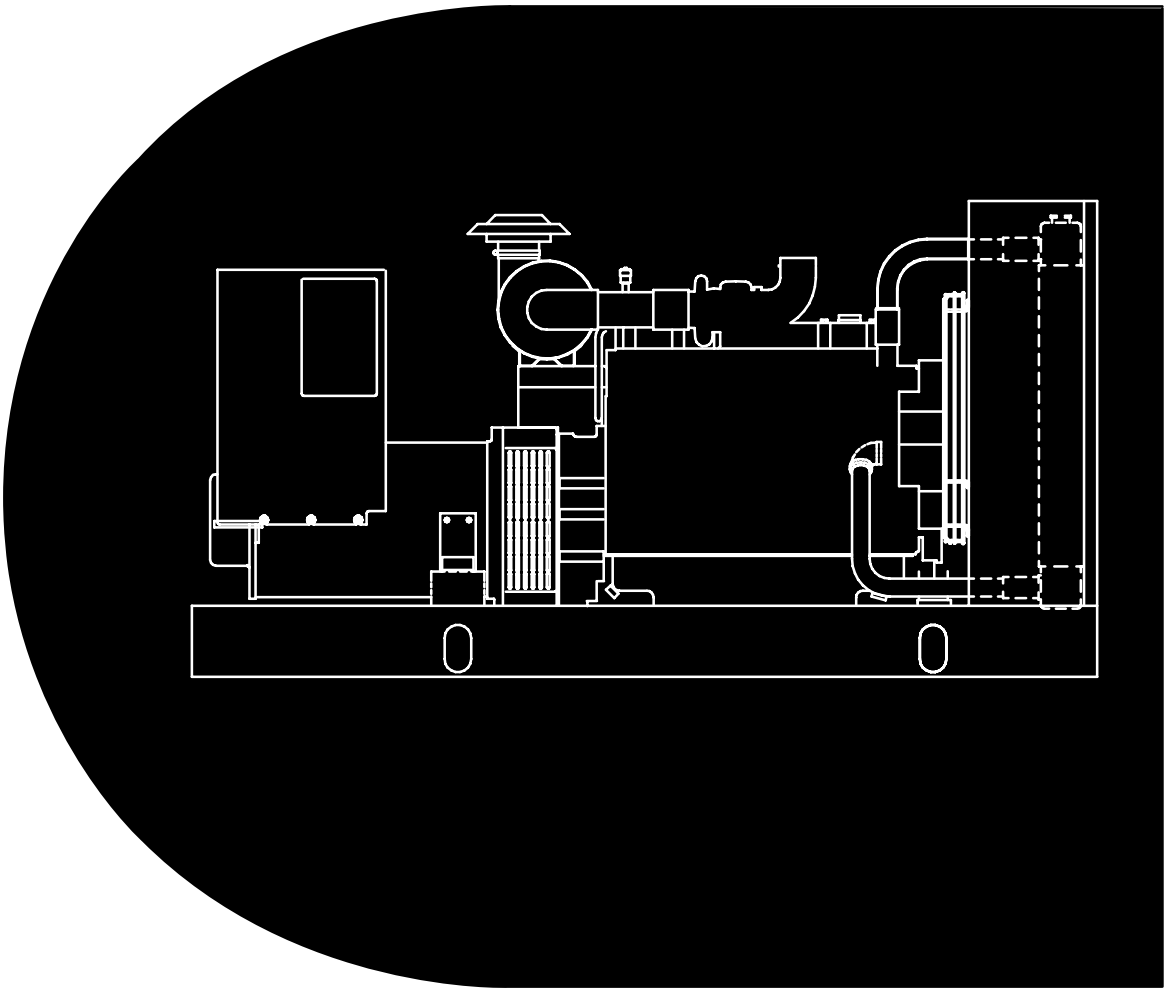
Power Generation

Standard Repair Times

SRT Family: CP

Models: DGBA, DGBB, DGBC, DGBD, DGBE, DGCA, DGCB, DGCC, DGCD, DGCE, DGCF, and DGCG Generator Sets



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Foreword

The Standard Repair Times (SRTs) in this manual represent the time required to perform service repairs on Onan Engine and Generator Sets. These times are representative of an average mechanic in a typical dealer or distributorship using the prescribed hand tools, equipment, and all available service tools and equipment required to perform quality repairs and do all necessary testing.

The use of this manual will:

- Encourage uniform terminology throughout the Cummins/Onan organization
- Standardize Repair Order job description write-ups
- Provide shop managers with a guide for establishing flat rate quotations
- Serve as a basis for Onan Corporation, Inc. to establish its warranty labor obligations

Reporting of errors, omissions, and recommendations for improving this publication is encouraged. Send your suggestions or comments to:

Onan Corporation
1400 73rd Avenue NE
Minneapolis, MN 55432

Attn: Service Department

General Information

Standard Repair Times (SRTs) are lists of work tasks (procedures) and the time required to perform those tasks. The procedures list the work tasks required to be sure an engine or generator set is ready to return to service at the lowest possible cost to the customer. A Standard Repair Time is equitable when the repair described in the procedure can be performed in a period of time less than or equal to the standard by a journeyman mechanic after he/she has performed that repair on the same model, in the same application at least once. Those SRTs that a particular mechanic performs more frequently will often require less time than the standard. Conversely, those SRTs that a particular mechanic does not frequently perform may require more time than the standard. Several of the procedures may be required to accurately depict all the work actually performed to return a particular engine or generator set to service because the repair of a particular engine or generator set is often unique in light of the complaint, failure model, progressive damage, condition of the parts and customer desires. To allow for differences in the time required to perform a repair because of interference by the application, a Service Accessibility Code Scheme has been created.

Types of Standard Repair Times

There are three types of SRTs. Most often at least one of each type is necessary to accurately depict the repair. The three types are:

- Administrative
- Troubleshooting
- Repair

Administrative SRTs

Administrative SRTs are intended to provide time to move the vehicle engine or generator set to and from the work area, fill out the repair order, record SRTs used, etc. It is intended that an administrative SRT be used only once for each repair order. There are two administrative SRTs found in this manual in Group 00 – Complete Engine or Generator Set. One of the administrative SRTs is to be used when the repair takes place in a shop operated by the repairing location. The other administrative SRT is to be used when the repair takes place away from the shop operated by the repairing location (road repairs). The time for the road repair administrative SRT is greater to allow for loading and unloading tools, equipment, parts, etc. from the service truck.

Troubleshooting SRTs

Troubleshooting SRTs are intended to be used when diagnosing and analyzing engine, generator set or component failures. Troubleshooting SRTs are broken down in to logical numbered steps. The time for each step is cumulative with successive steps, including the time for the appropriate preceding step(s). Some troubleshooting SRTs contain time to remove and install components to perform the check(s) listed. If a troubleshooting SRT does **NOT** include required component removal and installation, it is intended that the SRT for the removal and installation of that component be in addition to the troubleshooting SRT. Refer to the following example:

Procedure Number	Procedure Description	SRT Hours
00–055	Troubleshoot – Lubricating Oil Consumption Excessive Includes:	
–01	– Check: – Oil consumption report – For external oil leaks – For overfilled oil pan – Oil specifications – For fuel contamination – Oil change interval – For engine oil in torque converter	0.4
–02	– Perform checks in Step 01 – Check: – Oil temperature – Air compressor oil consumption – Turbocharger seal – Crankcase blowby	1.0

In the above example, the time required to perform the checks in Step 01 is 0.4 hour. If the problem is not located while performing the checks in Step 01, an additional 0.6 hour is allowed to perform the checks in Step 02 for a total of 1.0 hour. The total troubleshooting time appropriate is the time indicated in the column directly in line with the final step required to locate the problem. The step required to locate the problem may or may not be the last step shown in the troubleshooting SRT. Each step contains information as to which steps are included.

Repair SRTs

Repair SRTs make up the majority of this manual. These are the SRTs that cover the actual repair work. The time shown on the same line as the SRT code and title is the total time for that SRT.

Standard Repair Combined Times

Standard Repair Combined Times (SRCTs) provide for the combining of the three types of SRTs under one code so that, if appropriate, the user can identify the work performed with fewer SRT codes.

Manual Organization

SRT Coding System

Each SRT has a unique code so that SRT data can be computerized. The numbering system used is common to all the SRT manuals for all Onan engines and generator sets. The portion of the system shown in the manual contains three segments:

"Group Number"	"Procedure Number"	"Step Number"
XX	XXX	XX

Group Numbers

Group numbers (the first two digits in the SRT code) are used to identify major engine components. The following list explains the group numbers used in SRT manuals:

Procedure Numbers

The procedure number consists of three digits. The first digit provides guidance as to the category of the repair. The second and third digits, shown as XX in the following list, are sequential numbers or alpha within the category.

Group Number	Contents of Group	Specific Repair Number	Description of Category
00	Complete Engine or Generator Set		
01	Cylinder Block	0XX	Troubleshooting
02	Cylinder Head		ONLY in Group 00
03	Rocker Levers	1XX	Remove and Install
04	Cam Followers/Tappets	2XX	Rebuild
05	Fuel System	3XX	Replace
06	Injectors and Fuel Lines	4XX	Clean and Visually Check or Inspect for Reuse
07	Lubricating Oil System		
08	Cooling System	5XX	Machine/Ream/Dowel/
09	Drive Units		Sleeve
10	Intake Air System		Modify/Cut/Lap
11	Exhaust System	6XX	Adjust/Calibrate
12	Air (Compressed) System		
13	Electrical Equipment	7XX	Test
14	Engine or Generator Set Testing		
15	Instruments and Controls		
16	Mounting Adaptations		
17	Miscellaneous	9XX	(SRCT in Group 99) General/Miscellaneous
22	Hardware		
25	Generator Components		
26	Generator Control Components		
27	Transfer Switches		
99	SRCT		

Step Numbers

While all SRT codes will contain a Group and Procedure number, only those procedures that are broken down into steps have step numbers. The step numbers are sequential within an SRT.

General

There is an alphabetic index in the back of the manual. Within a particular group the procedures are arranged in alphabetical order by title, thus are not in code numeric order.

There is also a numerical index in which the procedures are arranged in numeric order and not in alphabetical order.

Within a procedure, the user will note that some lines are indented. This indentation is intended to indicate that the sub–tasks are part of the task under which they are indented.

