

w12 engine diagram

w12 engine diagram is a comprehensive visual representation that illustrates the complex structure and functioning of a W12 engine. Known for its high power output, smooth performance, and unique design, the W12 engine has become a hallmark in luxury and high-performance vehicles.

Understanding its diagram is crucial for automotive engineers, mechanics, enthusiasts, and students aiming to grasp the intricacies of this sophisticated powertrain. In this article, we delve into the detailed components, configuration, working principles, and maintenance insights related to the W12 engine diagram, providing a clear and organized guide to this remarkable engine type.

Introduction to W12 Engine

The W12 engine is a twelve-cylinder engine arranged in a W-shaped configuration, which is a variation of the traditional V-engine layout. Its design allows for a compact yet powerful engine that can deliver high performance without occupying excessive space. This engine type is predominantly used in luxury cars like Audi's flagship models, offering a blend of power, efficiency, and smoothness.

Understanding the W12 Engine Diagram

Examining the W12 engine diagram helps to comprehend the spatial arrangement and interrelation of its components. The diagram provides a visual roadmap of how the cylinders, crankshaft, valves, and other critical parts are organized and function together.

Basic Structure of the W12 Engine Diagram

The W12 engine diagram typically features:

- 12 cylinders arranged in four banks of three cylinders each
- Two cylinder banks forming a "W" shape when viewed from the front
- Shared crankshaft connecting all cylinders
- Timing chains or belts controlling valve timing
- Intake and exhaust manifolds mounted to each bank

Understanding these primary elements sets the foundation for deeper insights into the engine's operation.

Components of a W12 Engine as Shown in the Diagram

A detailed W12 engine diagram highlights various components, each playing a vital role in engine

performance.

1. Cylinder Banks

- Four banks, each with three cylinders
- Constructed in a configuration that reduces engine length and width
- Allows for a more compact engine design suitable for luxury vehicles

2. Pistons and Cylinders

- Pistons move up and down within cylinders to generate power
- Each bank contains three cylinders connected to the crankshaft via connecting rods
- Designed for durability under high-pressure conditions

3. Crankshaft

- Central component converting pistons' linear motion into rotational motion
- Shares power among all twelve cylinders
- Often includes counterweights to reduce vibrations

4. Valvetrain System

- Includes intake and exhaust valves for each cylinder
- Controlled by camshafts via timing chains or belts
- Ensures precise valve timing for optimal combustion

5. Intake and Exhaust Manifolds

- Distribute air-fuel mixture to cylinders and expel exhaust gases
- Designed to optimize airflow and engine efficiency

6. Fuel Injection System

- Injects fuel directly into the combustion chambers or intake ports
- Ensures accurate fuel delivery for performance and efficiency

7. Cooling System

- Includes radiators, coolant passages, and thermostats
- Maintains optimal operating temperature to prevent overheating

8. Lubrication System

- Distributes oil to reduce friction and wear
- Includes oil pumps, filters, and galleries within the engine block

Working Principle of a W12 Engine as Depicted in the Diagram

The diagram illustrates the sequential process of how the W12 engine produces power through internal combustion.

1. Intake Stroke

1. The intake valves open, allowing a mixture of air and fuel to enter the cylinders.

2. The pistons move downwards, creating a vacuum that draws in the mixture.

2. Compression Stroke

1. The intake valves close, and the pistons move upward, compressing the mixture.
2. This compression increases the mixture's temperature and pressure, preparing it for ignition.

3. Power Stroke

1. The spark plugs ignite the compressed mixture, causing combustion.
2. The explosion forces the pistons downward, generating mechanical power.

4. Exhaust Stroke

1. The exhaust valves open, and the pistons move upward again.
2. Exhaust gases are expelled from the cylinders into the exhaust manifold.

The cycle repeats for each bank of cylinders, synchronized through precise timing mechanisms to ensure smooth engine operation.

Advantages of the W12 Engine Design

The W12 engine offers numerous benefits, which are highlighted in the diagram and technical specifications.

- **Compact Size:** Its unique arrangement allows for a shorter engine length, ideal for luxury car designs.
- **High Power Output:** With twelve cylinders, the engine delivers exceptional horsepower and torque.
- **Smooth Performance:** The W configuration reduces vibrations and enhances driving comfort.
- **Efficient Space Utilization:** The W layout maximizes power within a limited engine bay space.

- **Enhanced Balance:** The engine's configuration promotes balanced operation, reducing wear and tear.

Maintenance and Troubleshooting Using the W12 Engine Diagram

A clear understanding of the diagram is essential for diagnosing issues and performing maintenance tasks.

Common Maintenance Tasks

1. Replacing spark plugs and ignition coils
2. Changing engine oil and oil filters
3. Inspecting and replacing timing chains or belts
4. Checking coolant levels and radiator condition
5. Cleaning or replacing intake and exhaust components

Troubleshooting Tips

- **Engine Misfire:** Could be due to faulty spark plugs, ignition coils, or fuel injectors.
- **Overheating:** Check coolant levels, radiator condition, and cooling fans.
- **Unusual Noises:** Worn timing chains, loose belts, or damaged valves may cause abnormal sounds.
- **Reduced Performance:** Dirty air filters, clogged fuel injectors, or sensor issues could be the cause.

Conclusion

The **w12 engine diagram** offers valuable insights into the design and operation of one of the most sophisticated engine configurations in modern automotive engineering. Its intricate arrangement of cylinders, components, and systems exemplifies engineering excellence aimed at delivering high performance, efficiency, and reliability. Whether for maintenance, troubleshooting, or educational

purposes, understanding the W12 engine diagram provides a solid foundation for appreciating this engineering marvel. As technology advances, the W12 engine continues to embody innovation, balancing power and compactness to meet the demands of luxury and performance vehicles.

Frequently Asked Questions

What are the main components of a W12 engine diagram?

A W12 engine diagram typically includes components such as the cylinders, pistons, crankshaft, camshafts, valves, timing chain, and fuel injectors, illustrating how they are arranged in the W-shaped configuration.

How does the W12 engine layout differ from V12 and W16 engines?

The W12 engine features a W-shaped configuration with 12 cylinders arranged in four banks, making it more compact than a V12 and smaller than a W16, offering a balance of power and space efficiency. Its diagram highlights the unique arrangement of cylinder banks and associated components.

What are the advantages of a W12 engine as shown in its diagram?

The W12 engine provides high power output, smooth operation, and a compact design, allowing for better packaging in vehicle layouts while maintaining performance, as detailed in its technical diagram.

Can I understand the timing system from a W12 engine diagram?

Yes, a W12 engine diagram typically includes timing components like the timing chain or belt, camshaft positions, and timing gears, helping to understand how the engine's valvetrain synchronizes with the crankshaft.

How do the cylinders in a W12 engine diagram connect to the crankshaft?

In the diagram, each bank of cylinders connects to the crankshaft via connecting rods, with the layout showing how power is transferred from pistons to rotational motion in the W-shaped configuration.

What should I look for in a W12 engine diagram to understand cooling system placement?

The diagram highlights coolant passages, radiator connections, and water pump locations, illustrating how cooling channels are integrated around the cylinders and engine block to manage heat.

Are there specific symbols or color codes used in a W12 engine diagram for clarity?

Yes, technical diagrams often use color coding and standardized symbols to differentiate components such as fuel injectors, spark plugs, and sensors, enhancing readability and understanding of the W12 engine layout.

Additional Resources

Understanding the w12 engine diagram is essential for automotive enthusiasts, mechanics, and engineers interested in high-performance engine configurations. The W12 engine, with its complex yet efficient design, exemplifies advanced engineering and precision craftsmanship. This comprehensive guide will explore the intricacies of the w12 engine diagram, breaking down its components, layout, and operational principles to provide a clear understanding of this remarkable powertrain.

Introduction to the W12 Engine

The w12 engine diagram represents a detailed schematic of a unique engine configuration that combines elements of both V and W engines. Known for its high power output and compact design, the W12 engine is widely used in luxury and performance vehicles, notably by brands like Audi and Bentley. Its architecture allows for a high degree of performance while maintaining a relatively small footprint, making it ideal for premium automobiles.

What is a W12 Engine?

A W12 engine is a 12-cylinder engine arranged in a "W" shape, comprising four banks of three cylinders each. It essentially merges two narrow-angle V6 engines into a single unit, sharing a common crankshaft. This configuration provides the following advantages:

- High power output with fewer cylinders
- Compact engine size
- Smooth operation and balanced performance
- Reduced weight compared to traditional V12 engines

Anatomy of the W12 Engine Diagram

Understanding the w12 engine diagram requires familiarity with its fundamental components and their arrangement within the engine. Below, we explore the key parts and how they interact.

Basic Components

- Cylinders: 12 cylinders arranged in four banks of three cylinders each.
- Crankshaft: The central rotating shaft that converts piston movement into rotational motion.
- Camshafts: Typically four in a W12, controlling intake and exhaust valves.

- Valves: Intake and exhaust valves for each cylinder.
- Fuel injectors: Deliver fuel into each cylinder.
- Timing belts/chains: Synchronize the movement of the crankshaft and camshafts.
- Cooling system: Includes water jackets, radiators, and coolant passages.
- Lubrication system: Oil pump and passages for lubrication.

