

NOT MEASUREMENT
SENSITIVE

MIL-STD-710D

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SUPERSEDING

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MILITARY STANDARD

SYNCHROS, 60 AND 400 Hz,
SELECTION AND APPLICATION OF



AMSC - N/A

FSC 5990

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FOREWORD

1. This military standard is approved for use by all Departments and Agencies of the Department of Defense.
2. Beneficial comments (recommendations, additions, deletions) and any pertinent data which may be of use in improving this document should be addressed to: Commanding Officer, Naval Air Engineering Center, Systems Engineering and Standardization Department, Code 53, Lakehurst, NJ 08733-5100, by using the self-addressed Standardization Document Improvement Proposal (DD Form 1426) appearing at the end of this document or by letter.

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1. SCOPE

1.1 Scope. This standard establishes requirements for the selection and application of synchros for use in military equipments. Included are the following:

- a. A list of synchros considered by the Department of Defense as standard for use in the design of military equipments.
- b. Requirements for the application of synchros in military equipment.

Specific requirements for the synchros listed in this standard are included in the latest issue of MIL-S-20708 and its associated specification sheets.

1.2 Purpose. The purpose of this standard is to:

- a. Provide the equipment designer with a list of synchros from a Qualified Products List (QPL) considered acceptable for military applications.
- b. Restrict the number of synchro types used in military equipment in order to provide effective logistic support of field equipment, and to concentrate effort in the improvement of manufacturing techniques for the synchro types included in this standard.
- c. Establish criteria pertinent to choice, application, and use of synchros in military equipment.

2. APPLICABLE DOCUMENTS

2.1 Government documents.

2.1.1 Specifications and standards. The following specifications and standards form a part of this standard to the extent specified herein. Unless otherwise specified, the issues of these documents are those listed in the issue of the Department of Defense Index of Specifications and Standards (DODISS) cited in the solicitation (see 6.2).

SPECIFICATIONSMILITARY

MIL-S-20708	Synchros, 60 and 400 Hz; and associated specification sheets.
MIL-S-81963	Servocomponents, Precision Instrument, Rotating, Common Requirements and Tests, General Specification for

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(Unless otherwise indicated, copies of federal and military specifications, standards, and handbooks are available from the Standardization Document Order Desk, 700 Robbins Avenue, Building #4, Section D, Philadelphia, PA 19111-5094.)

2.2 Order of precedence. In the event of a conflict between the text of this standard and references cited herein, the text of MIL-S-20708 shall take precedence. Nothing in this document or MIL-S-20708 supersedes applicable laws and regulations unless a specific exemption has been obtained.

3. DEFINITIONS

3.1 Synchro terminology. The meaning of terms used in this standard are those commonly encountered in synchro engineering practice.

a. Synchro - A synchro is an electromechanical analog converter which, through electromagnetic means, gives an electrical output that is a function of its rotor position; or positions its rotor to an angle that is a function of the electrical input. There are two types of synchros--torque and control.

(1) Torque synchro - Provides a mechanical output.

(2) Control synchro - Provides an electrical output.

b. Synchro System - A synchro system is a circuit containing one or more synchros that operate on angular information and convey this information to one or more remotely located indicators. There are also two types of synchro systems.

(1) Torque Synchro System - A torque synchro system is a system in which the transmitted signal does actual work.

(2) Control Synchro System - A control synchro system is a system in which the transmitted signal controls a source of power which does actual work.

3.2 Nonstandard synchros. Any synchro selected which is not listed in Table I of this standard shall be considered a nonstandard synchro. A Part Approval Request for use of a nonstandard item shall be submitted when specified by the contracting activity as a deliverable data item (see 6.3).

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4. GENERAL REQUIREMENTS

4.1 Choice of synchro types. For simplification and standardization, the number of synchro types appearing in any particular equipment shall be the minimum necessary to obtain specified performance, consistent with established design practices. This document lists standard synchro types, all of which are designed for future military applications. The choice of synchro types to be incorporated in new equipments shall be confined to those types listed in Table I of this standard whenever possible. For those applications where none of the types listed in Table I satisfy the requirements, a Part Approval Request for use of nonstandard synchros shall be submitted when specified by the contracting activity (see 6.3). The term "new equipments" includes:

- a. Equipments basically new in design with no similar prototypes.
- b. Equipments possessing a similar prototype, but completely redesigned electrically.

The term "new equipments" does not include:

- a. Equipments that are merely reorders, without change, of existing equipment.
- b. Equipments that are purely physical redesigns of existing equipments.
- c. Equipments that are likely to be manufactured in very small quantities, as determined by the contracting activity.

4.2 Criteria for inclusion in the listing of standard synchros. The criteria for the selection and inclusion of synchros in the list of standard synchros shown in Table I are:

- a. Coordinated MIL-S-20708 specification sheets must be available for the synchros.
- b. The synchro types must be listed on, or approved for listing on, the latest issue of QPL-20708.
- c. Synchros must have a part number ending with -01 (plus the modification letter) to meet the NATO standardization requirements.

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TABLE I. Listing of standard synchros (as per 4.2).

Type Designation	MIL-S-20708 Specification Sheet Number Latest Issue in Effect	Specification Military Part Number
26V-08CX4C	78	M20708/78-01C
26V-08CT4C	79	M20708/79-01C
26V-08CDX4C	80	M20708/80-01C
11CDX4B	81	M20708/81-01B
11CT4E	1	M20708/1-01E
11CX4E	2	M20708/2-01E
26V-11TX4C	6	M20708/6-01C
26V-11CT4D	7	M20708/7-01D
26V-11CX4C	8	M20708/8-01C
26V-11CDX4C	9	M20708/9-01C
15CX4D	14	M20708/14-01D
15CT4C	15	M20708/15-01C
15CDX4D	16	M20708/16-01C
15TDX4C	17	M20708/17-01C
15TRX4A	19	M20708/19-01A
15CX6C	20	M20708/20-01C
15CT6D	21	M20708/21-01D
15CDX6C	22	M20708/22-01C
15TRX6A	23	M20708/23-01A
18CX4D	28	M20708/28-01D
18CT4C	29	M20708/29-01C

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TABLE I. Listing of standard synchros (as per 4.2) - Continued.

Type Designation	MIL-S-20708 Specification Sheet Number Latest Issue in Effect	Specification Military Part Number
18CDX4C	30	M20708/30-01C
18TDX4C	31	M20708/31-01C
18TRX4A	32	M20708/32-01A
18CX6C	33	M20708/33-01C
18CT6D	34	M20708/34-01D
18TRX6B	35	M20708/35-01B
18CDX6D	36	M20708/36-01D
23CX4D	45	M20708/45-01D
23CT4C	46	M20708/46-01C
23CDX4C	47	M20708/47-01C
23TDX4C	48	M20708/48-01C
23TRX4A	50	M20708/50-01C
23CX6D	52	M20708/52-01D
23CT6D	53	M20708/53-01D
23CDX6C	54	M20708/54-01C
23TDX6C	55	M20708/55-01C
23TRX6B	56	M20708/56-01B
31TRX4A	62	M20708/62-01A
31TRX6A	66	M20708/66-01A
31TDX6C	68	M20708/68-01C

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TABLE I. Listing of standard synchros (as per 4.2) - Continued.

Type Designation	MIL-S-20708 Specification Sheet Number Latest Issue in Effect	Specification Military Part Number
37TRX4A	70	M20708/70-01A
37TRX6A	74	M20708/74-01A
37TDX6A	76	M20708/76-01A

4.3 Standard synchros (functional listing). Standard torque synchros are listed in Table II. Standard control synchros are listed in Table III.

TABLE II. Functional list of standard torque synchros.

System Voltage (Volts)	Supply Frequency (Hz)	Type Designation			
		Transmitters	Receivers	Differential Transmitters	Receiver Transmitters
26	400	26V-11TX4C			
115	400			15TDX4C	15TRX4A
115	60				15TRX6A
115	400			18TDX4C	18TRX4A
115	60				18TRX6B
115	400			23TDX4C	23TRX4A
115	60			23TDX6C	23TRX6B
115	400				31TRX4A
115	60			31TDX6C	31TRX6A
115	400				37TRX4A
115	60			37TDX6A	37TRX6A

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TABLE III. Functional list of standard control synchros.

System Voltage (Volts)	Supply Frequency (Hz)	Type Designation		
		Transmitters	Transformers	Differentials
26	400	26V-08CX4C	26V-08CT4C	26V-08CDX4C
115	400	11CX4E	11CT4E	11CDX4B
26	400	26V-11CX4C	26V-11CT4D	26V-11CDX4C
115	400	15CX4D	15CT4C	15CDX4D
115	60	15CX6C	15CT6D	15CDX6C
115	400	18CX4D	18CT4C	18CDX4C
115	60	18CX6C	18CT6D	18CDX6D
115	400	23CX4D	23CT4C	23CDX4C
115	60	23CX6D	23CT6D	23CDX6C

4.4 Application and use.

4.4.1 Electrical and physical tolerances. Military equipment shall comply with the performance specification requirements of MIL-S-20708 and MIL-S-81963 when using synchros representative of manufactured lots possessing acceptable electrical and physical characteristics.

