMENSIONS FOR H GAGE PROTRUSION SHALL BE INSPECTED PER NAS527.
- (5) SCREWS LESS THAN 2 DIAMETERS IN LENGTH - COMPLETE THREADS SHALL EXTEND TO WITHIN 2 PITCHES OF BEARING SURFACE OF HEAD AND INCOMPLETE THREADS MAY EXTEND UP TO BEARING SURFACE.
SCREWS 2 DIAMETERS THRU 2 INCHES IN LENGTH - COMPLETE THREADS SHALL EXTEND TO WITHIN 2 PITCHES OF TANGENCY OF "R" AND INCOMPLETE THREADS MAY EXTEND UP TO "R" FILLET AREA.
SCREWS LONGER THAN 2 INCHES - COMPLETE THREADS SHALL EXTEND A MINIMUM OF 1.75 INCHES FROM END OF SCREW AND INCOMPLETE THREADS MAY EXTEND UP TO "R" FILLET AREA.
INCOMPLETE THREADS - SEE NAS4003.
- (6) CONCENTRICITY: CONICAL SURFACE OF HEAD TO THREAD PITCH DIAMETER WITHIN .005 FIM.
- (7) PROTRUSION OF LOCKING ELEMENTS SHALL BE CONTROLLED SO THAT IT WILL PASS FREELY OR WITH FINGER PRESSURE THROUGH A RING GAGE WITH DIAMETER OF .010 (+.001, -.000) GREATER THAN MAXIMUM MAJOR DIAMETER OF SCREW THREAD.
- (8) "F" MINIMUM (5 THREAD PITCHES) = REGION OF MINIMUM ENGAGEMENT WITH FEMALE THREAD REQUIRED TO MEET MIL-F-18240 REQUIREMENTS. LOCKING ELEMENT WITHIN "F" REGION MUST DEVELOP REQUIRED TORQUE WHEN TESTED PER MIL-F-18240.
- (9) FOR EASE OF STARTING, LOCKING ELEMENT SHALL NOT BE EFFECTIVE IN "J" AREA (3 THREAD PITCHES).
- (10) MORTORQ SPIRAL DRIVE SCREW SHALL WITHSTAND MINIMUM TORQUE VALUES LISTED IN TABLE II WITHOUT DAMAGE TO RECESS OR DRIVER. SCREW RECESS SHALL BE TORQUE TESTED IN BOTH INSTALLATION AND REMOVAL DIRECTIONS. APPLY TABULATED TORQUE IN CW DIRECTION WITH MAXIMUM END LOAD OF 20 POUNDS. PARTS ARE ACCEPTABLE IF RAISED METAL AT EDGE OF RECESS DOES NOT EXCEED TABULATED VALUES. APPLY TABULATED TORQUE IN CCW DIRECTION WITH MAXIMUM END LOAD OF 40 POUNDS. PARTS ARE ACCEPTABLE IF TORQUE IS ATTAINED WITHOUT RESTRICTION ON RAISED METAL.
- (11) "A" ALUMINUM COATED AND "U" UNPLATED CODES NEED NOT APPEAR ON THE HEAD OF THE SCREW.
- (12) MAGNETIC PERMEABILITY SHALL BE LESS THAN 2.0 (AIR = 1.0) FOR FIELD STRENGTH H = 200 OERSTEDS USING A MAGNETIC PERMEABILITY INDICATOR PER MIL-I-17214 OR EQUIVALENT.
- (13) DIMENSIONS TO BE MET AFTER PLATING.
- (14) DIMENSIONS ARE IN INCHES.

SURFACE TEXTURE:

(AA MAX PER ANSI B46.1) BEARING SURFACE OF THE HEAD, THREAD FLANKS AND THREAD ROOT 32;
OTHER SURFACES 125.

PROCUREMENT SPECIFICATION:

NAS4003, EXCEPT AS NOTED. COLD WORK OF HEAD TO SHANK FILLET IS NOT REQUIRED.
LOCKING ELEMENT FOR SELF-LOCKING SCREWS: PER MS15981 AND MIL-F-18240. ANY TYPE OF CONFIGURATION IS OPTIONAL WHEN "L" CODE IS SPECIFIED. PATCH TYPE LOCKING ELEMENT (WITH NO METAL REMOVED) IS REQUIRED WHEN "P" CODE IS SPECIFIED. LOCKING ELEMENT MUST BE SUPPLIED BY A QUALIFIED SOURCE LISTED IN QPL18240. SHIPPING NOTICE SHOULD IDENTIFY THE SUPPLIER OF SCREW AND LOCKING ELEMENT SEPARATELY. RECESS TORQUE VALUES SHALL NOT APPLY.

"WASPALLOY" IS A REGISTERED TRADEMARK OF UTC CORPORATION

©COPYRIGHT 2013 PHILLIPS SCREW COMPANY.
ALL RIGHTS RESERVED.

