

Technology & Maintenance Council



Turning Experience Into Practice

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Average Standard Repair Times (SRT) for 98 Commonly Performed Labor Tasks in Fleet and Service Provider Operations

Developed by the Technology & Maintenance Council (TMC)

ABSTRACT

Fifty TMC member fleet and service provider members responded to TMC's second "Fleet & Service Provider Average Standard Repair Time (SRT) Survey," which was administered in the first quarter of 2020. The purpose of the study was to aid in establishing baseline repair times that will improve shop productivity and profitability. This is the second year that TMC has conducted the survey, giving the members a comparison of year-to-year SRT data.

The survey was based on Vehicle Maintenance Reporting Standards (VMRS) making it easier to aggregate repair times. Participants were asked to provide the time in hours to install specific parts or to perform needed labor in their facilities, not the rates that participants necessarily charge their customers.

Data presented in this report is based on the labor description and the corresponding VMRS Code Keys for each task using VMRS Code Keys 15 (Work Accomplished) and 33 (Component Code). Once again, repair and replacement of clutch assemblies and automatic transmissions were reported to be the most labor intensive tasks followed by EGR cooler, replacement of the air brake compressor edged out radiator replacement this year. Of the 10 most labor intensive tasks, two were related to emission/exhaust and conversely three of the least labor intensive tasks were associated to brake system related repair/replacement.



Technology & Maintenance Council (TMC)

950 N. Glebe Road • Arlington, VA 22203 • Ph: (703) 838-1776 • FAX: (703) 838-1701
tmc@trucking.org • <http://tmc.trucking.org>

INTRODUCTION

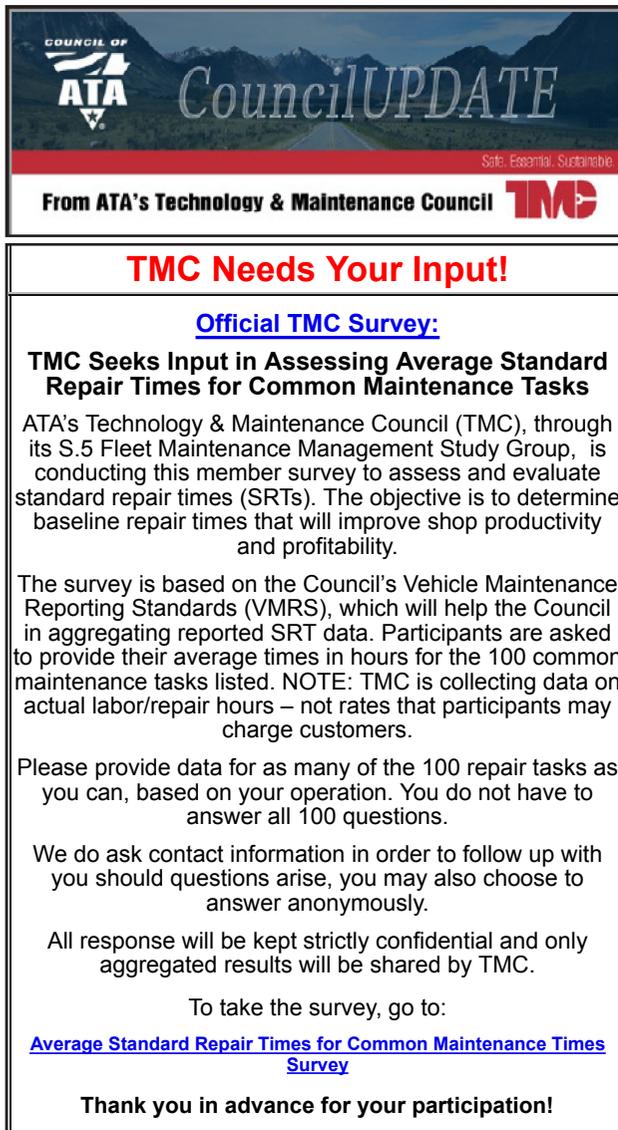
TMC's S.5 Fleet Maintenance Management Study Group is responsible for the maintenance and oversight of the Vehicle Maintenance Reporting Standards (VMRS) through its VMRS Codes Committee. One of the objectives of the VMRS Codes Committee is to develop meaningful benchmarking data based on the VMRS coding convention.

