INCH-POUND
A-A-59433A
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SUPERSEDING
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COMMERCIAL ITEM DESCRIPTION

MIXERS, LIQUID, REVOLVING SHAFT AND AGITATOR TYPES

The General Services Administration has authorized the use of this Commercial Item Description (CID), for all federal agencies.

1. SCOPE. This CID covers two types of liquid mixers designed for the mixing of paints, oils, or emulsions. The mixers covered in this CID are intended for commercial/industrial applications.

2. CLASSIFICATION. The mixers shall be of the following types, classes, and sizes, as specified (see 7.2).

Type I - Revolving-shaft mixer
Class 1 - Electric-motor-driven

Size - 1/4 horsepower (hp)
Size - 1/2 hp

Class 2 - Pneumatic-motor-driven

Type II - Agitator-type mixer
Size - 1/4 hp
Size - 1/3 hp

3. SALIENT CHARACTERISTICS.

3.1 General. All mixers shall meet the requirements of this CID unless otherwise specified by the contract or order.

3.2 Design and Construction. Mixers supplied under this CID shall be made of the materials specified under the salient characteristics section of this CID and in accordance with the manufacturer's standard practice unless otherwise stated in the contract or order. The mixers shall consist of a motor, motor bracket, shaft assembly, clamp and bracket mounting device, metal base, transmission case and cover, bearing stand, belt guard, and adjustable can holder unless otherwise stated in the contract or order. The item of equipment shall be constructed of new parts, without defects and free of repairs. The structure shall be capable of withstanding all forces encountered during the operation of the item of equipment, to its maximum rating and capacity, without permanent distortion. All parts of the item shall be manufactured to definite standards and tolerances that will provide for the interchangeability of respective parts between items of the same model. All replacement parts shall be interchangeable with their respective original parts, and fit/function with mating components.

3.3 Gears. All gear and pinion designs selected for use in the item of equipment shall be manufactured in accordance with AGMA documents (see 7.6). Gears and mountings shall be designed and machined to provide a fit-up to minimize backlash.

Comments, suggestions, or questions on this document should be addressed to: DLA Land and Maritime, Attn: VAI, P.O. Box 3990, Columbus, OH 43218-3990, or emailed to FluidFlow@dla.mil. Since contact information can change, you may want to verify the currency of this address information using the ASSIST Online database at https://assist.dla.mil.

AMSC N/A FSC 4940

3.4 Motor. Unless otherwise specified, the electric motors shall conform to NEMA MG-1, as applicable to the type of mixer specified. These motors shall be equipped with overload protection and rated for continuous duty operations, and the mixer shall operate from a 115 Volt, 60 Hertz, single phase, alternating current source unless otherwise specified (see 7.2). When specified (see 7.2), the electric motor shall be explosion-proof in accordance with NFPA 70.

3.5 Electric Power Supply Cable. The electric power supply cable shall not be less than ten (10) feet in length and shall terminate with a three (3) prong grounding plug in accordance with ANSI C73.11. The three (3) prong plug shall be furnished with a three to two prong outlet adapter, with a ground lead. The electric supply cable shall have a voltage and current carrying capacity exceeding that required by the electric power consuming devices, including electric motors, of the mixer be in accordance with NFPA 70.

3.6 Switch. The motor shall be equipped with an “on-off” toggle switch mounted on the motor or some adjacent part of the mixer. The switch shall have a current rating of not less than 1-1/2 times the full load current rating of the motor. The switch shall be clearly and permanently marked to indicate the “on” and “off” positions. When specified (see 7.2), the switch shall be explosion-proof in accordance with NFPA 70.

3.7 Fastening Devices. Fastening devices and methods shall be chosen to serve the need while providing necessary adjustability for service, maintenance or repair. Fasteners shall be installed to prevent loss of tightness and shall not loosen in service.

3.8 Threads. All machined threads shall conform to the commercial industries standard practice unless otherwise stated in the contract or order.

3.9 Lubrications. All bearings (except sealed-for-life type), mating gears, and sliding parts shall be provided with standard means for lubrication. Oil holes, grease fittings, and filler caps shall be accessible without requiring disassembly of functional parts. Lubrication reservoirs, if applicable, shall have means for checking levels.