THIS DRAWING EMBODIES A CONFIDENTIAL AND PROPRIETARY DESIGN OWNED BY PHILLIPS SCREW COMPANY AND MAY NOT BE COPIED OR REPRODUCED, IN WHOLE OR IN PART, IN ANY FORM WHATSOEVER WITHOUT THE EXPRESS WRITTEN PERMISSION OF PHILLIPS SCREW COMPANY. THIS DRAWING AND DESIGN IS PROVIDED UNDER A CONFIDENTIAL RELATIONSHIP FOR A SPECIFIC PURPOSE AND THE RECIPIENT AGREES TO USE IT ONLY FOR SUCH PURPOSE. ALL PATENT, TRADEMARK, AND OTHER RIGHTS IN AND TO THIS DRAWING AND DESIGN ARE EXPRESSLY RESERVED BY PHILLIPS SCREW COMPANY, BELLINGHAM, MASSACHUSETTS, U.S.A.

TITLE: SCREW 100° FLAT HD., FULL THREAD
MORTORQ SPIRAL® DRIVE, A286 CRES AND WASPALOY
SELF-LOCKING AND NON-LOCKING

DRAWN G. LaMONICA	DATE 07-28-04	DRAWING NUMBER PMT-738 SHEET 3 OF 4
CHECKED: G. LaMONICA	DATE 03-13-06	

PHILLIPS SCREW CO. 155 FARM STREET, BELLINGHAM, MA 02019 U.S.A.
PHONE: 774-396-6190 FAX: 508-966-2326

PHILLIPS® II PHILLIPS® POZIDRIV® ACR® POZISQUARE® PHILLIPS SQUARE-DRIV® TORQ-SET® TRI-WING® MORTORQ® HEXSTIX®
AND POZILOCK® ARE REGISTERED TRADEMARKS OF THE PHILLIPS SCREW COMPANY

REVISION
1/ AUTOCAD UPDATE 08-18-04
2/ REVISED 03-13-06
3/ REVISED 05-01-09
4/ REVISED 8-21-13

**ROLLS-ROYCE APPROVED SOURCES OF MORTORQ[®] PMT-738 BOLTS
ADDITIONAL SOURCES FOR OTHER END USERS AVAILABLE FROM
PHILLIPS SCREW COMPANY UPON REQUEST**

APPROVED SOURCES OF SUPPLY	ADDRESS	IDENTITY CODE	WASPALLOY APPROVAL
A F FASTENERS, LTD	UNIT 14-15 GLOSSOP BROOK BUSINESS PARK GLOSSOP DERBYSHIRE SK13 7AJ ENGLAND	J	N
LINREAD NORTHBRIDGE	CROSSGATE ROAD PARK FARM, REDDITCH WORCESTERSHIRE B98 7TD ENGLAND	L	Y
SPS TECHNOLOGIES, LTD T. J. BROOKS DIV.	191 BARKBY ROAD TROON INDUSTRIAL AREA LEICESTER LE4 9HX ENGLAND	TBJ	Y
MONOGRAM AEROSPACE FASTENERS	3423 SOUTH GARFIELD AVENUE P.O. BOX 6847 LOS ANGELES, CA 90022-0547	MI	N
ALCOA FASTENING SYSTEMS CITY OF INDUSTRY AEROSPACE PRODUCTS	135 N. UNRUH AVE. CITY OF INDUSTRY, CA 91744	Vs	Y

REVISION
1/ REVISED 03-02-10
2/ REVISED 09-22-10
3/ REVISED 07-15-11
4/ REVISED 8-21-13

"WASPALLOY" IS A REGISTERED TRADEMARK OF UTC CORPORATION

© COPYRIGHT 2013 PHILLIPS SCREW COMPANY.
ALL RIGHTS RESERVED.

THIS DRAWING EMBODIES A CONFIDENTIAL AND PROPRIETARY DESIGN OWNED BY PHILLIPS SCREW COMPANY AND MAY NOT BE COPIED OR REPRODUCED, IN WHOLE OR IN PART, IN ANY FORM WHATSOEVER WITHOUT THE EXPRESS WRITTEN PERMISSION OF PHILLIPS SCREW COMPANY. THIS DRAWING AND DESIGN IS PROVIDED UNDER A CONFIDENTIAL RELATIONSHIP FOR A SPECIFIC PURPOSE AND THE RECIPIENT AGREES TO USE IT ONLY FOR SUCH PURPOSE. ALL PATENT, TRADEMARK, AND OTHER RIGHTS IN AND TO THIS DRAWING AND DESIGN ARE EXPRESSLY RESERVED BY PHILLIPS SCREW COMPANY, BELLINGHAM, MASSACHUSETTS, U.S.A.

TITLE: SCREW 100° FLAT HD., FULL THREAD
MORTORQ SPIRAL[®] DRIVE, A286 CRES AND WASPALLOY
SELF-LOCKING AND NON-LOCKING

DRAWN L. DOUGAN	DATE 05-01-09	DRAWING NUMBER PMT-738 SHEET 4 OF 4
CHECKED: G. DILLING	DATE 05-01-09	

PHILLIPS SCREW CO. 155 FARM STREET, BELLINGHAM, MA 02019 U.S.A.
PHONE: 774-396-6190 FAX: 508-966-2326

PHILLIPS[®] II PHILLIPS[®] POZIDRIV[®] ACR[®] POZISQUARE[®] PHILLIPS SQUARE-DRIV[®] TORQ-SET[®] TRI-WING[®] MORTORQ[®] HEXSTIX[®]
AND POZILOCK[®] ARE REGISTERED TRADEMARKS OF THE PHILLIPS SCREW COMPANY