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August 30, 1955

FEDERAL SPECIFICATION

MOWER, LAWN, GASOLINE POWERED

(ROTARY FLAT-KNIFE, 24 THROUGH 60 INCHES, GASOLINE ENGINE DRIVEN)

This specification was approved by the Commissioner, Federal Supply Service, General Services Administration, for the use of all Federal agencies.

1. SCOPE AND CLASSIFICATION

1.1 Scope. This specification covers heavy duty, industrial, selfpropelled lawn mowers with gasoline-engine power-driven cutting blades. These mowers are of the rotary flat-knife type (blade(s) rotating essentially in a horizontal plane) and are either walk-behind or riding-types.

1.1.1 Federal specification coverage. Federal specifications do not include all varieties of the commodity as indicated by the title of the specification, or which are commercially available, but are intended to cover only those generally used by the Federal Government.

1.2 Classification.

1.2.1 Type and sizes. The power mowers covered by this specification shall be rotary flat-knife, heavy duty, selfpropelled, and furnished in single or multiple cutting units in the following types, classes, and nominal sizes, as specified herein and in the invitation for bids, contract, or order (see 6.2):

Type I - Rotary flat-knife, heavy duty selfpropelled.
  Class 1 - Walk-behind.
    Size A - 24 inch nominal, 7 HP minimum.
    Size B - 31 inch nominal, 8 HP minimum.
  Class 2 - Riding mower.
    Size A - 36 inch nominal, 10 HP minimum.
    Size B - 60 inch nominal, 15 HP minimum.

2. APPLICABLE DOCUMENTS

2.1 The following documents, of the issues in effect on date of invitation for bids or request for proposal, form a part of this specification to the extent specified herein:

Federal Specifications:

GGG-G-680 - Grease Gun, Hand, Light Duty.
PPP-B-601 - Boxes, Wood, Cleated-Plywood.
PPP-B-621 - Boxes, Wood, Nailed and Lock-Corner.
PPP-B-640 - Boxes, Fiberboard, Corrugated, Triple Wall.
PPP-P-40 - Packaging and Packing of Hand Tools.
PPP-T-60 - Tape, Pressure-Sensitive Adhesive, Waterproof, for Packing.
UU-T-81 - Tags, Shipping and Stock.
TT-P-664 - Primer Coating, Synthetic, Rust-Inhibiting, Lacquer-Resisting.

Federal Standard:

Fed. Std. No. 123 - Marking for Domestic Shipment (Civil Agencies).

(Activities outside the Federal Government may obtain copies of Federal Specifications, Standards, and Handbooks as outlined under General Information in the Index of Federal Specifications and Standards and at the prices indicated in the Index. The Index, which includes cumulative monthly supplements as issued, is for sale on a subscription basis by the Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402.

(Single copies of this specification and other Federal Specifications required by activities outside the Federal Government for bidding purposes are available without charge from Business Service Centers at the General Services Administration Regional Offices in Boston, New York, Washington, DC, Atlanta, Chicago, Kansas City, MO, Fort Worth, Denver, San Francisco, Los Angeles, and Seattle, WA.

(Federal Government activities may obtain copies of Federal Specifications, Standards, and Handbooks and the Index of Federal Specifications and Standards from established distribution points in their agencies.)

Military Specifications:

MIL-P-116 - Preservation, Methods of.
MIL-B-121 - Barrier Material, Greaseproofed, Waterproofed, Flexible.
MIL-L-2105 - Lubricating Oil, Gear, Multi-Purpose.
MIL-E-10062 - Engines, Spare or Installed, Other than Aircraft, Preparation for Shipment and Storage of.
MIL-L-21260 - Lubricating Oil, Internal-Combustion Engine Preservative.
MIL-V-173 - Varnish, Moisture-and-Fungus-Resistant (For the Treatment of Communications, Electronic, and Associated Electrical Equipment).

Military Standards:

MIL-STD-105 - Sampling Procedures and Tables for Inspection by Attributes.
MIL-STD-129 - Marking for Shipment and Storage.
MIL-STD-461 - Electromagnetic Interference Characteristics, Requirements for Equipment.

(Copies of Military Specifications and Standards required by suppliers in connection with specific procurement functions should be obtained from the procuring activity or as directed by the contracting officer.)

2.2 Other publications. The following documents form a part of this specification to the extent specified herein. Unless otherwise indicated, the issues in effect on date of invitation for bids or request for proposal shall apply:

National Bureau of Standards (NBS) Handbook:

H28 - Screw-Thread Standards for Federal Services.

(Application for copies should be addressed to the Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402.)

American National Standards Institute (ANSI), Inc., Standard:

B71.1 - Safety Specification for Power Lawn Mowers.

(Application for copies should be addressed to the American National Standards Institute, Inc., 1430 Broadway, New York, NY 10018.)

National Motor Freight Traffic Association, Incorporated, Agent:

National Motor Freight Classification.

(Application for copies should be addressed to the American Trucking Associations, Inc., Tariff Order Section, 1616 P Street, N.W., Washington, DC 20036.)

Society of Automotive Engineers (SAE) Standards:

J429 - Mechanical and Quality Requirements for Externally Threaded Fasteners.
J551 - Measurement of Electromagnetic Radiation from Motor Vehicles (20-1,000 mHz).
J607 - Small Stock Two Stroke and Four Stroke Cycle Gasoline Engine Test Code.

(Application for copies should be addressed to the Society of Automotive Engineers, 485 Lexington Avenue, New York, NY 10017.)