3.10 Safety and Health Requirements. Safety devices shall be provided for all parts presenting safety hazards. Guards shall be removable to provide easy access to guarded parts. The mixer shall comply with the general safety and health requirements set forth by the standard commercial manufacturing practice unless otherwise stated in the contract or order. In order that equipment integrated into the user’s operational environment will comply with OSHA limitations and control of noise levels, radiation, electromagnetic emission, noxious vapors, heat, etc., as applicable, specific requirements concerning such points of operation, and other health and safety requirements, should be specified by the contract or order (see 7.2).

3.11 Finish. Unless specified in the contract or order (see 7.2), all painting and finishing shall be in accordance with the best commercial practice in the industry.

3.12 Nameplate. The nameplate and information plate(s) shall be incorporated into one or more corrosion-resistant metallic plate(s) at the manufacturer’s option. Characters and numerals shall be permanently and legibly engraved, etched, embossed, or stamped in bold face on a contrasting background. The plate(s) shall be secured to the machine with permanent fasteners such as screws, bolts, or rivets; one at each of the four corners. The nameplate shall include the following information, at a minimum:

Nomenclature
Manufacturer’s Name and Model Number
Manufacturer’s Serial Number (if applicable)
Power Input (volts, amperes, phase, Hertz, alternating current (AC))
Horsepower

3.13 Type I – Revolving-Shaft Mixer. The Type I mixer shall consist of a motor, propeller shaft, shaft connector, propeller, mounting device, and, when specified, a mixing tank and mounting stand.

3.14 Propeller Shaft. The propeller shaft shall be fabricated of type 304 or 316 stainless steel. The shaft shall be of sufficient length to place the propeller within 3 inches of the bottom and sides of a 55-gallon drum. The shaft shall be provided with flat side surfaces to seat the setscrews of the shaft connector and the propellers. The shaft shall transmit power to the propellers without torsional vibration or whipping.

3.15 Shaft Connector. A shaft connector shall be provided to connect the motor shaft to the propeller shaft. When sleeve-type connectors are used, the connector shall be secured to both shafts by setscrews or setscrew and key combinations.

3.16 Propeller. Each propeller shall be fabricated of type 304 or 316 stainless steel, or aluminum alloy conforming to ASTM B26/B26M, Alloy 355.0, Condition T6, or Alloy 356.0, Condition T6. The blade angle shall permit
maximum agitation of material without cavitation and shall be consistent with the propeller diameter and motor horsepower.

3.17 Mounting Device. A clamp-and-bracket mounting device shall be provided with each mixer. The mounting device shall clamp the mixer firmly on the side of a 55-gallon open-head drum, tank, or vessel with shells not more than 1.25 inches thick. The clamp shall lock the mixer securely in an angular off-center mixing position. The bracket shall be adjustable to provide various angular positions of the shaft.

3.18 Mixing Tank and Mounting Stand. When specified (see 7.2), a mixing tank and mounting stand shall be furnished. The mixing tank shall have a capacity of not less than 50 or more than 60 gallons and shall be fabricated from corrosion resisting steel sheet, type 304 or 316, or carbon steel sheets conforming to ASTM A1008/A1008M. When carbon steel sheets are used, both the tank and cover, after fabrication, shall be galvanized in accordance with ASTM A 153/A153M or ASTM B 633. The bottom of the tank shall be equipped with a 2-inch outlet fitted with a 2-inch gate valve. The tank shall be provided with either a split cover or a removable cover. The split cover shall have one section hinged to provide an opening to accommodate the shaft of the mixer. The stationary part of the cover shall be bolted or clamped to the top reinforcing ring of the tank and shall be removable at any time. The removable cover shall have a circular opening of proper size to accommodate the shaft of the mixer. The stand shall support a full tank. A bracket for receiving the clamping device on the mixer shall be mounted on the stand.

3.19 Type I, Class 1 (Electric Motor Driven).

3.19.1 Size 1/4 Horsepower (hp). The size 1/4-hp mixer shall be equipped with two 4-inch diameter propellers angled to discharge to the bottom of the container. The upper propeller shall be adjustable on the shaft to within 6 inches of the shaft connector and to within six inches of the bottom propeller and shall be secured to the shaft with countersunk setscrews. The mixer shall operate at not less than 1725 revolutions per minute (rpm).

3.19.2 Size 1/2 Horsepower. The size 1/2-hp mixer shall be of a reduction-gear type and shall rotate the propeller shaft at 410 rpm, $\pm$ 10 rpm. The mixer shall be equipped with two 8-inch diameter propellers angled to discharge to the bottom of the container. The upper propeller shall be adjustable on the shaft to within 6 inches of the shaft connector and to within six inches of the bottom propeller and shall be secured to the shaft with countersunk setscrews.