4.4.2 Selection and alterations. Equipments shall be designed to meet performance requirements when using standard synchros complying with the requirements of MIL-S-20708 and associated specification sheets. Alterations of standard synchros selected are not permitted. If any synchro needs modification to meet equipment requirements, it shall be treated as a nonstandard part. A Part Approval Request shall be submitted when required by the contracting activity as a deliverable data item (see 6.3).

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4.4.3 Tests and inspections for equipment design. Tests and inspections of synchros from vendors, in addition to those normally required for production acceptance test, shall not be performed, except as required to obtain information pertinent to equipment design. If additional tests should be necessary, a request for approval to perform the tests, a description of the test procedures, and a test report shall be submitted when required by contracting activity as deliverable data (see 6.3). When tests tend to degrade performance of useful life, synchros to which such tests are applied shall not subsequently be installed on deliverable equipment.

4.4.4 Tests and inspections for specification modifications. Supplemental tests and inspections of synchros, in addition to those normally required, may be considered by the Government for the purpose of modifying the appropriate military specification. The request for approval of such tests, a description of the test procedures, and a test report shall be submitted when required by the contracting agency as deliverable data (see 6.3).

4.4.5 Application. Synchros incorporated into equipment shall be assigned functions consistent with applicable MIL-S-20708 specification sheets. It is the contractor's responsibility to determine the proper operating points and realistic safety factors to insure satisfactory and reliable performance of the equipment, with anticipated variations of supply voltage and load variation due to temperature rise and accumulated manufacturing tolerances of the equipment.

4.4.5.1 Unspecified characteristics. Acceptable equipment performance shall be a function of those synchro characteristics defined in MIL-S-20708 and the applicable specification sheet. When required by the contracting activity as a deliverable data item, performance based on unspecified synchro characteristics shall be substantiated by an Equipment Test Plan (Nonsystem) (see 6.3).

4.5 Use of nonstandard synchros. Appendix A contains information on the interchangeability of synchro types, including preferred standard replacements for superseded synchros (see Table IV). A listing of obsolete and prestandard synchros with their preferred substitutes (both standard and nonstandard) is also included as Table V. Appendix B contains a list of synchros which are nonstandard, but are still preferred for new design because they have current MIL-S-20708 specification sheets available (see Table VI). If a nonstandard synchro type is selected from Appendices A or B for a particular application, a Part Approval Request shall be submitted when required by the contracting activity as a deliverable data item (see 6.3).

4.6 New development. If equipment requirements cannot be accommodated by the use of an existing synchro type, either standard or nonstandard, new designs may be developed. A new synchro type shall be considered a nonstandard part. When specified by the contracting agency as a deliverable data item (see 6.3), a Part Approval Request shall be submitted.

4.6.1 Test data. Test data verifying the proposed nonstandard synchro meets the requirements of MIL-S-20708 shall be submitted when specified by the contracting activity as a deliverable data item (see 6.3).

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5. DETAIL REQUIREMENTS. (Not applicable)

6. NOTES

(This section contains information of a general or explanatory nature that may be helpful, but is not mandatory.)

6.1 Intended use. This standard contains requirements for the selection and application of 60- and 400-hertz synchros in military equipment.

6.2 Issue of DODISS. When this standard is used in acquisition, the issue of the DODISS to be applicable to the solicitation must be cited in the solicitation (see 2.1.1).

6.3 Consideration of data requirements. The following data requirements should be considered when this standard is applied on a contract. The applicable Data Item Descriptions (DID's) should be reviewed in conjunction with the specific acquisition to ensure that only essential data are requested/provided and that the DID's are tailored to reflect the requirements of the specific acquisition. To ensure correct contractual application of the data requirements, a Contract Data Requirements List (DD Form 1423) must be prepared to obtain the data, except where DOD FAR Supplement 27.475-1 exempts the requirement for a DD Form 1423.

<u>Reference Paragraph</u>	<u>DID Number</u>	<u>DID Title</u>	<u>Suggested Tailoring</u>
4.4.3, 4.4.4	UDI-T-23732B	Test Procedures	Use contractor format
4.4.3, 4.4.4	DI-T-2072	Test Reports	Use contractor format
4.4.5.1	DI-T-3709A	Equipment Test Plan (Nonsystem)	Use contractor format
3.2, 4.1, 4.4.2,4.5, 4.6	DI-MISC-80071	Part Approval Requests	-----
4.6.1	DI-E-7030	Test Data for Nonstandard Parts	Use contractor format

The above DID's were those cleared as of the date of this standard. The current issue of DOD 5010.12-L, Acquisition Management Systems and Data Requirements Control List (AMSDL), must be researched to ensure that only current, cleared DID's are cited on the DD Form 1423.

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6.4 Subject term (key word) listing.

Analog converter, electromechanical
Current/Preferred synchros
Interchangeability
Military equipments
Military part numbers
Military specifications
Military standards
Modifications
Nonstandard synchros
Obsolescence data
Prestandard synchros
Qualified products list (QPL)
Specification sheets
Standard synchros
Standardization
Supersession data
Synchro
Synchro system, control
Synchro system, torque

6.5 International standardization agreements. Certain provisions of this standard are the subject of international standardization agreements reached by the NATO Working Group on Analogue and Digital Servocomponents (AC/301(SG/A)(WG/5)). When change notice, revision, or cancellation of this standard is proposed that will modify the international agreement concerned, the preparing activity will take appropriate action through international standardization channels, including departmental standardization offices, to change the agreement or make other appropriate accommodations.

6.6 Changes from previous issue. Marginal notations are not used in this revision to identify changes with respect to the previous issue due to the extensiveness of the changes.

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APPENDIX A

SYNCHRO INTERCHANGEABILITY GUIDE

10. GENERAL

10.1 Purpose. The purpose of Table IV is to furnish information and guidance on the interchangeability of military type synchros. The use of standard military type synchros insures a high level of performance and reliability, as well as the availability of replacement. Table V contains a list of obsolete or prestandard synchros and their preferred replacements (whether standard or nonstandard) when corresponding types are available. Some synchros have no equivalent type. An obsolete synchro referenced to a MIL-S-20708 specification sheet may be reactivated if it meets the necessary requirements and no equivalent type is available.

10.2 Military type synchros. These synchros are covered by the following specification:

MIL-S-20708 (latest issue in effect)

10.3 Preferred synchros. The corresponding descriptive names and symbols of preferred synchros are listed below:

<u>First Letter</u>	<u>Function</u>
C	Control
T	Torque
<u>Succeeding Letters</u>	<u>Function</u>
D	Differential
R	Receiver
T	Transformer
X	Transmitter
B	Rotatable Stator

NOTE: All preferred synchros are designed for operation up to and including 1200 rpm.

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TABLE IV. Synchro supersession data.

Standard Preferred Synchros				Superseded Synchros			
Type Designation	Specification Sheet Number MIL-S-	Date of Specification Sheet		Type Designation	Specification Sheet Number MIL-S-	Date of Specification Sheet	
26V-08CX4C	20708/78E	13 March 1989	Replaces	26V-08CX4C	20708/78D	19 Dec 1968	
			Replaces	26V-08CX4C		1 Apr 1965	
			Replaces	26V-08CX4C		7 Nov 1963	
			Replaces	26V-08CX4C		26 Jul 1963	
			<u>Does not</u> replace	26V-08CX4B	20708/78A(WEP)	29 Feb 1960	
				26V-08CX4B	20708/78(NORD)	31 Mar 1959	
26V-08CT4C	20708/79E	13 March 1989	Replaces	26V-08CT4C	20708/79D	19 Dec 1968	
			Replaces	26V-08CT4C		1 Apr 1965	
			Replaces	26V-08CT4C		7 Nov 1963	
			Replaces	26V-08CT4C		25 Apr 1963	
			<u>Does not</u> replace	26V-08CT4B	20708/79A(WEP)	29 Feb 1960	
				26V-08CT4B	20708/79(NORD)	31 Mar 1959	
26V-08CDX4C	20708/80E	13 March 1989	Replaces	26V-08CDX4C	20708/80D	19 Dec 1968	
			Replaces	26V-08CDX4C		1 Apr 1965	
			Replaces	26V-08CDX4C		7 Nov 1963	
			Replaces	26V-08CDX4C		11 Feb 1963	
			<u>Does not</u> replace	26V-08CDX4B	20708/80A(WEP)	29 Feb 1960	
				26V-08CDX4B	20708/80(NORD)	31 Mar 1959	

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TABLE IV. Synchro supersession data - Continued.