The Layout of the W12 Engine Diagram

Arrangement of Cylinders

The W12 engine features a distinctive layout:

- Four banks of cylinders arranged in a W shape.
- Each bank contains three cylinders, angled at approximately 15 degrees.
- The banks are arranged in pairs, with two V-shaped banks on either side of the engine block.

Crankshaft Configuration

- The crankshaft runs longitudinally, connecting with all four banks.
- It drives the pistons via connecting rods, which are arranged to balance the engine's movements.

Valve and Camshaft Placement

- The engine typically has four camshafts — two for each bank.
- Valves are operated via double overhead camshafts (DOHC) per bank, allowing for precise valve timing.

Visual Breakdown of the W12 Engine Diagram

1. Cylinder Banks

- Bank A and B: Front side cylinders
- Bank C and D: Rear side cylinders
- Each bank houses three cylinders aligned vertically.

2. Pistons and Connecting Rods

- Each cylinder contains a piston connected to the crankshaft.
- Pistons move up and down in synchronous motion, controlled by the crankshaft's rotation.

3. Valve Operation

- Camshafts rotate, opening and closing intake and exhaust valves.
- Valve timing is critical to optimize power and efficiency.

4. Fuel Injection System

- Injectors are positioned to spray fuel directly into each cylinder.
- Fuel delivery is synchronized with piston movement.

5. Cooling and Lubrication Passages

- Water jackets surround cylinders and pistons for cooling.
- Oil passages ensure lubrication of moving parts for smooth operation.

Operational Principles of the W12 Engine

Understanding the w12 engine diagram also involves grasping how the engine operates during combustion cycles.

Four-Stroke Cycle

- Intake: Intake valves open, and the piston moves down, drawing in air-fuel mixture.
- Compression: Valves close; piston moves up, compressing the mixture.
- Power: Spark ignites the mixture, forcing the piston down.
- Exhaust: Exhaust valves open; piston moves up to expel combustion gases.

The four cylinders in each bank fire in a specific sequence, ensuring smooth power delivery and balance.

Balancing and Vibration Control

- The W12's design inherently balances out vibrations due to its symmetrical layout.
- Additional balance shafts may be incorporated for refinement.

Common Symbols and Notations in a W12 Engine Diagram

When interpreting a w12 engine diagram, familiarity with common symbols can enhance understanding:

- Pistons: Usually represented as circles or rectangles.
- Crankshaft: Shown as a horizontal or vertical line with connecting points.
- Camshafts: Often depicted as lines with lobes.
- Valves: Represented by small rectangles or lines intersecting with the cam lobes.
- Timing belts/chains: Lines connecting camshafts to crankshaft.

Practical Applications and Maintenance Insights

W12 engine diagrams are not only useful for understanding engine architecture but also critical for maintenance, troubleshooting, and modifications.

Common Maintenance Areas

- Valve clearance adjustments
- Timing belt/chain replacement
- Cooling system checks
- Oil and filter changes
- Cylinder head and gasket inspections

Troubleshooting Tips

- Look for irregularities in the diagram indicating oil or coolant passages.
- Ensure timing marks align correctly during belt or chain replacement.
- Check for signs of piston or valve damage based on operational anomalies.

Summary: The Significance of the W12 Engine Diagram

The w12 engine diagram offers a comprehensive visualization of one of the most sophisticated engine layouts in modern automotive engineering. Its intricate design balances high performance with compactness, making it a marvel of engineering. By understanding the diagram's components, layout, and operational principles, enthusiasts and professionals alike can appreciate the engineering feats behind these powerful engines.

Final Thoughts

Mastering the w12 engine diagram opens the door to deeper knowledge of engine mechanics, performance tuning, and maintenance. Whether you're a mechanic working on a vehicle equipped with a W12 or an enthusiast eager to learn more about high-performance engine configurations, a detailed understanding of this diagram is invaluable. As automotive technology continues to evolve, the principles exemplified by the W12 will undoubtedly influence future engine designs and innovations.

W12 Engine Diagram

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w12 engine diagram: Automobile Electrical and Electronic Systems Tom Denton, 2007-06-01 Understanding vehicle electrical and electronic systems is core to the work of every

motor vehicle mechanic and technician. This classic text ensures that students and practicing engineers alike keep abreast of advancing technology within the framework of the latest FE course requirements. The new edition includes updated and new material throughout, covering recent developments such as microelectronic systems, testing equipment, engine management systems and car entertainment and comfort systems. New self-assessment material includes multiple choice questions on each of the key topics covered. With over 600 clear diagrams and figures the new edition will continue to be the book of choice for many students taking IMI technical certificates and NVQ level qualifications, C&G courses, HNC/D courses, and their international equivalents, and is also ideal for use as a reference book by service department personnel.

w12 engine diagram: *Thermal and Statistical Physics* Sandeep Sharma, 2022-09-24 This textbook presents the fundamental concepts and theories in thermal physics and elementary statistical mechanics in a very simple, systematic and comprehensive way. This book is written in a way that it presents the topics in a holistic manner with end-of-chapter exercises and examples where concepts are supported by numerous solved examples and multiple-choice questions to aid self-learning. The textbook also contains illustrated diagrams for better understanding of the concepts. The book will benefit students who are taking introductory courses in thermal physics, thermodynamics and statistical mechanics.

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w12 engine diagram: *Engine Modeling and Control* Rolf Isermann, 2014-07-01 The increasing demands for internal combustion engines with regard to fuel consumption, emissions and driveability lead to more actuators, sensors and complex control functions. A systematic implementation of the electronic control systems requires mathematical models from basic design through simulation to calibration. The book treats physically-based as well as models based experimentally on test benches for gasoline (spark ignition) and diesel (compression ignition) engines and uses them for the design of the different control functions. The main topics are: - Development steps for engine control - Stationary and dynamic experimental modeling - Physical models of intake, combustion, mechanical system, turbocharger, exhaust, cooling, lubrication, drive train - Engine control structures, hardware, software, actuators, sensors, fuel supply, injection system, camshaft - Engine control methods, static and dynamic feedforward and feedback control, calibration and optimization, HiL, RCP, control software development - Control of gasoline engines, control of air/fuel, ignition, knock, idle, coolant, adaptive control functions - Control of diesel engines, combustion models, air flow and exhaust recirculation control, combustion-pressure-based control (HCCI), optimization of feedforward and feedback control, smoke limitation and emission control This book is an introduction to electronic engine management with many practical examples, measurements and research results. It is aimed at advanced students of electrical, mechanical, mechatronic and control engineering and at practicing engineers in the field of combustion engine and automotive engineering.