How Standard Repair Times are Developed

Cummins/Onan SRT Objectives and Philosophy

The objective of Cummins/Onan SRT program is to provide credible and equitable labor time standards and procedures to the worldwide Cummins/Onan service network.

An SRT is credible when the procedure accurately depicts the work that **must** be performed to accomplish a quality engine or generator set repair.

An SRT is equitable when it can be performed in a period of time less than or equal to the standard by a journeyman mechanic after he/she has performed that repair at least once.

To establish credible and equitable SRTs with sufficient flexibility to account for differences in complaints, failures, progressive damage, customer desires, etc., SRTs have been structured using the following considerations:

- What must ALWAYS be done to the engine or generator set to perform the work.
- What MAY have to be done to the engine or generator set parts dependent on their condition.
- What MAY have to be removed to access the engine or generator set.
- How difficult it is for the mechanic to reach the engine or generator set even after interfering application hardware has been removed.

While the most frequent use of SRT information is the Onan Warranty System, it is Onan's intent that the SRTs be applicable to repairs conducted for any customer.

As SRTs are developed, it is assumed:

- That all the required tools, equipment, and supplies are available in sufficient quantity and in operating condition.
- That required Onan Service Manuals are available to the mechanic are being used.
- That the correct parts are available when the mechanic needs them.

How Times are Developed

SRTs are developed from time studies conducted in the field and Onan Technical Service Personnel. Technical Service Representatives create a comprehensive list of all the work elements or tasks required to perform specific repairs. Field studies are analyzed to find these same work elements or tasks and determine the time required for each. The time for work elements or tasks that are not included in the field time studies is determined by conducting free engine or generator set studies or by estimation using similar elements from existing time studies. A time is determined for each element of the procedure. The time for all elements is then totaled to establish the total productive repair time.

Productive Repair Time

Productive Repair Time is described as the actual time involved doing productive work, such as: removing, disassembling, cleaning, inspecting, machining, installing and adjusting parts or components. In addition, the following operations are considered to be productive work for inclusion in an SRT:

- Clock on and off the job or repair order, including shift changes.
- Move vehicle, engine or generator set to and from the work area.
- Move tool box to the work area.
- Obtain tools from tool box, wipe and put away after use.
- Refer to service manuals.
- Obtain, unpack and clean replacement parts as necessary.
- Package and mark parts removed as necessary for warranty or local consumer laws.
- Operate engine or generator set to check for proper operation.
- Clean work area at completion of shift or repair.
- Properly dispose of used engine fluids such as oil and coolant.
- Write summary of work performed at completion of repair or work shift.
- Help from another mechanic (time for one man to complete the task times two).

Time Allowances

After the total productive time is established, an additional allowance of 15 percent is added to cover the following:

- Personal time of 5 percent for:
  - Scheduled rest breaks
  - Personal phone calls
  - Restroom breaks
  - Shift changes
- Supplementary time of 10 percent to cover normal work interruptions:
  - Seized or hard turning fasteners
  - Extra time for extremely dirty equipment
  - Excessive waiting time for replacement parts
  - Brief assistance to other mechanics (less than 5 minutes)
  - Routine maintenance (not repair) of shop equipment
  - Obtain consumable supplies
  - Technical consultation with shop supervision

The following is an example of how the allowances are calculated to establish the SRT for a procedure where the productive time is 208.7 minute (3.48 hr):

Allowance Type	Allowance Percent (%)	Time (Minutes)
Productive Repair Time	100	208.7
Personal	5	10.4
Supplementary	10	20.9
TOTAL	115	240.0

Published Standard Repair Time = 4.0 hours

Work Not Included in An SRT

For almost every complete repair there will be one SRT that contains most of the work performed. This is sometimes called a base repair. For example, repairing an engine for high oil consumption often requires use of the SRT title Piston and Rings – Remove and Install. This SRT contains most of the time appropriate for the repair, so it is the base repair. There can be work required that is **not** part of this base SRT. This does not mean that the other work is non–productive, rather that other work is **NOT** required EVERY TIME the pistons and rings are removed and installed. More often than not, this other work is covered by another SRT. If the other work is **not** included in the base repair or in another SRT, the work is probably still productive work required for that particular repair.

Non-Productive Work

Analysis of past SRT time studies reveals the following general types of work that were not considered to be productive:

- Waiting on camshaft gears to heat and cool
- Waiting on another mechanic to finish using special tools or shop equipment
- Hunting for misplaced parts
- Repairing shop equipment
- Sorting through capscrews, to find the correct length, that were all thrown together into one basket during disassembly
- Repairing customer supplied components
- Salvaging parts or tools that have been damaged from improper handling or lack of correct tools
- Clearing off tables, parts carts, parts racks etc. left dirty or loaded with parts from previous repairs on other equipment
- Rework caused by installation of incorrect parts or incorrect installation of correct parts
- Fabrication or modification of special tools or equipment because the correct tools or equipment are not available
- Visiting during non–break time
- Conducting business with tool vendors
- Waiting on other mechanics to provide required help

- Waiting on parts clerk to fill orders for other mechanics
- Unnecessary inspection of new parts
- “Hot Setting” valves and injectors when not required
- Repairs to application hardware
- Rework resulting from failure to follow recommended service practices
- Performing work that is **not** part of the repair order or helping another mechanic

Service Accessibility Codes

Service repairs are affected by engine or generator set accessibility. The more difficult the accessibility, the longer it will take to complete the tasks given in the SRT procedure. Accessibility for a particular application is determined by reviewing the application and rating the degree of difficulty for performing the 20 most common repairs. Four codes (A, B, C and D) are used to classify the degree of difficulty for the service accessibility of a specific model or type of equipment. An “A” accessibility code indicates the engine or generator set is easily accessible. A “D” code indicates the application does not make the engine or generator set as easily accessible, thus the highest degree of difficulty relative to SRT standards. An “S” code is included for special or specific repairs not covered in the other four classifications. The “R” code indicates the repair is completed with the component, engine or generator set removed from the application.

“A” Accessibility Rating

1. Engine or generator sets mounted in equipment where 90 percent of the work can be performed while standing on the ground, shop floor, or flat work deck.

2. Engine or generator set can be accessed without removing any doors or panels.

3. Interfering application hardware can all be removed.

4. Clearance is sufficient for hands, wrenches, and drain and fill operations, making visual checks and room to stand and work.

“B” Accessibility Rating

1. Engine or generator set mounted in equipment where 70 percent of the work can be performed while standing on the ground, shop floor or flat work deck.

2. Access to the engine can be gained by removing access panels or doors.

3. On 80 percent of the operations, interfering application hardware can be removed.

4. On 80 percent of the operations, clearance is sufficient for hands, wrenches, service tools, drain and fill operations, making visual checks and room to stand and work.

“C” Accessibility Rating

1. Engine or generator set mounted in equipment where 50 percent of the work can be performed while standing on the ground, shop floor or flat work deck.

2. Access to the engine or generator set can be gained by removing the hood, structural members (bolted in) or sheet metal panels.

3. On 60 percent of the operations, interfering application hardware can be removed.

4. On 60 percent of the operations, clearance is sufficient for hands, wrenches, service tools, drain and fill operations, making visual checks and room to stand and work.

“D” Accessibility Rating

1. Engine or generator set mounted in equipment where 25 percent of the work can be performed while standing on the ground, shop floor or flat work deck.

2. Access to the engine or generator set is limited due to interference from permanently mounted structural members, sheet metal or crossmembers.

3. On 40 percent of the operations, clearance is sufficient for hands, wrenches, service tools, drain and fill operations, making visual checks and limited room to stand and work.

Standard Repair Combined Times (SRCTs)

SRCTs are the combination of some of the SRTs in the manual within a distinctive code. These SRCTs are based on field input of SRTs that are most frequently used in combination to describe the most common field repairs on this engine.

Use of SRCTs can reduce the amount of time required to determine the labor standard for a specific complete engine or generator set repair. The use of SRCTs will also reduce the number of codes required when completing a warranty claim or customer invoice.

SRCTs are intended to supplement, NOT replace, SRTs. One SRCT code can be used instead of several SRT codes.

It is intended that other appropriate SRTs can be used to supplement an SRCT as long as the work does not overlap. If there is overlapping work, do **not** use an SRCT.

How To Use This Manual

1. **Determine the actual work performed:**
   - Obtain this information from the work description on the repair order.
2. **Determine the Accessibility Code:**
   - Determine the application from the repair order.
   - Look in the “Accessibility Code Listing” on page to determine the accessibility code for the application involved in the repair. If the application is not shown, assume the accessibility code is “B”.
   - Write down the code.
3. **Determine applicable SRCT:**
   - Find the Contents Page for Group 99 – Standard Repair Combined Times.
   - Compare the titles to the work performed to determine if a SRCT will apply.
   - If there is an SRCT that seems to apply, find that SRCT and compare the SRT within the SRCT to the work performed. If you are not sure of the work included in the SRT, read that SRT and compare the procedure listing with the work performed.
   - If a SRCT applies to all or part of the work performed, find the column that contains the same accessibility code determined in Step 2 above.
   - Move down the column to the line containing the SRCT code and title and pick out the appropriate time.
   - If all the work in the SRCT is performed and additional steps were taken, use the SRCT and continue to Step 4 to cover the additional work.
   - If there is NOT an appropriate SRCT, move to Step 4.
4. **Determine the appropriate repair SRT:**
   - Use the information from the repair order to identify the parts involved.
   - Use the contents page at the front of the manual or the alphabetical index in the back of the manual to determine the appropriate SRT group for the parts and/or work involved.
   - Find the contents page for that group.
   - Read the contents page for procedure titles that seem to correspond to the work performed.
   - Find the SRT within the group.
   - Read the SRT procedure listing to determine the work included.

– If the work performed and the work included in the SRT are the same, all or in part, determine and record the time.

– Repeat the steps in this paragraph until you have determined an SRT for all the work performed.

5. **Determine the appropriate troubleshooting SRT:**

   – Read the repair order to determine what troubleshooting work was performed.

   – Find the contents page for Group 00.

   – Read the contents page for procedure to determine the work included in each step.

   – If the work performed and the work included in the troubleshooting SRT are the same, all or in part, determine and record the time of the SRT step. Remember that troubleshooting SRTs are cumulative.