Accordingly, TMC's S.5 Fleet Maintenance Management Study Group directed its VMRS Codes Committee to conduct a labor time study based on fleet and service provider members' self-reported repair and installation times. The

purpose of the study was to aid in establishing baseline repair times that will improve shop productivity and profitability.

The survey was based on VMRS Code Keys 15 (Work Accomplished) and 33 (Component Code), making it easier to aggregate repair times. Participants were asked to provide the time in hours to install specific parts or to perform needed labor in their facilities, not necessarily the rates that participants charge their customers.

TMC realized that reported times would vary depending on the brands involved in certain installations. Therefore, participants were asked to list the "average" repair time for the brand they use most often. Hours were recorded to the nearest hundredth of an hour (i.e., 1 hour and 45 minutes is recorded as 1.75).



METHODOLOGY

Survey alerts were sent via email to more than 500 TMC fleet executive members and more than 100 TMC service provider members on February 24, 2020, with reminder notices being sent during the following 30 days. **Figure 1** illustrates how the survey notice email appeared to recipients.

The survey was conducted using SurveyMonkey. Eblast alerts were generated using Bluehornet's High Roads email management system. Fifty individuals attempted to complete at least a portion of the survey. The survey was activated on February 24, 2020. The survey was closed April 1, 2020.

The survey was initiated by S.5 Fleet Maintenance Management Study Group Chairman Amanda Schuier, VMRS Codes Committee Chairman Paul Moszak, and administered by TMC staff members Robert Braswell, TMC executive director; Jack Poster, VMRS services manager, and Cori Hicks, TMC administrative coordinator.

Figure 1

RESULTS

The total number of responding TMC member fleets and service providers was 54. Survey respondents were asked a series of demographic questions to determine their company’s geographic area of operation, vocation and fleet size (if applicable).

500-999 5
 1000 and above 16

See **Figure 4**.

Q1. Which of the following best describes your company’s operation (check all that apply)?

| Vocation | Number |
|----------------------------|--------|
| Intermodal | 2 |
| Leasing (full service) | 6 |
| Less-Than-Truckload | 2 |
| Pickup & Delivery | 0 |
| Private Carrier (For Hire) | 17 |
| Service Provider | 11 |
| Truckload | 16 |
| Vocational | 1 |

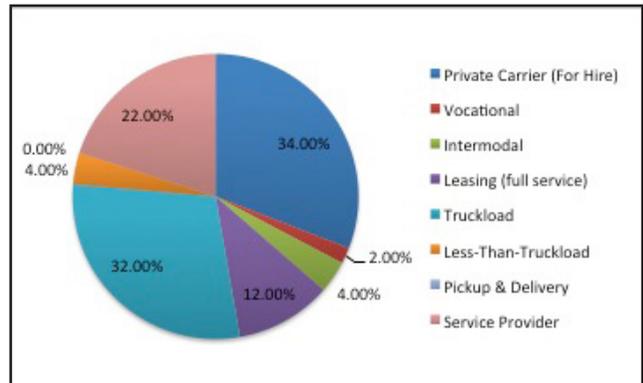


Figure 2: Vocation

See **Figure 2**.

Q2. In what area(s) does your fleet principally operate (check all that apply)?

| Region | Number |
|------------------------------|--------|
| Nationally | 20 |
| Northeast | 12 |
| Northwest | 2 |
| Mid-Atlantic | 6 |
| Midwest | 6 |
| Southwest (including Hawaii) | 3 |
| South Central | 5 |
| Alaska | 0 |
| Canada | 5 |
| Mexico | 2 |

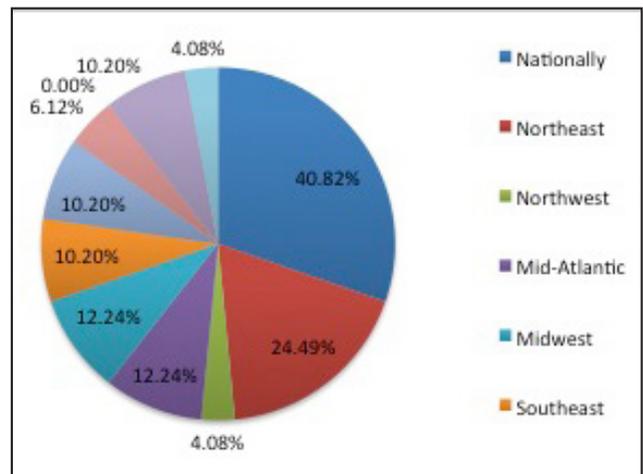


Figure 3: Region

See **Figure 3**.