w12 engine diagram: *Manuals Combined: 150+ U.S. Army Navy Air Force Marine Corps Generator Engine MEP APU Operator, Repair And Parts Manuals* , Over 36,000 total pages Just a SAMPLE of the CONTENTS by File Number and TM Number:: 013511 TM 5-6115-323-24P 4 GENERATOR SET, GASOLINE ENGINE DRIVEN, SKID MOUNTED, TUBULAR FRAME, 1.5 K SINGLE PHASE, AC, 120/240 V, 28 VDC (LESS ENGINE) DOD MODELS MEP-015A, 60 HZ (NSN 6115-00-889-1446) AND (DOD MODEL MEP-025A) 28 VDC (6115-00-017-8236) {TO 35C2-3-385-4; SL 4-07609A/07610A} 013519 TM 5-6115-329-25P 1 GENERATOR SET, GASOLINE ENGINE DR (LESS ENGINE) 0.5 KW, AC, 120/240 V, 60 HZ, 1 PHASE (DOD MODEL (FSN 6115-923-4469); 400 HZ (MODEL MEP-019A) (6115-940-7862) AN DC (MODEL MEP-024A) (6115-940-7867) {TO 35C2-3-440-14} 013537 TM 5-6115-457-12 7 GENERATOR SET, ENGINE DRIVEN, TACTICAL, SKID MTD; 100 KW, 3 PHASE, 4 WIRE, 120 240/416 V (DOD MODELS MEP-007A), UTILITY CLASS, 50/60 HZ (NSN 6115-00-133-9101), (MODEL MEP-106A) PRECISE CLASS, 50/60 H (6115-00-133-9102), (MODEL MEP-116A) PRECISE CLASS, 400 KW (6115-00-133-9103) INCLUDING OPTIONAL KITS (MODEL MEP-007 AWF) WINTERIZATION KIT, FUEL BURNING (6115-00-463-9082), (MEP-007AWE WINTERIZATION KIT, ELECTRIC (6115-00-463-9084), (MODEL MEP-007A DUMMY LOAD KIT (6115-00-463-9086) AND (MODEL MEP-007AWM) WHEEL 013538 TM 5-6115-457-34 12 GENERATOR SET, DIESEL ENGINE DRIVEN, TACTICAL SKID 100 KW, 3 PHASE, 4 WIRE, 120/208 AND 240/416 V (DOD MODELS MEP0 UTILITY CLASS, 50/60 HZ (NSN 6115-00-133-9101); (MODEL MEP106A) CLASS, 50/60 HZ (6115-00-133-9102) AND (MODEL MEP116A), PRECISE 400 HZ (6115-00-133-9103); INCLUDING OPTIONAL KITS (DOD MODELS MEP007AWF) WINTERIZATION KIT, FUEL BURNING (6115-00-463-9082); MEP007AWE) WINTERIZATION KIT, ELECTRIC (6115-00-463-9084); (MOD MEP007ALM) DUMMY LOAD KIT (6115-00-463-9086) AND (MODEL MEP007A MOUNTING KIT (6 013540 TM 5-6115-458-24P 9 GENERATOR SET, DIESEL ENGINE DRIVEN, TACTICAL, SKID MTD., 2 KW, 3 PHASE, 4 WIRE, 120/208 AND 240/416 VOLTS, DOD MODELS MEP009A UTILITY CLASS, 50/60 HZ (NSN 6115-00-133-9104) AND MODEL MEP108A PRECISE CLASS, 50/60 HZ (6115-00-935-8729) INCLUDING OPTIONAL K DOD MODELS MEP009AWF, WINTERIZATION KIT, FUEL BURNING (6115-00-403-3761), MODEL MEP009AWE, WINTERIZATION KIT, ELECTRIC (6115-00-489-7285) 013545 TM 5-6115-465-12 19 GENERATOR DIESEL ENGINE DRIVEN, TACTICAL SKID MTD, 30 KW, 3 PHASE, 4 WIRE 120/208 AND 240/416 V (DOD MODEL MEP-005A), UTILITY CLASS, 50/6 (NSN 6115-00-118-1240), (MODEL MEP-104A), PRECISE CLASS, 50/60 (6115-00-118-1247), (MODEL MEP-114A), PRECISE CLASS, 400 HZ (6115-00-118-1248) INCLUDING AUXILIARY EQUIPMENT (DOD MODEL MEP WINTERIZATION KIT, FUEL BURNING (6115-00-463-9083), (MODEL MEP- WINTERIZATION KIT, ELECTRIC (6115-00-463-9085), (MODEL MEP-005A LOAD BANK KIT (6115-00-463-9088) AND (MODEL MEP-005AWM), WH 013547 TM 5-6115-465-34 12 GENERATOR SET, DIESEL ENGINE DRIVEN, TACTIC SKID MTD, 30 KW, 3 PHASE, 4 WIRE, 120/208 AND 240/416 V (DOD MO MEP-005A), UTILITY, 50/60 HZ (NSN 6115-00-118-1240), (MODEL MEP-104A), PRECISE, 50/60 HZ (6115-00-118-1247), (MODEL MEP-114 PRECISE, 50/60 HZ (6115-00-118-1248) INCLUDING OPTIONAL KITS (MODEL MEP-005AWF) WINTERIZATION KIT, FUEL BURNING (6115-00-463 (MODEL MEP-005AWE) WINTERIZATION KIT, ELECTRIC (6115-00-463-908 (MODEL MEP-005ALM) LOAD BANK KIT (6115-00-463-9088) (MODEL MEP- WHEEL MOUNTING KIT (6115-00 013548 TM 5-6115-545-12 18 GENERATOR DIESEL ENGINE DRIVEN, TACTICAL SKID MTD., 60 KW, 3 PHASE, 4 WIR 120/208 AND 240/416 VOLTS, DOD MODEL MEP-006A, UTILITY CLASS, 5 (NSN 6115-00-118-1243) DOD MODEL MEP-105A, PRECISE CLASS, 50/60 (6115-00-118-1252) DOD MODEL MEP-115A, PRECISE CLASS, 400 HZ (6115-00-118-1253) INCLUDING OPTIONAL KITS, DOD MODEL MEP006AWF WINTERIZATION KIT, FUEL BURNING (6115-00-407-8314) DOD MODEL MEP006AWE, WINTERIZATION KIT, ELECTRIC (6115-00-455-7693) DOD M MEP006ALM, LOAD BANK KIT (6115-00-407-8322) DOD MODEL MEP006 013550 TM 5-6115-545-34 12 INTERMEDIATE (FIELD) (DIRECT AND GENERAL SUPPORT) AND DEPOT MAINTENANCE MANUAL FOR GENERATOR SET, DIESEL ENGINE DRIVEN, TAC SKID MTD., 60 KW, 3 PHASE, 4 WIRE, 120/208 AND 240/416 VOLTS DOD MODELS

MEP-006A, UTILITY CLASS, 50/60 HZ (FSN 6115-118-1243 MEP-105A, PRECISE CLASS, 50/60 HZ (6115-118-1252) AND MEP-115A, PRECISE CLASS, 400 HZ (6115-118-1253) {TO 35C2-3-444-2; NAVFAC P-8-626-34; TM 00038G-35} 015378 TM 5-6115-323-14 10 GENERATOR GASOLINE ENGINE DRIVEN, SKID MOUNTED, TUBULAR FRAME, 1.5 KW, SI PHASE, AC, 120/240 V, 28 V, DC (LESS ENGINE) (DOD MODELS MEP-01 60 HZ (NSN 6115-00-889-1446) AND (MODEL MEP-025A) 28 V DC (6115-00-017-8236) {TO 35C2-3-385-1} 015380 TM 5-6115-332-24P 3 GENERATOR GASOLINE ENGINE: AIR COOLED, 5 KW, AC, 120/240 V, SINGLE PHASE; 120/208 V, 3 PHASE, SKID MOUNTED, TUBULAR FRAME (LESS ENGINE) M DESIGN: 60 HZ (DOD MODEL MEP-017A) (NSN 6115-00-017-8240); 400 (DOD MODEL MEP-022A) (6115-00-017-8241) {TO 35C2-3-424-24} 020611 LO 5-6115-457-12 GENERATOR SET, DIESEL ENGINE DRIVEN; SKID MTD, 100 KW, 3 PHASE, 120/208 AND 240/416 V (DOD MODELS MEP-007A), UTILITY CLASS, 50/ (NSN 6115-00-133-9101); (MODEL MEP-106A) PRECISE CLASS, 50/60 H (6115-00-133-9102) AND (MODEL MEP-116A), PRECISE CLASS, 400 HZ (6115-00-133-9103) 020612 LO 5-6115-458-12 GENERATOR SET, DIESEL ENGINE DRIVEN, SKID MTD, 200 KW, 3 PHASE, 4 WIRE, 120/208/416 VOLTS, DOD MODELS MEP-009A, UTILITY CLASS, 50/60 HERTZ (NSN 6115-00-133-9104), MEP-108A, PRECISE CLASS, 50 HERTZ (6115-00-935-8729) {LO 07536A-12} 020614 LO 5-6115-465-12 GENERATOR SET, DIESEL ENGINE DRIVEN, TACTICAL, SKID MOUNTED, 30 3 PHASE, 4 WIRE, 120/206 AND 240/416 V (DOD MODEL MEP-055A), UT CLASS, 50/60 HZ (NSN 6115-00-118-1240); (MODEL MEP 104A), PRECI CLASS, 50/60 HZ (6115-00-118-1247) AND (MODEL 114A) PRECISE CLA 400 HZ (6115-00-118-1248) 025150 TM 5-6115-271-14 12 GENERATOR SET, GASOLINE ENGINE DRIVEN, S MTD, TUBULAR FRAME, 3 KW, 3 PHASE, AC, 120/208 AND 120/240 V, 2 DC (LESS ENGINE) DOD MODEL MEP-016A, 60 HZ (NSN 6115-00-017-823 MODEL MEP-016C 60 HZ (6115-00-143-3311) MODEL MEP-021A 400 HZ (6115-00-017-8238) MODEL MEP-021C 400 HZ (6115-01-175-7321) MODEL MEP-026A DC HZ (6115-00-017-8239) MODEL MEP-026C 28 V DC (6115-01-175-7320) {TO 35C2-3-386-1; TM 05926A-14; NAVFAC P-8-6 025151 TM 5-6115-271-24P 3 GENERATOR SET, GASOLINE ENGINE DRIVEN, SKID MOUNTED, TUBULA FRAME, 3 KW, 3 PHASE, AC; 120/208 AND 120/240 VOLTS, 28 VDC (LE ENGINE) (DOD MODEL MEP-016A) 60 HERTZ (NSN 6115-00-017-8237) (MEP-021A) 400 HERTZ (6115-00-017-8238) (MEP-026A) 28 VDC HERTZ (6115-00-017-8239) (MEP-016C) 60 HERTZ (6115-01-143-3311) (MEP- 400 HERTZ (6115-01-175-7321) (MEP-026C) 28 VDC HERTZ (6115-01-175-7320) {TO 35C2-3-386-4; SL-4-05926A} 032507 TM 5-6115-275-14 10 GENERATOR SET, GASOLINE ENGINE DRIVEN, SKID MOUNTED, TUBULAR FRAME, 10 KW, AC, 120/208V PHASE, AND 120/240V, SINGLE PHASE, LESS ENGINE: DOD MODELS MEP- HZ, (NSN 6115-00-889-1447) AND MEP-023A, 400 HZ (6115-00-926-08 {NAVFAC P-8-615-14; TO 35C2-3-452-1} (THIS ITEM IS INCLUDED ON EM 0086, EM 0088 & EM 0127) 032508 TM 5-6115-275-24P 5 GENERATOR, GASOLINE ENGINE DRIVEN, SKID MOUNTED, TUBULAR FRAME, 10 KW, AC, 120/208 V, 3 PHASE AND 120/240 V, SINGLE PHASE (LESS ENGINE); D MEP-018A, UTILITY CLASS, 60 HZ (NSN 6115-00-889-1447) AND MEP-0 PRECISE CLASS, 400 HZ (6115-00-926-0843) {NAVFAC P8-615-24P; TO 35C2-3-452-4} (THIS ITEM IS INCLUDED ON EM 0086, EM 0088 & EM 0127) 032551 TM 5-6115-584-12 11 GENERATOR SET, DIESEL ENGINE DRIVEN, TACTICAL SKID MTD, 5 KW, 1 PHASE, 2 WIRE; 1 PHASE, 3 WIRE; 3 PHASE, 4 WIRE, 120, 120/240 AND 120/208 V (DOD MODEL MEP-002A) UTILITY CLASS, 60 HZ (NSN 6115-00-465-1044) {NAVFAC P-8-622-12; TO 35C2-3-456-1; TM 05682C-12} 032640 TM 5-6115-585-12 12 GENERATOR SET, DIESEL ENGINE DRIVEN, TACTICAL SKID MTD, 10 KW, 1 PHASE, 2 WIRE 1 PHASE, 3 WIRE AND 3 PHASE, 4 WIRE; 120, 120/240 AND 120/208 V (DOD MODEL MEP-003A) UTILITY CLASS, 60 HZ (NSN 6115-00-465-1030 AND (MODEL MEP-112A), UTILITY CLASS, 400 HZ (6115-00-465-1027) {NAVFAC P-8-623-12; TO 35C2-3-455-1; TM-05684C/05685B-12} 032781 TM 5-6115-584-34 8 GENERATOR SET, DIESEL ENGINE DRIVEN, TAC SKID MOUNTED, 5 KW, 1 PHASE, 2 WIRE, 1 PHASE, 3 WIRE, 3 PHASE, 120, 120/240 AND 120/208 V (DOD MODEL MEP-002A), UTILITY CLASS, (NSN 6115-00-465-1044) {NAVFAC P-8-622-34; TO 35C2-3-456-2; TM 0568C-34} 032936 TM 5-6115-329-14 4 GENERATOR SET

