

Technology & Maintenance Council



Turning Experience Into Practice

*Issued:
June 26, 2019*

Average Standard Repair Times (SRT) for 75 Commonly Performed Labor Tasks in Fleet and Service Provider Operations

Developed by the Technology & Maintenance Council's (TMC)
S.5 Fleet Maintenance Management Study Group

ABSTRACT

Fifty-four TMC member fleet and service provider members responded to TMC's "Fleet & Service Provider Average Standard Repair Times Survey," which was administered in the first quarter of 2019. 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 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). Repair and replacement of clutch assemblies and automatic transmissions were reported to be the most labor intensive tasks, followed by EGR cooler and radiator removal and replacement. Of the 10 most labor intensive tasks, three were associated with emission/exhaust, and two with engine/coolant systems. Conversely, four of the least labor intensive tasks were associated with brake system related repair/replacement.



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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 14, 2019, with reminder notices being sent on February 19, February 21 and March 12. **Figure 1** illustrates how the survey notice email appeared to recipients.

The survey was conducted using Survey-Monkey. Eblast alerts were generated using Bluehornet's High Roads email management system. Fifty-four individuals attempted to complete at least a portion of the survey. The survey was activated on February 14, 2019. The survey was closed March 15, 2019.

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.

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).

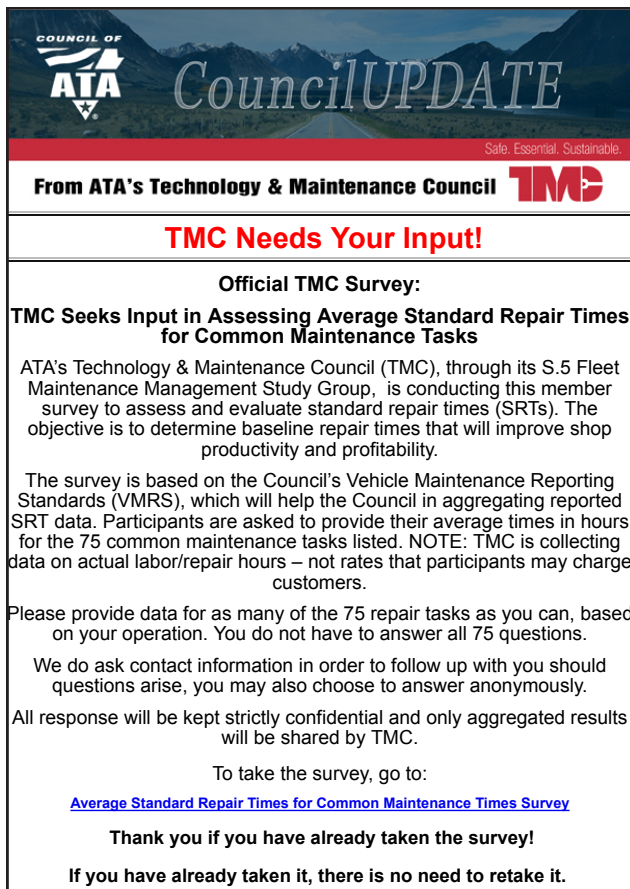


Figure 1

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

Vocation	Number
Intermodal	5
Leasing (full service)	4
Less-Than-Truckload	1
Pickup & Delivery	1
Private Carrier (For Hire)	19
Service Provider	16
Truckload	15
Vocational	3

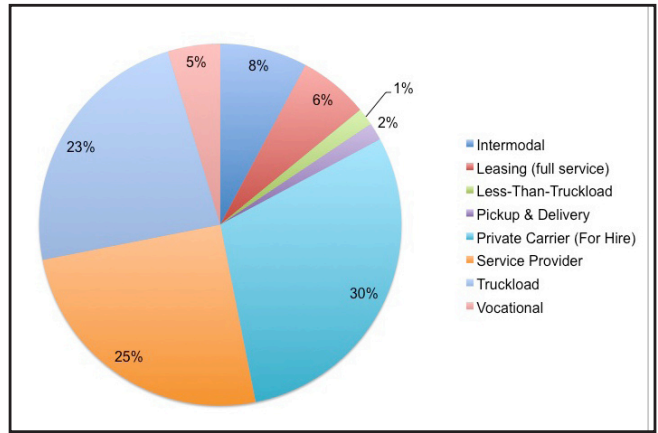


Figure 2: Vocation

See Figure 2.