Uniform Classification Committee, Agent:

Uniform Freight Classification.

(Application for copies should be addressed to the Uniform Classification Committee, Room 1106, 222 South Riverside Plaza, Chicago, IL 60606.)

(Technical society and technical association specifications and standards are generally available for reference from libraries. They are also distributed among technical groups and using Federal agencies.)

3. REQUIREMENTS

3.1 Condition. Lawn mowers shall be complete and new. The mowers shall be fully assembled except that the handles, wheels, and control rods need not be affixed to the machine (see 5.1.1.1). There shall be no evidence of damage to the mower or component parts that would appreciably affect safe usage or performance at the conclusion of any tests conducted to determine compliance with the service, cutting, or other performance requirements of this specification. Assembled mowers shall be free from rust and imperfections which may affect appearance or serviceability of the mower.

3.1.1 Standard product. The lawn mowers furnished under this specification shall be the manufacturer's current standard industrial product except for those modifications or changes required in the standard product in order to comply with the requirements of this specification. All accessories and components shall be furnished with each lawn mower that are normally furnished with the standard product offered commercially.

3.2 Materials. Materials used in the construction of lawn mowers shall be of the highest grade and suitable for the purpose intended.

3.3 Bid sample model. When specified (see 6.2), and prior to the award of the contract, the supplier shall furnish the mower(s) to prove that his production methods and choice of design detail will produce lawn mowers that comply with the requirements of this specification. Examination and tests shall be those specified herein. Any changes or deviations from the bid sample model during production shall be subject to the approval of the contracting officer. Approval of the bid sample model by the contracting agency shall not relieve the supplier of his obligation to furnish lawn mowers conforming to this specification.

3.4 Design and construction. The mowers shall consist essentially of a gasoline engine, blade(s), housing, guards, controls, handle, wheels, propulsion unit, and sulky when required. Unless otherwise specified (see 6.2), sizes of cut within a range of +2 inches to -1 inch of the nominal size specified will be accepted. Mowers shall be designed with the blade securely mounted to a vertical shaft located forward of the engine and driven by one or more belts and pulleys powered by the engine (see 3.5.1). Mowers shall conform to the safety requirements within and shall be capable of passing the impact, unbalance and blade security tests of ANSI B71.1 (see 4.7.1) without sustaining damage that could be hazardous to the operator. Lawn mowers shall be capable of operating continuously eight hours daily for sixty days under the cutting conditions and at the operating speeds herein specified without the necessity for repairing or reconditioning

the piston, piston rings, or cylinder bore in the engine or repairing the differential or clutch. Frames and structural supporting members shall be of either heavy or reinforced construction, and shall be capable of withstanding loads arising from operation on rough grounds without breakage or visible deformation. Components and related parts shall be accurately and permanently aligned. Assembled machines shall have adequate rigidity and shall not vibrate objectionably when in operation. All bearing housings shall adequately protect the bearings against the entrance of grass clippings, dirt, and other foreign material.

3.4.1 Guards. All power-driven shafts, chains, belts, gears, friction drivers and pulleys shall be positioned or otherwise guarded. A guard or shield shall be provided to prevent inadvertent contact with any exposed components which are hot and may cause burns during normal starting, mounting, and operation of the machine. Splash shield(s) or deflector(s) around gas filler area shall be provided if such devices are required for deverting overflow gasoline away from the muffler outlet area. All shields or guards shall be either permanently attached or secured to prevent removal without the use of tools. Cutter blade housing guards shall be steel; the front and/or side guards may be adjustable, but shall extend below the cutter blade circle in the lowest cutting height setting. The minimum cutter blade housing guard thickness shall be 11 gage. Rear guards may be reinforced neoprene, minimum thickness of 1/4 of an inch, bolted to the mower deck with corrosion resistant fasteners.

3.4.2 Blade housing. The blade housing shall be steel, 1015 merchant quality, or equal, with a minimum thickness of 11 gage. When necessary, blade housings shall be reinforced in areas of structural weakness. In addition, the word "CAUTION" or "DANGER" shall be placed on the mower at or near each discharge opening. Such instructions shall be easily legible by a person of normal vision and height standing upright two feet away from the machine and adjacent to the sign. Letters should be at least 1/4 of an inch high.

3.4.3 Blades. The furnished blades shall be one piece steel, balanced and hardened to Rockwell C 35 to 48 on the last 4 inches of each cutting edge. The blade shall be designed to produce aerodynamic lift and shall be securely mounted to the cutter shaft with ferrous metal adapters. Mounting shall be accomplished through bolt or threaded shaft locknut fasteners of SAE 5 grade, or equal (see SAE J429). Bolt fasteners shall be a minimum of 7/16 of an inch in diameter. The blade shall be tightened to the torque value specified by the manufacturer. Cutter blades, whether used singularly or in multiples, shall be a minimum of 2-1/2 inches in width and 1/4 of an inch in blade thickness, except at the sharpened cutting edges.

3.4.3.1 Cutter blade shafts. Mandrel shafts shall be a minimum of 25 millimeters (0.9843 inches) in diameter alloy steel with a surface hardness of Rockwell C 43 to 57 and a minimum center hardness of Rockwell C 37. In addition, the shafts shall have the following minimum mechanical properties: tensile strength, 135 k.p.s.i.; yield point, 120 k.p.s.i. Mandrel shafts shall be equipped with 25 millimeters inside diameter precision ball or roller bearings which shall be sealed to protect against loss of lubricant and from outside contamination. The bearing manufacturer's recommendation shall be utilized for fitting the bearings to the shaft. Cutter blade shafts shall be securely and rigidly mounted to the mower housing. Cutter blade shafts shall provide for blade mounting by means of a tapped threaded hole to receive a threaded fastener or by means of a threaded shaft locknut combination. The threaded portion of the shaft shall be a minimum of 3/4 of an inch in diameter. Blade adapters shall be of ferrous metal.