Q3. How many power units does your fleet operate?

| | |
|---------|----|
| 0 | 1 |
| 1-9 | 5 |
| 10-49 | 4 |
| 50-99 | 6 |
| 100-499 | 14 |

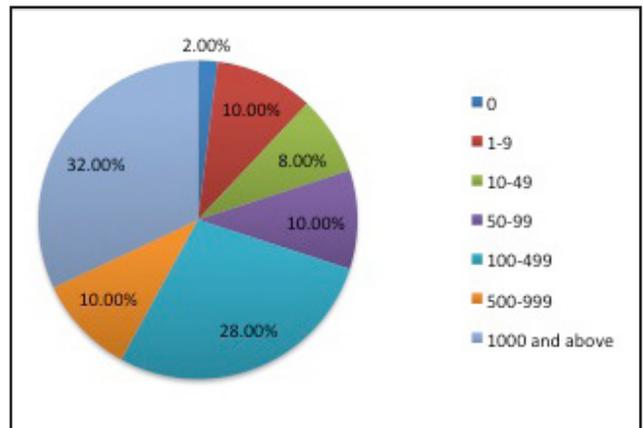


Figure 4: Fleet Size

In developing the survey, TMC staff identified — with the assistance of members of the VMRS Codes Committee — 98 commonly performed labor tasks on powered equipment as experienced in typical fleet and service provider operations. Each of the following labor tasks were tagged with the appropriate VMRS Code Key 33: Component Code and Code Key 15: Work Accomplished Code to facilitate data collection and analysis.

For the purposes of this study, “R&R” was defined as Code Key 15; “Code 03: Replace With New,” which means to replace a damaged or worn component with a new component. The 98 labor tasks are as follows:

- R&R Brake Lining, Per Wheel - Steer Axle
- R&R Brake Drum, Per Wheel - Drive Axle
- R&R Brake Lining, Per Wheel - Drive Axle
- R&R Brake Drum, Per Wheel - Drive Axle
- R&R Brake Rotor, Per Wheel - Steer Axle
- R&R Brake Rotor, Per Wheel - Drive Axle
- R&R Brake Caliper, Per Wheel - Steer Axle
- R&R Brake Caliper, Per Wheel - Drive Axle
- R&R Slack Adjuster - Steer Axle
- R&R Slack Adjuster - Drive Axle
- R&R Slack Adjuster - Automatic, Steer Axle
- R&R Slack Adjuster - Automatic, Drive Axle
- R&R Brake Chamber/Cylinder Assembly - Steer Axle
- R&R Brake Chamber/Cylinder Assembly - Drive Axle
- R&R Brake Hose - Hydraulic, Steer Axle
- R&R Brake Hose - Hydraulic, Drive Axle
- R&R Gladhand - Service & Emergency
- R&R Gladhand - Service
- R&R Gladhand - Emergency
- R&R Tractor Protection Control Valve
- R&R Brake Air Compressor
- R&R Air Governor
- R&R Foot Valve
- R&R ABS Modulator Valve
- R&R Wheel Speed Sensor
- R&R ABS ECU
- R&R Alternator
- R&R Alternator/Generator Belt
- R&R Idler Pulley
- R&R Starter
- R&R Starter Relay
- R&R Battery
- R&R Power Steering Pump
- Adjust Wheel Bearings - Per Wheel
- Recharge A/C System
- R&R A/C Expansion Valve
- R&R A/C Accumulator
- R&R A/C Receiver Drier
- R&R A/C Belt
- R&R A/C Evaporator Core
- R&R Radiator
- R&R Water Pump
- R&R Thermostat
- Flush & Fill Coolant System
- R&R Radiator Hose - Upper
- R&R Radiator Hose - Lower
- R&R Engine Serpentine Belt
- R&R Wiper Blade Assembly
- R&R Wiper Arm Linkage Assembly
- R&R Clutch Assembly
- R&R Automatic Transmission
- R&R Turbocharger
- R&R Charge Air Cooler
- R&R EGR Cooler
- R&R EGR Valve
- R&R DEF Tank
- R&R DEF Tank Heater
- R&R ELD - Electronic Logging Device
- R&R 7 Pin Connector Plug
- R&R Trailer Junction Box
- Overhaul Fifth Wheel Assembly
- Lubricate Fifth Wheel
- R&R Fuel Tank
- R&R Fuel Tank Sending Unit
- R&R Windshield
- R&R Wheel Stud - Per Wheel
- R&R Auxiliary Heater Assembly
- R&R Tire
- R&R Shock Absorber - Each
- R&R Intake Manifold Gasket
- R&R Exhaust Pipe Stack
- New Truck In-service
- R&R Cab Height Control Valve
- R&R Doser Valve Assembly
- R&R Camshaft Position Sensor