Standard Preferred Synchros				Superseded Synchros			
Type Designation	Specification Sheet Number MIL-S-	Date of Specification Sheet		Type Designation	Specification Sheet Number MIL-S-	Date of Specification Sheet	
26V-11CT4D	20708/7D	13 March 1989	Replaces	26V-11CT4D	20708/7C	19 Dec 1968	
			Replaces	26V-11CT4D	20708/7B(WP)	1 Apr 1965	
			Replaces	26V-11CT4D	20708/7B(WP)	1 Oct 1964	
			Replaces	26V-11CT4D	0020708/133(WP)	2 Aug 1963	
			Replaces	26V-11CT4C	20708/7A(NORD)	30 Nov 1959	
			Replaces	26V-11CT4C	20708/7(NORD)	27 Jan 1959	
			Replaces	26V-11CT4A	20708	15 Jan 1958	
			Replaces	26V-11CT4A	16892(BUORD)	10 Dec 1951	
			Does not replace	26V-11CT4	16892(BUORD)	10 Dec 1951	
			26V-11CX4C	20708/8D	13 March 1989	Replaces	26V-11CX4C
Replaces	26V-11CX4C	20708/8B(WP)				1 Apr 1965	
Replaces	26V-11CX4C	20708/8B(WP)				1 Oct 1964	
Replaces	26V-11CX4C	0020708/132(WEP)				2 Aug 1963	
Replaces	26V-11CX4B	20708/8A(NORD)				30 Nov 1959	
Replaces	26V-11CX4B	20708/8(NORD)				27 Jan 1959	
26V-11CDX4C	20708/9D	13 March 1989	Replaces	26V-11CDX4C	20708/9C	19 Dec 1968	
			Replaces	26V-11CDX4C	20708/9B(WP)	1 Apr 1965	
			Replaces	26V-11CDX4C	20708/9B(WP)	1 Oct 1964	
			Replaces	26V-11CDX4C	0020708/117(WP)	10 Jul 1963	
			Replaces	26V-11CDX4B	20708/9A(NORD)	30 Nov 1959	
			Replaces	26V-11CDX4B	20708/9(NORD)	27 Jan 1959	
Replaces	26V-11CDX4A	20708	15 Jan 1958				

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TABLE IV. Synchro supersession data - Continued.

Standard Preferred Synchros			Superseded Synchros			
Type Designation	Specification Sheet Number MIL-S-	Date of Specification Sheet		Type Designation	Specification Sheet Number MIL-S-	Date of Specification Sheet
11CDX4B	20708/81D	13 March 1989	Replaces	11CDX4B	20708/81C	19 Dec 1968
			Replaces	11CDX4B	20708/81B(WP)	1 Apr 1965
			Replaces	11CDX4B	20708/81B(WEP)	7 Nov 1963
			Replaces	11CDX4B	0020708/129(WP)	10 Jul 1963
			Replaces	11CDX4A	20708/81A(NORD)	3 Nov 1959
			Replaces	11CDX4A	20708/81(NORD)	31 Aug 1959
11CT4E	20708/1E	13 March 1989	Replaces	11CT4E	20708/1D	19 Dec 1968
			Replaces	11CT4E	20708/1C	1 Apr 1965
			Replaces	11CT4E	20708/1B(WEP)	7 Nov 1963
			Replaces	11CT4E	0020708/102(WP)	10 Jul 1963
			Replaces	11CT4E	0020708/102(WP)	11 Feb 1963
			Replaces	11CT4C	20708/1A(NORD)	30 Mar 1959
			Replaces	11CT4C	20708/1(NORD)	27 Jan 1959
			Replaces	11CT4A	20708	15 Jan 1958
			Does not replace	11CT4D	20708/83(WP)	1 Nov 1960
			11CX4E	20708/2D	13 March 1989	Replaces
Replaces	11CX4E	20708/2B(WP)				1 Apr 1965
Replaces	11CX4E	20708/2B(WEP)				7 Nov 1963
Replaces	11CX4E	0020708/134(WP)				2 Aug 1963
Replaces	11CX4C	20708/2A(NORD)				30 Nov 1959
Replaces	11CX4C	20708/2(NORD)				27 Jan 1959
			Replaces	11CX4A	20708	15 Jan 1958

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TABLE IV. Synchro supersession data - Continued.

Standard Preferred Synchros				Superseded Synchros		
Type Designation	Specification Sheet Number MIL-S-	Date of Specification Sheet		Type Designation	Specification Sheet Number MIL-S-	Date of Specification Sheet
15CX4D	20708/14F	13 March 1989	Replaces	15CX4D	20708/14E	19 Dec 1968
			Replaces	15CX4D	20708/14D	1 Apr 1965
			Replaces	15CX4D	20708/14C(WEP)	7 Nov 1963
			Replaces	15CX4D	0020708/106(WP)	11 Feb 1963
			Replaces	15CX4B	20708/14B(WEP)	26 Apr 1963
			Replaces	15CX4B	20708/14A(NORD)	25 Nov 1959
			Replaces	15CX4B	20708/14(NORD)	20 Mar 1959
			Replaces	15CX4A	20708	15 Jan 1958
			Replaces	15CX4A	16892 (BUORD)	10 Dec 1951
			Does <u>not</u> replace	15CX4C	20708/84(WP)	1 Nov 1960
	15CX4	OS-3883	16 Jun 1949			
15CT4C	20708/15F	13 March 1989	Replaces	15CT4C	20708/15E	19 Dec 1968
			Replaces	15CT4C	20708/15D	1 Apr 1965
			Replaces	15CT4C	20708/15C	7 Nov 1963
			Replaces	15CT4C	0020708/105(WP)	2 Aug 1963
			Replaces	15CT4B	20708/15B(WEP)	26 Apr 1963
			Replaces	15CT4B	20708/15A(NORD)	25 Nov 1959
			Replaces	15CT4B	20708/15(NORD)	20 Mar 1959
			Replaces	15CT4A	20708	15 Jan 1958
			Replaces	15CT4A	16892 (BUORD)	10 Dec 1951
			Does <u>not</u> replace	15CT4	OS-3883	16 Jun 1949

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TABLE IV. Synchro supersession data - Continued.

Standard Preferred Synchros				Superseded Synchros		
Type Designation	Specification Sheet Number MIL-S-	Date of Specification Sheet		Type Designation	Specification Sheet Number MIL-S-	Date of Specification Sheet
15CDX4D	20708/16E	13 March 1989	Replaces	15CDX4D	20708/16D	19 Dec 1968
			Replaces	15CDX4D	20708/16C(WP)	1 Apr 1965
			Replaces	15CDX4D	0020708/115(WP)	20 Feb 1963
			Replaces	15CDX4B	20708/16B(WEP)	26 Apr 1963
			Replaces	15CDX4B	20708/16A(NORD)	25 Nov 1959
			Replaces	15CDX4B	20708/16(NORD)	20 Mar 1959
			Replaces	15CDX4A	20708	15 Jan 1958
			Replaces	15CDX4A	16892 (BUORD)	10 Dec 1951
			<u>Does not</u>	15CDX4C	20708/85(WP)	1 Nov 1960
			<u>replace</u>	15CDX4	OS-3883	16 Jun 1949
15TDX4C	20708/17E	13 March 1989	Replaces	15TDX4C	20708/17D	19 Dec 1968
			Replaces	15TDX4C	20708/17C(WP)	1 Apr 1965
			Replaces	15TDX4B	20708/17B(WEP)	26 Apr 1963
			Replaces	15TDX4A	20708	15 Jan 1958
			Replaces	15TDX4A	16892 (BUORD)	10 Dec 1951
			<u>Does not</u>	15TDX4	OS-3883	16 Jun 1949

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TABLE IV. Synchro supersession data - Continued.

Standard Preferred Synchros				Superseded Synchros		
Type Designation	Specification Sheet Number MIL-S-	Date of Specification Sheet		Type Designation	Specification Sheet Number MIL-S-	Date of Specification Sheet
15TRX4A	20708/19F	13 March 1989	Replaces	15TRX4A	20708/19E	19 Dec 1968
			Replaces	15TRX4A	20708/19D(WP)	1 Apr 1965
			Replaces	15TRX4A	20708/19D(WP)	1 Oct 1964
			Replaces	15TR4D	20708/19C(WEP)	7 Nov 1963
			Replaces	15TR4D	0020708/118(WP)	15 Mar 1963
			Replaces	15TR4C	20708/19B(WEP)	6 Feb 1963
			Replaces	15TR4B	20708	15 Jan 1958
			Replaces	15TR4A	16892 (BUORD)	10 Dec 1951
			Replaces	15TX4B	20708/18A(NORD)	25 Nov 1959
			Replaces	15TX4A	20708	15 Jan 1958
			Does <u>not</u> replace	15TR4	OS-3883	16 Jun 1949
15CX6C	20708/20D	13 March 1989	Replaces	15CX6C	20708/20C	19 Dec 1968
			Replaces	15CX6C	20708/20B(WP)	1 Apr 1965
			Replaces	15CX6B	20708/20A(NORD)	25 Nov 1959
			Replaces	15CX6A	20708	15 Jan 1958
15CT6D	20708/21E	13 March 1989	Replaces	15CT6D	20708/21D	19 Dec 1968
			Replaces	15CT6D	20708/21C(WP)	1 Apr 1965
			Replaces	15CT6D	20708/21B(WEP)	26 Oct 1963
			Replaces	15CT6B	20708/21A(NORD)	25 Nov 1959
Replaces	15CT6B	20708/21(NORD)	20 Mar 1959			

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TABLE IV. Synchro supersession data - Continued.