GASOLINE ENGINE DRIVEN, 0.5 KW (LESS ENGINE) (DOD MODEL MEP-014 UTILITY CLASS, 60 HZ) (NSN 6115-00-923-4469), (DOD MODEL MEP-01 UTILITY CLASS, 400 HZ (6115-00-940-7862) AND (DOD MODEL MEP-024 UTILITY CLASS, 28 VDC (6115-00-940-7867) {TO 35C2-3-440-1} 033374 TM 5-6115-332-14 10 GENERATOR SET, TAC GASOLINE ENGINE: AIR COOLED, 5 KW, AC, 120/240 V, SINGLE PHASE, V, 3 PHASE, SKID MOUNTED, TUBULAR FRAME (LESS ENGINE) (MILITARY DOD MODEL MEP-017A), UTILITY, 60 HZ (NSN 6115-00-017-8240) AND MODEL MEP-022A), UTILITY, 400 HZ (6115-00-017-8241) {NAVFAC P-8-614-14; TO 35C2-3-424-1} 033750 TM 5-6115-585-34 9 GENERATOR SET, DIESEL ENGINE DRIVEN, TAC SKID MOUNTED, 10 KW, 1 PHASE, 2 WIRE, 1 PHASE, 3 WIRE, 3 PHASE, 4 WIRE, 120, 120/240 AND 120/208 VOLTS (DOD MODEL MEP-003A), UT CLASS, 60 HZ (NSN 6115-00-465-1030) {NAVFAC P-8-623-12; TO 35C2-3-455-2; TM-05684C/05685B-34} 034072 TM 5-6115-585-24P 5 GENERATOR SET, DIESEL ENGINE DRIVEN, TA SKID MTD, 10 KW, 1 PHASE, 2 WIRE; 1 PHASE, 3 WIRE; 3 PHASE, 4 W 120, 120/240 AND 120/208 V (DOD MODELS 003A), UTILITY CLASS, 60 (NSN 6115-00-465-1030) AND (MODEL MEP-112A), UTILITY CLASS, 400 (6115-00-465-1027) {NAVFAC P-8-623-24P; TO 35C2-3-455-4; SL-4-05684C/06585B} 040180 TM 5-6115-584-12-HR HAND RECEIPT MANUAL COVERING END ITEM/COMPONENTS OF END ITEM (C BASIC ISSUE ITEMS (BII), AND ADDITIONAL AUTHORIZATION LIST (AAL GENERATOR SET, DIESEL ENGINE DRIVEN, TACTICAL SKID MTD, 5 KW, 1 WIRE; 1 PH, 3 WIRE; 3 PH, 4 WIRE, 120, 120/240 AND 120/208 V (D MEP-002A) UTILITY CLASS, 60 HZ (NSN 6115-00-465-1044) 040833 TM 5-6115-458-12-HR HAND RECEIPT MANUAL COVERING THE END ITEM/COMPONENTS OF END ITE BASIC ISSUE ITEMS (BII), AND ADDITIONAL AUTHORIZATION LIST (AA GENERATOR SET, DIESEL ENGINE DRIVEN, TACTICAL, SKID MOUNTED, 20 3 PHASE, 4 WIRE, 120/208 AND 240/416 V (DOD MODEL MEP-009A), UT CLASS, 50/60 HZ (NSN 6115-00-133-9104) AND (DOD MODEL MEP-108A) PRECISE CLASS, 50/60 HZ (6115-00-935-8729) 040843 TM 5-6115-593-34 GENERATOR SET, DIESEL ENGINE DRIVEN, TAC SKID MTD, 500 KW, 3 PHASE, 4 WIRE, 120/208 AND 240/416 VOLTS DOD MODEL, MEP-029A, CLASS UTILITY, 50/60 HZ, (NSN 6115-01-030- DOD MODEL, MEP-029B, CLASS UTILITY, 50/60 HZ, (6115-01-318-6302 INCLUDING OPTIONAL KITS DOD MODEL, MEP-029AHK, HOUSING KIT, (6115-01-070-7550), DOD MODEL, MEP-029ACM, AUTOMATIC CONTROL MO (6115-01-275-7912) DOD MODEL, MEP-029ARC, REMOTE CONTROL MODULE (6110-01-070-7553) DOD MODEL, MEP-029ACC, REMOTE CONTROL CABLE, (6110-01-087-4127) {NAVFAC P-8 041070 TM 5-6115-593-12 GENERATOR SET, ENGINE DRIVEN, TACTICAL SKID MTD, 500 KW, 3 PHASE, 4 WIRE; 120/ 240/416 VOLTS DOD MODEL MEP-029A; CLASS UTILITY, HERTZ 50/60; (NSN 6115-01-030-6085); MEP-029B; UTILITY; 50/60; (6115-01-318- INCLUDING OPTIONAL KTS DOD MODELS MEP-029AHK; NOMENCLATURE HOUS (6115-01-070-7550) MEP-029ACM; AUTOMATIC CONTROL MODULE; (6115-01-275-7912); MEP-029ARC, REMOTE CONTROL MODULE, (6110-01-070-7553); MEP-029ACC, REMOTE CONTROL CABLE (6110-01-087-4127) {TO 35C2-3-463-1} 041338 LO 55-1730-229-12 POWER UNIT, AVIATION, MULTI-OUTPUT GTED ELECTRICAL, HYDRAULIC, PNEUMATIC (AGPU), WHEEL MOUNTED, SELF-PROPELLED, TOWABLE DOD MODEL-MEP-360A, CLASS-PRECISE, HERTZ-400, (NSN 1730-01-144-1897 042791 TM 5-6115-457-12-HR HAND RECEIPT MANUAL COVERING THE BASIC ISSUE ITEMS (BII) FOR GE SET, DIESEL ENGINE DRIVEN, TACTICAL, SKID MTD; 100 KW, 3 PHASE, 120/208 AND 240/416 V (DOD MODELS MEP007A), UTILITY CLASS, 50/6 (NSN 6115-00-133-9101), (MODEL MEP-106A), PRECISE CLASS, 50/60 (6115-00-133-9102) AND (MODEL MEP116A) PRECISE CLASS, 400 HZ (6115-00-133-9103) 043437 TM 5-6115-593-24P 1 GENERATOR SET, DIESEL ENGINE DRIVEN, TACTICAL SKID MOUNTED, 500 KW, 3 PHA 4 WIRE; 120/208 AND 240/416 VOLTS DOD MODEL MEP-029A UTILITY CL 50/60 HZ (NSN 6115-01-030-6085) MEP-029B UTILITY CLASS, 50/60 (6115-01-318-6302) INCLUDING OPTIONAL KITS DOD MODEL MEP-029AHK HOUSING KIT (6115-01-070-7550) MEP-029ACM AUTOMATIC CONTROL MOD (6115-01-275-7912) MEP-029ARC REMOTE CONTROL MODULE (6110-01-070-7553) MEP-029ACC REMOTE CONTROL CABLE (6110-01-087 {NAVFAC P-8-631-24P; TO 35C2-3-463-4} 044703 TM 5-6115-545-12-HR HAND RECEIPT MANUAL COVERING