- R&R Hood Assembly
- R&R Side Cab Rear View Mirror Assembly, Non-Heated
- R&R Side Cab Rear View Mirror Assembly, Heated
- R&R Backup Warning System Sensor
- R&R Backup Warning System Switch
- R&R Adaptive Cruise Control Distance Sensor
- R&R Roof Mounted Air Foil Deflector
- R&R Roof Air Deflector Actuator Assembly
- R&R Roof Mounted Fairing, Complete
- R&R Aerodynamic Wheel Cover
- R&R Front Chassis Fairing
- R&R Heater Glow Pin, (APU) Auxiliary Power Unit
- R&R Trailer Tail Extender Assembly
- R&R Headlamp Housing Assembly
- R&R Headlamp Halogen Capsule
- R&R Speedometer Head Cable, Driven
- R&R Pitman Arm
- R&R Steering Idler Arm
- R&R Tie Rod Assembly, Outer
- R&R Tie Rod, Inner
- R&R Power Take-Off (PTO) Assembly, Complete
- R&R Pintle Hook
- R&R Trailer Side Skirt Fairing

Results for the average standard repair times submitted by survey respondents follows in **Table 1**.

Data presented in **Table 1** includes the labor description, the task performed as identified by VMRS Code Keys 15 and 33, and the number of respondents for a given labor task, and the hours it takes to perform that given task. Data shaded in red indicates a reported increase in time from 2019; green indicates a reported decrease in time.

The top 10 labor tasks by longest length of repair time in hours were as follows:

| | |
|-------------------------------|------|
| 1. R&R Clutch Assembly | 9.49 |
| 2. R&R Automatic Transmission | 9.07 |
| 3. R&R EGR Cooler | 6.27 |
| 4. R&R Brake Air Compressor | 5.26 |
| 5. R&R Radiator | 5.17 |
| 6. R&R Turbocharger | 4.76 |
| 7. R&R Intake Manifold Gasket | 3.78 |
| 8. R&R Fuel Tank | 3.50 |
| 9. R&R A/C Evaporator Core | 3.47 |
| 10. New Truck In-Service | 3.45 |

The top 10 labor tasks by shortest length of repair time in hours were as follows:

| | |
|---------------------------------------|------|
| 1. R&R Aerodynamic Wheel Cover | 0.25 |
| 2. R&R Wiper Blade Assembly | 0.27 |
| 3. R&R Gladhand – Service | 0.32 |
| 4. R&R Gladhand – Emergency | 0.32 |
| 5. Lubricate Fifth Wheel | 0.35 |
| 6. R&R Gladhand – Service & Emergency | 0.43 |
| 7. R&R Headlamp Halogen Capsule | 0.46 |
| 8. R&R Shock Absorber | 0.59 |
| 9. R&R 7 Pin Connector Plug | 0.61 |
| 10. R&R A/C Belt | 0.68 |

CONCLUSION

As in the previous 2019 survey, repair and replacement of clutch assemblies and automatic transmissions were reported to be the most labor intensive tasks, followed by the EGR cooler. In 2020, brake air compressor replacement proved to be more difficult than radiator replacement. Of the 10 most labor intensive tasks, two were related to emission/exhaust and two were related to drive train repairs. Conversely, three of the least labor intensive tasks were associated with brake system related repair/replacement. TMC intends to repeat this survey on at least an annual basis and will keep expanding the number of labor tasks covered.

