

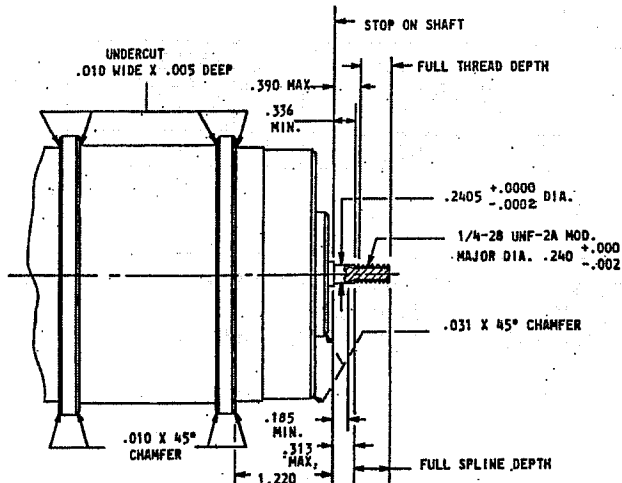
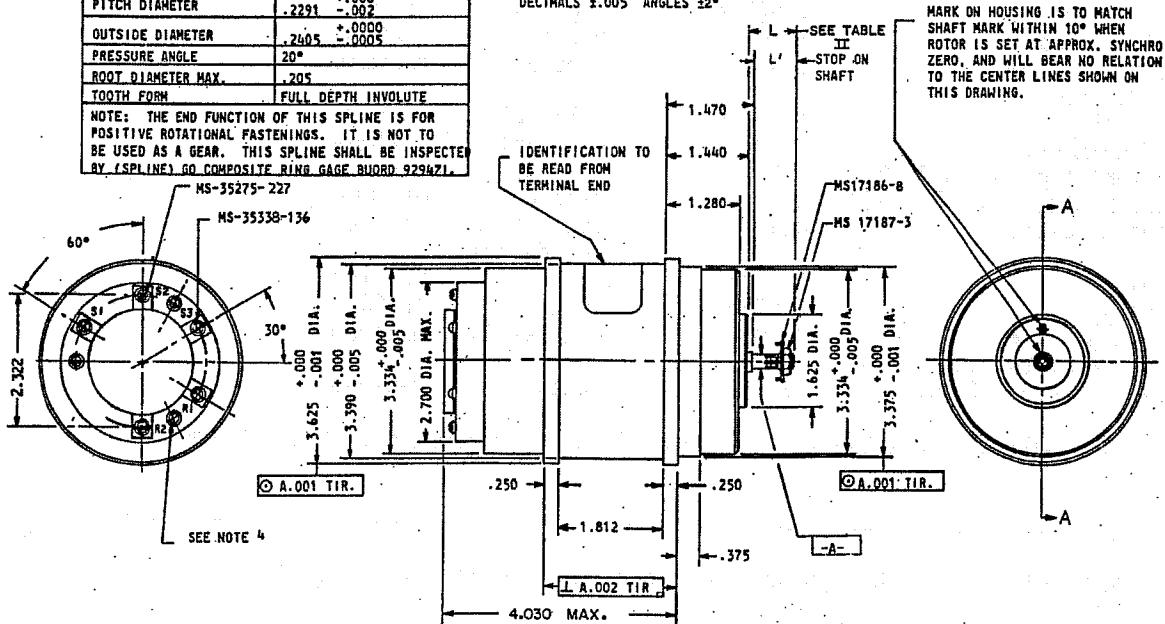
MILITARY SPECIFICATION SHEET  
 SYNCHRO TORQUE RECEIVER TRANSMITTER, TYPE 37TRX4a

This Specification has been Approved by the Ordnance Systems Command, Department of the Navy.  
 THE COMPLETE REQUIREMENTS FOR PROCURING THE SYNCHRO DESCRIBED HEREIN SHALL CONSIST OF THIS DOCUMENT AND THE ISSUE IN EFFECT OF SPECIFICATION MIL-S-20708.

SPLINE DATA	
TEETH	22
PITCH	96
PITCH DIAMETER	.2291 $\begin{smallmatrix} +.000 \\ -.002 \end{smallmatrix}$
OUTSIDE DIAMETER	.2405 $\begin{smallmatrix} +.0000 \\ -.0005 \end{smallmatrix}$
PRESSURE ANGLE	20°
ROOT DIAMETER MAX.	.205
TOOTH FORM	FULL DEPTH INVOLUTE

NOTE: THE END FUNCTION OF THIS SPLINE IS FOR POSITIVE ROTATIONAL FASTENINGS. IT IS NOT TO BE USED AS A GEAR. THIS SPLINE SHALL BE INSPECTED BY SPLINE GO COMPOSITE RING GAGE BUORD 929471.