6. **Determine the appropriate miscellaneous SRT:**

   – Read the repair order to determine if any application hardware was removed and installed in order to access the engine or generator set.

   – Find the contents page for Group 17.

   – Read the contents page for procedure titles that seem to correspond to the work performed.

   – Find the SRT within the group.

   – Read the SRT procedure to determine the work included in the SRT.

   – If the work performed and the work included in the SRT are the same, all or in part, determine and record the time.

   – If the work required to application hardware is not given in the SRT manual, determine the time for ONLY this work from the repair order. Record the time for possible use as “99–999” or “Non-SRT Time”.

7. **Determine the appropriate administrative SRT:**

   – Both of the administrative SRTs are shown at the beginning of Group 00.

   – Determine the appropriate SRT.

   – Record the time.

8. **Determine the total appropriate SRT time:**

   – Check to be sure that there is no duplication of tasks within the SRT procedures selected. If there is work duplicated by some of those selected, use other information contained in the manual to reduce the time of one of the SRTs accordingly. If the information is not available, make an estimate.

   – Total all the times obtained during performance of Steps 2 through 7.

Standard Repair Times Review Procedure

Onan Corporation makes every effort to be sure the SRTs published in this manual are credible and equitable. It will be necessary to review the published times when one or more of the following changes occur:

– Design changes to special service tools or equipment required to perform the repair

– Changes to the repair procedure

A formal SRT review procedure is available for any Cummins/Onan Authorized Repair Location that believes the SRTs shown in this manual are incorrect.

To be sure prompt attention and an accurate appraisal is given to your request, the following guidelines must be met:

1. Be sure the technician has followed all the procedures and used all the service tools referred to in the appropriate service manuals.

2. Be sure a journeyman technician performed the repair, one who has completed the repair a sufficient number of times to become familiar with the procedure.

3. Be sure all the SRTs, including supplemental SRTs, are appropriate for the repair are being used.

4. Include as much detail as possible about the specific repair.

NOTE: It is **NOT** the intent of this procedure to provide a forum for appealing or disputing the amount of time or the SRT judged appropriate on a particular warranty claim. Communication of this sort **must** follow the processes shown in the Onan Warranty Administration Manual.

5. Provide photographs of the installation.

6. Provide copies of all repair orders applicable to the SRT involved, the technicians time cards, and any other information related to the repair that will aid in the review process.

7. Be sure to provide the correct name of the repairing location, a phone number, and point of contact.

Company Action

Upon receipt of the request for an SRT review, the following action will be taken:

1. The person signing the request will be contacted to acknowledge the receipt of the request.

2. All the information provided will be analyzed and compared with the history files of the specific operation.

3. All information will be analyzed to determine if an error has been made in the procedure, the operations description, or the published repair time.

4. If it is determined the published repair time is incorrect, additional studies/analysis will be performed to establish the correct time. The requester will be notified of the results, and the results will be published in the next SRT update.

5. If it is determined that the time and procedure is correct, recommendations and assistance will be offered as needed.

Group 00 – Complete Engine or Genset

Contents

Standard Repair Times	Removed From Chassis	In-Chassis Service Accessibility Codes				
Procedure Number and Description	R	A	B	C	D	Special S
00–021 TROUBLESHOOT – ENGINE CRANKS BUT WILL NOT START						
Step 1 *Includes:* Check for: – Overspeed or other fault condition/shutdown – Ensure switches are in correct position Check: – Fuel supply – Loose or defective wiring connections – Fuses	–	–	0.5	–	–	–
Step 2 *Includes:* Perform checks in Step 01 Check: – Power to shutoff solenoid/ECM – Battery voltage – MPU Voltage – Voltage to governor/actuator – Fuel supply to injectors – Actuator for binding linkage Note: It may be necessary to further troubleshoot with specific engine manual.	–	–	1.0	–	–	–
00–024 TROUBLESHOOT – ENGINE DIFFICULT TO START						
Step 1 *Includes:* Check for: – Fuel supply – Fuel drain back – Ambinet temperature requiring cold start aid *(continued on next page)*	–	–	0.3	–	–	–

Standard Repair Times	Removed From Chassis	In-Chassis Service Accessibility Codes				
Procedure Number and Description	R	A	B	C	D	Special S
(Continued from previous page)						
00–024 TROUBLESHOOT – ENGINE DIFFICULT TO START						
Step 2 *Includes:* Perform checks in Step 01 Check for: – Battery voltage – Cranking speed – Air in fuel – Intake or exhaust restriction – Fuel contamination/waxing – Fuel shutdown solenoid binding Note: It may be necessary to further troubleshoot with specific engine manual	–	–	0.8	–	–	–
00–027 TROUBLESHOOT – ENGINE NOISE EXCESSIVE						
Step 1 *Includes:* Check: – Visually check for physical damage – Drive belt tension and allignment – Fan guard/fan interference – For rubbing components – For loose components Note: It may need to isolate to engine or alternator end and reference specific times.	–	–	0.3	–	–	–
00–031 TROUBLESHOOT – ENGINE POWER OUTPUT LOW						
Step 1 *Includes:* Check: – Throttle linkage travel – Intake and exhaust pipe condition – Ambient temperature – For intake leaks – Fuel line condition	–	–	0.3	–	–	–

(continued on next page)

Standard Repair Times	Removed From Chassis	In-Chassis Service Accessibility Codes				
Procedure Number and Description	R	A	B	C	D	Special S
(Continued from previous page)						
00–031 TROUBLESHOOT – ENGINE POWER OUTPUT LOW						
Step 2 *Includes:* Perform Checks in step 01 Check: – Air cleaner – Fuel transfer pump operation – Intake and exhaust restriction – Fuel filters – Check for parasitic generator load Note: It may be necessary to further troubleshoot with specific engine manual.	–	–	0.8	–	–	–
00–037 TROUBLESHOOT – ENGINE STARTS BUT WILL NOT KEEP RUNNING						
Step 1 *Includes:* Check for: – Parasitic load on generator – Fuel level – Fuel filter plugged or waxing – Fuel contamination – Damaged fuel line	–	–	0.3	–	–	–
Step 2 *Includes:* Preform checks in step 01 Check for: – Air in fuel – Intake or exhaust restriction – Fuel transfer pump output Note: It may be necessary to further troubleshoot with specific engine manual	–	–	0.7	–	–	–

Standard Repair Times	Removed From Chassis	In-Chassis Service Accessibility Codes				
Procedure Number and Description	R	A	B	C	D	Special S
00–041 TROUBLESHOOT – ENGINE UNSTABLE (HUNTS) (GENSET)						
Step 1 *Includes:* Check: – Fuel supply – Loose wire connections – Governor actuator operation – MPU Signal	–	–	0.5	–	–	–
Step 2 *Includes:* Perform checks in step 01 Check: – For air in fuel supply – Fuel filters	–	–	0.8	–	–	–
00–042 TROUBLESHOOT – VIBRATION EXCESSIVE						
Step 1 *Includes:* Verify proper operating speed Check for loose or damaged: – Fan – Engine mounts – Rotor drive disk damage – Accessory drive components Note: It may be necessary to further troubleshoot with specific engine manual	–	–	0.3	–	–	–
00–044 TROUBLESHOOT – ENGINE WILL NOT CRANK OR CRANKS SLOWLY						
Step 1 *Includes:* Check for: – Battery condition – Battery connections – Voltage at starter during cranking – Engine/AC alternator seizure – Parasitic Loads	–	–	0.3	–	–	–

(continued on next page)

Standard Repair Times	Removed From Chassis	In-Chassis Service Accessibility Codes				
Procedure Number and Description	R	A	B	C	D	Special S
(Continued from previous page)						
00–044 TROUBLESHOOT – ENGINE WILL NOT CRANK OR CRANKS SLOWLY						
Step 2 *Includes:* Perform checks in step 01 Inspect: – Starter condition – Start stop switch – Start solenoid	–	–	0.5	–	–	–
00–045 TROUBLESHOOT – ENGINE WILL NOT SHUT OFF						
Step 1 *Includes:* Check for: – Binding in the governor – Actuator adjustment – Start stop switch – Sw B+ from control board/relay – Stop solenoid	–	–	0.4	–	–	–
00–047 TROUBLESHOOT – EXCESS WHITE SMOKE AT START–UP (WARM)						
Step 1 *Includes:* Check: – Ambient operating temperature – Fuel quality – Air cleaner/Exhaust restriction Note: It may be necessary to further troubleshoot with specific engine manual	–	–	0.3	–	–	–
00–048 TROUBLESHOOT – EXCESS WHITE SMOKE AT START-UP (COLD)						
Step 1 *Includes:* Check: – Ambient temperatuure – Engine coolant heater operation Note: It may be necessary to further troubleshoot with specific engine manual.	–	–	0.2	–	–	–

Standard Repair Times	Removed From Chassis	In-Chassis Service Accessibility Codes				
Procedure Number and Description	R	A	B	C	D	Special S
00–0AD TROUBLESHOOT – HIGH/LOW AC OUTPUT (GENSET)						
Step 1 *Includes:* Check: – Proper output lead configuration – Genset output voltage – Voltage at line side of breaker – Voltage at load side of breaker – Voltage sense leads secure/in good condition – Wire harness condition – Wire harness connections, control, PMG, etc.	–	–	0.5	–	–	–
Step 2 *Includes:* Perform checks in step 01 Check: – Field voltage – Exciter stator resistance – Exciter rotor resistance – Excite with battery	–	–	1.3	–	–	–
Step 3 *Includes:* Perform checks in step 01 and 02 Check: – Main stator resistance/winding – Main rotor resistance/winding	–	–	1.8	–	–	–
Step 4 *Includes:* Perform checks in step 01 and 02 and 03 Check: – Rotating diodes	–	–	2.5	–	–	–

Standard Repair Times	Removed From Chassis	In-Chassis Service Accessibility Codes				
Procedure Number and Description	R	A	B	C	D	Special S
00–0AG TROUBLESHOOT – NO OUTPUT VOLTAGE (AVR) (GENSET)						
Step 1 *Includes:* Check: – Proper output lead configuration – Genset output voltage – Voltage at line side of breaker – Voltage at load side of breaker – Voltage sense leads secure/in good condition – Wire harness condition – Wire harness connections, control, PMG, etc.	–	–	0.5	–	–	–
Step 2 *Includes:* Perform checks in step 01 Check: – Field voltage – Exciter stator resistance – Exciter rotor resistance – Excite with battery	–	–	1.3	–	–	–
Step 3 *Includes:*Perform checks in step 01 and 02 Check: – Main stator resistance/winding – Main rotor resistance/winding	–	–	1.8	–	–	–
Step 4 *Includes:*Perform checks in step 01 and 02 and 03 Check: – Rotating diodes	–	–	2.5	–	–	–