Standard Preferred Synchros				Superseded Synchros			
Type Designation	Specification Sheet Number MIL-S-	Date of Specification Sheet		Type Designation	Specification Sheet Number MIL-S-	Date of Specification Sheet	
15CDX6C	20708/22D	13 March 1989	Replaces	15CDX6C	20708/22C	19 Dec 1968	
			Replaces	15CDX6C	20708/22B(WP)	1 Apr 1965	
			Replaces	15CDX6B	20708/22A(NORD)	25 Nov 1959	
			Replaces	15CDX6A	20708	15 Jan 1958	
15TRX6A	20708/23D	13 March 1989	Replaces	15TRX6A	20708/23C	19 Dec 1968	
			Replaces	15TRX6A	20708/23B(WP)	1 Apr 1965	
			Replaces	15TR6A	20708/23A(NORD)	25 Nov 1959	
			Replaces	15TR6B	0020708/116(WP)	5 May 1964	
18CX4D	20708/28E	13 March 1989	Replaces	18CX4D	20708/28D	19 Dec 1968	
			Replaces	18CX4D	20708/28C(WP)	1 Apr 1965	
			Replaces	18CX4D	0020708/119(WP)	15 Mar 1963	
			Replaces	18CX4B	20708/28B(WEP)	26 Apr 1963	
			Replaces	18CX4B	20708/28A(NORD)	25 Nov 1959	
			Replaces	18CX4B	20708/28(NORD)	31 Mar 1959	
			Replaces	18CX4A	20708	15 Jan 1958	
			Replaces	18CX4A	16892(BUORD)	10 Dec 1951	
			Does not replace	18CX4	OS-3883	16 Jun 1949	

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TABLE IV. Synchro supersession data - Continued.

Standard Preferred Synchros				Superseded Synchros		
Type Designation	Specification Sheet Number MIL-S-	Date of Specification Sheet		Type Designation	Specification Sheet Number MIL-S-	Date of Specification Sheet
18CT4C	20708/29E	13 March 1989	Replaces	18CT4C	20708/29D	19 Dec 1968
			Replaces	18CT4C	20708/29C(WP)	1 Apr 1965
			Replaces	18CT4C	0020708/121(WP)	11 Feb 1963
			Replaces	18CT4B	20708/29B(WEP)	26 Apr 1963
			Replaces	18CT4B	20708/29A(NORD)	18 Nov 1959
			Replaces	18CT4B	20708/29(NORD)	31 Mar 1959
			Replaces	18CT4A	20708	15 Jan 1958
			Replaces	18CT4A	16892(BUORD)	10 Dec 1951
			<u>Does not</u> replace	18CT4	OS-3883	16 Jun 1949
			18CDX4C	20708/30E	13 March 1989	Replaces
Replaces	18CDX4C	20708/30C(WP)				1 Apr 1965
Replaces	18CDX4C	0020708/120(WP)				15 Mar 1963
Replaces	18CDX4B	20708/30B(WEP)				26 Apr 1963
Replaces	18CDX4B	20708/30A(NORD)				18 Nov 1959
Replaces	18CDX4B	20708/30(NORD)				31 Mar 1959
Replaces	18CDX4A	20708				15 Jan 1958
Replaces	18CDX4A	16892(BUORD)				10 Dec 1951
<u>Does not</u> replace	18CDX4	OS-3883				16 Jun 1949

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TABLE IV. Synchro supersession data - Continued.

Standard Preferred Synchros				Superseded Synchros			
Type Designation	Specification Sheet Number MIL-S-	Date of Specification Sheet		Type Designation	Specification Sheet Number MIL-S-	Date of Specification Sheet	
18TDX4C	20708/31E	13 March 1989	Replaces	18TDX4C	20708/31D	19 Dec 1968	
			Replaces	18TDX4C	20708/31C(WP)	1 Apr 1965	
			Replaces	18TDX4B	20708/31B(WEP)	26 Apr 1963	
			Replaces	18TDX4A	20708	15 Jan 1958	
			Replaces	18TDX4A	16892 (BUORD)	10 Dec 1951	
			Does not replace	18TDX4	OS-3883	16 Jun 1949	
18TRX4A	20708/32F	13 March 1989	Replaces	18TRX4A	20708/32E	19 Dec 1968	
			Replaces	18TRX4A	20708/32D(WP)	1 Apr 1965	
			Replaces	18TR4C	20708/32C(WEP)	7 Nov 1963	
			Replaces	18TR4C	0020708/124(WP)	10 Jul 1963	
			Replaces	18TR4B	20708/32B(WEP)	26 Apr 1963	
			Replaces	18TR4B	20708/32A(NORD)	18 Nov 1959	
			Replaces	18TR4B	20708/32(NORD)	31 Mar 1959	
			Replaces	18TR4B	16892 (BUORD)	10 Dec 1951	
			Replaces	18TR4A	20708	15 Jan 1958	
			Replaces	18TR4A	16892 (BUORD)	10 Dec 1951	
			Does not replace	18TR4	OS-3883	16 Jun 1949	

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TABLE IV. Synchro supersession data - Continued.

Standard Preferred Synchros				Superseded Synchros			
Type Designation	Specification Sheet Number MIL-S-	Date of Specification Sheet		Type Designation	Specification Sheet Number MIL-S-	Date of Specification Sheet	
18CX6C	20708/33D	13 March 1989	Replaces	18CX6C	20708/33C	19 Dec 1968	
			Replaces	18CX6C	20708/33B(WP)	1 Apr 1965	
			Replaces	18CX6C	0020708/122(WP)	10 Jul 1963	
			Replaces	18CX6B	20708/33A(NORD)	18 Nov 1959	
			Replaces	18CX6B	20708/33(NORD)	31 Mar 1959	
			Replaces	18CX6A	20708	15 Jan 1958	
18CT6D	20708/34D	13 March 1989	Replaces	18CT6D	20708/34C	19 Dec 1968	
			Replaces	18CT6D	20708/34B(WEP)	1 Apr 1965	
			Replaces	18CT6D	0020708/123(WP)	10 Jul 1963	
			Replaces	18CT6B	20708/34A(NORD)	18 Nov 1959	
			Replaces	18CT6B	20708/34(NORD)	31 Mar 1959	
			Replaces	18CT6A	20708	15 Jan 1958	
18TRX6B	20708/35D	13 March 1989	Replaces	18CT6A	17245(BUORD)	1 Aug 1952	
			Does not replace	18CT6C	20708/86(WP)	1 Nov 1960	
			Replaces	18TRX6B	20708/35C	19 Dec 1968	
			Replaces	18TRX6A	20708/35B(WP)	1 Apr 1965	
			Replaces	18TRX6A	20708/35A(NORD)	18 Nov 1959	
			Replaces	18TRX6A	20708/37A(NORD)	18 Nov 1959	
			Replaces	18TRX6A	20708/35(NORD)	31 Mar 1959	
			Replaces	18TR6A	20708	15 Jan 1958	

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TABLE IV. Synchro supersession data - Continued.

Standard Preferred Synchros				Superseded Synchros			
Type Designation	Specification Sheet Number MIL-S-	Date of Specification Sheet		Type Designation	Specification Sheet Number MIL-S-	Date of Specification Sheet	
18CDX6D	20708/36D	13 March 1989	Replaces	18CDX6D	20708/36C	19 Dec 1968	
			Replaces	18CDX6D	20708/36B(WP)	1 Apr 1965	
			Replaces	18CDX6D	20708/36B(WP)	1 Oct 1964	
			Replaces	18CDX6D	20708/36B(WP)	22 Oct 1963	
			Replaces	18CDX6B	20708/36A(NORD)	18 Nov 1959	
			Replaces	18CDX6B	20708/36(NORD)	31 Mar 1959	
23CX4D	20708/45E	13 March 1989	Replaces	23CX4D	20708/45D	19 Dec 1968	
			Replaces	23CX4D	20708/45C	1 Apr 1965	
			Replaces	23CX4D	20708/45B	1 Jul 1964	
			Replaces	23CX4D	0020708/107(WP)	11 Feb 1963	
			Replaces	23CX4B	20708/45A(NORD)	26 Oct 1959	
			Replaces	23CX4B	20708/45(NORD)	31 Mar 1959	
			Replaces	23CX4A	20708	15 Jan 1958	
			<u>Does not</u> replace	23CX4C	20708/87(WP)	1 Nov 1960	
				23CX4	16892(BUORD)	10 Dec 1951	
23CT4C	20708/46D	13 March 1989	Replaces	23CT4C	20708/46C	19 Dec 1968	
			Replaces	23CT4C	20708/46B(WP)	1 Apr 1965	
			Replaces	23CT4B	20708/46A(NORD)	26 Oct 1959	
			Replaces	23CT4B	20708/46(NORD)	31 Mar 1959	
			Replaces	23CT4A	20708	15 Jan 1958	
			<u>Does not</u> replace	23CT4	16892(BUORD)	10 Dec 1951	

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TABLE IV. Synchro supersession data - Continued.