3.4.4 Engines. The engines shall be the type known to industry as heavy duty, single cylinder, operate in four cycles, and use gasoline as fuel. Class 2, size B mowers may, at the option of the manufacturer, be furnished with two cylinder industrial engines. Engine cylinder blocks shall be cast iron or aluminum with a cast iron sleeve. The engines shall be equipped with a magneto ignition, a float type carburetor, a fuel strainer, a dry type air cleaner or air cleaner assembly (paper or polyurethane), an efficient exhaust muffler or silencer that directs the outflow to the right or left, forward and down, or to the rear, away from the operator, and a starter of the recoil type, except for class 2, size B, that automatically releases when the engine starts. Class 2, size B mower engines shall be equipped with a 12 volt electric start system. Recoil starters shall be mounted with removable threaded fasteners rather than with rivets to facilitate disassembly. At the option of the manufacturer, a rope start system may be substituted. The starting mechanism shall be arranged in such a way that to use it, an operator need not stand within angle of the discharge opening drawn by extending the sides of the chute opening. Magnetos shall be the high tension type and moisture-resistant. Magneto points shall be protected against

interference by or accumulation of grass clippings, dirt particles, and oil. Exhaust valves for engines shall be hardfaced, heat resistant alloy. Exhaust valve seats in cast iron engines shall be replaceable. The engine crankshaft shall be not less than 25 millimeters (0.9843 inches) in diameter throughout its length for 8 HP and less engines, and 28 millimeters (1.125 inches) for 10 HP and greater, and shall be enclosed in an oil tight housing supported (top and bottom or both ends) on ball or roller bearings. The engine horsepower, as specified in 1.2.1, shall be the rated brake horsepower when tested in accordance with SAE J607. The fuel system shall be capable of operation on inclines of 15°. Engines shall be so mounted that the air passages of the cooling system will not become clogged with cut grass thrown by the blade(s).

3.4.4.1 Gas tank. The gas tank capacity shall be that which is normally provided on the manufacturer's standard commercial unit. Gas tanks shall be metal with a minimum wall thickness of 19 gage or plastic with a minimum wall thickness of 0.110 inches ±.005 inch. Plastic gas tanks shall be manufactured of high density polyethylene or equivalent material, suitable for use as gasoline containers and inert in the presence of hydrocarbons. Plastic tanks shall be treated with an ultraviolet inhibitor to prevent the degradation of the natural plastic resin. When a plastic tank is supplied at the time of bid submission, the tank manufacturer shall certify that all tanks meet the above requirements and are approved for their specific application for a minimum lifetime of five years. The tank shall be securely mounted with metal fasteners and/or brackets in a location that will prevent it from being snagged during operation or being vibrated loose. If the tank is mounted separate from the engine, the fuel line hose shall be attached to the tank with a hose clamp to insure positive hookup. The tank shall meet the acceptance requirements of the unbalance test in 4.7.1.

3.4.4.2 Electric start. Class 2, size B mowers shall be equipped with a magneto or battery ignition. The engine shall also be equipped with an alternator rated at a minimum of 10 amps at 3,600 RPM and a 12 volt electric starting system consisting of a starter, 32 amp hour minimum battery, and an on-off switch.

3.4.4.3 Electromagnetic interference reduction. When specified (see 6.2), lawn mowers shall be equipped for electromagnetic interference suppression in accordance with MIL-STD-461 and tested (see 4.8) in accordance with SAE J551.

3.4.4.4 Fungus proofing. When specified (see 6.2), lawn mowers, including all components and connections, shall be protected from the effect of water and fungus growth by an overall treatment with a varnish conforming to MIL-V-173, with the following exceptions:

(a) Components which are inherently fungus and water resistant or which are hermetically sealed need not be treated.

(b) Components whose function will be adversely affected by the varnish coating shall not be treated.

When used, the varnish shall be applied to give a minimum dry film thickness of 0.001 inch to components or element surfaces previously cleaned and prepared in accordance with accepted commercial practice.

3.4.4.5 Safety switch. When specified (see 6.2), engines shall be equipped with a high-temperature safety switch.

3.4.5 Controls. Mowers shall have independent controls designed for heavy duty use to regulate the engine speed, engage and disengage the cutting blade(s) independent of propulsion drive, clutching or transmission controls as required to engage propulsion drive, engine shutoff, and deadman's control for reverse such that power to the propulsion drive ceases when the operator's actuating force is removed. The controls shall be clearly identified by a durable label (see 3.13.1). Transmissions shall be located convenient to the operator with the shifting pattern clearly identified with a durable label. A hand-operated direction clutching control for engine drive vehicles (nonvariable speed), when provided, shall be moved forward for forward vehicle motion and rearward for rearward vehicle motion. A neutral position shall be provided, and provisions shall be made to retard movement of the control into the forward or rearward directions.

