

DRAFT TRADE REACTIVATION

HEAVY CONSTRUCTION EQUIPMENT MECHANIC
(formerly known as OPERATING ENGINEER (HEAVY DUTY REPAIRER))

APPENDIX A

D.O.T. CODE 620.261-022
O*NET CODE 49-3042.00

This training outline represents a minimum standard in terms of work processes and related instruction which are required to achieve skilled worker status. It is recognized that rapid technological and regulatory changes will frequently result in the need for additional on-the-job or classroom instruction.

WORK PROCESSES

	<u>Approximate Hours</u>
A. <u>Clean and Inspect the Parts of all Types of Equipment</u>	100
B. <u>Cylinder Heads</u>	550
1. Check and inspect heads;	
2. Replace valve guides;	
3. Remove and replace valve seats;	
4. Reaming valve guides;	
5. Grind valve seats with hard-seat grinder;	
6. Lap valves;	
7. Check valves with dial indicator;	
8. Install injector tubes or brass;	
9. Replace Welch (Welsh) plugs and water test head;	
10. Rebush rocker-arms and reaming bushings;	
11. Check and replace rocker-arm rollers;	
12. Torque cylinder head bolts;	
13. Use compounds on head gaskets;	
14. Torque and adjust injectors.	
C. <u>Cylinder Blocks and Liners</u>	500
1. Remove and install cylinder sleeves;	
2. Clean and check water passages;	
3. Check counterbores for sleeves;	
4. Recut and straighten counter bores;	
5. Remove and cut cylinder studs;	
6. Clean ring grooves, fit piston and ring for clearance;	
7. Install piston pin bushings and fit piston pins;	
8. Check rod alignment and bores;	

9.	Hone and bore cylinders;	
10.	Clean oil passages;	
11.	Inspect oil and oil lines;	
12.	Check, remove and install timing gears;	
13.	Check main bearing saddles, crank shaft wear and cracks, and radius area;	
14.	Perform Magnafluxing;	
15.	Install main and rod bearings;	
16.	Check oil clearances;	
17.	Torque main and rod bearings;	
18.	Install cam shaft bushings and ream lines and bearings;	
19.	Pressure test oil systems;	
20.	Use dial to indicate run out on fly wheel and housings.	
D.	<u>Fuel Systems</u>	650
1.	Adjust valve clearances;	
2.	Install and adjust injectors;	
3.	Check compression;	
4.	Check and adjust injection and carburetion systems;	
5.	Care for and clean air filters;	
6.	Care for timing injection system;	
7.	Repair fuel pumps and carburetors;	
8.	Check and service fuel filtering systems.	
E.	<u>Electrical Systems</u>	575
1.	Check timing of electrical systems;	
2.	Use proper equipment to check electrical systems;	
3.	Repair generators and starters;	
4.	Adjust voltage regulators;	
5.	Make up and install wiring circuits.	
F.	<u>Water Cooling Systems</u>	300
1.	Check thermostats;	
2.	Clean water passages;	
3.	Install new gaskets on radiator tanks;	
4.	Check pressure on cooling systems;	
5.	Adjust fan belts and friction-driven fan drivers.	
G.	<u>Clutch</u>	525
1.	Check and adjusting clutches;	
2.	Rebuild pressure plates;	
3.	Reline clutch disks;	