Standard Preferred Synchros			Superseded Synchros			
Type Designation	Specification Sheet Number MIL-S-	Date of Specification Sheet		Type Designation	Specification Sheet Number MIL-S-	Date of Specification Sheet
23CDX4C	20708/47D	13 March 1989	Replaces	23CDX4C	20708/47C	19 Dec 1968
			Replaces	23CDX4C	20708/47B(WP)	1 Apr 1965
			Replaces	23CDX4B	20708/47A(NORD)	26 Oct 1959
			Replaces	23CDX4B	20708/47(NORD)	31 Mar 1959
			Replaces	23CDX4A	20708	15 Jan 1958
			<u>Does not</u> replace	23CDX4	16892(BUORD)	10 Dec 1951
23TDX4C	20708/48D	13 March 1989	Replaces	23TDX4C	20708/48C	19 Dec 1968
			Replaces	23TDX4C	20708/48B(WP)	1 Apr 1965
			Replaces	23TDX4B	20708/48A(NORD)	26 Oct 1959
			Replaces	23TDX4B	20708/48(NORD)	31 Mar 1959
			Replaces	23TDX4A	20708	15 Jan 1958
			<u>Does not</u> replace	23TDX4	16892(BUORD)	10 Dec 1951

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TABLE IV. Synchro supersession data - Continued.

Standard Preferred Synchros			Superseded Synchros			
Type Designation	Specification Sheet Number MIL-S-	Date of Specification Sheet		Type Designation	Specification Sheet Number MIL-S-	Date of Specification Sheet
23TRX4A	20708/50E	13 March 1989	Replaces	23TRX4A	20708/50D	29 Nov 1971
			Replaces	23TRX4A	20708/50C	19 Dec 1968
			Replaces	23TRX4A	20708/50B(WP)	1 Apr 1965
			Replaces	23TR4B	20708/50A(NORD)	26 Oct 1959
			Replaces	23TR4B	20708/50(NORD)	31 Mar 1959
			Replaces	23TR4A	20708	15 Jan 1958
			Replaces	23TX4B	20708/44A(NORD)	26 Oct 1959
			Replaces	23TX4B	20708/44(NORD)	31 Mar 1959
			Replaces	23TX4A	20708	15 Jan 1958
			Does <u>not</u> replace	23TR4C	20708/88(WP)	1 Nov 1960
	23TR4	16892(BUORD)	10 Dec 1951			
	23TX4	16892(BUORD)	10 Dec 1951			
23CX6D	20708/52D	13 March 1989	Replaces	23CX6D	20708/52C	19 Dec 1968
			Replaces	23CX6D	20708/52B(WP)	1 Apr 1965
			Replaces	23CX6C	20708/52A(NORD)	26 Oct 1959
			Replaces	23CX6C	20708/52(NORD)	31 Mar 1959
			Replaces	23CX6A	20708	15 Jan 1958
			Replaces	23CX6A	12472(BUORD)	13 Feb 1953
			Does <u>not</u> replace	23CX6	12472(BUORD)	13 Feb 1953

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TABLE IV. Synchro supersession data - Continued.

Standard Preferred Synchros				Superseded Synchros		
Type Designation	Specification Sheet Number MIL-S-	Date of Specification Sheet		Type Designation	Specification Sheet Number MIL-S-	Date of Specification Sheet
23CT6D	20708/53D	13 March 1989	Replaces	23CT6D	20708/53C	19 Dec 1968
			Replaces	23CT6D	20708/53B(WP)	1 Apr 1965
			Replaces	23CT6D	0020708/126(WP)	10 Jul 1963
			Replaces	23CT6C	20708/53A(NORD)	26 Oct 1959
			Replaces	23CT6C	20708/53(NORD)	31 Mar 1959
			Replaces	23CT6A	20708	15 Jan 1958
			Replaces	23CT6A	0020708/98(WP)	No date
			Replaces	23CT6A	12472(BUORD)	13 Feb 1953
			<u>Does not</u> replace	23CT6	12472(BUORD)	13 Feb 1953
			23CDX6C	20708/54D	13 March 1989	Replaces
Replaces	23CDX6C	20708/54B(WP)				1 Apr 1965
Replaces	23CDX6C	20708/54B(WP)				1 Oct 1964
Replaces	23CDX6C	0020708/125(WP)				10 Jul 1963
Replaces	23CDX6B	20708/54A(NORD)				26 Oct 1959
Replaces	23CDX6B	20708/54(NORD)				31 Mar 1959
Replaces	23CDX6A	20708				15 Jan 1958
Replaces	23CDX6A	12472(BUORD)				13 Feb 1953
<u>Does not</u> replace	23CDX6	12472(BUORD)				13 Feb 1953

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TABLE IV. Synchro supersession data - Continued.

Standard Preferred Synchros			Superseded Synchros			
Type Designation	Specification Sheet Number MIL-S-	Date of Specification Sheet		Type Designation	Specification Sheet Number MIL-S-	Date of Specification Sheet
23TDX6C	20708/55D	13 March 1989	Replaces	23TDX6C	20708/55C	19 Dec 1968
			Replaces	23TDX6C	20708/55B (WP)	1 Apr 1965
			Replaces	23TDX6B	20708/55A (NORD)	26 Oct 1959
			Replaces	23TDX6B	20708/55 (NORD)	31 Mar 1959
			Replaces	23TDX6A	20708	15 Jan 1958
			Replaces	23TDX6A	12472 (BUORD)	13 Feb 1953
			<u>Does not replace</u>	23TDX6	12472 (BUORD)	13 Feb 1953
23TRX6B	20708/56D	13 March 1989	Replaces	23TRX6B	20708/56C	19 Dec 1968
			Replaces	23TRX6B	20708/56B (WP)	1 Apr 1965
			Replaces	23TRX6A	20708/56A (NORD)	26 Oct 1959
			Replaces	23TRX6A	20708/56 (NORD)	7 May 1959
			Replaces	23TR6A	0020708/97 (WP)	8 Jun 1964
			Replaces	23TX6C	0020708/96 (WP)	No date
			Replaces	23TX6B	20708/51A (NORD)	26 Oct 1959
			Replaces	23TX6B	20708/51 (NORD)	31 Mar 1959
			Replaces	23TX6A	20708	15 Jan 1958
			Replaces	23TR6A	12472 (BUORD)	13 Feb 1953
			Replaces	23TX6A	12472 (BUORD)	13 Feb 1953
			<u>Does not replace</u>	23TRX6B	20708/89 (WP)	1 Nov 1960
				23TR6	12472 (BUORD)	13 Feb 1953
	23TX6	12472 (BUORD)	13 Feb 1953			

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TABLE IV. Synchro supersession data - Continued.

Standard Preferred Synchros				Superseded Synchros			
Type Designation	Specification Sheet Number MIL-S-	Date of Specification Sheet		Type Designation	Specification Sheet Number MIL-S-	Date of Specification Sheet	
31CX4A	20708/138B(OS)	2 March 1988	Replaces Replaces	31CX4A 31CX4A	20708/138A(OS) 20708/138(OS)	29 Nov 1971 3 Mar 1969	
31TRX4A	20708/62E	13 March 1989	Replaces Replaces Replaces Replaces Replaces Replaces Replaces Replaces Replaces Replaces <u>Does not</u> replace	31TRX4A 31TRX4A 31TRX4A 31TR4D 31TR4D 31TR4C 31TX4D 31TX4D 31TX4C 31TX4B 31TX4A	20708/62D(OS) 20708/62C(OS) 20708/62B(WP) 20708/62A(WEP) 20708/62(NORD) 20708 20708/61A(WEP) 20708/61(NORD) 20708 20708 20708	13 Mar 1972 3 Mar 1969 1 Apr 1965 1 Apr 1960 31 Mar 1959 15 Jan 1958 1 Apr 1960 31 Mar 1959 15 Jan 1958 15 Jan 1958 15 Jan 1958	
				31TX4E 31TX4A 31TR4A	20708/90(WP) 16892(BUORD) 16892(BUORD)	1 Nov 1960 10 Dec 1951 10 Dec 1951	

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TABLE IV. Synchro supersession data - Continued.

Standard Preferred Synchros				Superseded Synchros		
Type Designation	Specification Sheet Number MIL-S-	Date of Specification Sheet		Type Designation	Specification Sheet Number MIL-S-	Date of Specification Sheet
31TRX6A	20708/66D	13 March 1989	Replaces	31TRX6A	20708/66C	19 Dec 1968
			Replaces	31TRX6A	20708/66B(WP)	1 Apr 1965
			Replaces	31TR6B	20708/66A(WEP)	1 Apr 1960
			Replaces	31TR6B	20708/66(NORD)	31 Mar 1959
			Replaces	31TR6A	20708	15 Jan 1958
			Replaces	31TX6B	20708/65A(WEP)	1 Apr 1960
			Replaces	31TX6B	20708/65(NORD)	31 Mar 1959
			Replaces	31TX6A	20708	15 Jan 1958
			Does not replace	31TR6C	20708/91(WP)	1 Nov 1960
				31TR6	12472(BUORD)	1 Aug 1952
	31TX6	12472(BUORD)	1 Aug 1952			
31TDX6C	20708/68C(OS)	2 Mar 1988	Replaces	31TDX6C	20708/68B(OS)	3 Mar 1969
			Replaces	31TDX6B	20708/68A(WEP)	1 Apr 1960
			Replaces	31TDX6B	20708/68(NORD)	31 Mar 1959
			Replaces	31TDX6A	20708	15 Jan 1958
			31TDX6	12472(BUORD)	1 Aug 1952	
37TRX4A	20708/70C	13 March 1989	Replaces	37TRX4A	20708/70C(OS)	3 Mar 1969
			Replaces	37TRX4A	20708/70B(WP)	1 Apr 1965
			Replaces	37TX4B	20708/69A(WEP)	1 Apr 1960
			Replaces	37TX4A	20708	15 Jan 1958

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TABLE IV. Synchro supersession data - Continued.