A single-lever hand-operated combination, directional, and variable speed control, when provided, shall have a definite neutral zone with some means of retarding the control or its effect when moving into the forward or rearward directions. The control shall be moved forward for forward travel and increasing forward speed, and rearward for rearward travel and increasing rearward speed. The control shall remain in the selected position or move to a slower speed position unless repositioned by operator action. The clutch shall be engaged by a control lever on the handle of the mower or foot pedal. When provided, the foot pedal clutch control shall be actuated by the operator's left foot, with the direction of motion forward or downward, or both, for disengagement, except for deadman's control. When a hand operated clutch control is provided, the control shall be moved generally rearward or toward the operator for disengagement, except for deadman's control. There may be three types of deadman's controls: foot actuated, hand actuated, and seat actuated. Clutch adjustment shall be provided to compensate for slight slippage or weakening of the spring. All controls, except the deadman's control, shall be positive in action and remain fixed in any desired position under all normal usage conditions, and shall be located within convenient reach of the operator during normal operation. Handle mounted engine control shall move forward for fast and rearward for slow or stop. Wheel drive disengaging controls shall move generally opposite to the direction of travel in order to disengage the drive, excpet deadman's controls, which may operate in any direction to disengage the drive. Certain controls shall be retarded, as applied to combination, directional, and variable speed controls or directional controls, or their effect on the motion of the vehicle whether actuated by hand, foot, or other means, shall be accomplished by at least one of the following: (1) A change in direction of the control actuation other than the general path described by the control. A distinct actuation at right angles to the general control motion shall be required. (2) A distinct change in force level of the control actuation at the point of control entry into the selected direction. (3) A positive means if retarding vehicle acceleration, such as linkage or valving, so that the operator does not lose control of the vehicle when passing through the transition zones from neutral to either forward or reverse direction. Foot pedals when supplied, shall have slip resistant surfaces. The engine shut-off device shall require manual and intentional activation in order to start the engine.

3.4.6 Handles. The handle frames shall be of metal construction and shall be sufficiently rigid to prevent whipping action or noticeable deformation when the mower is manipulated on turns or hills. Handles shall be formed from welded or seamless steel pipe or tubing not less than one inch in outside diameter with not less than 12 gage wall thickness, except for class 2, size B mowers whose handles shall be 1-1/4 inch minimum in outside diameter and 9 gage minimum wall thickness. Combination tubular and bar stock handles will be acceptable, provided the bar stock sections are welded to the handle frame and are fabricated from steel 3/16 inch minimum thickness by one inch minimum width. Hand grips shall be covered with rubber or other suitable industry accepted composition which shall not slip when twisted by hand. Class 2, size B mowers may provide a steering wheel, mounted on a shaft for manipulating the mower on turns. The force applied to the steering wheel shall be multiplied through a steering gear assembly. The steering wheel shaft shall be rigidly supported.

3.4.7 Wheels. Wheels shall be of metal construction and shall be of the cast or disc type with discs welded, bolted, or riveted to each other. Class 1 mowers may, at the option of the manufacturer, be equipped with spoke type wheels, provided the hubs are welded steel and the spokes (12 inch minimum) are 3/8 inch minimum in diameter and welded to the steel rim. Drive wheel assemblies, either drive shafts or drive wheels, shall be mounted on bearings of the ball or roller type packed in grease, either permanently sealed to prevent the entry of dirt and moisture or fitted with functional grease fittings to facilitate lubrication and the flushing out of dirt and other foreign matter. Class 1, size B and class 2, size A mowers shall be equipped with front wheels of the caster type. Caster wheels shall be swivel mounted with replaceable oil impregnated sleeve bearings in the swivel or fitted with functional grease fittings. Caster wheel bearings shall be of the ball, roller, or tapered type. Caster wheels with straight roller bearings shall have a spanner bushing. Class 1, size A mowers shall be equipped with either caster wheels or wheels all equipped with antifriction bearings and mounted to the mower housing/frame. Class 2, size B mowers may be equipped with a steerable front wheel. Caster wheels shall be designed for speeds of 5 to 10 miles per hour.

3.4.7.1 Tires. Mower tires shall be solid rubber, semi-pneumatic, or pneumatic in the minimum nominal dimensions as indicated in table I.

TABLE I. Tire dimensions, minimum

Class and size	Rear or front (as applicable)		Caster (nonpneumatic)
	Solid or semi-pneumatic	Pneumatic	
Class 1, size A	10.25 x 3.25	400 x 7 or 20 x 2.125	6 x 1.50
size B	10.25 x 3.25	400 x 7 or 20 x 2.125	8 x 2.50
Class 2, size A	------	400 x 7	8 x 2.50
size B	------	600 x 12	8 x 2.50

Sulky tires shall be either semi-pneumatic or pneumatic, not less than 4 inches nominal in width.

3.5 Propulsion capability. All mowers shall be selfpropelled through differential gearing, except for those designs which provide independent drive to each rear or front wheel. Mowers shall utilize for power transmission V-belt, chain and sprocket, or incremental multispeed transmission. Propulsion designs shall preclude those requiring the manual changing of pulleys to obtain a variable speed. All gears shall be suitable for continuous heavy duty use, shall mesh fully and smoothly, and shall be completely housed and properly lubricated. All mowers shall provide for multiple ground travel speeds at a constant engine RPM and blade tip speed without having to stop the unit to change the speed setting. All mowers shall be capable of continuous cutting on firm level grass covered ground at the speeds herein specified: class 1 mowers - 220 ft/minute; class 2, size A - 350 ft/minute with at least two forward speeds if incremental; and class 2, size B - 440 ft/minute with at least three forward speeds if incremental. All mowers shall have at least one reverse speed. The maximum speed in reverse shall be not less than 176 ft/minute nor greater than 310 ft/minute. Mowers shall be capable of continuous cutting across in both directions on firm, smooth grass covered grades of 27 percent (15° slope) and directly up smooth grass covered grades of 27 percent (15° slope). All cutting speeds at which the mower may be designed to operate continuously shall be controlled either by a throttle, an automatic or manually adjustable speed governor, or a combination thereof. Upon request, data or calculations shall be furnished to justify the design of the power drive on the basis of established engineering practices.