**TABLE 1:
AVERAGE STANDARD REPAIR TIMES FOR 98 COMMON LABOR TASKS**

| Labor Description | CK33 | CK15 | Hours 2020 | Responses 2020 | Hours 2019 | Responses 2019 |
|--|-------------|------|------------|----------------|------------|----------------|
| Recharge A/C System | 001-001-000 | 34 | 1.49 | 12 | 1.50 | 18 |
| R&R A/C Belt | 001-001-048 | 03 | 0.68 | 13 | 0.59 | 18 |
| R&R A/C Expansion Valve | 001-001-049 | 03 | 2.78 | 12 | 1.72 | 15 |
| R&R A/C Evaporator Core | 001-001-052 | 03 | 3.47 | 10 | 3.22 | 18 |
| R&R A/C Receiver Drier | 001-001-065 | 03 | 1.76 | 12 | 1.18 | 18 |
| R&R A/C Accumulator | 001-001-376 | 03 | 2.14 | 12 | 1.59 | 18 |
| R&R Auxiliary Heater Assembly | 001-003-001 | 03 | 1.42 | 9 | 2.52 | 17 |
| R&R Hood Assembly | 002-004-053 | 03 | 3.29 | 10 | 3.03 | 18 |
| R&R Side Cab Rear View Mirror Assembly, Non-Heated | 002-010-006 | 03 | 1.05 | 11 | | |
| R&R Side Cab Rear View Mirror Assembly, Heated | 002-010-117 | 03 | 1.16 | 11 | | |
| R&R Windshield | 002-021-001 | 03 | 1.47 | 11 | 1.59 | 17 |
| R&R Wiper Arm Linkage Assembly | 002-035-013 | 03 | 0.78 | 12 | 0.96 | 17 |
| R&R Wiper Blade Assembly | 002-035-015 | 03 | 0.27 | 12 | 0.33 | 19 |
| R&R Speedometer Head Cable, Driven | 003-002-001 | 03 | 1.78 | 8 | | |
| R&R Roof Mounted Air Foil Deflector | 004-001-001 | 03 | 1.93 | 10 | | |
| R&R Roof Air Deflector Actuator Assembly | 004-001-034 | 03 | 1.35 | 8 | | |
| R&R Roof Mounted Fairing, Complete | 004-003-023 | 03 | 2.51 | 8 | | |
| R&R Front Chassis Fairing | 004-005-001 | 03 | 0.76 | 10 | | |
| R&R Aerodynamic Wheel Cover | 004-013-001 | 03 | 0.25 | 9 | | |
| R&R Brake Lining, Per Wheel - Steer Axle | 013-001-015 | 03 | 1.26 | 17 | 1.06 | 20 |
| R&R Brake Chamber/Cylinder Assembly - Steer Axle | 013-001-020 | 03 | 1.08 | 16 | 0.95 | 20 |
| R&R Brake Drum, Per Wheel - Drive Axle | 013-001-023 | 03 | 0.88 | 16 | 0.86 | 20 |
| R&R Brake Rotor, Per Wheel - Steer Axle | 013-001-026 | 03 | 1.92 | 12 | 1.26 | 20 |
| R&R Brake Caliper, Per Wheel - Steer Axle | 013-001-028 | 03 | 1.60 | 12 | 1.33 | 15 |
| R&R Slack Adjuster - Steer Axle | 013-001-030 | 03 | 0.81 | 15 | 0.73 | 20 |
| R&R Slack Adjuster - Automatic, Steer Axle | 013-001-149 | 03 | 0.88 | 16 | 0.78 | 20 |
| R&R Brake Lining, Per Wheel - Drive Axle | 013-002-014 | 03 | 1.10 | 16 | 1.14 | 20 |
| R&R Brake Drum, Per Wheel - Drive Axle | 013-002-023 | 03 | 0.89 | 15 | 0.81 | 20 |
| R&R Slack Adjuster - Drive Axle | 013-002-028 | 03 | 0.92 | 16 | 0.78 | 20 |
| R&R Brake Caliper, Per Wheel - Drive Axle | 013-002-122 | 03 | 1.70 | 12 | 1.52 | 20 |
| R&R Brake Rotor, Per Wheel - Drive Axle | 013-002-124 | 03 | 1.94 | 12 | 1.72 | 16 |
| R&R Slack Adjuster - Automatic, Drive Axle | 013-002-169 | 03 | 1.48 | 16 | 0.83 | 20 |
| R&R Brake Chamber/Cylinder Assembly - Drive Axle | 013-002-169 | 03 | 1.30 | 16 | 1.04 | 13 |
| R&R Brake Hose - Hydraulic, Steer Axle | 013-007-007 | 03 | 0.82 | 12 | 0.84 | 12 |
| R&R Brake Hose - Hydraulic, Drive Axle | 013-007-012 | 03 | 0.84 | 12 | 0.91 | 18 |
| R&R Brake Air Compressor | 013-009-001 | 03 | 5.26 | 13 | 4.29 | 20 |
| R&R Air Governor | 013-009-070 | 03 | 0.91 | 14 | 0.79 | 20 |
| R&R Tractor Protection Control Valve | 013-010-016 | 03 | 1.40 | 13 | 1.34 | 20 |
| R&R Gladhand - Service & Emergency | 013-010-030 | 03 | 0.43 | 16 | 0.49 | 21 |