Standard Preferred Synchros				Superseded Synchros			
Type Designation	Specification Sheet Number MIL-S-	Date of Specification Sheet		Type Designation	Specification Sheet Number MIL-S-	Date of Specification Sheet	
37TRX6A	20708/74D	13 March 1989	Replaces	37TRX6A	20708/74C	19 Dec 1968	
			Replaces	37TRX6A	20708/74B (WP)	1 Apr 1965	
			Replaces	37TR6B	20708/74A (WP)	1 Apr 1960	
			Replaces	37TR6B	20708/74 (NORD)	31 Mar 1959	
			Replaces	37TR6A	20708	15 Jan 1958	
			Replaces	37TX6B	20708/73A (WEP)	1 Apr 1960	
			Replaces	37TX6B	20708/73 (NORD)	31 Mar 1959	
			Replaces	37TX6A	20708	15 Jan 1958	
			Does not replace	37TX6C	20708/92 (WP)	1 Nov 1960	
			37TDX6A	20708/76C	13 March 1989	Replaces	37TDX6A
Replaces	37TDX6A	20708/76A (WEP)				1 Apr 1960	
Replaces	37TDX6A	20708/76 (NORD)				18 Sep 1959	
Replaces	37TDX6A	20708				15 Jan 1958	

NOTE:

- The order of supersession is in one direction only as shown in Table IV reading left to right and down; e.g., a modification "D" will replace a lesser and older modification letter "C", "B" and "A".

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TABLE V. Synchro obsolescence data.

<u>Preferred Synchros for New Design</u>				<u>Obsolete/Prestandard Synchros</u>		
Type Designation	MIL-S-20708 Specification Sheet Number	Date of Specification Sheet	Type Designation	Obsolete/Prestandard Reference	Date of Reference	
NE			08CX4B	20708/130B	19 Dec 1968	
NE			08TX4	20708/501A(AS)	20 Feb 1974	
NE			26V-08CDX4	20708/502(AS)	20 Feb 1974	
NE			26V-08BCT4	20708/503(AS)	20 Feb 1974	
NE			11CT4D	20708/83(WEP)	1 Nov 1960	
NE			11CX4D	20708/111B	19 Dec 1968	
NE			12CXB4B	20708/10A(NORD)	25 Nov 1959	
NE			12CTB4B	20708/11A(NORD)	25 Nov 1959	
NE			26V-12CXB4B	20708/12A(NORD)	25 Nov 1959	
NE			26V-12CTB4B	20708/13A(NORD)	25 Nov 1959	
NE			15CX4C	20708/84(WEP)	1 Nov 1960	
NE			15CDX4C	20708/85(WEP)	1 Nov 1960	
NE			16CXB4B	20708/24A(NORD)	25 Nov 1959	

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TABLE V. Synchro obsolescence data - Continued.

<u>Preferred Synchros for New Design</u>				<u>Obsolete/Prestandard Synchros</u>		
Type Designation	MIL-S-20708 Specification Sheet Number	Date of Specification Sheet	Type Designation	Obsolete/Prestandard Reference	Date of Reference	
NE			16CDXB4B	20708/26A(NORD)	25 Nov 1959	
NE			16TRB4C	20708/27A(NORD)	25 Nov 1959	
NE			18CT6C	20708/86(WEP)	1 Nov 1960	
NE			18CX4C	20708/112B	19 Dec 1968	
NE			26V-18CX4A	20708/113B	19 Dec 1968	
NE			19CXB4B	20708/38A(NORD)	25 Nov 1959	
NE			19CDXB4B	20708/40A(NORD)	25 Nov 1959	
NE			19TRB4C	20708/41A(NORD)	25 Nov 1959	
NE			19CXB6A	20708/43A(NORD)	25 Nov 1959	
NE			23TDR6B	20708/82(WEP)	3 Nov 1960	
NE			23CX4C	20708/87(WEP)	1 Nov 1960	
NE			23TR4C	20708/88(WEP)	1 Nov 1960	
NE			23TRX6B	20708/89(WEP)	1 Nov 1960	

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TABLE V. Synchro obsolescence data - Continued.

Preferred Synchros for New Design			Obsolete/Prestandard Synchros		
Type Designation	MIL-S-20708 Specification Sheet Number	Date of Specification Sheet	Type Designation	Obsolete/Prestandard Reference	Date of Reference
NE			30TXB6A	20708/57A (WEP)	1 Apr 1960
NE			30TXB4A	20708/59A (WEP)	1 Apr 1960
NE			31TDR4B	20708/63A (WEP)	1 Apr 1960
NE			31TDX4C	20708/64B (OS)	3 Mar 1969
NE			31TX4E	20708/90 (WEP)	1 Nov 1960
NE			31TR6C	20708/91 (WEP)	1 Nov 1960
NE			37CDX6A	20708/75A (OS)	3 Mar 1969
NE			37TRTR6B	20708/77A (WEP)	1 Apr 1960
			37TRTR6A	1316775	20 Jan 1954
			2R	1316775	20 Jan 1954
NE			37CX4A	20708/140 (OS)	3 Mar 1969
NE			37CX6A	20708/141 (OS)	3 Mar 1969

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TABLE V. Synchro obsolescence data. - Continued.

<u>Preferred Synchros for New Design</u>				<u>Obsolete/Prestandard Synchros</u>		
Type Designation	MIL-S-20708 Specification Sheet Number	Date of Specification Sheet		Type Designation	Obsolete/Prestandard Reference	Date of Reference
23TRX4A	20708/50E	13 Mar 1989	Replaces for new design	1F400	173166-3	7 Mar 1952
				1SF1	173166-2	7 Mar 1952
				1SF	173166-1	7 Mar 1952
23CT6D	20708/53D	13 Mar 1989	Replaces for new design	1CT Mod 2 & Mod 2A (Requires 1HCT and Conversion Adapter, Z5990-620-1137)	279966	25 Jul 1943
				1CT Mk 5 any Mod	255711-1	9 Nov 1953
				1HCT Mk 11 any Mod	255711-2	9 Nov 1953
23TDX6C	20708/55D	13 Mar 1989	Replaces for new design	1DG Mk 1 Mod 1	561790-4	6 Nov 1953
				1HDG Mk 13	561790-5	6 Nov 1953
23TDR6B	20708/82 (Wep)	3 Nov 1960	Replaces for new design	1D Mk 1 Mod 4	561790-6	6 Nov 1953
				1HD Mk 5	561790-7	6 Nov 1953
				1D Mk 1 Mod 1	213339	10 Aug 1951
23TRX6B	20708/56D	13 Mar 1989	Replaces for new design	1F Mk 8 Mod 1 & 1B	948630	30 Sep 1952
				1F Mk 8 any Mod but 1	561790-1	6 Nov 1953
				1G Mk 5	561790-2	6 Nov 1953
				1HG Mk 14	561790-3	6 Nov 1953
				1HF Mk 14	561790-8	6 Nov 1953
NE				1SHBG	951965	9 May 1952

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TABLE V. Synchro obsolescence data. - Continued.

Preferred Synchros for New Design				Obsolete/Prestandard Synchros		
Type Designation	MIL-S-20708 Specification Sheet Number	Date of Specification Sheet		Type Designation	Obsolete/Prestandard Reference	Date of Reference
NE				1SHBCT	951186	29 May 1951
NE				1CDXB4	980770	27 Aug 1953
31TRX6A	20708/66D	13 Mar 1989	Replaces for new design	3F Mk 9 3HF Mk 15 3HG Mk 10	561791-1 561791-2 561791-3	20 Oct 1953 20 Oct 1953 20 Oct 1953
31TDX6C	20708/68(OS)	3 Mar 1969	Replaces for new design	3HDG Mk 8 Mod 3	561791-4	20 Oct 1953
31TDR6B	20708/67B	13 Mar 1989	Replaces for new design	3D Mk 3 any Mod but 3 3D Mk 3 Mod 3	561791-5 173136	20 Oct 1953 23 Jan 1946
NE				3B Mk 16	561795-1	29 Mar 1954
NE				3DB Mk 6	561795-2	29 Mar 1954
NE				3DGB Mk 16	561795-3	29 Mar 1954
NE				3CTB Mk 12 3HCTB Mk 12 3HCT Mk 7 any mod	561795-4 1445018 561791-6	29 Mar 1954 21 Sep 1952 20 Oct 1953

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TABLE V. Synchro obsolescence data - Continued.