3.5.1 Blade driving methods. Blade driving methods (i.e., drive to the blade cutter shaft) employing slipping clutches, slipping or frictional devices other than V-belt drives will not be acceptable. Set screws shall not be used either wholly or in part to transmit torque loads.

3.5.2 V-belt drives. Where a V-belt drive is used, a movable shaft and pulley or other equally suitable device may be furnished to function as a clutch in engaging and disengaging the V-belt drive. V-belt drives shall be designed with either a take-up on the pulley or with an idler. Inside idlers shall be at least as large as the smallest loaded pulley. Outside idlers shall be one-third larger than the smallest loaded pulley. All pulleys used shall be cast iron, machined steel, or powdered metal (P/M) steel and securely mounted. All V-belts used shall be heavy duty belts; no fractional horsepower or light duty belts shall be used. V-belts used shall meet industry requirements for engine horsepower transmitted with a service factor of 1.5. At the time of bid submission, the contractor shall provide certification from the belt manufacturer, for his propulsion design, that all belts utilized on the unit are approved for their specific use for a minimum life of 500 hours.

3.5.3 Blade stopping time. The blade(s) shall stop rotating from the manufacturer's specified maximum speed within seven seconds after either declutching or shutting off drive power. In addition, the maximum tip speed of any blade shall be 19,000 feet per minute.

3.5.4 Brakes. Class 2 mowers shall be equipped with durable breaks of adequate design, properly installed, and capable of stopping the mowers in a distance of two feet for each mile per hour of maximum vehicle velocity with a maximum applied force of 50 pounds to meet the braking requirements of ANSI B71.1 (see 4.7.2).

3.6 Cutting requirements. Lawn mowers shall be capable of cutting cleanly, in a single pass, the hardiest of annual growths of buckhorn, crowfoot, dandelion, milkweed, thistle, tung grass, bermuda, foxtail, Johnson grass, wire grass, ragweed, fox grass, and similar field growths when operating under the propulsion speeds, slope conditions, and continuous operation conditions specified herein. Mowers shall also be capable of cutting grass on developed lawns in an even, uniform manner, and operable over rough, muddy terrain and capable of passing over reasonable obstructions without damage to the mower.

3.6.1 Height of cut above the ground. The height of cut above the ground shall be adjustable, through the use of hand tools. Cutter blades shall be adjustable for cutting heights of at least 1-1/2 to 3 inches in increments of 3/8 inch minimum. A provision shall be made to prevent the lowering of the blade/housing to cut below 1-1/2 inches.

3.7 Riding mower or detachable sulky. When specified (see 6.2), class 1 mowers shall be supplied with a sulky. When specified (see 6.2), class 2 mowers shall have an integral operator's seat or sulky. All mowers furnished with sulky or integral operator's seat shall be equipped with footrests and adjustment for operator comfort either by moving the seat position or footrest position. A slip-resistant surface or other means shall be provided to minimize the possibility of an operator's foot slipping off the foot support of the platform. The sulky shall be readily attachable and detachable without requiring the use of special tools, equipped with a saddle type seat, and shall be suitable for use with the type and size mower furnished. Sulky chassis and draw bar shall be steel.

3.7.1 Stability requirements for riding or sulky operated mower. Mowers shall be capable of meeting the stability requirements and tests acceptance of ANSI B71.1.

3.8 Fasteners. Bolt and nut threads shall conform to H28. Swaging, peening, or staking of threads shall not be permitted. Sheet metal screws and sheet metal nuts shall not be used unless approved by the procuring activity. Where aluminum-magnesium or zinc alloys are involved, assembly of parts shall be by the following: through bolts, bushings with tapped holes, threaded studs inserted to a depth of two stud diameters minimum, coil type inserts, and machine screws in holes tapped directly in the metal where frequent disassembly is not required.

3.9 Sound pressure level. The sound pressure level shall not exceed 92 dbA for walk behind mowers and 95 dbA for riding mowers with the sound level meter set at slow response for all mower types when tested in accordance with ANSI B71.1.

3.10 Lubrication. All components requiring lubrication shall be either permanently lubricated or shall be readily accessible for lubrication and provided with functional grease or oil fittings of the grease gun injection type. When the axle housing contains removable plugs or fittings for providing lubrication, they shall be metal and threaded. The mower shall be lubricated when delivered. When specified (see 6.2), a grease gun shall be furnished for lawn mowers having grease fittings and shall conform to GGG-G-680.

3.11 Finish. All exterior metal surfaces shall be finished with a smooth durable weatherproof paint or lacquer to resist corrosion. Handle frames may be chromium or nickel plated.

3.12 Instructions and parts list information. The contractor shall furnish with each lawn mower either a booklet(s) or pamphlet(s) giving complete instructions for the operation, lubrication, adjustment, and care of the engine, mower, and attachment units. A pamphlet listing all repair parts and parts source information shall also be furnished with each lawn mower.

3.13 Identification marking. Each lawn mower shall be marked in a plain and permanent manner with the model designator and name of the manufacturer or with a trademark of such known character that the source of manufacture may be readily determined.