3.20 Type I, Class 2 (Pneumatic Motor Driven). The Type I, class 2, 1/2-hp pneumatic motor driven mixer shall be of a reduction-gear type and shall rotate the propeller shaft at 20 to 400 rpm with a corresponding motor speed 4 to 5 times greater. The air motor will develop a minimum of 1/2 hp at 1100 rpm and 60 pounds per square inch gauge (psig). An air muffler shall be provided. The exhaust outlet shall be positioned so that oil or water from the exhaust cannot drop into the material being mixed.

3.20.1 Propeller. The mixer shall be equipped with two 7-inch to 9-inch diameter 3-bladed, square pitch propellers to discharge to the bottom of the container. The upper propeller shall be adjustable on the shaft to within 6 inches of the shaft connector and to within six inches of the bottom propeller and shall be secured to the shaft with countersunk setscrews.

3.20.2 Air Connection. The air inlet shall have an internal 1/4-inch NPTF thread for attaching the hose. Unless otherwise specified (see 7.2), a 1/4-inch universal quick-disconnect air-line coupling with male and female unit shall be furnished.

3.20.3 Noise Limits. When the noise level of the mixer is 85dB(A) or greater, the mixer shall have a hazardous noise level sign according to standard commercial practice. The sign will be modified to indicate the distance from the mixer at which the 85dB(A) limit is met. An appropriate discussion of the noise hazards shall be included in the manuals for the mixer according to standard commercial practice.

3.21 Type II – Agitator-Type Mixer. The Type II agitator-type mixer shall vibrate a can through a belt and eccentric drive at a speed that will completely mix and blend the contents of the can. All belts shall be provided with a belt guard (when applicable). The mixer shall operate at its maximum load for the commercially rated time it takes to mix and blend the contents of the can without loss of power, over-heating, burning out, permanent distortion, or failure of any parts.

3.21.1 Size 1/4 Horsepower. The size 1/4-hp mixer shall accommodate containers from 1/4-pint to 1-gallon capacity. The oscillating or load shaft shall be mounted on bronze sleeve-type bearings. The crankshaft and spider, or other reciprocating mechanism, shall be mounted on anti-friction or sleeve-type bearings and shall be oil-bath lubricated. Moving parts in the transmission shall operate in a bath of oil. When sealed-for-life anti-friction bearings are used, oil-bath lubrication shall not be required. The timer shall have an adjustable range from 30 seconds to 15 minutes.

3.21.2 Size 1/3 Horsepower. The size 1/3-hp mixer shall have a minimum of 1/3 hp, shall accommodate containers from 1-gallon to 5-gallon capacity, and shall be provided with an adapter for holding a carton of four 1-gallon cans. The eccentric transmission and can holder shaft shall be mounted on a friction-type or anti-friction-type bearings. When friction type bearings are used, provisions shall be made for constant lubrication. The timer shall have an adjustable range from 1 to 30 minutes.

3.21.3 Can Holder. The can holder shall clamp both on the top and bottom of the container. The top clamp shall contact the periphery of the container in a manner to reseal a previously opened container. A hand crank or hand wheel shall be provided to secure the can in the can holder. Can holders for the size 1/3-hp mixer shall be such that the can be locked in the right side up, upside down, or sideways position.

3.21.4 Timer. Unless otherwise specified (see 7.2), a timer shall be provided for controlling the mixing time in accordance with the standard commercial manufacturing practice. The timer shall be either an automatic mechanical or electric timing device, as specified (see 7.2). When specified (see 7.2) the timer shall be explosion-proof in accordance with NFPA 70. The timer shall start the mixer without failure and shall stop the mixer at the preset time, ± 10 percent of full scale.

4. REGULATORY REQUIREMENTS. The offeror/contractor is encouraged to use recovered materials to the maximum extent practicable, in accordance with paragraph 23.403 of the Federal Acquisition Regulation (FAR).

5. PRODUCT CONFORMANCE PROVISIONS.

5.1 Product Conformance. The products provided shall meet the salient characteristics of this CID, conform to the producer's own drawings, specifications, standards, and quality assurance practices, and be the same product offered for sale in the commercial/industrial market. The Government reserves the right to require proof of such conformance.

5.2 Market Acceptance. The following market acceptance criteria are necessary to document the quality of the product to be provided under this CID:

a. The company producing the item must have been producing a product meeting the requirements of this CID for at least 5 years.