Standard Repair Times	Removed From Chassis	In-Chassis Service Accessibility Codes				
Procedure Number and Description	R	A	B	C	D	Special S
00–0AH TROUBLESHOOT – UNSTABLE VOLTAGE ENG STABLE (GENSET)						
Step 1 *Includes:* Check: – Proper output lead connection – Genset output voltage – Voltage at load side of breaker – Voltage at line side of breaker – Voltage sense leads secure/in good condition – Plugs/harness connections – Verify engine governing/stability – Parasitic loads effecting stability	–	–	0.7	–	–	–
00–0AS TROUBLESHOOT – BATTERY NOT CHARGING						
Step 1 *Includes:* Check: – Battery connections – Battery condition – Battery charging alternator connections – F2 and F3 Fuses in control – Voltage output at battery charging alternator – Harness connections	–	–	0.4	–	–	–
00–0DA TROUBLESHOOT – CIRCUIT BREAKER (AC MAIN) TRIPS						
Step 1 *Includes:* Check: – Overload condition – Short on customer loads – Proper adjustments on breaker – Correct genset output voltage – Disconnect customer loads	–	–	0.4	–	–	–

Standard Repair Times	Removed From Chassis	In-Chassis Service Accessibility Codes				
Procedure Number and Description	R	A	B	C	D	Special S
00–0DC TROUBLESHOOT – NO PROBLEM FOUND						
Step 1 *Includes:* Inspect genset Attempt to validate customer complaint	–	–	0.8	–	–	–
00–0DD TROUBLESHOOT – EXCESSIVE EXHAUST SMOKE (BLACK)						
Step 1 *Includes:* Check: – Overload condition – Intake/air cleaner restriction – Intake air leaks – Fuel quality Note: It may be necessary to further troubleshoot with specific engine manual	–	–	0.3	–	–	–
00–0DE TROUBLESHOOT – EXCESSIVE EXHAUST SMOKE (BLUE)						
Step 1 *Includes:* Check: – Ambient conditions – Coolant heater operation – Aircleaner restriction – Fuel quality Note: It may be necessary to further troubleshoot with specific engine manual	–	–	0.3	–	–	–

Standard Repair Times	Removed From Chassis	In-Chassis Service Accessibility Codes				
Procedure Number and Description	R	A	B	C	D	Special S
00–0DF TROUBLESHOOT – EXCESSIVE OIL CONSUMPTION						
Step 1 *Includes:* Check: – Engine oil level – Oil consumption data – External leaks – Proper oill specifications – Fuel contamination – Oil change intervals Note: It may be necessary to further troubleshoot with specific engine manual	–	–	0.4	–	–	–
00–0DG TROUBLESHOOT – OIL LEAK						
Step 1 *Includes:* Check: – Engine oil level – Visual inspection Note: It may be necessary to further troubleshoot with specific engine manual	–	–	0.2	–	–	–
00–0DH TROUBLESHOOT – LOW OIL PRESSURE						
Step 1 *Includes:* Check: – Engine oil level – Oil specifications – Oil dilution – Ambient conditiions Note: It may be necessary to further troubleshoot with specific engine manual	–	–	0.3	–	–	–
00–0DI TROUBLESHOOT – SOFTWARE						
Step 1 *Includes:* Connect laptop to genset Start InPower service tool Take capture file Perform initial calibration using InCal Disconnect Laptop	–	–	0.6	–	–	–

Standard Repair Times	Removed From Chassis	In-Chassis Service Accessibility Codes				
Procedure Number and Description	R	A	B	C	D	Special S
00–0DJ TROUBLESHOOT – BELOW NOMINAL FREQUENCY						
Step 1 *Includes:* Check: – Verify speed – Speed settings in control – Genset load – Injection pump settings – Actuator linkage – Wiring/harness connections	–	–	0.4	–	–	–
Step 2 *Includes:* Perform checks in step 01 Check: – MPU voltage – MPU Adjustment	–	–	0.7	–	–	–
00–0DK TROUBLESHOOT – UNBALANCED AC OUTPUT						
Step 1 *Includes:* Check: – Load distribution – Proper output lead configuration – Voltage sense leads secure/in good condition – Check exciter stator resistance – Wire harness condition – Wire harness connectiions, control, PMG, etc	–	–	0.5	–	–	–
Step 2 *Includes:* Perform checks in step 01 Check: – Field voltage – Exciter stator resistance – Excite with battery	–	–	1.3	–	–	–
Step 3 *Includes:* Perform checks in steps 01 and 02 Check: – Main stator resistance	–	–	1.8	–	–	–

Standard Repair Times	Removed From Chassis	In-Chassis Service Accessibility Codes				
Procedure Number and Description	R	A	B	C	D	Special S
00–0ET TROUBLESHOOT – FAULT CODE 135 *Includes:*						
Step 1 Fault Simulation was enabled with InPower Verify that fault is not enabled No InPower, remove battery power from control	–	–	0.17	–	–	–
Step 2 The sensor connections could be bad Inspect sensor and engine harness connector pins	–	–	0.08	–	–	–
Step 3 The sensor could be bad Test the oil pressure sensor	–	–	0.17	–	–	–
Step 4 The Harness could be bad Check the harness for short and open circuit	–	–	0.17	–	–	–
Step 5 The Base board could be bad Check the oil pressure signal on the base board	–	–	0.17	–	–	–
00–0EX TROUBLESHOOT – FAULT CODE 141 *Includes:*						
Step 1 Fault simulation was enabled with InPower Verify that fault simulation is not enabled No InPower, remove battery power from control	–	–	0.17	–	–	–
Step 2 The sensor connections could be bad Inspect sensor and engine harness connector pins	–	–	0.08	–	–	–
Step 3 The sensor could be bad Test the oil pressure sensor	–	–	0.17	–	–	–
Step 4 The harness could be bad Check the harness for short and open circuit(s)	–	–	0.17	–	–	–
Step 5 The base board could be bad Check the oil pressure signal on the base board	–	–	0.17	–	–	–

Standard Repair Times	Removed From Chassis	In-Chassis Service Accessibility Codes				
Procedure Number and Description	R	A	B	C	D	Special S
00–0EZ TROUBLESHOOT – FAULT CODE 143 *Includes:*						
Step 1 Fault simulation was enabled with InPower Verify that fault simulation is not enabled No InPower, remove battery power from control	–	–	0.17	–	–	–
Step 2 Low oil level. Check oil level, lines and filters Replenish oil level as necessary	–	–	0.30	–	–	–
Step 3 Sensor or oil pump could be bad Connect oil pressure sensor simulator	–	–	0.30	–	–	–
Step 4 Harness or base board could be bad Check for +5 VDC at the sensor	–	–	0.25	–	–	–
00–0FA TROUBLESHOOT – FAULT CODE 144 *Includes:*						
Step 1 Fault simulation was enabled with InPower Verify that fault simulation is not enabled No InPower, remove battery power from control	–	–	0.17	–	–	–
Step 2 The sensor connections could be bad Inspect sensor and engine harness connector pins	–	–	0.08	–	–	–
Step 3 The sensor could be bad Check the coolant temperature sensor	–	–	0.17	–	–	–
Step 4 The harness or base board could be bad Measure resistance of coolant sensor	–	–	0.25	–	–	–

Standard Repair Times	Removed From Chassis	In-Chassis Service Accessibility Codes				
Procedure Number and Description	R	A	B	C	D	Special S
00–0FB TROUBLESHOOT – FAULT CODE 145						
Includes:						
Step 1 Fault simulation was enabled with InPower Verify that fault simulation is not enabled No InPower, remove battery power from control	–	–	0.17	–	–	–
Step 2 The sensor connections could be bad Inspect sensor and engine harness connector pins	–	–	0.08	–	–	–
Step 3 The sensor could be bad Test coolant temperature sensor	–	–	0.17	–	–	–
Step 4 The harness or base board could be bad Check for a short circuit Measure resistance of coolant temperature sensor	–	–	0.25	–	–	–
00–0FC TROUBLESHOOT – FAULT CODE 146						
Includes:						
Step 1 Fault simulation was enabled with InPower Verify that fault simulation is not enabled	–	–	0.17	–	–	–
Step 2 Engine or sensor circuitry problem Check engine sensor accuracy	–	–	0.50	–	–	–
Step 3 The sensor could be bad Test coolant temperature sensor	–	–	0.17	–	–	–
Step 4 The harness or base board could be bad Measure resistance of coolant temperature sensor	–	–	0.25	–	–	–
00–0FE TROUBLESHOOT – FAULT CODE 151						
Includes:						
Step 1 Fault simulation was enabled with InPower Verify that fault simulation is not enabled	–	–	0.17	–	–	–
Step 2 Engine or sensor circuitry problem Check engine sensor accuracy	–	–	0.50	–	–	–

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Standard Repair Times	Removed From Chassis	In-Chassis Service Accessibility Codes				
Procedure Number and Description	R	A	B	C	D	Special S
(Continued from previous page)						
00–0FE TROUBLESHOOT – FAULT CODE 151						
Step 3 The sensor could be bad Test coolant temperature sensor	–	–	0.17	–	–	–
Step 4 The harness or base board could be bad Measure resistance of coolant temperature sensor	–	–	0.25	–	–	–
00–0GG TROUBLESHOOT – FAULT CODE 197 *Includes:*						
Step 1 The sensor, harness or base board could be bad Disconnect signal lead at sender and reset control	–	–	0.17	–	–	–
00–0GH TROUBLESHOOT – FAULT CODE 212 *Includes:*						
Step 1 The sensor connections could be bad Inspect sensor and engine harness connector pins	–	–	0.08	–	–	–
Step 2 The sensor could be bad Test oil temperature sensor	–	–	0.17	–	–	–
Step 3 The harness or base board could be bad Measure resistance of the oil temperature sensor	–	–	0.25	–	–	–
00–0GI TROUBLESHOOT – FAULT CODE 213 *Includes:*						
Step 1 The sensor connections could be bad Inspect sensor and engine harness connector pins	–	–	0.08	–	–	–
Step 2 The sensor could be bad Test oil temperature sensor	–	–	0.17	–	–	–
Step 3 The harness or base board could be bad Check for a short circuit Measure resistance of oil temperature sensor	–	–	0.25	–	–	–