COMPONENTS OF END ITEM (COEI), BAS ITEMS (BII), AND ADDITIONAL AUTHORIZATION LIST (AAL) FOR GENERA DIESEL ENGINE DRIVEN, TACTICAL SKID MTD, 60 KW, 3 PHASE, 4 WIRE 120/208 AND 240/416 V (DOD MODELS MEP-006A) UTILITY CLASS, 50/6 (NSN 6115-00-118-1243), (MODEL MEP-105A) PRECISE CLASS, 50/60 H (6115-00-118-1252) AND (MODEL MEP-115A) PRECISE CLASS, 400 HZ (6115-00-118-1253) 050998 TM 5-6115-600-12 8 GENERATOR DIESEL ENGINE DRIVEN, TACTICAL SKID MTD, 100 KW, 3 PHASE, 4 WIR 120/208 AND 240/416 V (DOD MODEL MEP-007B) CLASS UTILITY, 50/60 (NSN 6115-01-036-6374) INCLUDING OPTIONAL KITS, DOD MODEL MEP00 WINTERIZATION KIT, FUEL BURNING AND MEP007BWE WINTERIZATION KIT ELECTRIC 051007 TM 5-6115-600-24P 4 GENERATOR SET, DIESEL ENGINE DRIVEN, 100 KW, 3 PHASE, 4 WIRE, 120/208 AND VOLTS (DOD MODEL MEP-007B), UTILITY CLASS, 50/60 HZ (NSN 6115-01-036-6374) INCLUDING OPTIONAL KITS, DOD MODEL MEP007BWF, WINTERIZATION KIT, FUEL BURNING AND MEP007BWE WINTERIZATION KIT, ELECTRIC {TO 35C2-3-442-14; NAVFAC P-8-628-24P; SL-4-07464B} 057268 LO 5-6115-600-12 GENERATOR SET, DIESEL ENGINE DRIVEN; TACTICAL, SKID MTD, 100 KW PHASE, 4 WIRE; 120/208 AND 240/416 V (DOD MODEL MEP007B), CLASS UTILITY, 50/60 HZ (NSN 6115-01-036-6374) 057513 LO 5-6115-604-12 GENERATOR SET, DIESEL ENGINE DRIVEN, AIR TRANSPORTABLE; SKID MT 750 KW, 3 PHASE, 4 WIRE; 2400/4160 AND 2200/3800 VOLTS (DOD MOD MEP208A) CLASS PRIME UTILITY, HZ 50/60 (NSN 6115-00-450-5881) {LI 6115-12/9} 060183 TM 5-6115-612-24P 6 GENERATOR SET, AVIATION, GAS TURBINE ENGINE DRIVEN, INTEGRA TRAILER MOUNTED, 10KW, 28 VOLTS MODEL MEP-362A, PRECISE, DC (NSN 6115-01-161-3992) {TM 6115-24P/1; AG-320B0-IPE-000; TO 35C2-3-471-4} 060188 TM 5-6115-612-34 4 GENERATOR SET, AVIATION, GAS TURBINE ENG DRIVEN, INTEGRAL TRAILER MOUNTED 10KW 28 VOLTS DOD MODEL MEP 36 PRECISE, DC, (NSN 6115-01-161-3992) {AG-320B0-MME-000; TM 6115- TO 35C2-3-471-2} 060645 LO 5-6115-612-12 AVIATION GENERATOR SET, GAS TURBINE, ENGINE DRIVEN, INTEGRAL TR MOUNTED, 10KW, 28 VOLTS DC DOD MODEL MEP 362A CLASS PRECISE (NSN 6115-01-161-3992) 060921 TM 55-1730-229-34 5 POWER UNIT, AVIATION, MULTI-OUTPUT GTED, ELECTRICAL, HYDRAULIC, PNEUMATIC (AGPU) WHEEL MOUNTED, SELF-PROPELLED, TOWA AC 400HZ, 3PH, 0.8 PF, 115/200V, 30 KW, DC 28VDC 700 AMPS, PNEUMATIC, 60 LBS/MIN. AT 40 PSIG, HYDRAULIC, 15 GPM AT 3300 PS DOD MODEL MEP-360A, CLASS PRECISE, 400 HERTZ, (NSN 1730-01-144- {AG 320A0-MME-000; TO 35C2-3-473-2; TM 1730-34/1} 060922 TM 55-1730-229-12 8 POWER UNIT, AVIATION, MULTI-OUTPUT GTED ELECTRICAL, HYDRAULIC, PNEUMATIC (AGPU) WHEEL MOUNTED, SELF-PROPELLED, TOWABLE, AC 400HZ, 3PH, 0.8 PF, 115/200V, 30 KW, DC 28 VDC 700 AMPS, PNEUMATIC 60 LBS/M AT 40 PSIG, HYDRAULIC 15 GPM AT 3300 PSIG, DOD MODEL MEP-360A, CLASS PRECISE, HERTZ 400, (NSN 1730-01-144-1897) {AG 320A0-OMM-000; TO 35C2-3-473-1; TM 1730-12/1} 061758 LO 5-6115-614-12 GENERATOR SET, DIESEL ENGINE DRIVEN, TACTICAL SKID MTD. 200 KW, 3 PHASE, 4 WIRE, 120/208 AND 240/416 VOLTS MODEL MEP009B, UTILI 50/60 HERTZ, (NSN 6115-01-021-4096) 061772 LO 5-6115-622-12 GENERATOR SET, DIESEL ENGINE-DRIVEN, WHEEL MOUNTED 750-KW, 3-PH 4-WIRE, 2200/3800 AND 2400/4160 VOLTS CUMMINS ENGINE COMPANY IN MODEL KTA-2300G-2 DOD MODEL MEP-012A; CLASS UTILITY; HERTZ 062762 LO 5-6115-615-12 GENERATOR SET, DIESEL ENGINE DRIVEN, TACTICAL SKID MOUNTED, 3 K MODEL 016B; CLASS UTILITY MODE 50/60 HZ (NSN 6115-01-150-4140); DOD MODEL MEP-021B; CLASS UTILITY; MODE 400 HZ (6115-01-151-812 DOD MODEL MEP-026B; CLASS UTILITY; MODE 28 VDC (6115-01-150-036 {LI 05926B/06509B-12/5; P-8-646-LO} 064310 TM 5-6115-626-14&P 2 POWER UNIT PU-406B/M (NSN 6115-00-394-9576) MEP-005A 30 KW 60 HZ GENERATOR SET M200A1 2-WHEEL4-TIRE, MODIFIED TRAILER 064390 TM 5-6115-632-14&P 5 POWER UNIT PU-753/M (NSN 6115-00-033-1 MEP-003A 10 KW 60 HZ GENERATOR SET M116A2 2-WHEEL, 2-TIRE, MODI TRAILER 064392 TM 5-6115-629-14&P 3 POWER PLANT AN/AMJQ-12A (NSN 6115-00-257-1602) (2) MEP-006A 60HZ, GENERATOR SETS (2) M200A1 2-WHEEL, 4-TIRE, MODIFIED TRAIL 064443 TM 5-6115-625-14&P 2 POWER UNIT PU-405A/M (NSN 6115-00-394-9577) MEP-004A 15 KW 60 HZ GENERATOR SET M200A1 2-WHEEL, 4-TIRE,