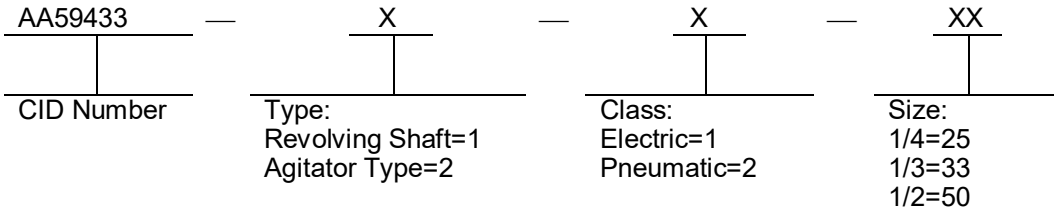
b. The company producing the item must have the capability to produce at least 200 units annually meeting the requirements of this CID.

6. PACKAGING.

6.1 Preservation, Packing, and Marking. Preservation, packing, and marking shall be as specified by the contract or order.

7. NOTES.

7.1 Part Identification Number (PIN). The PIN should be used for Government purposes to buy commercial products conforming to the requirements of this CID. The part identification numbering procedure is for government purposes and does not constitute a requirement for the contractor. The following is an example of the PIN numbering system for CID A-A-XXXXX:



7.2 Ordering Data. The contract or order should specify the following:

a. CID document number, revision, and CID PIN.
b. Type, class and size required (see 2).
c. Specify 220 volt operation, when required (see 3.4).
d. Packaging requirements (see 6.1).
e. Exceptions and additional safety/health requirements when required (see 3.10).
f. When explosion-proof motors, switches, or timers are required (see 3.4, 3.6, 3.21.4).
g. Whether the timer shall be an automatic, mechanical, or electric timing device (see3.21.4).
h. When a timer is not required (see 3.21.4).
i. Painting, if different (see 3.11).
j. When a mixing tank and mounting stand shall be provided (see 3.18).
k. When a quick disconnect coupling is required (see 3.20.2).

7.3 National Stock Number (NSN)/CID Part Identification Number (PIN) Cross-Reference. The following is a list of identified NSNs assigned that correspond to this CID. This list may not be indicative of all possible NSNs associated with this CID. Addition Type I and II mixers have been identified within Item Name Codes 05704 and 05706 respectively, but lack sufficient description to classify.

NSN	CID PIN
4940-00-243-2735	AA59433-2-1-25
4940-00-243-2736	AA59433-2-1-33
4940-00-254-8666	AA59433-2-1-33 (220V)
4940-00-221-1707	AA59433-1-1-50
4940-00-251-6475	AA59433-2-1-33
4940-01-320-5391	AA59433-2-1-50

7.4 Commercial Products. As part of the market analysis and research effort information was gathered from the following vendors of commercial/industrial products. At the time of CID preparation and coordination, these vendors were known to have commercial/industrial products that would meet the requirements of this CID. (NOTE: This information should not be considered as a list of approved vendors or be used to restrict procurement to only the vendors shown.)

Eclipse Systems
Division of Technology General Corporation
12 Cork Hill Road
Franklin, NJ 07416-1300
Phone: (800) 526-1752 CAGE: 19272

Lightnin
135 Mt. Read Boulevard
P.O. Box 1370
Rochester, NY 14611
Phone: (888) 649-2378 CAGE: 41083

McMaster-Carr Supply Company
600 County Line Road
Elmhurst, IL 60126
Phone: (630) 833-0300 CAGE: 39428

Midwest Mixing Inc.
5630 Pleasant Boulevard
Chicago Ridge, Il 60415-2306
Phone: (708) 422-8100 CAGE: 90399

Miracle Paint Rejuvenator Company
6270 Claude Way
Inver Grove Heights, MN 55076-4435
Phone: (888) 236-1143 CAGE: 88883

Red Devil INC
1437 S. Boulder Ave. Suite 750
Tulsa, OK 74119-3644
Phone: (800) 206-6661 CAGE: 89093

7.5 Part Number/National Stock Number (NSN) Cross-Reference. Table I contains the commercial part number cross-reference to the NSN. Dimensions of components and horsepower ratings of the commercial items in this table are for commercial devices that are currently available on the open market.

Table 1. Part Number/National Stock Number Cross Reference.