4.	Remove and repair clutches.	
H.	<u>Transmission and Differentials</u>	600
1.	Remove and install transmissions;	
2.	Test converters;	
3.	Rebuild transmission and torque converters;	
4.	Adjust steering clutches;	
5.	Rebuild steering clutches;	
6.	Realign steering clutch bands;	
7.	Adjust and install ball bearings, precision (e.g., Timken) bearings and oil seals;	
8.	Adjust, inspect and replace differential gears, bearings and oil seals.	
I.	<u>Final Drive</u>	500
1.	Remove, replace and adjust final drives, axles, gears, bearings and oil seals;	
2.	Adjust tracks, wheel bearings, track rollers and brake lining;	
3.	Repair, service and adjust air compressors, brake applicators, boosters, valves and regulators.	
J.	<u>Hydraulic Systems</u>	700
1.	Repair and service cylinders, valves and power control units.	
K.	<u>Welding</u>	450
1.	Acetylene – cutting, brazing and welding;	
2.	Electric – cutting and welding.	
L.	<u>Repair and Maintenance of Self-Propelled and Stationary Equipment (Exclusive of Engines)</u>	550
1.	Use proper oils, greases, tools and shop equipment used by the industry;	
2.	Maintain and repair the various types of equipment used by the industry.	
Total Hours		6,000

Apprenticeship work processes are applicable only to training curricula for apprentices in approved programs. Apprenticeship work processes have no impact on classification determinations under Article 8 or 9 of the Labor Law. For guidance regarding classification for purposes of Article 8 or 9 of the Labor Law, please refer to <https://www.labor.ny.gov/workerprotection/publicwork/pwcontents.shtm>

DRAFT TRADE REACTIVATION

OPERATING ENGINEER (HEAVY DUTY REPAIRER)

APPENDIX B

RELATED INSTRUCTION

Safety

Fundamentals

Trade safety

OSHA 10-Hour Construction Course – if required for Public Work

Asbestos Safety: If apprentice will do any handling of asbestos:

Successfully complete a course approved by the New York State Department of Health for “Asbestos Handler” and obtain, and keep current, an “Asbestos Handler (Worker)” certificate from the New York State Department of Labor

If apprentice will do no handling of asbestos:

Asbestos Awareness – minimum 4 hours (see attachment)

First Aid – minimum 6.5 hours every 3 years

Sexual Harassment Prevention Training – MUST comply with Section 201-g of the Labor Law

Blueprint Reading, Sketching and Drawing

Elementary blueprint reading and sketching

Advanced blueprint reading and sketching

Electrical circuits and diagrams

General engineering of machine installation specifications

Mathematics

Fundamentals

Electrical mathematics, formulas, etc.

Shop mathematics

Use of handbooks, tables, charts, etc.

Trade Theory and Science

Basic Equipment Skills

Tools and equipment

Terminology

Materials

Operation, care and maintenance

Theory of job and processes

Metallurgy

Strength of materials

Welding

Hydraulics

Machine design

Lubricants

Fuels
Electrical Fundamentals
Principles of gauges, measuring and testing devices
Principles of heat exchange
Principles of air conditioning
Principles of refrigeration

Other Related Courses as Necessary

144 Hours of Related Instruction are required for each apprentice for each year.

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ATTACHMENT TO APPENDIX B

Asbestos Awareness

This course must be delivered by one of the following:

1. A provider currently approved by the New York State Department of Health to deliver asbestos safety training.
2. A person holding a current Asbestos Handler certificate from the New York State Department of Labor in the title of: Inspector, Supervisor, Project Monitor, Management Planner, or Project Designer.
3. Anyone otherwise approved by the New York State Education Department.

Minimum course contents must include the following:

1. Definition of asbestos
2. Types and physical characteristics
3. Uses and applications
4. Health effects:
 - Asbestos-related diseases
 - Risks to families
 - Cigarette smoking
 - Lack of safe exposure level
5. Employer-specific procedures to follow in case of potential exposure, including making a supervisor or building owner immediately aware of any suspected incidental asbestos disturbance so that proper containment and abatement procedures can be initiated promptly.

Notwithstanding the above course requirement, employers are advised that they must also be in compliance with New York State Department of Labor Industrial Code Rule 56 at all times.

Employers are further advised, and must advise all apprentices, that completion of the above course requirement does not authorize any person to remove, encapsulate, enclose, repair, disturb, or abate in any manner, any friable or non-friable asbestos, asbestos containing material, presumed asbestos containing material, or suspect miscellaneous asbestos containing material.