Standard Repair Times	Removed From Chassis	In-Chassis Service Accessibility Codes				
Procedure Number and Description	R	A	B	C	D	Special S
00–0GT TROUBLESHOOT – FAULT CODE 234						
Includes:						
Step 1 Cold engine	–	–	0.00	–	–	–
Step 2 Single step large block load removal Clear fault and restart genset	–	–	0.00	–	–	–
Step 3 Fault simulation was enabled with InPower Verify that fault is not enabled No InPower, remove battery power from control	–	–	0.17	–	–	–
Step 4 Fault threshold is not set correctly with InPower Determine highest allowable setting Set threshold as required	–	–	0.08	–	–	–
Step 5 Monitor engine RPM using InPower Refer to fault code 121, if RPM is not correct	–	–	0.08	–	–	–
Step 6 The electronic governor actuator could be bad Inspect or repair O-rings, pump.	–	–	0.17	–	–	–
00–0GU TROUBLESHOOT – FAULT CODE 235						
Includes:						
Step 1 The sensor, harness or base board could be bad Disconnect signal lead at sender and reset control	–	–	0.17	–	–	–
00–0JC TROUBLESHOOT – FAULT CODE 359						
Includes:						
Step 1 Mechanical Governed Engine Restricted fuel supply Check if: – Fuel level is below pickup tube in tank – Closed shutoff valve in supply line – Fuel injectors are clogged – Air in the fuel system	–	–	0.30	–	–	–

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Standard Repair Times	Removed From Chassis	In-Chassis Service Accessibility Codes				
Procedure Number and Description	R	A	B	C	D	Special S
(Continued from previous page)						
00–0JC TROUBLESHOOT – FAULT CODE 359						
Step 2 Fuel solenoid not enegized Check if: – Fuel solenoid is bad – Check for CNTL B+ at the fuel solenoid coil Harness of base board is bad – Test base board P7 connector	–	–	0.50	–	–	–
Step 3 Electronic Governed Engine Restricted fuel supply Check if: – Fuel level is below pickup tube in tank – Closed shutoff valve in supply line – Fuel injectors are clogged – Air in the fuel system	–	–	0.30	–	–	–
Step 4 Injection pump actuator not energized	–	–	0.50	–	–	–
00–0JP TROUBLESHOOT – FAULT CODE 415 *Includes:*						
Step 1 Fault simulation was enabled with InPower Verify that fault simulation is not enabled No InPower, remove battery power from control	–	–	0.17	–	–	–
Step 2 Low oil level Check oil level, line and filters Replenish oil level as necessary	–	–	0.30	–	–	–
Step 3 Sensor or oil pump could be bad Connect oil pressure sensor simulator	–	–	0.30	–	–	–
Step 4 Harness or base board could be bad Check for +5 VDC at the sensor	–	–	0.25	–	–	–
00–0JS TROUBLESHOOT – FAULT CODE 421 *Includes:*						
Step 1 Fault threshold is not set correctly with InPower Determine highest allowable setting Set threshold as required	–	–	0.17	–	–	–

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Standard Repair Times	Removed From Chassis	In-Chassis Service Accessibility Codes				
Procedure Number and Description	R	A	B	C	D	Special S
(Continued from previous page)						
00–0JS TROUBLESHOOT – FAULT CODE 421						
Step 2 Engine or sensor circuitry problem Check sensor accuracy	–	–	0.25	–	–	–
Step 3 The sensor could be bad Test oil temperature sensor	–	–	0.17	–	–	–
Step 4 The harness or base board could be bad Measure resistance of oil temperature sensor	–	–	0.08	–	–	–
00–0KE TROUBLESHOOT – FAULT CODE 441						
Includes:						
Step 1 Weak or discharged battery Recharge or replace battery	–	–	0.08	–	–	–
Step 2 Low electrolyte level in battery Replenish electrolyte or recharge battery	–	–	0.17	–	–	–
Step 3 Battery connections loose or dirty Clean and tighten or replace battery cables or cable connectors	–	–	0.08	–	–	–
Step 4 Wrong battery voltage Verify that battery voltage is 12 or 24V matches calibration	–	–	0.08	–	–	–
Step 5 Insufficient battery charging voltage Adjust battery charge rate as required	–	–	0.17	–	–	–
Step 6 Engine DC alternator could be bad Replace engine DC alternator as necessary	–	–	0.00	–	–	–
Step 7 Harness or base board may be bad	–	–	0.17	–	–	–
00–0KF TROUBLESHOOT – FAULT CODE 442						
Includes:						
Step 1 Excessive battery charging voltage Adjust battery charge rate as required	–	–	0.17	–	–	–
Step 2 Engine DC alternator could be bad Replace engine DC alternator as necessary	–	–	0.00	–	–	–
Step 3 Wrong battery voltage Verify that battery voltage 12 or 24V matches calibration	–	–	0.08	–	–	–

Standard Repair Times	Removed From Chassis	In-Chassis Service Accessibility Codes				
Procedure Number and Description	R	A	B	C	D	Special S
00–0MM TROUBLESHOOT – FAULT CODE 1311						
Includes:						
Step 1 Troubleshoot customer connections	–	–	0.08	–	–	–
Step 2 If no fault,	–	–	0.17	–	–	–
Check external wiring						
Active input selection may be incorrect						
00–0MN TROUBLESHOOT – FAULT CODE 1312						
Includes:						
Step 1 Troubleshoot customer connections	–	–	0.08	–	–	–
Step 2 If no fault,	–	–	0.17	–	–	–
Check external wiring						
Active input selection may be incorrect						
00–0MP TROUBLESHOOT – FAULT CODE 1317						
Includes:						
Step 1 Troubleshoot customer connections	–	–	0.08	–	–	–
Step 2 If no fault,	–	–	0.17	–	–	–
Check external wiring						
Active input selection may be incorrect						
00–0MQ TROUBLESHOOT – FAULT CODE 1318						
Includes:						
Step 1 Troubleshoot customer connections	–	–	0.08	–	–	–
Step 2 If no fault,	–	–	0.17	–	–	–
Check external wiring						
Active input selection may be incorrect						
00–0NX TROUBLESHOOT – FAULT CODE 1435						
Includes:						
Step 1 Fault simulation was enabled with InPower	–	–	0.17	–	–	–
Verify that fault simulation is not enabled						
No InPower remove battery power from control						
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Standard Repair Times	Removed From Chassis	In-Chassis Service Accessibility Codes				
Procedure Number and Description	R	A	B	C	D	Special S
(Continued from previous page)						
00–0NX TROUBLESHOOT – FAULT CODE 1435						
Step 2 Fault threshold is not set correctly with InPower Determine highest allowable setting Set threshold as required	–	–	0.08	–	–	–
Step 3 The engine coolant heater could be bad Check for: – Power connection, blown fuses – Low coolant level Defective heater element or thermostat	–	–	0.17	–	–	–
Step 4 The sensor connections could be bad Inspect sensor and engine harness connector pins	–	–	0.08	–	–	–
Step 5 The sensor could be bad Test low coolant temperature sensor	–	–	0.17	–	–	–
Step 6 Harness or Base board could be bad Measure resistance of coolant temperature sensor	–	–	0.17	–	–	–
00–0NY TROUBLESHOOT – FAULT CODE 1438 *Includes:*						
Step 1 Starter may be bad Reset control, restart Test for B+ at the starter	–	–	0.17	–	–	–
Step 2 Base board is bad or fuse F3 is open Remove F3 and check for continuity Use harness tool for troubleshooting	–	–	0.17	–	–	–
Step 3 Start Pilot Relay K4 or starter circuitry could be bad Check for B+ at K4–1 Check for open circuits	–	–	0.08	–	–	–
Step 4 The Emergency Stop switch or wiring is defective Check for continuity between P1–1 and P1–2	–	–	0.08	–	–	–
Step 5 See Fault Code 121 for troubleshooting procedures	–	–	0.6	–	–	–

Standard Repair Times	Removed From Chassis	In-Chassis Service Accessibility Codes				
Procedure Number and Description	R	A	B	C	D	Special S
00–0PB TROUBLESHOOT – FAULT CODE 1442						
Includes:						
Step 1 Weak or discharged battery Recharge or replace battery	–	–	0.08	–	–	–
Step 2 Low electrolyte level in battery Replenish electrolyte and recharge battery	–	–	0.17	–	–	–
Step 3 Battery connections are loose or dirty Clean and tighten or replace cables as necessary	–	–	0.08	–	–	–
Step 4 Insufficient battery charging voltage Adjust charge rate as required	–	–	0.17	–	–	–
Step 5 Harness may be bad Check battery voltage	–	–	0.17	–	–	–
00–0PC TROUBLESHOOT – FAULT CODE 1443						
Includes:						
Step 1 Starter may be bad Reset control, restart Test for B+ at the starter	–	–	0.17	–	–	–
Step 2 Base board is bad or fuse F3 is open Remove F3 and check for continuity Use harness tool for troubleshooting	–	–	0.17	–	–	–
Step 3 Start Pilot Relay K4 or starter circuitry could be bad Check for B+ at K4–1 Check for open circuits	–	–	0.08	–	–	–
Step 4 The Emergency Stop switch or wiring is defective Check for continuity between P1–1 and P1–2	–	–	0.08	–	–	–
Step 5 See Fault Code 121 for troubleshooting procedures	–	–	0.60	–	–	–
00–0PD TROUBLESHOOT – FAULT CODE 1444						
Includes:						
Step 1 Fault threshold is not set correctly with InPower Determine highest allowable setting Set threshold as required	–	–	0.17	–	–	–