		Company					
		Miracle Paint Rejouvenator Company	Midwest Mixing Incorporated	McMaster-Carr Supply Company	Red Devil Equipment Company	Lightnin	Eclipse Systems
		Cage Code					
		88883	90399	39428	89093	41083	19272
ITEM	**NSN**						
Type I Revolving Shaft Mixer							
Class 1 (Electric Motor Driven)							
1/4 Horsepower			112 (1/3 hp)			EV1P25	52-4402-3 (1/2 hp)
1/2 Horsepower	4940-00-221-1707		33****			EV1P50***	52-7050-304
Class 2 (Pneumatic Motor Driven)							
1/2 Horsepower			N-33			EV1P50A***	
Type II Agitator Type Mixer							
1/4 Pint To 1 Gallon Mixer	4940-00-243-2735	DC-1-P	Model 0	7910T7	5410-0M		
1 To 5 Gallon Mixer	4940-00-243-2736	MBB-5-C	Model 6	9584T11	5033-00		
	4940-00-251-6475	MBB-5-C	Model 6				
	4940-00-254-8666*		Model 6**				

*220 Volt Motor, **Specify 220 Volt Motor, ***350 RPM Gear Drive, ****10 Inch Diameter Blade

7.6 Source of Documents.

AMERICAN NATIONAL STANDARDS (ANSI)

ANSI-C73.11	-	DIMENSIONS OF PLUGS AND RECEPTACLES-GENERAL PURPOSE, 125 VOLTS, 15 AMPERES, 2POLE, 3WIRE GROUNDING TYPE

(Copies of these documents are available online at https://www.ansi.org/)

ASTM INTERNATIONAL

ASTM-A153/A153M	-	Zinc Coating (Hot-Dip) on Iron and Steel Hardware
ASTM A1008/A1008M	-	Steel, Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, Solution Hardened, and Bake Hardenable
ASTM-B26/26M	-	Standard Specification for Aluminum-Alloy Sand Castings
ASTM-B633	-	Electrodeposited Coatings of Zinc on Iron and Steel

(Copies of these documents are available online at http://www.astm.org)

NATIONAL ELECTRICAL MANUFACTURERS' ASSOCIATION (NEMA)

NEMA-MG1	-	MOTORS AND GENERATORS

(Copies of these documents are available online at https://www.nema.org/Standards/)

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)

NFPA70	-	National Electrical Code

(Copies of these documents are available online at https://www.nfpa.org/)

AMERICAN GEAR MANUFACTURERS' ASSOCIATION (AGMA)

AGMA-915-1-A02	-	Inspection Practices - Part : Cylindrical Gears
AGMA-915-2-A05	-	Inspection Practices - Part 2: Cylindrical Gears
AGMA-2011-B14	-	Cylindrical Wormgearing Tolerance and Inspection Methods
AGMA-2015-2-B15	-	Gear Tooth Flank Tolerance Classification System
AGMA-ISO 10064-6A10	-	Code of Inspection Practice - Bevel Gear Measurement Methods
AGMA-ISO 17485-A08	-	Bevel Gears - ISO System of Accuracy

(Copies of these documents are available online at https://www.agma.org)

FEDERAL REGULATIONS

FAR	–	Federal Acquisition Regulations (FAR)

(Copies of these documents are available online at https://www.acquisition.gov/far/)

OSHA Standards are available online at https://www.osha.gov/

7.7 Government Users. To acquire information on obtaining these mixers from the Government inventory system, contact Defense Supply Center, Columbus, ATTN: DSCC-VAI, 3990 East Broad Street, Columbus, OH 43216-5000, or emailed to FluidFlow@dla.mil.

7.8 Changes from previous issue. The margins of this specification are marked with vertical lines to indicate where changes from the previous issue were made. This was done as a convenience only and the Government assumes no liability whatsoever for any inaccuracies in these notations. Bidders and contractors are cautioned to evaluate the requirements of this document based on the entire content irrespective of the marginal notations and relationship to the previous issue.

MILITARY INTERESTS:

Custodians:
Army - AL
Air Force - 84
DLA - CC

Review activities:
Army - CR
Navy - MC

CIVIL AGENCY COORDINATING ACTIVITY:

GSA - FSS

Preparing activity:
DLA - CC

(Project 4940-2019-001)

NOTE: The activities listed above were interested in this document as of the date of this document. Since organization and responsibilities can change, you should verify the currency of the information above using the ASSIST Online database at https://assist.dla.mil.