MODIFIED TRAILER (THIS ITEM IS INCLUDED ON EM 0086 & EM 0087) 064445 TM
5-6115-633-14&P 4 POWER PLANT AN/MJQ-18 (NSN 6115-00-033-1398) (2) MEP-003A 1 60 HZ
GENERATOR SETS M103A3 2-WHEEL 1 1/2 TON MODIFIED TRAILER 064446 TM
5-6115-628-14&P 4 POWER PLANT AN/MJQ-15 (NSN 6115-00-400-7591) (2) MEP-113A 1 400 HZ
GENERATOR SETS, (2) M200A1 2-WHEEL, 4-TIRE, MODIFIED TRA (THIS ITEM IS INCLUDED ON
EM 0086) 064542 TM 5-6115-631-14&P 4 POWER PLANT AN/MJQ-16 (NSN 61 15-00-033-1395) (2)
MEP-002A 5 KW 60 HZ GENERATOR SETS M103A3 2-WHEEL, 2-TIRE, MODIFIED TRAI 065071 TM
55-1730-229-24P 6 POWER AVIATION, MULTI-OUTPUT GTED ELECTRICAL, HYDAULIC,
PNEUMATIC (AG WHEEL MOUNTED, SELF-PROPELLED, TOWABLE AC 400 HZ, 3 PH, 0.8 PF,
115/200V, 30 KW DC 28 VDC 700 AMPS PNEUMATIC 60 LBS/MIN. AT 40 HYDRAULIC 15 GPM AT
3300 PSIG DOD MODEL MEP-360A, CLASS PRECISE 400 HERTZ (NSN 1730-01-144-1897) {TO
35C2-3-473-4; TM 1730-24P/ AG 320A0-IPB-000} 065603 TB 5-6115-593-24 WARRANTY PROGRAM
FOR GENERATOR SET DOD MODEL MEP-029A HOUSING K DOD MODEL MEP-029AHK 066727
TM 5-6115-640-14&P 2 POWER AN/MJQ-32 (NSN 6115-01-280-2300) AN/MJQ-33
(6115-01-280-2301) (MEP-701A 3KW 60 HZ ACOUSTIC SUPPRESSION KIT GENERATOR SETS
M116 2-WHEEL, 2-TIRE, 3/4-TON MODIFIED TRAILERS 066808 TM 5-6115-627-14&P 2 POWER
PLANT AN/MJQ-10A (NSN 6115-00-394-9582); (2) MEP-005A 30 KW 60 HZ GEN SETS; (2) M200A1
2-WHEEL, 4 TIRE MODIFIED TRAILERS 066809 TM 5-6115-630-14&P 4 POWER UNIT, PU-751/M
(NSN 6115-00-033-1373) MEP-002A, 5 KW, 60 HZ GENERATOR SET M116A1 2-WHEEL, 2-TIRE,
MODIFIED TRAILER 066824 TM 5-6115-465-10-HR 1 HAND RECEIPT MANUAL COVERING END
ITEM/COMPONENTS OF END ITEM (C BASIC ISSUE ITEMS, (BII) AND ADDITIONAL
AUTHORIZATION LIST (AAL GENERATOR SET, DIESEL ENGINE DRIVEN, TACTICAL SKID
MOUNTED, 30K 4 WIRE, 120/208 AND 240/416 VOLTS - MEP-005A, UTILITY, 50/60 HE (NSN
6115-00-118-1240); MEP-104A, PRECISE, 50/60 HERTZ, (6115-00-118-1247): MEP-114A, PRECISE,
400 HERTZ, (6115-00-118- INCLUDING AUXILIARY EQUIPMENT MEP-005AWF WINTERIZATION
KIT, FUE BURNING (6115-00-463-9083); MEP-005AWE, WINTERIZATION KIT, ELEC (6115-00
067310 TM 9-6115-650-14&P 1 POWER PLAN AN/MJQ-25 (NSN 6115-01-153-7742) (2) MEP-112A
10 KW 400 HZ GENE SETS M103A3 2-WHEEL, 2-TIRE, MODIFIED TRAILER 067311 TM
9-6115-653-14&P 2 POWER UNIT PU-732/M (NSN 6115-00-260-3082) MEP-113A 15 KW 400 HZ
GENERATOR SET M200 2-WHEEL, 4-TIRE, MODIFIED TRAILER 067544 TM 9-6115-652-14&P 1
POWER UNIT PU-760/M (NSN 6115-00-394-9581) MEP-114A 30 KW 400 HZ GENERATOR M200A1
2-WHEEL, 4-TIRE, MODIFIED TRAILER 067632 TM 9-6115-648-14&P POWER UNIT PU-650B/G
(NSN 6115-00-258-1622) MEP-006A 60 KW 60 HZ GENERATOR M200A1 2-WHEEL, 4-TIRE,
MODIFIED TRAILER 067744 TM 9-6115-646-14&P 1 POWER UNIT PU-495A/G, (NSN
6115-00-394-9575) AND PU-495B/G, (6115-01-134-0 MEP-007A 100 KW, 60 HZ OR MEP-007B, 100
KW, 60 HZ GENERATOR SET M353-2-WHEEL, 2-TIRE MODIFIED TRAILER 067746 TM
9-6115-651-14&P POWER UNIT 707A/M (NSN 6115-00-394-9573) MEP-115A, 60 KW, 400 HZ
GENERATOR M200A1, 2-WHEEL, 4-TIRE, MODIFIED TRAILER 067879 TM 9-6115-647-14&P 1
POWER UNIT PU-789/M (NSN 6115-01-208-9827) MEP-114A, 30 KW 400 HZ GENERATOR SET
M353 2-WHEEL, 2-TIRE, MODIFIED TRAILER 069601 TM 9-6115-464-10-HR HAND RECEIPT
MANUAL COVERING THE END ITEMS/COMPONENTS OF END IT (COEI), BASIC ISSUE ITEMS
(BII), AND ADDITIONAL AUTHORIZATION L (AAL) FOR GENERATOR SET, DIESEL ENGINE
DRIVEN, TACTICAL SKID MO 15 KW, 3 PHASE, 4 WIRE, 120/208 AND 240/416 VOLTS DOD
MODEL MEP UTILITY CLASS, 50/60 HERTZ (NSN 6115-00-118-1241) DOD MODEL MEP PRECISE
CLASS, 50/60 HERTZ (6115-00-118-1245) DOD MODEL MEP-113 PRECISE CLASS, 400 HERTZ
(6115-00-118-1244) 069602 LO 9-6115-464-12 GENERATOR SET, DIESEL ENGINE DRIVEN,
TACTICAL, SKID MTD, 15KW, 4 WIRE, 120/208 AND 240/416 VOLTS (DOD MODEL MEP 004A)
(NSN 6115-00-118-1241); (DOD MODEL MEP 104A) (6115-00-118-1245) (DOD MODEL MEP-113A)
(6115-00-118-1244) 069954 TM 9-6115-465-24P 2 GENERATOR SET, DIESEL ENGINE DRIVE
TACTICAL SKID MTD. 30KW, 3 PHASE, 4 WIRE, 120/208 AND 240/416 V MODELS; MEP-005A,
UTILITY, 50/60 HZ, (NSN 6115-00-118-1240), MEP-104A PRECISE, 50/60 HZ, (6115-00-118-1247),