| | | | | | | |
|---|-------------|----|------|----|------|----|
| R&R Gladhand - Service | 013-010-031 | 03 | 0.32 | 16 | 0.37 | 21 |
| R&R Gladhand - Emergency | 013-010-032 | 03 | 0.32 | 16 | 0.37 | 20 |
| R&R Foot Valve | 013-010-411 | 03 | 2.75 | 13 | 2.12 | 20 |
| R&R Wheel Speed Sensor | 013-011-002 | 03 | 1.40 | 14 | 1.30 | 19 |
| R&R ABS Modulator Valve | 013-011-071 | 03 | 2.13 | 13 | 1.58 | 20 |
| R&R ABS ECU | 013-011-076 | 03 | 2.18 | 15 | 1.78 | 18 |
| R&R Power Take-Off (PTO) Assembly, Complete | 015-001-001 | 03 | 3.47 | 9 | | |
| R&R Pitman Arm | 015-004-013 | 03 | 1.48 | 9 | | |
| R&R Steering Idler Arm | 015-004-014 | 03 | 1.31 | 9 | | |
| R&R Tie Rod Assembly, Outer | 015-004-045 | 03 | 1.39 | 10 | | |
| R&R Tie Rod, Inner | 015-004-070 | 03 | 1.41 | 10 | | |
| R&R Power Steering Pump | 015-005-009 | 03 | 2.42 | 12 | 2.02 | 17 |
| R&R Shock Absorber - Each | 016-008-003 | 03 | 0.59 | 12 | 0.65 | 19 |
| R&R Cab Height Control Valve | 016-015-006 | 03 | 1.14 | 11 | 1.24 | 18 |
| R&R Tire | 017-000-000 | 03 | 0.72 | 11 | 0.78 | 20 |
| Adjust Wheel Bearings - Per Wheel | 018-001-000 | 01 | 0.80 | 13 | 0.84 | 18 |
| R&R Wheel Stud - Per Wheel | 018-003-009 | 03 | 1.22 | 11 | 1.14 | 17 |
| R&R Clutch Assembly | 023-002-001 | 03 | 9.49 | 11 | 9.14 | 18 |
| R&R Automatic Transmission | 027-037-001 | 03 | 9.07 | 11 | 8.19 | 15 |
| R&R Alternator | 031-001-001 | 03 | 1.50 | 13 | 1.35 | 18 |
| R&R Alternator/Generator Belt | 031-001-026 | 03 | 0.85 | 13 | 0.77 | 18 |
| R&R Idler Pulley | 031-001-027 | 03 | 0.76 | 13 | 1.08 | 19 |
| R&R Battery | 032-001-001 | 03 | 0.86 | 14 | 1.06 | 18 |
| R&R Starter | 032-002-001 | 03 | 2.58 | 13 | 2.64 | 17 |
| R&R Starter Relay | 032-002-015 | 03 | 0.75 | 13 | 0.81 | 19 |
| R&R Headlamp Housing Assembly | 034-001-001 | 03 | 0.95 | 11 | | |
| R&R Headlamp Halogen Capsule | 034-001-078 | 03 | 0.46 | 10 | | |
| R&R 7 Pin Connector Plug | 034-003-036 | 03 | 0.61 | 11 | 0.90 | 17 |
| R&R Trailer Junction Box | 034-003-067 | 03 | 0.85 | 11 | 1.08 | 17 |
| R&R ELD - Electronic Logging Device | 036-010-001 | 03 | 1.25 | 10 | 1.86 | 17 |
| R&R Backup Warning System Sensor | 036-012-001 | 03 | 0.68 | 9 | | |
| R&R Backup Warning System Switch | 036-012-006 | 03 | 0.73 | 9 | | |
| R&R Adaptive Cruise Control Distance Sensor | 036-013-001 | 03 | 1.08 | 10 | | |
| R&R Intake Manifold Gasket | 041-002-003 | 03 | 3.78 | 10 | 3.77 | 16 |
| R&R Charge Air Cooler | 041-004-021 | 03 | 2.62 | 12 | 2.65 | 18 |
| Flush & Fill Coolant System | 042-000-000 | 44 | 1.65 | 12 | 1.87 | 17 |
| R&R Radiator | 042-002-001 | 03 | 5.17 | 12 | 4.61 | 19 |
| R&R Water Pump | 042-004-001 | 03 | 3.28 | 12 | 3.08 | 18 |
| R&R Thermostat | 042-004-001 | 03 | 2.45 | 12 | 1.81 | 18 |
| R&R Radiator Hose - Upper | 042-004-014 | 03 | 1.12 | 12 | 0.96 | 18 |
| R&R Radiator Hose - Lower | 042-004-015 | 03 | 1.28 | 12 | 1.08 | 18 |
| R&R EGR Valve | 043-001-023 | 03 | 2.85 | 10 | 3.31 | 18 |
| R&R EGR Cooler | 043-001-049 | 03 | 6.37 | 10 | 5.88 | 18 |
| R&R Exhaust Pipe Stack | 043-003-018 | 03 | 1.33 | 10 | 1.36 | 17 |
| R&R Turbocharger | 043-004-001 | 03 | 4.76 | 11 | 4.00 | 19 |
| R&R Doser Valve Assembly | 043-006-025 | 03 | 1.40 | 10 | 1.93 | 18 |
| R&R DEF Tank | 043-007-001 | 03 | 2.31 | 10 | 3.07 | 17 |