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

Region	Number
Nationally	19
Northeast	12
Northwest	5
Mid-Atlantic	12
Midwest	16
Southwest	5
South Central	10
Hawaii	1
Alaska	0
Canada	7
Mexico	2

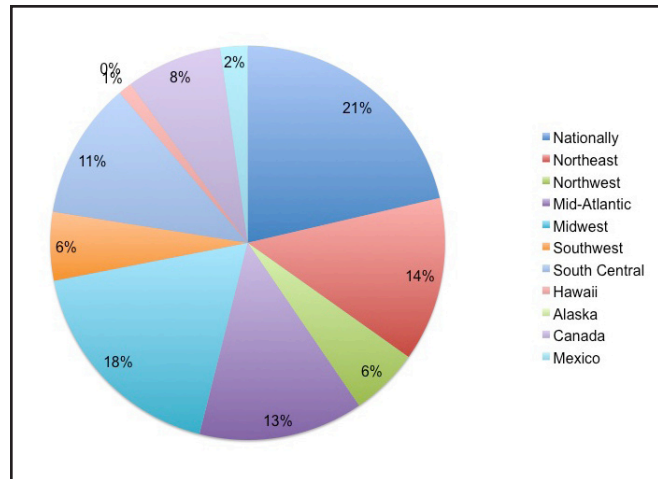


Figure 3: Region

See Figure 3.

Q3. How many power units does your fleet operate?

0	3
1-9	4
10-49	9
50-99	3
100-499	16
500-999	8
1000 and above	11

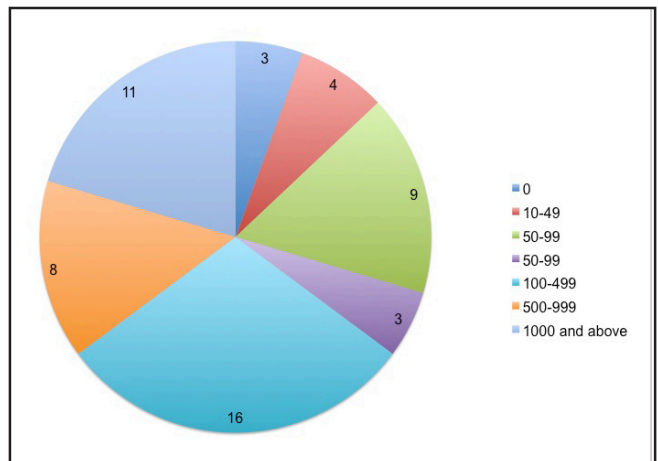


Figure 4: Fleet Size

See Figure 4.

In developing the survey, TMC staff identified — with the assistance of members of the VMRS Codes Committee — 75 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.

- 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

- | | |
|---------------------------------------|------|
| 1. R&R Wiper Blade Assembly | 0.33 |
| 2. Lubricate Fifth Wheel | 0.34 |
| 3. R&R Gladhand - Service | 0.37 |
| 4. R&R Gladhand - Emergency | 0.37 |
| 5. R&R Gladhand - Service & Emergency | 0.49 |
| 6. R&R A/C Belt | 0.59 |
| 7. R&R Shock Absorber - Each | 0.65 |
| 8. R&R Engine Serpentine Belt | 0.72 |
| 9. R&R Slack Adjuster-Steer Axle | 0.73 |
| 10. R&R Alternator/Generator Belt | 0.77 |

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.

Results of the survey were presented on June 26, 2019 at TMC’s Fleet Data Management and Cybersecurity Conference.

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

- | | |
|-------------------------------|------|
| 1. R&R Clutch Assembly | 9.14 |
| 2. R&R Automatic Transmission | 8.19 |
| 3. R&R EGR Cooler | 5.88 |
| 4. R&R Radiator | 4.61 |
| 5. New Truck In-service | 4.58 |
| 6. R&R Brake Air Compressor | 4.29 |
| 7. R&R Turbocharger | 4.00 |
| 8. R&R Intake Manifold Gasket | 3.77 |
| 9. R&R EGR Valve | 3.31 |
| 10. R&R A/C Evaporator Core | 3.22 |

CONCLUSION

Repair and replacement of clutch assemblies and automatic transmissions were reported to be the most labor intensive tasks, followed by EGR cooler and radiator removal and replacement. Of the 10 most labor intensive tasks, three were associated with emission/exhaust, and two with engine/coolant systems. Conversely, four of the least labor intensive tasks were associated with brake system related repair/replacement.

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

TMC intends to repeat this survey on at least an annual basis and possibly expand the number of labor tasks covered to include the top 250 most commonly encountered tasks in fleet and service provider operations. □