MEP-114A, PRECISE, 400 H (6115-00-118-1248), INCLUDING OPTIONAL KITS, DOD MODELS; MEP-00 WINTERIZATION KIT, FUEL BURNING, (6115-00-463-9083), MEP-005-AW WINTERIZATION KIT, ELECTRIC, (6115-00-463-9085), MEP-002-ALM, L BANK KIT, (6115-00-463-9088), MEP-005-AWM, WHEEL MOUNTING KIT, (6115-00-463-9094) {TO-35C2-3-070096 TM 9-6115-464-24P 1 GENERATOR S DIESEL ENGINE DRIVEN, TACTICAL SKID MTD., 15KW, 3 PHASE, 4 WIRE 120/208 AND 240/416 VOLTS (DOD MODEL MEP-004A) UTILITY CLASS 50/60 HERTZ (NSN 6115-00-118-1241) (DOD MODEL MEP-103A) PRECISE CLASS 50/60 HERTZ (6115-00-118-1245) (DOD MODEL MEP-113A) PRECI CLASS 400 HERTZ (6115-00-118-1244) INCLUDING OPTIONAL KITS (DOD MODEL MEP-005-AWF) WINTERIZATION KIT, FUEL BURNING (6115-00-463 (DOD MODEL MEP-005-AWE) WINTERIZATION KIT, ELECTRIC (6615-00-46 (DOD MODEL MEP-004-ALM) LOAD BANK KIT (6115-00-191-9201 071025 TM 9-6115-641-10 2 GENERATOR SET SKID MOUNTED, TACTICAL QUIET 5 KW, 60 AND 400 HZ MEP-802A (60 HZ) (NSN 6115-01-274-7387) MEP-812A (400 HZ) (6115-01-274-7391) {TO 35C2-3-456-11} 071026 TM 9-6115-642-10 2 GENERATOR SET SKID MOUNTED, TACTICAL QUIE 10 KW, 60 AND 400 HZ MEP-803A (60 HZ) (NSN 6115-01-275-5061) MEP-813A (400 HZ) (6115-01-274-7392) {TO 35C2-3-455-11; TM 09247A/09248A-10/1} 071028 TM 9-6115-643-10 3 GENERATOR SET, SKID MOUNTED, TACTICAL QUI 15 KW, 50/60 AND 400 HZ MEP-804A (50/60 HZ) (NSN 6115-01-274-73 MEP-814A (400 HZ) (6115-01-274-7393) {TO 35C2-3-445-21} 071029 TM 9-6115-644-10 2 GENERATOR SET, SKID MOUNTED, TACTICAL QUIET 30 KW, 50/60 AND 400 HZ MEP-805A (50/60 HZ), (NSN 6115-01-274-7389) MEP-815A (400 HZ), (6115-01-274-7394) {TO 35C2-3-446-11; TM 09249A/09246A-10/1} 071030 TM 9-6115-645-10 2 GENERATOR SET, SKID MOUNTED, TACTICAL QUIET 60 KW, 50/60 AND 400 HZ MEP-806A (50/60 HZ), (NSN 6115-01-274-7390) MEP-816A (400 HZ), (6115-01-274-7395) {TO 35C2-3-444-11; TM 09244A/09245A-10/1} 071031 LO 9-6115-641-12 GENERATOR SET, SKID MOUNTED, TACTICAL QUIET 5 KW, 60 AND 400 HZ MEP-802A TACTICAL QUIET 60 HZ (NSN 6115-01-274-7387) MEP-812A TACTICAL QUIET 400 HZ (6115-01-274-7391) 071032 LO 9-6115-642-12 GENERATOR SET, SKID MOUNTED, TACTICAL QUIET 10 KW, 60 AND 400 HZ MEP-803A TACTICAL QUIET 60 HZ (NSN 6115-01-275-5061) MEP-813A TACTICAL QUIET 400 HZ (6115-01-274-7392) 071033 LO 9-6115-643-12 GENERATOR SET, SKID MOUNTED, TACTICAL QUIET 15 KW, 50/60/400 HZ MEP-804A TACTICAL QUIET 50/60 HZ (NSN 6115-01-274-7388) MEP-814 TACTICAL QUIET 400 HZ (6115-01-274-7393) 071034 LO 9-6115-644-12 GENERATOR SET, SKID MOUNTED, TACTICAL QUIET 30 KW, 50/60 AND 40 MEP-805A TACTICAL QUIET 50/60 HZ (NSN 6115-01-274-7389) MEP-815 TACTICAL QUIET 400 HZ (6115-01-274-7394) {LI 09249A/09246A-12} 071035 LO 9-6115-645-12 GENERATOR SET, SKID MOUNTED, TACTICAL QUIET 60 KW, 50/60 AND 40 MEP-806A TACTICAL QUIET 50/60 HZ (NSN 6115-01-274-7390) MEP-816 TACTICAL QUIET 400 HZ (6115-01-274-7395) {LI 09244A/09245A-12} 071036 TB 9-6115-641-24 WARRANTY PROGRAM FOR GENERATOR SET, TACTICAL QUIET 5 KW, 60 AND 400 HZ MEP-802A AND MEP-812A 071037 TB 9-6115-642-24 WARRANTY PROGRAM FOR GENERATOR SET, TACTICAL QUIET 10 KW, 60 AND 400 HZ MEP-803A AND MEP-813A {SI 09247A/09248A-24} 071038 TB 9-6115-643-24 WARRANTY PROGRAM FOR GENERATOR SET, TACTICAL QUIET 15 KW, 50/60 AND 400 HZ MEP-804A AND MEP-814A 071039 TB 9-6115-644-24 WARRANTY PROGRAM FOR GENERATOR SET, TACTICAL QUIET 30 KW, 50/60 AND 400 HZ MEP-805A AND MEP-815A {SI 09249A/09246A-24} 071040 TB 9-6115-645-24 WARRANTY PROGRAM FOR GENERATOR SET, TACTICAL QUIET 60 KW, 50/60 AND 400 HZ MEP-806A AND MEP-816A {SI 09244A/09245A-24} 071541 TM 9-6115-464-12 2 GENERATOR SET, DIESEL ENGINE DRIVEN, TACTICAL SKID MTD, 15 KW, 3 PHASE, 4 WIRE, 120/2 AND 240/416 VOLTS DOD MODEL MED-004A UTILITY CLASS 50/60 HERTZ (NSN 6115-00-118-1241) DOD MODEL MEP-103A PRECISE CLASS 50/60 HERTZ (6115-00-118-1245) DOD MODEL MEP-113A PRECISE CLASS 400 HERTZ (6115-00-118-1244) INCLUDING OPTIONAL KITS DOD MODEL MEP-005-AWF WINTERIZATION KIT, FUEL BURNING (6115-00-463-9083) DOD MODEL MEP-005-AWE WINTERIZATION KIT, ELECTRIC (6115-00-463-9085) DOD MODEL MEP-004-ALM LOAD BANK KIT (6115-00-291 071604 TM 9-6115-645-24P GENERATOR SET, TACTICAL QUIET 60KW, 50/60/400

HZ (NSN 6115-01-274-7390) (MEP-806A) (6115-01-274-7395) (MEP-816A) {TO 35C2-3-444-14; TM 09244A/09245A-24P/3} 071605 TM 9-6115-642-24P GENERATOR SET, TACTICAL QUIET 10 KW, 60/400 HZ (NSN 6115-01-275-5061) (MEP-803A) (6115-01-274-7392) (MEP-813A) {TO 35C2-3-455-14; TM 09247A/09248A-24P/3} 071610 TM 9-6115-643-24P GENERATOR SET, TACTICAL QUIET 15KW, 50/60 - 400 HZ (NSN 6115-01-274-7388) (MEP-804A) (6115-01-274-7393) (MEP-814A) {TO 35C2-3-445-24} 071611 TM 9-6115-644-24P GENERATOR SET, TACTICAL QUIET 30KW, 50/60-400 HZ (NSN 6115-01-274-7389) (MEP-805A) (6115-01-274-7394) (MEP-815A) {TO 35C2-3-446-14; TM 09249A/09246A-24P/3} 071613 TM 9-6115-641-24P GENERATOR SET, TACTICAL QUIET 5 KW, 60/400 HZ (NSN 6115-01-274-7387) (MEP-802A) (6115-01-274-7391) (MEP-812A) {TO 35C2-3-456-14} 071713 TM 9-6115-645-24 4 GENERATOR SET, SKID MOUNTED, TACTICAL QUIET 60KW, 50/60 AND 400 HZ MEP-806A (50/60 HZ) (NSN 6115-01-274-7390) MEP-816A (400 HZ) (6115-01-274-7395) {TO 35C2-3-444-12; TM 09244A/09245A-24/2} 071748 TM 9-6115-644-24 1 GENERATOR SET, SKID MOUNTED, TACTICAL QUIET 30 KW, 50/60 AND 400 HZ MEP-805A (50/60 HZ) (NSN 6115-01-274-7389) MEP-815A (400 HZ) (6115-01-274-7394) {TO 35C2-3-446-12; TM 09249A/09246A-24/2} 071749 TM 9-6115-643-24 4 GENERATOR SET, SKID MOUNTED, TACTICAL QUIET 15 KW, 50/60 AND 400 HZ MEP-804A (50/60 HZ) (NSN 6115-01-274-7388) MEP-814A (400 HZ) (6115-01-274-7393) {TO 35C2-3-445-22} 071750 TM 9-6115-642-24 4 GENERATOR SET, SKID MOUNTED, TACTICAL QUIET 10 KW, 60 AND 400 HZ MEP-803A (60 HZ) (NSN 6115-01-275-5061) MEP-813A (400 HZ) (6115-01-274-7392) {TO 35C2-3-455-12; TM 09247A/09248A-24/2} 071751 TM 9-6115-641-24 3 GENERATOR SET, SKID MOUNTED, TACTICAL QUIET 5 KW, 60 AND 400 HZ MEP-802A (60 HZ) (NSN 6115-01-274-7387) MEP-812A (400 HZ) (6115-01-274-7391) {TO 35C2-3-456-12} 072239 TM 9-6115-464-34 1 GENERATOR SET, DIESEL ENGINE DRIVEN, TACTICAL SKID MTD., 15 KW, 3 PHASE, 4 WIRE 120/208 AND 240/416 VOLTS DOD MODEL MEP-004A UTILITY CLASS 50/60 HERTZ (NSN 6115-00-118-1241) DOD MODEL MEP 103A PRECISE CLASS 50/60 HERTZ (6115-00-118-1245) DOD MODEL MEP-113A PRECISE CLASS 400 HERTZ (6115-00-118-1244) INCLUDING OPTIONAL KITS DOD MODEL MEP-005AWF WINTERIZATION KIT, FUEL BURNING (6115-00-463-9083) DOD MODEL MEP-005AWE WINTERIZAT KIT, ELECTRIC (6115-00-463-9085) DOD MODEL MEP-004ALM LOAD BANK KIT (6115-00-291-920 073744 TM 9-6115-604-24P 1 GENERATOR SET, DIESEL ENGINE DRIVEN, AIR TRANSPORTABLE SKID MOUNTED, 750KW, 3 PHASE, 4 WIRE, 2400/4160, AND 2200/3800 VOLTS DOD MODEL MEP208A PRIME UTILITY CLASS 50/60 HERTS (NSN 6115-00-450-5881) DOD MODEL 80-1466 REMOTE CONTROL MODULE CLASS (6115-01-150-5284 DOD MODEL 80-7320 SITE REQUIREMENTS MODULE CLASS (6115-01-150-5 {NAVFAC P-8-633-24P} 074040 TM 9-6115-545-24P GENERATOR SET, DIESEL ENGINE DRIVEN, TAC SKID MTD., 60 KW, 3 PHASE, 4 WIRE, 120/208 AND 240/416 VOLTS, D MODELS MEP-006A, UTILITY CLASS, 50/60 H/Z, (NSN 6115-00-118-124 MEP-105A, PRECISE CLASS, 50/60 H/Z, (6115-00-118-1252), MEP-115 PRECISE CLASS, 400 H/Z (6115-00-118-1253); INCLUDING OPTIONAL K DOD MODELS MEP-006AWF, WINTERIZATION FUEL BURNING, (6115-00-407 MEP-006AWE, WINTERIZATION KIT, ELECTRIC, (6115-00-455-7693), ME LOAD BANK KIT, (6115-00-407-8322), AND MEP-006AWM, WHEEL MOUNTI (6115-00-463-9092) {TO 074212 TM 9-6115-604-12 GENERATOR SET, DIESEL DRIVEN, AIR TRANSPORTABLE SKID MTD., 750 KW, 3 PHASE, 4 WIRE, 24 AND 2200/3800 V (DOD MODEL MEP 208A) CLASS PRIME UTILITY, HZ 50 (NSN 6115-00-450-5881) {NAVFAC P-8-633-12} 074896 TM 9-6115-604-34 GENERATOR SET, DIESEL ENGINE DRIVEN, AIR TRANSPORTABLE SKID MTD., 750 KW, 3 PHASE, 4 WIRE, 2400/4160 AND 2200/3800 VOLTS DOD MODEL MEP 208A PRIME UTILITY CLASS 50/60 HERTZ (NSN 6115-00-450-5881) {NAVFAC P-8-633-34} 075027 TM 9-6115-584-24P 1 GENERATOR SET, DIESEL E DRIVEN, TACTICAL SKID MTD 5 KW, 1 PHASE -2 WIRE, 1 PHASE -3 WIR 3 PHASE -4 WIRE, 120, 120/240 AND 120/208 VOLTS (DOD MODEL MEP- UTILITY CLASS, 60 HZ (NSN 6115-00-465-1044) {NAVFAC P-8-622-24P TO 35C2-3-456-4} 077581 TM 9-6115-673-13&P 2KW MILITARY TACTICAL GENERATOR SET 120 VAC, 60 HZ (NSN 6115-01-435-1565) (MEP-531A) (EIC: LKA) (NSN 6115-21-912-0393) (MECHRON) 28 VDC (NSN 6115-01-435-1567) (MEP-501A)