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Standard Repair Times	Removed From Chassis	In-Chassis Service Accessibility Codes				
Procedure Number and Description	R	A	B	C	D	Special S
(Continued from previous page)						
00–0PD TROUBLESHOOT – FAULT CODE 1444						
Step 2 Short or overload Check load and load cables Repair or replace as necessary	–	–	0.00	–	–	–
Step 3 Incorrect CTs or CT connections Check CTs and CT connections Correct as necessary	–	–	0.30	–	–	–
Step 4 Base board or harness connections could be bad Check for a short circuit	–	–	0.17	–	–	–
00–0PE TROUBLESHOOT – FAULT CODE 1445 *Includes:*						
Step 1 Fault threshold is not set correctly with InPower Determine highest allowable setting Set threshold as required	–	–	0.17	–	–	–
Step 2 Short or overload Check load and load cables Repair or replace as necessary	–	–	0.00	–	–	–
Step 3 Incorrect CTs or CT connections Check CTs and CT connections Correct as necessary	–	–	0.30	–	–	–
Step 4 Base board or harness connections could be bad Check for a short circuit	–	–	0.17	–	–	–
00–0PF TROUBLESHOOT – FAULT CODE 1446 *Includes:*						
Step 1 Fault simulation was enabled with InPower Verify that fault simulation is not enabled No InPower, remove battery power from control	–	–	0.17	–	–	–
Step 2 Single step large block load removal Clear fault and restart genset	–	–	0.00	–	–	–
Step 3 Fault threshold is not set correctly with InPower Determine highest allowable setting Set threshold as required	–	–	0.17	–	–	–
Step 4 Base board or generator is bad	–	–	0.25	–	–	–

Standard Repair Times	Removed From Chassis	In-Chassis Service Accessibility Codes				
Procedure Number and Description	R	A	B	C	D	Special S
00–0PG TROUBLESHOOT – FAULT CODE 1447 *Includes:*						
Step 1 Fault simulation was enabled with InPower Verify that fault simulation is not enabled No InPower, remove battery power from control	–	–	0.17	–	–	–
Step 2 Fault threshold is not set correctly with InPower Determine highest allowable setting Set threshold as required	–	–	0.08	–	–	–
Step 3 Overload Check load and load connections	–	–	0.00	–	–	–
Step 4 Improper connections at generator output Reconnect as specified	–	–	0.08	–	–	–
Step 5 PMG or field wiring could be bad Check or repair PMG or field wiring	–	–	0.25	–	–	–
Step 6 Shunt wiring connection could be incorrect Check excitation inputs	–	–	0.17	–	–	–
Step 7 The rotating rectifier assembly is faulty Check and replace each diode as necessary	–	–	0.25	–	–	–
Step 8 Loose connector or base board is bad Repair connections or replace base board as necessary	–	–	0.17	–	–	–
00–0PH TROUBLESHOOT – FAULT CODE 1448 *Includes:*						
Step 1 Fault simulation was enabled with InPower Verify that fault simulation is not enabled No InPower, remove battery power from control	–	–	0.17	–	–	–
Step 2 Fault threshold is not set correctly with InPower Determine highest allowable setting Set threshold as required	–	–	0.08	–	–	–
Step 3 Overload Check load and load connections	–	–	0.00	–	–	–
Step 4 Fuel or air delivery problems	–	–	0.30	–	–	–
Step 5 Loose connector or Base board is bad Repair connections or replace base board as necessary	–	–	0.17	–	–	–

Standard Repair Times	Removed From Chassis	In-Chassis Service Accessibility Codes				
Procedure Number and Description	R	A	B	C	D	Special S
00–0PI TROUBLESHOOT – FAULT CODE 1449						
Includes:						
Step 1 Fault simulation was enabled with InPower Verify that fault simulation is not enabled No InPower, remove battery power from control	–	–	0.17	–	–	–
Step 2 Fault threshold is not set correctly with InPower Determine highest allowable setting Set threshold as required	–	–	0.08	–	–	–
Step 3 Fuel or air delivery problems	–	–	0.30	–	–	–
Step 4 Loose connector or Base board is bad Repair connections or replace Base board as necessary	–	–	0.17	–	–	–
00–0PY TROUBLESHOOT – FAULT CODE 1471						
Includes:						
Step 1 Fault threshold is not set correctly with InPower Determine highest allowable setting Set threshold as required	–	–	0.17	–	–	–
Step 2 Short or overload Check load and load cables Repair or replace as necessary	–	–	0.00	–	–	–
Step 3 Incorrect CTs or CT connections Check CTs and CT connections Correct as necessary	–	–	0.30	–	–	–
Step 4 Base board or harness connections could be bad	–	–	0.17	–	–	–
00–0PZ TROUBLESHOOT – FAULT CODE 1472						
Includes:						
Step 1 Fault threshold is not set correctly with InPower Determine highest allowable setting Set threshold as required	–	–	0.17	–	–	–
Step 2 Short or overload Check load and load cables Repair or replace as necessary	–	–	0.00	–	–	–

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Standard Repair Times	Removed From Chassis	In-Chassis Service Accessibility Codes				
Procedure Number and Description	R	A	B	C	D	Special S
(Continued from previous page)						
00–0PZ TROUBLESHOOT – FAULT CODE 1472						
Step 3 Incorrect CTs or CT connections Check CTs and CT connections Correct as necessary	–	–	0.30	–	–	–
Step 4 Base board or harness connections could be bad Check for short circuits	–	–	0.17	–	–	–
00–0YP TROUBLESHOOT – FAULT CODE 121 *Includes:*						
Step 1 Check magnetic pickup wiring Inspect wires/connector pins Repair or replace as necessary	–	–	0.17	–	–	–
Step 2 The magnetic pickup, harness or Base board is bad Check for damage or debris Check magnetic pickup output Check for proper adjustment of the MPU Measure generator output frequency	–	–	0.17	–	–	–
00–1AE GENSET, STANDBY – REMOVE AND INSTALL						
Step 1 *Includes:* Shut off/turn on fuel supply Disconnect/reconnect: – Battery – Customer leads – Fuel supply – Communication leads – Battery charger – Control leads – Genset mounting hdwr. Lift/reset genset from mounting surface	–	–	4.5	–	–	–
Step 2 For F182 Housing, Perform items in step 01	–	–	5.0	–	–	–
Step 3 For F172 and F173 Housing, Perform items in step 01	–	–	7.0	–	–	–

Standard Repair Times	Removed From Chassis	In-Chassis Service Accessibility Codes				
Procedure Number and Description	R	A	B	C	D	Special S
00–3AA ENGINE – REPLACE						
Step 1 *Includes:* Cooling system drain and refill Engine oil drain and refill Disconnect and connect: – Battery cables – Wiring harness – Coolant lines – Fuel lines – Exhaust system – Engine/AC Alternator mounting Remove and Install: – Battery charge alternator – Cooling fan – AC Alternator – Fan guards – Air cleaner assy. – Starter – Switches and senders – Wire harnesses – Fuel filters and lines Test run for proper operation	–	–	13.0	–	–	–
Step 2 For F182 Housing, *Includes:* Perform items in step 01 Remove and install additional housing	–	–	15.0	–	–	–
Step 3 For F172 Housing, *Includes:* Perform items in step 01 Remove and install additional housing	–	–	18.0	–	–	–
Step 4 For F173 Housing, *Includes:* Perform items in step 01 Remove and install additional housing	–	–	19.5	–	–	–

Standard Repair Times	Removed From Chassis	In-Chassis Service Accessibility Codes				
Procedure Number and Description	R	A	B	C	D	Special S
00–7AB TEST – STATOR WINDINGS						
Step 1 *Includes:* Visual inspection Disconnect/reconnect battery Gain access to reconnect block Isolate stator windings Check for shorted windings Measure winding resistance Reconnect stator leads to block	–	–	0.6	–	–	–
00–7AC TEST – ROTOR WINDINGS						
Step 1 *Includes:* Visual inspection Disconnect/reconnect battery Gain access to rectifier plates Disconnect/reconnect main rotor lead(s) Check for shorts Measure winding resistance	–	–	0.8	–	–	–
00–901 ADMINISTRATIVE TIME – OPEN/CLOSE REPAIR ORDER (SHOP)						
Step 1 *Includes:* Clock on and off the job Move equipment to and from work area Record the following: – Generator set model number – Generator set serial number – Engine serial number – Hours of operation – Date in Service Load/unload tools, equipment and repair parts Clean up work area Write repair order Write repair procedures	0.4	–	–	–	–	–

Standard Repair Times	Removed From Chassis	In-Chassis Service Accessibility Codes				
Procedure Number and Description	R	A	B	C	D	Special S
00–902 ADMINISTRATIVE TIME – OPEN/CLOSE REPAIR ORDER (ROAD)						
Step 1 *Includes:* Clock on and off the job Move equipment to and from work area Record the following: – Generator set model number – Generator set serial number – Engine serial number – Hours of operation – Date in Service Load/unload tools, equipment and repair parts Clean up work area Write repair order Write repair procedures	0.7	–	–	–	–	–

Group 07 – Lubricating Oil System

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Standard Repair Times	Removed From Chassis	In-Chassis Service Accessibility Codes				
Procedure Number and Description	R	A	B	C	D	Special S
07–301 OIL FILTER, FULL FLOW – REPLACE						
Step 1 *Includes:* Remove and install oil filter Fill new filter with oil Replenish system with oil Test run and check for leaks	–	–	0.6	–	–	–

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Group 08 – Cooling System

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Standard Repair Times	Removed From Chassis	In-Chassis Service Accessibility Codes				
Procedure Number and Description	R	A	B	C	D	Special S
08–142 BELT GUARD – REMOVE AND INSTALL						
Step 1 *Includes:* Connect/disconnect battery Remove and install fan guards Engine wiring harness as necessary Test run unit	–	–	0.6	–	–	–
Step 2 For unit with F182, F172 and F173 Housing *Includes:* Perform items in step 01 Remove/install housing components for access	–	–	1.0	–	–	–
08–301 FAN AND ALTERNATOR BELT – REPLACE						
Step 1 *Includes:* Disconnect/reconnect: – Battery – Wire harnesses as necessary – Fan Guard Replace belt Test run for proper operation	–	–	0.6	–	–	–
Step 2 For unit with F182, F172 and F173 Housing *Includes:* Perform items in step 01 Remove/install housing components for access	–	–	1.0	–	–	–
08–310 LOWER RADIATOR HOSE – REPLACE						
Step 1 *Includes:* Disconnect/reconnect battery Cooling system, drain and refill Remove and install: – Hose clamps – Hose – Fan guards Test run unit Check for coolant leaks	–	–	1.25	–	–	–