<u>Preferred Synchros for New Design</u>				<u>Obsolete/Prestandard Synchros</u>		
Type Designation	MIL-S-20708 Specification Sheet Number	Date of Specification Sheet		Type Designation	Obsolete/Prestandard Reference	Date of Reference
NE				5B Mk 13 5B Mk 5 any Mod 5B Mk 5 Mod 2A	561788-1 164367 109419	29 Mar 1954 8 Feb 1938 19 Nov 1935
37TRX4A	20708/70D	13 Mar 1989	Replaces for new design	5G400 and 5HG400 5F400 5G	173110-1 173110-2 173110-3	12 Oct 1945 12 Oct 1945 12 Oct 1945
NE				5HDC400 Mk 14 Mod 3	173020	14 May 1947
NE				5DGB Mk 3	561788-3	29 Mar 1954
37TRX6A	20708/74D	13 Mar 1989	Replaces for new design	5F Mk 4 any Mod 5HF Mk 11 any Mod 5G Mk 1 any Mod 5HG Mk 6 any Mod but 2	561792-1 561792-2 561792-3 561792-4	20 Oct 1953 20 Oct 1953 20 Oct 1953 20 Oct 1953
37TDX6A	20708/76B	13 Mar 1989	Replaces for new design	5DG Mk 4 any Mod 5HDC Mk 9	561792-5 561792-6	20 Oct 1953 20 Oct 1953
NE				5D Mk 7 Mod 2 5D Mk 7 Mod 4	109663 561792-7	14 Nov 1935 20 Oct 1953

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TABLE V. Synchro obsolescence data - Continued.

Preferred Synchros for New Design				Obsolete/Prestandard Synchros		
Type Designation	MIL-S-20708 Specification Sheet Number	Date of Specification Sheet		Type Designation	Obsolete/Prestandard Reference	Date of Reference
NE				5CT Mk 3 any Mod 5HCT Mk 6 any Mod 5CT Mk 1 and 5HCT Mk 1 & Mk 3 (Overhauled from 5CT)	561792-8 561792-9 202423	20 Oct 1953 20 Oct 1953 31 Jan 1938
NE				5DB Mk 9 Mod 5	561788-2	29 Mar 1954
NE				5CTB Mod 1 5CTB Mod 2	212983 524341	11 Mar 1944
5N	20708/99(AS)	21 Mar 1963	Replaces for new design	5CTB Mk 8 Mod 1 and 5HCTB Mk 8 Mod 7	561788-4	29 Mar 1954
5SN Mod 1B	20708/100(Wep)	21 Mar 1963	Replaces for new design	5N Mk 6 Mod 4 5N Mk 6 Mod 1 & 1A	164368 212781	23 Mar 1954 24 Jun 1944
NE				5SN Mods 1 & 1A	212973	1 Apr 1944
NE				5SCT Mk 13 Mod 2B	524057	2 Sep 1952
NE				5SDG Mod 1	213100	21 May 1947

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TABLE V. Synchro obsolescence data - Continued.

<u>Preferred Synchros for New Design</u>			<u>Obsolete/Prestandard Synchros</u>			
Type Designation	MIL-S-20708 Specification Sheet Number	Date of Specification Sheet		Type Designation	Obsolete/Prestandard Reference	Date of Reference
NE				5F400 Mk 12 Mod 3	951192	25 Sep 1952
5SB Mod 2	20708/101(AS)	21 Mar 1963	Replaces for new design	5SB Mod 1 & 1A 5SB Mod 1B	212974 1445019	21 Dec 1940 21 Sep 1956
NE				6CT Mk 2 Mod 2A	280350	22 Aug 1944
NE				6HG400	839832	9 May 1950
NE				6HDG400	839833	27 Feb 1952
NE				6SHDG Mk 1 any Mod	791892	24 Feb 1950
NE				6HGB	629844	31 Mar 1955
NE				6HGB400	839834	13 Feb 1951
NE				6SG Mod 2A 6SG Mod 3	319823 185025	6 Jan 1943 25 Sep 1944
37TRX6A	20708/74D	13 Mar 89	Replaces for new design	6G Mk 2 any Mod 6HG Mk 7 any Mod but 4 6HG Mk 7 Mod 4 6HG Mk 2 Mod 9	561793-1 561793-2 1357625 2061886	6 Nov 1953 6 Nov 1953 31 Jan 1957 24 Oct 1960

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TABLE V. Synchro obsolescence data - Continued.

Preferred Synchros for New Design				Obsolete/Prestandard Synchros		
Type Designation	MIL-S-20708 Specification Sheet Number	Date of Specification Sheet		Type Designation	Obsolete/Prestandard Reference	Date of Reference
37TDX6A	20708/76B	13 Mar 89	Replaces for new design	6DG Mk 5 any Mod 6HDG Mk 10 Mod 1	561793-3 561793-4	6 Nov 1953 6 Nov 1953
NE				7G Mk 3 any Mod 7HG Mk 9 any Mod	561794-1 561794-2	6 Nov 1953 6 Nov 1953
NE				7DG Mk 6 any Mod 7HDG Mk 11 Mod 1	561794-3 561794-4	6 Nov 1953 6 Nov 1953
NE				7SDG Mk 8	113805	
NE				7SG Mk 8 Mod 2 & 2B 7SG Mk 3 Mod 3	319391 173225	14 Apr 1943 3 Aug 1945
NE				8G Mk 4	164363	8 Feb 1938
NE				8DG Mk 7	164365	8 Feb 1938

NOTES:

1. NE = No Equivalent synchros for these types.
2. The preferred synchros in the left column of Table V are preferred replacements for the prestandard synchros. The prestandard synchros are not interchangeable with one another.

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APPENDIX B

SYNCHRO GUIDANCE LIST OF PREFERRED NONSTANDARD ITEMS

10. GENERAL

10.1 Purpose. The purpose of Table VI is to provide further information and guidance for the selection of preferred nonstandard synchros. These synchros are preferred if no standard synchros from Table I meet the necessary requirements, because they have coordinated MIL-S-20708 specification sheets available. However, they do not meet the criteria for standard synchros. The authorization for use of nonstandard synchros listed in Table VI shall be obtained from the contracting activity using DI-MISC-80071, Part Approval Request.

NOTE: Units in this list with a part number of -01 will transfer to the Listing of Standard Synchros in Table I when they meet the criteria of 4.2.

TABLE VI. Guidance list of preferred nonstandard synchros.

Type Designation	MIL-S-20708 Specification Sheet Number of Latest Issue in Effect	Specification Military Part Number
11CT4E	1	M20708/1-02E
11CT4E	1	M20708/1-03E
11CT4E	1	M20708/1-04E
11CT4E	1	M20708/1-05E
11CT4E	1	M20708/1-06E
11CX4E	2	M20708/2-02E
11CX4E	2	M20708/2-03E
11CX4E	2	M20708/2-04E
11CX4E	2	M20708/2-05E
11CX4E	2	M20708/2-06E
11TR4C	3	M20708/3-01C
11TR4C	3	M20708/3-02C

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TABLE VI. Guidance list of preferred nonstandard synchros - Continued.

Type Designation	MIL-S-20708 Specification Sheet Number of Latest Issue in Effect	Specification Military Part Number
11TR4C	3	M20708/3-05C
11TR4C	3	M20708/3-06C
11TX4C	4	M20708/4-01C
11TX4C	4	M20708/4-02C
11TX4C	4	M20708/4-03C
11TX4C	4	M20708/4-04C
11TX4C	4	M20708/4-05C
11TX4C	4	M20708/4-06C
26V-11TR4C	5	M20708/5-01C
26V-11TR4C	5	M20708/5-02C
26V-11TR4C	5	M20708/5-03C
26V-11TR4C	5	M20708/5-04C
26V-11TR4C	5	M20708/5-05C
26V-11TR4C	5	M20708/5-06C
26V-11TX4C	6	M20708/6-02C
26V-11TX4C	6	M20708/6-03C
26V-11TX4C	6	M20708/6-04C
26V-11TX4C	6	M20708/6-05C
26V-11TX4C	6	M20708/6-06C

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TABLE VI. Guidance list of preferred nonstandard synchros - Continued.

Type Designation	MIL-S-20708 Specification Sheet Number of Latest Issue in Effect	Specification Military Part Number
26V-11CT4D	7	M20708/7-02D
26V-11CT4D	7	M20708/7-03D
26V-11CT4D	7	M20708/7-04D
26V-11CT4D	7	M20708/7-05D
26V-11CT4D	7	M20708/7-06D
26V-11CX4C	8	M20708/8-02C
26V-11CX4C	8	M20708/8-03C
26V-11CX4C	8	M20708/8-04C
26V-11CX4C	8	M20708/8-05C
26V-11CX4C	8	M20708/8-06C
26V-11CDX4C	9	M20708/9-02C
26V-11CDX4C	9	M20708/9-03C
26V-11CDX4C	9	M20708/9-04C
26V-11CDX4C	9	M20708/9-05C
26V-11CDX4C	9	M20708/9-06C
15CX4D	14	M20708/14-02D
15CX4D	14	M20708/14-03D
15CT4C	15	M20708/15-02C
15CT4C	15	M20708/15-03C
15CDX4D	16	M20708/16-02D
15CDX4D	16	M20708/16-03D

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TABLE VI. Guidance list of preferred nonstandard synchros - Continued.