3.13.1 Durable labels. Labels provided for directional or cautionary information shall be certified by the mower manufacturer to meet the following minimum requirements. The labels shall form a durable bond with the base material surface and shall show no appreciable loss of adhesion during weathering exposure. When processed and applied in accordance with the label manufacturer's recommendations, labels shall be weather resistant showing no appreciable fading, discoloration, cracking, crazing, blistering, or dimensional change when exposed to the environment. Labels shall not curl at the edges nor be removable without destroying the label or the painted surface to which they are applied. Labels shall not be affected by spilled gasoline or oil.

3.14 Workmanship. The completely fabricated mower shall conform to the quality and grade of product covered by this specification. The mower shall be free from defects such as fractures, splits, punctures, tears, dents, creases, bows, miscasts, rust, deteriorations, or malformations. There shall be no sharp edges, burrs, or slivers.

4. QUALITY ASSURANCE PROVISIONS

4.1 Responsibility for inspection. Unless otherwise specified in the contract or purchase order, the supplier is responsible for the performance of all inspection requirements, as specified herein. Except as otherwise specified, the supplier may utilize his own facilities or any commercial laboratory acceptable to the Government. The Government reserves the right to perform any of the inspections set forth in the specification where such inspections are deemed necessary to assure that supplies and services conform to prescribed requirements.

4.1.1 Inspection of materials and components. In accordance with 4.1 above, the supplier is responsible for insuring that materials and components used were manufactured, tested, and inspected in accordance with the requirements of referenced subsidiary specifications and standards to the extent specified herein, or, if none, in accordance with this specification.

4.2 Classification of inspection. Inspection shall be classified as follows:

(a) Bid sample inspection.
(b) Lot acceptance inspection.

4.3 Bid sample inspection. Bid sample inspection shall be applied to the lawn mower submitted in accordance with 3.3. Failure of the bid sample model to pass the examination of one or more bid sample tests shall be cause for rejection. The bid sample inspection shall consist of the examination in 4.6 and all tests in 4.7.

4.4 Sampling for lot acceptance inspection.

4.4.1 Lot. All lawn mowers offered for delivery at one time shall be considered a lot for the purpose of acceptance, inspections, and tests.

4.4.2 Sampling for inspection. A random sample shall be selected from each lot in accordance with the provisions of MIL-STD-105 at inspection level II.

4.4.3 Sampling for tests. One sample lawn mower shall be selected at random. If the sample fails to comply with all of the tests, two additional samples shall be selected. If any additional sample fails any of the tests, mowers represented by the samples shall be considered as not conforming to the requirements of this specification. Manufacturers may correct minor deficiencies that cause failure.

4.5 Lot acceptance inspection. Lot acceptance inspection shall be applied to each item in accordance with 4.4.2 and 4.4.3 prior to being offered for acceptance under the contract. Lot acceptance inspection shall consist of the following:

(a) Examination (see 4.6).
(b) Tests (see 4.7.2).
(c) Inspection of preparation for delivery (see 4.10).

4.6 Examination.

4.6.1 Visual and dimensional examination. The completely assembled end item shall be examined for defects in finish, construction, workmanship, marking, and nonconformance with dimensional requirements. Defects shall be classified in table II. The inspection level shall be level II with an Acceptable Quality Level (AQL) of 4.0 percent for major defects and 6.5 percent for total defects expressed in terms of defects per hundred units.

TABLE II. Classification of defects

Examine	Defect	Classification	
		Major	Minor
Finish	Not finished where required.	X	
	Type of finish not as specified, or blistered, peeled, chipped, or area of no film or thin film.	X	
	Any component that is painted or otherwise coated where serviceability may be affected.	X	
	Significant rust.	X	
	Negligible rust.		X
Dimensions	Dimensions not in accordance with the specified requirements.	X	
Type	Not type specified.	X	
Size	Not size specified.	X	
Construction and workmanship, general.	Part missing or not as specified.	X	
	Malformed, fractured, split, punctured, torn, dented, creased, deteriorated, bowed, sprung, or otherwise impaired.	X	
	Sharp burr, sliver, or splinter that may be injurious to personnel.	X	
	Component not readily accessible for servicing where required.		X
Welding or brazing (where required)	Missing, incomplete, burn holes, cracked, fractured, or otherwise not fused.	X	
	Slag inclusion, undercut, not smooth and uniform, scale, or flux deposits not removed.		X
Bolts, nuts, screws, studs, and other types of threaded fasteners	Missing, broken, stripped, fractured.	X	
	Loose.		X
Assembly	Any component not properly assembled or secured.	X	
	Unit perceptibly out of square or alignment.	X	
Marking identification, instruction manual	Missing, incomplete, not legible, not as specified.	X	

4.7 Test.

4.7.1 ANSI test compliance. The manufacturer, at the time of bid submission, shall supply written certification or the ANSI seal indicating compliance with the impact, unbalance, and blade security tests as mentioned in 3.4. As a result of the impact test, the shaft, blade, or adapter shall not fail.

4.7.2 Braking test. Class 2 mower brake systems shall be tested for compliance with 3.5.4. Test stops shall be made on an essentially level, smooth, dry, hard surfaced road that is free of loose material. An operator with a minimum weight of 200 pounds shall be seated on the vehicle during the test. Vehicles with separate clutch and brake controls shall disengage the clutch simultaneously with the brake engagement.