UNLESS OTHERWISE SPECIFIED  
 DIMENSIONS ARE IN INCHES  
 TOLERANCES ON FRACTIONS  $\pm 1/64$   
 DECIMALS  $\pm .005$  ANGLES  $\pm 2^\circ$



PARTIAL SECTION  
 A - A

NOTES:

- PERPENDICULARITY AND CONCENTRICITY SHALL BE MEASURED WITH THE UNIT IN A VERTICAL POSITION SUPPORTED BY THE SHAFT, THEN THE HOUSING ROTATED.
- RUNOUT OF FEATURE "A" (SMOOTH PORTION) OF SHAFT SHALL NOT EXCEED .0008 TIR.
- END PLAY AND RADIAL PLAY SHALL BE MEASURED DURING THE REVERSAL OF THE FOLLOWING LOADS:  
 END PLAY - 1 POUND    RADIAL PLAY - 1 POUND
- THE TERMINAL BLOCK SHALL BE SECURED BY SCREWS OTHER THAN THE TERMINAL SCREWS. RECESSES SHALL ALLOW TERMINAL LUGS MS-25036-6 TO BE INSTALLED WITH THE BARRELS INBOARD OR OUTBOARD, AND PREVENT THE LUGS FROM TURNING.
- MINOR VARIATIONS OF UNIT CONFIGURATION ARE PERMITTED FOR UNDIMENSIONED DESIGN DETAIL.
- THE FOLLOWING LIST OF HARDWARE, MS-35275-227 MACHINE SCREW (5 REQUIRED), MS-35338-136 LOCK WASHER (5 REQUIRED), MS-17186-8 DRIVE WASHER (1 REQUIRED), MS-17187-3 NUT (1 REQUIRED), SHALL BE PACKAGED IN A VENTILATED ENVELOPE MADE OF MATERIAL HAVING A PH VALUE OF 6-8 THAT IS COMPATIBLE WITH THE HEIGHT OF THE CONTENTS, THEN THE PACKAGED HARDWARE SHALL BE PLACED IN THE UNIT SYNCHRO PACKAGE. FOR INFORMATION ONLY, SEE SYNCHRO CLAMP MS-17183.
- PENDING ISSUANCE OF A QUALIFIED PRODUCTS LIST (QPL) A SAMPLE OF THE SYNCHROS TO BE FURNISHED UNDER THIS SPECIFICATION SHALL BE SUBJECTED TO THE PREPRODUCTION TESTS AS SPECIFIED IN MIL-S-20708.

[FSC 5990]

TABLE I

Requirement	Value	Unit	Tolerance
Frequency	400	Hz	+1%
Primary Voltage	115	volts	+1%
Primary Current	1885	milliamps	maximum
Primary Power	20.0	watts	maximum
Impedance:			
Z <sub>ss</sub>	3.0-4.0	ohms	min.-max.
Impedance Angle:			
Z <sub>ss</sub>	66-70	degrees	min.-max.
Transformation Ratio	0.783	-----	+2%
Phase Shift	1.0(lead)	degrees	maximum
Receiver Error	36.0	minutes	maximum
Electrical Error	8.0	minutes	maximum
Null Voltage:			
Total	170	millivolts	maximum
Fundamental	35.0	millivolts	maximum
Synchronizing Time 30° +2°	1.0	seconds	maximum
Synchronizing Time 177° +2°	2.0	seconds	maximum
Torque Gradient	0.9	ounce-inches per degree	minimum
Radial Play	0.0008	inches	maximum
End Play	0.0030	inches	+0.0020
Temperature Rise	60.0	degrees(C)	maximum
Variation of Voltage (+10%) and Freq. (-5%)	32.5	watts	maximum

This unit shall not be subjected to the altitude requirements of MIL-S-20708.

Part number: M20708/70 plus applicable dash number from Table II.

TABLE II

DASH NO.	SHAFT DIAMETER	SHAFT STYLE	TERMINAL END	L' DIMENSION TO STOP ON SHAFT	L REFERENCE FREE SHAFT LENGTH
*-001	.2405	Splined	Terminal Board	.700 ± .010	.730 ± .010

\*Dash number -001 shall be the NATO Standard.

Custodians:	Review Activities:	User Activities:	Preparing Activity:
Navy-AS	Navy-SH,OS	Marine Corp. MC U.S. Coast Guard-CG	Navy-OS Project No. 5990-N-039

**SPECIFICATION ANALYSIS SHEET**

Form Approved  
Budget Bureau No. 119-R004

**INSTRUCTIONS**

This sheet is to be filled out by personnel either Government or contractor, involved in the use of the specification in procurement of products for ultimate use by the Department of Defense. This sheet is provided for obtaining information on the use of this specification which will insure that suitable products can be procured with a minimum amount of delay and at the least cost. Comments and the return of this form will be appreciated. Fold on lines on reverse side, staple in corner, and send to preparing activity (as indicated on reverse hereof).

**SPECIFICATION**

MIL-S 20708/70C(0S) SYNCHRO TORQUE RECEIVER TRANSMITTER, TYPE 37TRX4a

ORGANIZATION (of submitter)

CITY AND STATE

CONTRACT NO.

QUANTITY OF ITEMS PROCURED

DOLLAR AMOUNT

\$

**MATERIAL PROCURED UNDER A**

DIRECT GOVERNMENT CONTRACT       SUBCONTRACT

1. HAS ANY PART OF THE SPECIFICATION CREATED PROBLEMS OR REQUIRED INTERPRETATION IN PROCUREMENT USE?  
A. GIVE PARAGRAPH NUMBER AND WORDING.

B. RECOMMENDATIONS FOR CORRECTING THE DEFICIENCIES.

2. COMMENTS ON ANY SPECIFICATION REQUIREMENT CONSIDERED TOO RIGID

3. IS THE SPECIFICATION RESTRICTIVE?

YES       NO IF "YES", IN WHAT WAY?

4. REMARKS (Attach any pertinent data which may be of use in improving this specification. If there are additional papers, attach to form and place both in an envelope addressed to preparing activity)

SUBMITTED BY (Printed or typed name and activity)

DATE

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DEPARTMENT OF THE NAVY  
Naval Ordnance Systems Command  
Washington, D.C. 20360

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