(EIC: LKD) (NSN 6115-21-912-0392) (MECHRON) 078167 TM 9-6115-672-14 GENERATOR SET SKID MOUNTED TACTICAL QUIET 60KW, 50/60 AND 400 HZ, MEP-806B (50/60 HZ) (NSN 6115-01-462-0291) EIC: GGW, MEP-816B (400 HZ) (NSN 6115-01-462-0292) EIC: GGX 078443 TM 9-6115-639-13 1 3KW TACTICAL QUIET GENERATOR SET MEP 831A (60 HZ) (NSN 6115-01-285-3012) (EIC: VG6) MEP 832A (400 HZ) (NSN 6115-01-287-2431) (EIC: VN7) 078490 TM 9-6115-671-14 OPERATOR, UNIT, GENERATOR SET, SKID MOUNTED, TACTICAL QUIET 30 KW, 50/60 AND 400 HZ, MEP-805B (50/60 HZ) (NSN 6115-01-461-9335) (EIC: GGU) MEP-815B (400 HZ) (6115-01-462-0290) (EIC: GGV) 078503 TM 9-6115-671-24P GENERATOR SET SKID MOUNTED, TACTICAL QUIET 30 KW, 50/60 AND 400 HZ MEP-805B (50/60 HZ) (NSN 6115-01-461-9335) (EIC: GGU) MEP-815B (400 HZ) (NSN 6115-01-462-0290) (EIC: GGV) 078504 TM 9-6115-672-24P GENERATOR SET, SKID MOUNTED, TACTICAL QUIET 60 KW, 50/60 AND 400 HZ MEP-806B (50/60 HZ) (NSN 6115-01-462-0291) (EIC: GGW) MEP-816B (400 HZ) (NSN 6115-01-462-0292) (EIC: GGX) 078505 TB 9-6115-671-24 WARRANTY PROGRAM FOR GENERATOR SET, TACTICAL QUIET 30KW, 50/60 AND 400 HZ MEP-805B AND MEP-815B PROCURED UNDER CONTRACT DAAK01-96-D-00620WITH MCII INC 078506 TB 9-6115-672-24 WARRANTY PROGRAM FOR GENERATOR SET, TACTICAL QUIET 30KW, 50/60 AND 400 HZ MEP-806B AND MEP-816B PROCURED UNDER CONTRACT DAAK01-96-D-00620WITH MCII INC 078523 TM 9-6115-664-13&P 5KW, 28VDC, AUXILIARY POWER UNIT (APU) MEP 952B NSN 6115-01-452-6513 (EIC: N/A) 078878 TM 9-6115-639-23P 3KW TACTICAL QUIET GENERATOR SET MEP 831A (60 HZ) (NSN 6115-01-285-3012) (EIC: VG6) MEP 832A (400 HZ) (NSN 6115-01-287-2431) (EIC: VN7) 079379 TB 9-6115-641-13 WINTERIZATION KIT (NSN 6115-01-476-8973) INSTALLED ON GENERATOR SET, SKID MOUNTED, TACTICAL QUIET, 5KW, 60 AND 400 HZ MEP-802A (600HZ) (6115-01-274-7387) MEP-812A (400HZ) (6115-01-274-7391) 079460 TB 9-6115-642-13 WINTERIZATION KIT (NSN 6115-01-477-0564) (EIC: N/A) INSTALLED ON GENERATOR KIT, SKID MOUNTED, TACTICAL QUIET, 10KW, 60 AND 400 HZ MEP-803A (60HZ) (6115-01-275-0561) MEP-813A (400HZ) (6115-01-274-7392) 079461 TB 9-6115-643-13 WINTERIZATION KIT (NSN 6115-477-0566) INSTALLED ON GENERATOR SET, SKID MOUNTED, TACTICAL QUIET, 15KW, 50/60 AND 400 HZ, MEP-804A (50/60HZ) (6115-01-274-7388) MEP-814A (400HZ) (6115-01-274-7393) 079462 TB 9-6115-644-13 WINTERIZATION KIT (NSN 6115-01-474-8354) (EIC:N/A) INSTALLED ON GENERATOR SET, SKID MOUNTED, 30KW, 50/60 AND 400 HZ MEP-805A (50/60HZ) (NSN 6115-01-274-7389) MEP-815A (400HZ) (NSN 611501-274-7394) 079463 TB 9-6115-645-13 WINTERIZATION KIT (NSN 6115-01-474-8344) (EIC: N/A) INSTALLED ON GENERATOR SET, SKID MOUNTED, TACTICAL QUIET, 60KW, 50/60 AND 400 HZ, MEP-806A (50/60HZ) (6115-01-274-7390) MEP-816A (400HZ) (6115-01-274-7395) 080214 TM 9-6115-670-14&P AUXILIARY POWER UNIT, 20KW, 120/240 VAC, 60 HZ, MODEL NO. MEP-903A(SICPS) NSN 6115-01-431-3062 MODEL NUMBER MEP-903B (JTACS) NSN 6115-01-431-3063 MODEL NO MEP-903C9WIN-T) NSN 6115-01-458-5329 (EIC: N/A)

w12 engine diagram: *Solutions Manual for an Introduction to Thermodynamics* Y.V.C. Rao, 2005-02 This manual contains the complete solution for all the 505 chapter-end problems in the textbook *An Introduction to Thermodynamics*, and will serve as a handy reference to teachers as well as students. The data presented in the form of tables and charts in the main textbook are made use of in this manual for solving the problems.

w12 engine diagram: *Operator, Organizational, Direct Support, and General Support Maintenance Manual (including Repair Parts and Special Tools List)* , 1986

w12 engine diagram: Generation Systems Software E.M. Simulation Services Ltd., 2012-12-06 The contents of this book are intended for those concerned with the simulation of the performance of generation systems. The subject is of importance to practising electrical engineers because of the many situations that arise in the design and operation of modern electromechanical systems and electrical power systems. The simulation programs contained in this book cover the prediction of generator performance for both large and small scale units. Synchronous generators of the round rotor and salient-pole variety of ratings of between a few Megawatts to around 1200 MW

are invariably used by public supply companies for the generation of electrical power. For industrial purposes a variety of types of generator are used, including steam and gas turbines, and medium to low speed diesel engine driven generators, the former for those cases where process steam is available and the latter often in the role of marine generation or in a standby role.

w12 engine diagram: Haynes GM N-Cars Owners Workshop Manual, No. 1420 Bob Henderson, J. H. Haynes, 1992

w12 engine diagram: The Commercial Motor , 1925

w12 engine diagram: Thermodynamics Elias P. Gyftopoulos, Gian Paolo Beretta, 2012-07-12 Designed by two MIT professors, this authoritative text discusses basic concepts and applications in detail, emphasizing generality, definitions, and logical consistency. More than 300 solved problems cover realistic energy systems and processes.

w12 engine diagram: A Catalog of Scientific Apparatus, Instruments and Supplies for the Teaching of Physics, Chemistry and the Natural Sciences in the Laboratory and Classroom Central Scientific Company (Chicago, Ill.), 1935

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