4.7.3 Inclined operation tests. Mowers shall be tested for stability and the engine's ability to operate on inclined positions. Mowers shall be placed on a variable slope, rectangular single plane (tilt table) at 15° to the horizontal. Each sample mower shall be tested in four positions: front and rear end and right and left side down hill, with the down hill wheels blocked to prevent slipping. Mowers shall then be started and operated at approximately 3/4 throttle for a period of two hours in each position or until the engine has failed from lack of lubrication or fuel. Engines shall not stall excessively consume, leak, or burn oil.

4.7.4 Propulsion capability test.

4.7.4.1 Level ground. The propulsion capability test shall be conducted on a straight, firm, fairly level course. Whenever practicable, the course shall contain heavy, thick grass or grass and weeds with a height of 4 to 5 inches. The operator shall guide the mower towards a landmark or special marker. With the mower operating at the highest speed attainable and set at the minimum height adjustment, it shall be guided toward the landmark or marker while cutting grass to determine compliance with 3.5. The height adjustment shall then be set at the minimum and a second pass made over the same area to determine compliance with 3.5.

4.7.4.2 Grade. The grade propulsion test shall be conducted on firm grass courses (see 4.7.4.1), across, in both directions on a grade of 27 percent (15°) and directly up a grade of 27 percent (15°) to determine compliance with 3.5. The course shall run between two marked points not less than 55 feet apart. With the mower operating at the highest speed attainable and set at the minimum height adjustment, the time required (in seconds) for the mower to pass between the marked points shall be noted. The speed shall be calculated as follows:

$$\text{speed (ft/minute)} = \frac{60 \times \text{distance (feet)}}{\text{time (seconds)}}$$

Failure to attain the required speeds for level ground or the minimum speed on the specified grade shall be cause for rejection.

4.8 Radio interference suppression test. Conformance of the sample lawn mower with MIL-STD-461 will be determined by authorized representatives of the contracting officer using the test method set forth in SAE J551 and Government test equipment. The testing facility will furnish the contracting officer a report on the sample tested, including details of the suppression system applicable for production units and recommendations for quality control of production. Upon approval by the contracting officer and provided all other requirements of this specification are met, the contractor shall examine each production unit to determine that it conforms to the report of the contracting officer and the approved suppression system of the tested sample.

4.9 Rejected lots. Rejected lots may be resubmitted for examination and tests, provided the contractor has removed or repaired all nonconforming lawn mowers. Samples shall again be selected and inspected from such resubmitted lots to verify compliance with this specification. Rejected lawn mowers shall not be resubmitted for inspection without furnishing full particulars concerning previous rejections and measurements taken to overcome the defects.

4.10 Inspection of preparation for delivery. An inspection shall be made to determine that packaging, packing, and marking requirements are in complaince with section 5 of this specification. Defects shall be scored in accordance with table III. For examination of contents, the sample unit shall be one shipping container fully prepared for delivery selected just prior to the closing operations. Defects of closure listed shall be examined on shipping containers fully prepared for delivery. The lot size shall be the number of shipping containers in the end item inspection lot. The inspection level shall be S-2 and the AQL shall be 4.0 percent defects per hundred units in accordance with MIL-STD-105.

TABLE III. Classification of preparation for delivery defects

Examine	Defect
Markings (exterior and interior containers)	Omitted; incorrect; illegible; of improper size, location, sequence, or method of application.
Materials	Any component missing or damaged.
Workmanship	Inadequate application of components such as: Incomplete closure of container, loose strapping, inadequate stapling. Bulging or distortion of containers.
Preservation	Improperly applied or missing.

5. PREPARATION FOR DELIVERY

5.1 Preservation and packaging. Preservation and packaging shall be level A or C, as specified (see 6.1).

5.1.1 Level A.

5.1.1.1 Disassembly. Parts vulnerable to damage, pilferage, and loss or that would otherwise increase cubage, such as controls, control rods, levers, and handles shall be removed. All bolts, nuts, pins, and washers removed shall be placed in mating parts and secured to prevent their loss. Small parts removed shall be match-marked to facilitate reassembly. Match-marking information shall be on cloth tags conforming to UU-T-81, type A.

5.1.1.2 Unprotected metal surfaces. Unprotected metal surfaces requiring the application of a contact preservative shall be coated with a type P-1 preservative conforming to the applicable specification listed in and shall be applied in accordance with MIL-P-116.

5.1.1.3 Engine. The engine and engine accessories shall be preserved in accordance with MIL-E-10062, and the following exceptions and additional requirements.

5.1.1.3.1 Exterior surfaces. Exterior surfaces of the engine and engine accessories shall not be sprayed with insulation compound specified therein.

5.1.1.4 Wheels and axles. Wheels removed shall have the bearing surfaces of the axle or spindles, interior bearing surfaces of the hub, and all ball or roller bearings which are not removed from the axles or spindles coated with type P-11 preservative. The coated surfaces shall be wrapped or covered with barrier material conforming to MIL-B-121, type I, grade A and the barrier material secured in place with tape conforming to PPP-T-60, class 1.

5.1.1.4.1 Drive wheels. Drive wheels shall be removed from the mowers and the interior surfaces, gears, and drive control clutches coated with a lubricant conforming to MIL-L-2105 and the wheels replaced.

5.1.1.4.2 Drive chains and sprockets. Exposed drive chains shall be coated with enough type P-3 preservative to assure penetration to the inner surfaces of the rollers, pins, and bushings. After excess type P-3 preservative has drained, the entire chain shall be coated with type P-1 preservative. Sprockets and other unprotected surfaces of the drives shall be coated with type P-1 preservative.