(continued on next page)

Standard Repair Times	Removed From Chassis	In-Chassis Service Accessibility Codes				
Procedure Number and Description	R	A	B	C	D	Special S
(Continued from previous page)						
08–310 LOWER RADIATOR HOSE – REPLACE						
Step 2 For unit with F182, F172 and F173 Housing *Includes:* Perform items in step 01 Remove/install housing components for access	–	–	1.6	–	–	–
08–311 UPPER RADIATOR HOSE – REPLACE						
Step 1 *Includes:* Disconnect/reconnect battery Cooling system, drain and refill Remove and install: – Hose clamps – Hose – Fan guards Test run unit Check for coolant leaks	–	–	0.6	–	–	–
08–313 COOLANT HEATER – REPLACE						
Step 1 *Includes:* Disconnect/reconnect battery Drain and refill cooling system Disconnect/connect wire harnesses as necesssary Remove/install coolant heater Test run unit Check for leaks	–	–	1.2	–	–	–
08–315 RADIATORS – REPLACE ENTIRE ASSEMBLY						
Step 1 *Includes:* Drain an refill cooling system Disconnect/reconnect batteries Remove and install entire new assembly Disconnect/reconnect coolant hoses Remove and replace guards Wire harnesses as necessary Test run, check for leaks	–	–	2.75	–	–	–

(continued on next page)

Standard Repair Times	Removed From Chassis	In-Chassis Service Accessibility Codes				
Procedure Number and Description	R	A	B	C	D	Special S
(Continued from previous page)						
08–315 RADIATORS – REPLACE ENTIRE ASSEMBLY						
Step 2 For unit with F182 Housing *Includes:* Perform items in step 01 Remove/install housing components for access	–	–	3.5	–	–	–
Step 3 For unit with F172 and F173 Housing: Perform items in step 01 Remove/install housing components for access	–	–	4.0	–	–	–
08–318 FAN – REPLACE ALL						
Step 1 *Includes:* Disconnect/reconnect: – Battery – Wire harnesses as necessary Remove/install: – Fan guards – Fan assembly Test run unit	–	–	0.7	–	–	–
Step 2 For unit with F182 Housing, *Includes:* Perform items in step 01 Remove/install housing components for access	–	–	1.1	–	–	–
Step 3 For unit with F172 and F173 Housing, *Includes:* Perform items in step 01 Remove/install housing components for access	–	–	1.5	–	–	–
08–319 RADIATOR CAP – REPLACE						
Step 1 *Includes:* Remove/install radiator cap	–	–	0.1	–	–	–

Standard Repair Times	Removed From Chassis	In-Chassis Service Accessibility Codes				
Procedure Number and Description	R	A	B	C	D	Special S
08–320 COOLANT DRAIN VALVE – REPLACE						
Step 1 *Includes:* Disconnect/reconnect battery Cooling system, drain and refill Remove and install: – Coolant drain valve – Fan guards Test run unit	–	–	0.8	–	–	–
08–705 SYSTEM – PRESSURE TEST						
Step 1 *Includes:* Top off coolant Remove/install pressure tester Pressurize system Check for leaks	–	–	0.3	–	–	–

Group 10 – Intake Air System

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Standard Repair Times	Removed From Chassis	In-Chassis Service Accessibility Codes				
Procedure Number and Description	R	A	B	C	D	Special S
10–117 AIR CLEANER ASSEMBLY – REMOVE AND INSTALL						
Step 1 *Includes:* Disconnect/reconnect: – Battery – Harnesses as encessary Remove/install air cleaner assembly	–	–	0.4	–	–	–
10–301 AIR CLEANER ELEMENT – REPLACE						
Step 1 *Includes:* Remove/install: – Air cleaner element	–	–	0.2	–	–	–

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Group 11 – Exhaust System

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Standard Repair Times	Removed From Chassis	In-Chassis Service Accessibility Codes				
Procedure Number and Description	R	A	B	C	D	Special S
11–3AB EXHAUST PIPE/TUBE – REPLACE						
Step 1 *Includes:* Disconnect/reconnect battery Remove/install exhaust pipe	–	–	0.3	–	–	–
11–3AC EXHAUST RAIN CAP – REPLACE						
Step 1 *Includes:* Remove/install rain cap	–	–	0.2	–	–	–
11–3AD EXHAUST ADAPTER/FLANGE – REPLACE						
Step 1 *Includes:* Disconnect/reconnect battery Remove/install: – Exhaust pipe – Exhaust flange	–	–	0.6	–	–	–

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Group 13 – Electrical Equipment

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Standard Repair Times	Removed From Chassis	In-Chassis Service Accessibility Codes				
Procedure Number and Description	R	A	B	C	D	Special S
13–104 STARTER MOTOR – REMOVE AND INSTALL						
Step 1 *Includes:* Disconnect/reconnect: – Battery – Wire harnesses as necessary – Battery leads Romove and install starter Test run unit	–	–	0.5	–	–	–
13–3AN DC ALTERNATOR – REMOVE and REPLACE						
Step 1 *Includes:* Disconnect/connect batteries Remove and replace: – Fan guards – Drive belt – Wire harnesses as necessary – Battery charge alternator – Test run unit	–	–	0.75	–	–	–
13–3AP BATTERY CABLE – REPLACE						
Step 1 *Includes:* Remove/replace battery cable (each)	–	–	0.1	–	–	–

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Group 14 – Engine Testing

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Standard Repair Times	Removed From Chassis	In-Chassis Service Accessibility Codes				
Procedure Number and Description	R	A	B	C	D	Special S
14–704 TEST RUN GENERATOR						
Step 1 *Includes:* Disconnect/reconnect: – Load bank – Fuel supply – Battery Start and operate set: – No load – Full load – Check voltage and frequency – Inspect for fluid leaks	–	–	1.2	–	–	–

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Group 14 – Mounting Adaptations

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Standard Repair Times	Removed From Chassis	In-Chassis Service Accessibility Codes				
Procedure Number and Description	R	A	B	C	D	Special S
16–1AH SKID – REMOVE AND INSTALL						
Step 1 *Includes:* Disconnect/reconnect: – Battery – Fuel connections – Battery charger – Load leads – Communication leads – Control leads – Wire harnesses as necessary Drain/refill fluids Remove/install: – Radiator assembly – Fan guards – Exhaust as necessary – Vibration isolators – Battery box	–	–	8.5	–	–	–
16–1AI SUB-BASE FUEL TANK – REMOVE AND INSTALL						
Step 1 *Includes:* Disconnect/reconnect: – Battery – Fuel connections – Battery charger – Load leads – Communication leads – Control leads – Wire harnesses as necessary Drain/refill fluids Remove/install: – Fuel pump/controls as necessary – Battery box – Exhaust as necessary	–	–	5.5	–	–	–

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Group 17 – Miscellaneous

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Standard Repair Times	Removed From Chassis	In-Chassis Service Accessibility Codes				
Procedure Number and Description	R	A	B	C	D	Special S
17–131 MUFFLER – REMOVE AND INSTALL *Includes:*						
Step 1 For open set, *Includes:* Disconnect/reconnect battery Remove/install: – Rain cap – Exhaust pipe – Muffler	–	–	0.75	–	–	–
Step 2 For F182 Housing, *Includes:* Perform items in step 01 Remove/install housing roof	–	–	1.5	–	–	–
Step 3 For F172 and F173 Housing: *Includes:* Perform items in step 01 and 02 Remove/install housing roof	–	–	2.5	–	–	–
17–1AB VIBRATION ISOLATORS – REMOVE AND INSTALL						
Step 1 *Includes:* Disconnect/reconnect: – Battery cables – Wiring harnesses as necessary Remove/install: – Vibration isolators	–	–	2.3	–	–	–

Standard Repair Times	Removed From Chassis	In-Chassis Service Accessibility Codes				
Procedure Number and Description	R	A	B	C	D	Special S
17–1AD HOUSING ASSEMBLY – REMOVE AND INSTALL						
Step 1 For F182 (Weather Protective) Housing, *Includes:* Disconnect/reconnect battery Remove/install: – Doors – Corner posts – Center posts – Rain cap – Roof section	–	–	2.5	–	–	–
Step 2 For F172 (QS1) Housing, *Includes:* Perform items in step 01 Remove/install: – Exhaust pipe – Coolant expansion tank	–	–	5.5	–	–	–
Step 3 For F173 (QS2) Housing, *Includes:* Perform items in steps 01 and 02 Remove/install: – Factory radiator outlet duct	–	–	7.0	–	–	–
17–3AB ENCLOSURE DOOR/PANEL – REPLACE						
Step 1 *Includes:* Drill/install rivets Remove/install: – Door from enclosure – Door hinges – Door handle – Door insulation	–	–	0.6	–	–	–
17–3AC ENCLOSURE GRILL/SCREEN – REPLACE						
Step 1 *Includes:* Remove/install grill	–	–	0.2	–	–	–

Standard Repair Times	Removed From Chassis	In-Chassis Service Accessibility Codes				
Procedure Number and Description	R	A	B	C	D	Special S
17–3AD ENCLOSURE DOOR/PANEL HANDLE/LATCH – REPLACE						
Step 1 *Includes:* Drill/install rivets Remove/install door latch	–	–	0.3	–	–	–
17–3AE ENCLOSURE DOOR/PANEL HINGE – REPLACE						
Step 1 *Includes:* Drill/install rivets Remove/install hinges	–	–	0.3	–	–	–
17–3AF ENCLOSURE INSULATION – REPLACE						
Step 1 F172 (QS1) and F173 (QS2) *Includes:* Remove/replace: – Door insulation – Center and corner post insulation	–	–	1.1	–	–	–
17–3AG BATTERY – REPLACE						
Step 1 *Includes:* Disconnect/reconnect: – Battery cables – Battery charger – Battery hold down Remove/install: – Battery cover – Battery	–	–	0.6	–	–	–

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Group 21 – Generator Equipment