Type Designation	MIL-S-20708 Specification Sheet Number of Latest Issue in Effect	Specification Military Part Number
15TDX4C	17	M20708/17-02C
15TDX4C	17	M20708/17-03C
15TRX4A	19	M20708/19-02A
15TRX4A	19	M20708/19-03A
15CX6C	20	M20708/20-02C
15CX6C	20	M20708/20-03C
15CT6D	21	M20708/21-02D
15CT6D	21	M20708/21-03D
15CDX6C	22	M20708/22-02C
15CDX6C	22	M20708/22-03C
15TRX6A	23	M20708/23-02A
15TRX6A	23	M20708/23-03A
16CTB4B	25	M20708/25-001
19CTB4B	39	M20708/39-001
19CTB6B	42	M20708/42-001
23TDR4B	49	M20708/49-01B
31TDR6B	67	M20708/67-01B
26V-08CX4C	78	M20708/78-02C
26V-08CT4C	79	M20708/79-02C
26V-08CDX4C	80	M20708/80-02C
11CDX4B	81	M20708/81-02B

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TABLE VI. Guidance list of preferred nonstandard synchros - Continued.

Type Designation	MIL-S-20708 Specification Sheet Number of Latest Issue in Effect	Specification Military Part Number
11CDX4B	81	M20708/81-03B
11CDX4B	81	M20708/81-04B
11CDX4B	81	M20708/81-05B
11CDX4B	81	M20708/81-06B
5SN Mod 1B	100	M20708/100-001
15CX4F	131	M20708/131-01F
15CX4F	131	M20708/131-02F
15CX4F	131	M20708/131-03F
26V-05CX4A	135	M20708/135-001
26V-05CT4A	136	M20708/136-001
26V-05CDX4A	137	M20708/137-001
31CX4A	138	M20708/138-01A
31CX6A	139	M20708/139-001
26V-23CT4A	142	M20708/142-001
26V-08TDX4A	143	M20708/143-001
26V-08TDX4A	143	M20708/143-002
26V-08TDX4A	143	M20708/143-003
26V-08TDX4A	143	M20708/143-004
26V-08TDX4A	143	M20708/143-005
26V-08TDX4A	143	M20708/143-006
26V-08TDX4A	143	M20708/143-007
26V-08TDX4A	143	M20708/143-008

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TABLE VI. Guidance list of preferred nonstandard synchros - Continued.

Type Designation	MIL-S-20708 Specification Sheet Number of Latest Issue in Effect	Specification Military Part Number
26V-08TDX4A	143	M20708/143-009
26V-08TDX4A	143	M20708/143-010
26V-08TDX4A	143	M20708/143-011
26V-08TDX4A	143	M20708/143-012
26V-08TDX4A	143	M20708/143-013
26V-08TDX4A	143	M20708/143-014
26V-08TDX4A	143	M20708/143-015
26V-08TDX4A	143	M20708/143-016
26V-08TDX4A	143	M20708/143-017
26V-08TDX4A	143	M20708/143-018
26V-08TDX4A	143	M20708/143-019
26V-08TDX4A	143	M20708/143-020
26V-08TDX4A	143	M20708/143-021
26V-08TDX4A	143	M20708/143-022
26V-08TDX4A	143	M20708/143-023
26V-08TDX4A	143	M20708/143-024
26V-08TDX4A	143	M20708/143-025
26V-08TDX4A	143	M20708/143-026
26V-08TDX4A	143	M20708/143-027
26V-08TDX4A	143	M20708/143-028
26V-08TDX4A	143	M20708/143-029
26V-08TDX4A	143	M20708/143-030

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TABLE VI. Guidance list of preferred nonstandard synchros - Continued.

Type Designation	MIL-S-20708 Specification Sheet Number of Latest Issue in Effect	Specification Military Part Number
26V-08TDX4A	143	M20708/143-031
26V-08TDX4A	143	M20708/143-032
26V-08TR4A	144	M20708/144-001
26V-08TR4A	144	M20708/144-002
26V-08TR4A	144	M20708/144-003
26V-08TR4A	144	M20708/144-004
26V-08TR4A	144	M20708/144-005
26V-08TR4A	144	M20708/144-006
26V-08TR4A	144	M20708/144-007
26V-08TR4A	144	M20708/144-008
26V-08TR4A	144	M20708/144-009
26V-08TR4A	144	M20708/144-010
26V-08TR4A	144	M20708/144-011
26V-08TR4A	144	M20708/144-012
26V-08TR4A	144	M20708/144-013
26V-08TR4A	144	M20708/144-014
26V-08TR4A	144	M20708/144-015
26V-08TR4A	144	M20708/144-016
26V-08TR4A	144	M20708/144-017
26V-08TR4A	144	M20708/144-018
26V-08TR4A	144	M20708/144-019
26V-08TR4A	144	M20708/144-020

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TABLE VI. Guidance list of preferred nonstandard synchros - Continued.

Type Designation	MIL-S-20708 Specification Sheet Number of Latest Issue in Effect	Specification Military Part Number
26V-08TR4A	144	M20708/144-021
26V-08TR4A	144	M20708/144-022
26V-08TR4A	144	M20708/144-023
26V-08TR4A	144	M20708/144-024
26V-08TR4A	144	M20708/144-025
26V-08TR4A	144	M20708/144-026
26V-08TR4A	144	M20708/144-027
26V-08TR4A	144	M20708/144-028
26V-08TR4A	144	M20708/144-029
26V-08TR4A	144	M20708/144-030
26V-08TR4A	144	M20708/144-031
26V-08TR4A	144	M20708/144-032
26V-08TX4A	145	M20708/145-001
26V-08TX4A	145	M20708/145-002
26V-08TX4A	145	M20708/145-003
26V-08TX4A	145	M20708/145-004
26V-08TX4A	145	M20708/145-005
26V-08TX4A	145	M20708/145-006
26V-08TX4A	145	M20708/145-007
26V-08TX4A	145	M20708/145-008
26V-08TX4A	145	M20708/145-009
26V-08TX4A	145	M20708/145-010

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TABLE VI. Guidance list of preferred nonstandard synchros - Continued.

Type Designation	MIL-S-20708 Specification Sheet Number of Latest Issue in Effect	Specification Military Part Number
26V-08TX4A	145	M20708/145-011
26V-08TX4A	145	M20708/145-012
26V-08TX4A	145	M20708/145-013
26V-08TX4A	145	M20708/145-014
26V-08TX4A	145	M20708/145-015
26V-08TX4A	145	M20708/145-016
26V-08TX4A	145	M20708/145-017
26V-08TX4A	145	M20708/145-018
26V-08TX4A	145	M20708/145-019
26V-08TX4A	145	M20708/145-020
26V-08TX4A	145	M20708/145-021
26V-08TX4A	145	M20708/145-022
26V-08TX4A	145	M20708/145-023
26V-08TX4A	145	M20708/145-024
26V-08TX4A	145	M20708/145-025
26V-08TX4A	145	M20708/145-026
26V-08TX4A	145	M20708/145-027
26V-08TX4A	145	M20708/145-028
26V-08TX4A	145	M20708/145-029
26V-08TX4A	145	M20708/145-030

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TABLE VI. Guidance list of preferred nonstandard synchros - Continued.

Type Designation	MIL-S-20708 Specification Sheet Number of Latest Issue in Effect	Specification Military Part Number
26V-08TX4A	145	M20708/145-031
26V-08TX4A	145	M20708/145-032
26V-10TR4	500	M20708/500-001
26V-10TR4	500	M20708/500-002
15CT6B	504	M20708/504-001
15CT6B	504	M20708/504-002
15CT6B	504	M20708/504-003

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MIL-STD-710D

Custodians:

Army - AR
Navy - AS
Air Force - 85

Preparing Activity:

Navy - AS

Review Activities:

Army -
Navy - OS, EC
Air Force - 99
DLA - ES

User Activities:

Army - ME
Navy - MC, CG
Air Force - 11

(Project 5990-0398)

STANDARDIZATION DOCUMENT IMPROVEMENT PROPOSAL

INSTRUCTIONS

1. The preparing activity must complete blocks 1, 2, 3, and 8. In block 1, both the document number and revision letter should be given.
2. The submitter of this form must complete blocks 4, 5, 6, and 7.
3. The preparing activity must provide a reply within 30 days from receipt of the form.

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I RECOMMEND A CHANGE:

1. DOCUMENT NUMBER
MIL-STD-710D

2. DOCUMENT DATE (YYMMDD)
25 MARCH 1991

3. DOCUMENT TITLE

SYNCHROS, 60 AND 400 HZ, SELECTION AND APPLICATION

4. NATURE OF CHANGE (Identify paragraph number and include proposed rewrite, if possible. Attach extra sheets as needed.)

5. REASON FOR RECOMMENDATION

6. SUBMITTER

a. NAME (Last, First, Middle Initial)

b. ORGANIZATION

c. ADDRESS (Include Zip Code)

d. TELEPHONE (Include Area Code)
(1) Commercial
(2) AUTOVON
(If applicable)

7. DATE SUBMITTED
(YYMMDD)

8. PREPARING ACTIVITY

a. NAME
COMMANDING OFFICER
NAVAL AIR ENGINEERING CENTER

b. TELEPHONE (Include Area Code)
(1) Commercial 908-323-2258
(2) AUTOVON 624-2258

c. ADDRESS (Include Zip Code)
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