5.1.1.5 Drive belts and pulleys. Pulley faces or grooves shall be coated with primer conforming to TT-P-664. The drive belts shall remain in place on the equipment and shall have the tension relieved.

5.1.1.6 Gears and gear housings. When the lubricant contained in the gear housing conforms to the specified operating lubricant, MIL-L-2105 or MIL-L-21260, a quantity of the applicable lubricant required to raise the lubricant to the operating level in the housing shall be added. The gears shall be actuated to insure coating all interior parts and surfaces. The threads of the fill plugs shall be coated with lubricant conforming to MIL-L-21260 before the plugs are reinstalled.

5.1.1.7 Clutches. Metal components of clutches shall be coated with primer conforming to TT-P-664.

5.1.1.8 Maintenance tools. Maintenance tools shall be preserved and packaged in accordance with PPP-P-40.

5.1.1.9 Technical publications. Technical publications shall be preserved and packaged in accordance with MIL-P-116, Method IC-1.

5.1.2 Level C. Mowers, parts, tools, and technical publications shall be preserved in a manner which will afford adequate protection against corrosion, deterioration, and damage during shipment from the supply source to the first receiving activity for immediate use or controlled humidity storage.

5.2 Packing. Packing shall be level A, B, or C, as specified (see 6.1).

5.2.1 Level A. Each complete mower, parts, tools, and technical publications shall be packed together in a close fitting box conforming to PPP-B-621, class 2, style optional, or PPP-B-601, overseas type, style optional, or PPP-B-640, class 2. Blocking, bracing, or cushioning shall be provided to prevent the disassembled parts from coming in contact with each other. Closure and strapping shall be in accordance with the appendix to the applicable box specification.

5.2.2 Level B. Each complete mower, parts, tools, and technical publications shall be packed together as specified in 5.2.1, except that the boxes shall be class 1 domestic type.

5.2.3 Level C. Each complete mower shall be packed to insure carrier acceptance and safe delivery to destination in containers complying with the requirements of Uniform Freight Classification or National Motor Freight Classification, as applicable to the mode of transportation.

5.3 Marking.

5.3.1 Civil agencies. In addition to any special markings required by the contract or purchase order (see 6.2), the packages and shipping containers shall be marked in accordance with Fed. Std. No. 123.

5.3.2 Military agencies. In addition to any special marking required by the contract or purchase order (see 6.2), interior packages and shipping containers shall be marked in accordance with MIL-STD-129.

6. NOTES

6.1 Intended use. The mowers covered by this specification are intended for heavy-duty commercial use in the care and maintenance of lawns and grounds for which the Government is responsible.

6.2 Ordering data. Purchasers should select the preferred options permitted herein and include the following information in procurement documents:

(a) Title, number, and date of this specification.
(b) Type, class, and size (see 1.2.1).
(c) Bid sample required (see 3.3).
(d) Width of cut if different (see 3.4).
(e) Electromagnetic interference reduction, if required (see 3.4.4.3).
(f) Fungus proofing, if required (see 3.4.4.4).
(g) High temperature safety switch, if required (see 3.4.4.5).
(h) Levels of preservation, packaging, and packing required (see 5.1 and 5.2).
(i) Special marking, if required (see 5.3).
(j) Grease gun, if required (see 3.10).
(k) Detachable sulky, if required (see 3.7).
(l) Intergral rider's seat on class 2, size B, if required (see 3.7).

6.3 Definition of terms used in specification. The term lawn mowers as used herein refer to hand-pushed, selfpropelled machines (designated by types in 1.2.1), having power-driven cutting devices which produce cutting swaths of the size specified in 1.2.1.

6.4 For hand lawn mowers, see 00-M-671.

6.5 Supersession data. When finalized, this specification is intended to supersede type II, class 2, style 2, sizes F, G, and H of 00-M-00681c(GSA-FSS) dated April 30, 1965, and type II, styles 1 and 2, sizes C, D, and E of 00-M-681a dated August 30, 1955.

6.6 Service guarantee. It is suggested that the purchasing officer include the following clause in the invitation for bids and all awarded contracts:

All necessary adjustments of machines with the exception of engines which are subject to the warranties of their respective manufacturer procured hereunder, not occasioned by misuse or accident through fault or negligence by the Government, shall be made by the contractor at his own expense, including transportation costs, if any, during the 90-day period after the machine is put in service. All mowers procured hereunder are guaranteed for a period of six months from the date the machine is put in service. During the guarantee period, all broken or defective parts not caused by accident or misuse through fault or negligence by the Government, must be replaced (including labor, transportation, and parts) and all necessary machine adjustments occasioned by such defective parts must be made at the contractor's expense, including transportation costs, if any. This guarantee also applies to breakage of mower parts caused by objects thrown by the cutting blades. The contractor agrees to have all parts for the item furnished available for a period of five years from date of award, and agrees to bill the Government for spare parts not covered by the warranty at a price not to exceed their industry-wide published list price. The contractor agrees that parts, during this five year period of availability, will be shipped immediately. If part is not in stock at the time the order is received, it will be shipped within not more than thirty working days after receipt of order.

MILITARY CUSTODIANS:

Army - ME
Navy - YD
Air Force - 84

User activities:

Army - SM
Navy - MC

Review activities:

Army - ME, EL
Navy - YD
Air Force - 84

Preparing activity:

GSA-FSS

Orders for this publication are to be placed with the General Services Administration, acting as an agent for the Superintendent of Documents. See section 2 of this specification to obtain extra copies and other documents referenced herein. Price 15 cents each.