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Standard Repair Times	Removed From Chassis	In-Chassis Service Accessibility Codes				
Procedure Number and Description	R	A	B	C	D	Special S
21–102 MAIN CIRCUIT BREAKER (AC) – REPLACE						
Step 1 *Includes:* Disconnect/reconnect: – Utility power as necessaryy – Battery – Load/line leads Remove/install: – Breaker box cover – Circuit breaker Test run unit	–	–	1.3	–	–	–
21–105 OIL PRESSURE SENDER – REPLACE						
Step 1 *Includes:* Diisconnect/reconnect: – Battery – Wire harnesses as necessary Remove/install sender	–	–	0.4	–	–	–
21–315 COOLANT TEMPERATURE SENDER – REPLACE						
Step 1 *Includes:* Drain/refill coolant as necessary Disconnect/reconnect: – Battery – Wire harnesses as necessary Remove/install sender	–	–	0.7	–	–	–
21–316 COOLANT TEMPERATURE SWITCH – REPLACE						
Step 1 *Includes:* Drain/refill coolant as necessary Disconnect/reconnect: – Battery – Wire harnesses as necessary Remove/install switch	–	–	0.7	–	–	–

Standard Repair Times	Removed From Chassis	In-Chassis Service Accessibility Codes				
Procedure Number and Description	R	A	B	C	D	Special S
21–319 OIL PRESSURE SWITCH – REPLACE						
Step 1 *Includes:* Diisconnect/reconnect: – Battery – Wire harnesses as necessary Remove/install switch	–	–	0.4	–	–	–
21–322 COOLANT LEVEL SWITCH – REPLACE						
Step 1 *Includes:* Drain/refill coolant as necessary Disconnect/reconnect: – Battery – Wire harnesses as necessary Remove/install switch	–	–	0.4	–	–	–
21–323 TANK LEVEL SENDER – REPLACE						
Step 1 *Includes:* Disconnect/reconnect: – Battery – Wire harnesses as necessary Remove/install sender	–	–	0.6	–	–	–

Group 25 – Generator

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Standard Repair Times	Removed From Chassis	In-Chassis Service Accessibility Codes				
Procedure Number and Description	R	A	B	C	D	Special S
25–1AA MAIN ROTOR – REMOVE AND INSTALL						
Step 1 *Includes:* Disconnect/reconnect: – Battery – Wire harnesses as necessary – Generator leads Remove/install: – Control housing as necessary – Alternator assembly – Rotor assembly Test run unit	–	–	11.0	–	–	–
25–1AB MAIN STATOR – REMOVE AND INSTALL						
Step 1 *Includes:* Disconnect/reconnect: – Battery – Wire harnesses as necessary – Generator leads Remove/install: – Control housing as necessary – Alternator assembly – Stator assembly Test run unit	–	–	11.0	–	–	–
25–1AF EXCITOR STATOR – REMOVE AND INSTALL						
Step 1 *Includes:* Disconnect/reconnect: – Battery cables – Wire harnesses as necessary Remove/install: – Control housing – Generator end bell – Exciter stator Test run unit	–	–	3.5	–	–	–

Standard Repair Times	Removed From Chassis	In-Chassis Service Accessibility Codes				
Procedure Number and Description	R	A	B	C	D	Special S
25–3AC BEARING – REPLACE						
Step 1 *Includes:* Disconnect/reconnect: – Battery cables – Wire harnesses as necessary Remove/install: – Control housing – Generator end bell – Rotor bearing Test run unit	–	–	4.0	–	–	–
25–3AD ROTATING DIODE – REPLACE						
Step 1 *Includes:* Disconnect/reconnect: – Battery cables – Wire harnesses as necessary Remove/install: – Control housing – Generator end bell as necessary – Diode assembly – Air screens on stator housing Test run unit	–	–	5.5	–	–	–
25–3AE OUTPUT LEAD TERMINAL BLOCK – REPLACE						
Step 1 *Includes:* Disconnect/connect: – Battery – Leads on reconnect block Remove/install reconnect block	–	–	0.7	–	–	–

Standard Repair Times	Removed From Chassis	In-Chassis Service Accessibility Codes				
Procedure Number and Description	R	A	B	C	D	Special S
25–3AF END BELL/BEARING CARRIER – REPLACE						
Step 1 *Includes:* Disconnect/reconnect: – Battery cables – Wire harnesses as necessary Remove/install: – Control housing – Generator end bell – Exciter stator Test run unit	–	–	3.5	–	–	–
25–3AG GENERATOR END ASSEMBLY COMPLETE – REPLACE						
Step 1 *Includes:* Disconnect/reconnect: – Battery – Wire harnesses as necessary – Generator leads Remove/install: – Control housing as necessary – Alternator assembly Test run unit	–	–	9.5	–	–	–
25–3AH DRIVE DISC – REPLACE						
Step 1 *Includes:* Disconnect/reconnect: – Battery – Wire harnesses as necessary – Generator leads Remove/install: – Control housing as necessary – Alternator assembly – Drive disc Test run unit	–	–	10.5	–	–	–

Standard Repair Times	Removed From Chassis	In-Chassis Service Accessibility Codes				
Procedure Number and Description	R	A	B	C	D	Special S
25–5AN PMG – REMOVE AND REPLACE						
Step 1 *Includes:* Disconnect/reconnect: – Battery – PMG leads – Wire harnesses as necessary Remove/install: – PMG Test run unit	–	–	0.9	–	–	–
25–5AR GENERATOR WINDING HEATER – REMOVE AND REPLACE						
Step 1 *Includes:* Disconnect/reconnect: – Battery – AC Power to heater Remove/replace heater	–	–	0.5	–	–	–
25–601 AC OUTPUT LEAD – RECONFIGURE/RECONNECT						
Step 1 *Includes:* Disconnect/reconnect: – Battery Configure AC output at terminal block Properly configure control settings Test run unit	–	–	1.3	–	–	–

Group 26 – Generator Control

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Standard Repair Times	Removed From Chassis	In-Chassis Service Accessibility Codes				
Procedure Number and Description	R	A	B	C	D	Special S
26–1AB DC WIRE HARNESS – REMOVE AND INSTALL						
Step 1 *Includes:* Disconnect/reconnect: – Battery – Wire harnesses as necessary Remove/install harness assembly Test run unit	–	–	2.2	–	–	–
26–1AD AC WIRE HARNESS – REMOVE AND INSTALL						
Step 1 *Includes:*: Disconnect/reconnect: – Battery – Wire harnesses as necessary Remove/install harness assembly Test run unit	–	–	1.2	–	–	–
26–3AB PCB CONTROL BOARD – REPLACE						
Step 1 *Includes:* Disconnect/reconnect: – Battery – Harnesses from board Remove/replace board	–	–	0.5	–	–	–
26–3AL RELAY – REPLACE						
Step 1 *Includes:* Disconnect/reconnect battery Remove/install relay Test run unit	–	–	0.4	–	–	–
26–3AN FUSE – REPLACE						
Step 1 *Includes:* Remove/replace fuse in control board	–	–	0.1	–	–	–

Standard Repair Times	Removed From Chassis	In-Chassis Service Accessibility Codes				
Procedure Number and Description	R	A	B	C	D	Special S
26–3AT CURRENT TRANSFORMER – REPLACE						
Step 1 *Includes:* Disconnect/reconnect: – Battery – CT Leads – AC Leads Remove/replace CT	–	–	0.4	–	–	–
26–3AV TERMINAL BLOCK – REPLACE						
Step 1 *Includes:* Disconnect/reconnect: – Battery – Leads from terminal block Replace terminal block Test run unit	–	–	0.6	–	–	–
26–4AB 4510 ANNUNCIATOR – REMOVE AND INSTALL						
Step 1 *Includes:* Disconnect genset batteries Remove annunciator Install new annunciator	–	–	0.25	–	–	–
Step 2 *Includes:* Configure annunciator as required Reconnect genset batteries	–	–	0.17	–	–	–
26–4AH MAG PICKUP SENSOR – REMOVE AND INSTALL						
Step 1 *Includes:* Disconnect/reconnect: – Batteries – Wire harness Remove/install MPU Adjust MPU Test run unit	–	–	0.6	–	–	–

Standard Repair Times	Removed From Chassis	In-Chassis Service Accessibility Codes				
Procedure Number and Description	R	A	B	C	D	Special S
26–608 LONWORKS CARD – REMOVE AND REPLACE (3200)						
Step 1 *Includes:* Disconnect batteries Remove old LonWorks card and install new one Reconnect battery	–	–	0.17	–	–	–
Step 2 *Includes:* Connect laptop to control Enable LonWorks card Load feature code onto the control Upon completion, cycle power to the control	–	–	0.17	–	–	–
Step 3 *Includes:* Commission LonWorks card	–	–	0.08	–	–	–
26–622 PT/CT MODULE – REMOVE AND REPLACE						
Step 1 *Includes:* Disconnect batteries Remove rear control cover as necessary	–	–	0.17	–	–	–
Step 2 I*ncludes:* Remove and replace PT/CT module Reconnect batteries	–	–	0.17	–	–	–
Step 3 *Includes:* Connect laptop to control Start InPower service tool Calibrate control as necessary	–	–	0.17	–	–	–
26–666 DISPLAY PANEL – REMOVE AND REPLACE						
Step 1 *Includes:* Disconnect/reconnect: – Battery – Harnesses from panel Remove/replace panel Cylec power to the control	–	–	0.25	–	–	–

Standard Repair Times	Removed From Chassis	In-Chassis Service Accessibility Codes				
Procedure Number and Description	R	A	B	C	D	Special S
26–669 SOFTWARE – CALIBRATE						
Step 1 *Includes:* Connect Laptop to genset Start InPower service tool Take capture file Perform initial or update calibration using current InCal or Client CD Disconnect laptop Cycle power to the control	–	–	0.25	–	–	–

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Request for SRT Review

Distributor/Dealer Data		
Distributor/Dealer		Phone No.
Address		
City	State	Zip Code
Country		

My experience has indicated the following repair procedures require more time:

Procedure Data

SRT Number	Procedure Discription	Published time Hrs.	Suggested time Hrs.
		Total Hours	

Generator Set Model
Transfer Switch Model
Repair Date
Technician Name

Describe how repair was performed:

Signature _____ **Title** _____

Mail to: **Onan Corporation**
Service Department
1400 73rd Avenue NE
Minneapolis, MN 55432

Power Generation

Cummins Power Generation
1400 73rd Avenue N.E.
Minneapolis, MN 55432
1-800-888-6626
763-574-5000 International Use
Fax: 763-528-7229

Power Generation

Power Generation