| | | | | | | |
|---|-------------|----|------|----|------|----|
| R&R DEF Tank Heater | 043-007-016 | 03 | 1.68 | 10 | 2.61 | 16 |
| R&R Fuel Tank | 044-001-001 | 03 | 3.50 | 12 | 2.46 | 18 |
| R&R Fuel Tank Sending Unit | 044-001-100 | 03 | 1.03 | 12 | 1.21 | 17 |
| R&R Engine Serpentine Belt | 045-002-073 | 03 | 0.89 | 12 | 0.72 | 17 |
| R&R Camshaft Position Sensor | 045-021-037 | 03 | 1.35 | 10 | 1.72 | 17 |
| Lubricate Fifth Wheel | 059-001-001 | 07 | 0.35 | 11 | 0.34 | 18 |
| Overhaul Fifth Wheel Assembly | 059-001-135 | 08 | 2.76 | 11 | 2.71 | 18 |
| R&R Pintle Hook | 059-002-001 | 03 | 1.12 | 9 | | |
| R&R Trailer Side Skirt Fairing | 078-025-001 | 03 | 2.11 | 10 | | |
| R&R Trailer Tail Extender Assembly | 078-026-001 | 03 | 2.57 | 8 | | |
| R&R Heater Glow Pin, (APU) Auxiliary Power Unit | 151-002-006 | 03 | 1.13 | 9 | | |
| New Truck In-service | 999-999-999 | 36 | 3.45 | 10 | 4.58 | 17 |