**TABLE 1:
AVERAGE STANDARD REPAIR TIMES FOR 75 COMMON LABOR TASKS**

Labor Description	CK 33	CK 15	Hours	Respondents
Recharge A/C System	001-001-000	34	1.50	18
R&R A/C Belt	001-001-048	03	0.59	18
R&R A/C Expansion Valve	001-001-049	03	1.72	15
R&R A/C Evaporator Core	001-001-052	03	3.22	18
R&R A/C Receiver Drier	001-001-065	03	1.18	18
R&R A/C Accumulator	001-001-376	03	1.59	18
R&R Auxiliary Heater Assembly	001-003-001	03	2.52	17
R&R Hood Assembly	002-004-053	03	3.03	18
R&R Windshield	002-021-001	03	1.59	17
R&R Wiper Arm Linkage Assembly	002-035-013	03	0.96	17
R&R Wiper Blade Assembly	002-035-015	03	0.33	19
R&R Brake Lining, Per Wheel - Steer Axle	013-001-015	03	1.06	20
R&R Brake Chamber/Cylinder Assembly - Steer Axle	013-001-020	03	0.95	20
R&R Brake Drum, Per Wheel - Drive Axle	013-001-023	03	0.86	20
R&R Brake Rotor, Per Wheel - Steer Axle	013-001-026	03	1.26	20
R&R Brake Caliper, Per Wheel - Steer Axle	013-001-028	03	1.33	15
R&R Slack Adjuster - Steer Axle	013-001-030	03	0.73	20
R&R Slack Adjuster - Automatic, Steer Axle	013-001-149	03	0.78	20
R&R Brake Lining, Per Wheel - Drive Axle	013-002-014	03	1.14	20
R&R Brake Drum, Per Wheel - Drive Axle	013-002-023	03	0.81	20
R&R Slack Adjuster - Drive Axle	013-002-028	03	0.78	20
R&R Brake Caliper, Per Wheel - Drive Axle	013-002-122	03	1.52	20
R&R Brake Rotor, Per Wheel - Drive Axle	013-002-124	03	1.72	16
R&R Slack Adjuster - Automatic, Drive Axle	013-002-169	03	0.83	20
R&R Brake Chamber/Cylinder Assembly - Drive Axle	013-002-169	03	1.04	13
R&R Brake Hose - Hydraulic, Steer Axle	013-007-007	03	0.84	12
R&R Brake Hose - Hydraulic, Drive Axle	013-007-012	03	0.91	18
R&R Brake Air Compressor	013-009-001	03	4.29	20
R&R Air Governor	013-009-070	03	0.79	20
R&R Tractor Protection Control Valve	013-010-016	03	1.34	20
R&R Gladhand - Service & Emergency	013-010-030	03	0.49	21
R&R Gladhand - Service	013-010-031	03	0.37	21
R&R Gladhand - Emergency	013-010-032	03	0.37	20
R&R Foot Valve	013-010-411	03	2.12	20
R&R Wheel Speed Sensor	013-011-002	03	1.30	19
R&R ABS Modulator Valve	013-011-071	03	1.58	20
R&R ABS ECU	013-011-076	03	1.78	18
R&R Power Steering Pump	015-005-009	03	2.02	17

(next page)

**TABLE 1:
AVERAGE STANDARD REPAIR TIMES FOR 75 COMMON LABOR TASKS (CONT'D)**

R&R Shock Absorber - Each	016-008-003	03	0.65	19
R&R Cab Height Control Valve	016-015-006	03	1.24	18
R&R Tire	017-000-000	03	0.78	20
Adjust Wheel Bearings - Per Wheel	018-001-000	01	0.84	18
R&R Wheel Stud - Per Wheel	018-003-009	03	1.14	17
R&R Clutch Assembly	023-002-001	03	9.14	18
R&R Automatic Transmission	027-037-001	03	8.19	15
R&R Alternator	031-001-001	03	1.35	18
R&R Alternator/Generator Belt	031-001-026	03	0.77	18
R&R Idler Pulley	031-001-027	03	1.08	19
R&R Battery	032-001-001	03	1.06	18
R&R Starter	032-002-001	03	2.64	17
R&R Starter Relay	032-002-015	03	0.81	19
R&R 7-Pin Connector Plug	034-003-036	03	0.90	17
R&R Trailer Junction Box	034-003-067	03	1.08	17
R&R ELD - Electronic Logging Device	036-0101-001	03	1.86	17
R&R Intake Manifold Gasket	041-002-003	03	3.77	16
R&R Charge Air Cooler	041-004-021	03	2.65	18
Flush & Fill Coolant System	042-000-000	44	1.87	17
R&R Radiator	042-002-001	03	4.61	19
R&R Water Pump	042-004-001	03	3.08	18
R&R Thermostat	042-004-001	03	1.81	18
R&R Radiator Hose - Upper	042-004-014	03	0.96	18
R&R Radiator Hose - Lower	042-004-015	03	1.08	18
R&R EGR Valve	043-001-023	03	3.31	18
R&R EGR Cooler	043-001-049	03	5.88	18
R&R Exhaust Pipe Stack	043-003-018	03	1.36	17
R&R Turbocharger	043-004-001	03	4.00	19
R&R Doser Valve Assembly	043-006-025	03	1.93	18
R&R DEF Tank	043-007-001	03	3.07	17
R&R DEF Tank Heater	043-007-016	03	2.61	16
R&R Fuel Tank	044-001-001	03	2.46	18
R&R Fuel Tank Sending Unit	044-001-100	03	1.21	17
R&R Engine Serpentine Belt	045-002-073	03	0.72	17
R&R Camshaft Position Sensor	045-021-037	03	1.72	17
Lubricate Fifth Wheel	059-001-001	07	0.34	18
Overhaul Fifth Wheel Assembly	059-001-135	08	2.71	18
New Truck In-service	999-999-999	36	4.58	17