

**MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY  
AIR QUALITY DIVISION**

July 24, 2013

**PERMIT TO INSTALL  
48-12B**

**ISSUED TO**  
American Axle & Manufacturing, Inc.

**LOCATED AT**  
One Manufacturing Drive  
Three Rivers, Michigan

**IN THE COUNTY OF**  
Saint Joseph

**STATE REGISTRATION NUMBER**  
B6633

The Air Quality Division has approved this Permit to Install, pursuant to the delegation of authority from the Michigan Department of Environmental Quality. This permit is hereby issued in accordance with and subject to Section 5505(1) of Article II, Chapter I, Part 55, Air Pollution Control, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended. Pursuant to Air Pollution Control Rule 336.1201(1), this permit constitutes the permittee's authority to install the identified emission unit(s) in accordance with all administrative rules of the Department and the attached conditions. Operation of the emission unit(s) identified in this Permit to Install is allowed pursuant to Rule 336.1201(6).

DATE OF RECEIPT OF ALL INFORMATION REQUIRED BY RULE 203: <b>June 14, 2013</b>	
DATE PERMIT TO INSTALL APPROVED: <b>July 24, 2013</b>	SIGNATURE:
DATE PERMIT VOIDED:	SIGNATURE:
DATE PERMIT REVOKED:	SIGNATURE:

## PERMIT TO INSTALL

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**Common Abbreviations / Acronyms**

Common Acronyms		Pollutant / Measurement Abbreviations	
AQD	Air Quality Division	BTU	British Thermal Unit
BACT	Best Available Control Technology	°C	Degrees Celsius
CAA	Clean Air Act	CO	Carbon Monoxide
CEM	Continuous Emission Monitoring	dscf	Dry standard cubic foot
CFR	Code of Federal Regulations	dscm	Dry standard cubic meter
CO <sub>2</sub> e	Carbon Dioxide Equivalent	°F	Degrees Fahrenheit
COM	Continuous Opacity Monitoring	gr	Grains
EPA	Environmental Protection Agency	Hg	Mercury
EU	Emission Unit	hr	Hour
FG	Flexible Group	H <sub>2</sub> S	Hydrogen Sulfide
GACS	Gallon of Applied Coating Solids	hp	Horsepower
GC	General Condition	lb	Pound
GHGs	Greenhouse Gases	kW	Kilowatt
HAP	Hazardous Air Pollutant	m	Meter
HVLP	High Volume Low Pressure *	mg	Milligram
ID	Identification	mm	Millimeter
LAER	Lowest Achievable Emission Rate	MM	Million
MACT	Maximum Achievable Control Technology	MW	Megawatts
MAERS	Michigan Air Emissions Reporting System	ng	Nanogram
MAP	Malfunction Abatement Plan	NO <sub>x</sub>	Oxides of Nitrogen
MDEQ	Michigan Department of Environmental Quality (Department)	PM	Particulate Matter
MSDS	Material Safety Data Sheet	PM10	PM with aerodynamic diameter ≤10 microns
NESHAP	National Emission Standard for Hazardous Air Pollutants	PM2.5	PM with aerodynamic diameter ≤ 2.5 microns
NSPS	New Source Performance Standards	pph	Pounds per hour
NSR	New Source Review	ppm	Parts per million
PS	Performance Specification	ppmv	Parts per million by volume
PSD	Prevention of Significant Deterioration	ppmw	Parts per million by weight
PTE	Permanent Total Enclosure	psia	Pounds per square inch absolute
PTI	Permit to Install	psig	Pounds per square inch gauge
RACT	Reasonably Available Control Technology	scf	Standard cubic feet
ROP	Renewable Operating Permit	sec	Seconds
SC	Special Condition	SO <sub>2</sub>	Sulfur Dioxide
SCR	Selective Catalytic Reduction	THC	Total Hydrocarbons
SRN	State Registration Number	tpy	Tons per year
TAC	Toxic Air Contaminant	µg	Microgram
TEQ	Toxicity Equivalence Quotient	VOC	Volatile Organic Compound
VE	Visible Emissions	yr	Year

\* For High Volume Low Pressure (HVLP) applicators, the pressure measured at the HVLP gun air cap shall not exceed ten (10) pounds per square inch gauge (psig).

### GENERAL CONDITIONS

1. The process or process equipment covered by this permit shall not be reconstructed, relocated, or modified, unless a Permit to Install authorizing such action is issued by the Department, except to the extent such action is exempt from the Permit to Install requirements by any applicable rule. **(R 336.1201(1))**
2. If the installation, construction, reconstruction, relocation, or modification of the equipment for which this permit has been approved has not commenced within 18 months, or has been interrupted for 18 months, this permit shall become void unless otherwise authorized by the Department. Furthermore, the permittee or the designated authorized agent shall notify the Department via the Supervisor, Permit Section, Air Quality Division, Michigan Department of Environmental Quality, P.O. Box 30260, Lansing, Michigan 48909-7760, if it is decided not to pursue the installation, construction, reconstruction, relocation, or modification of the equipment allowed by this Permit to Install. **(R 336.1201(4))**
3. If this Permit to Install is issued for a process or process equipment located at a stationary source that is not subject to the Renewable Operating Permit program requirements pursuant to R 336.1210, operation of the process or process equipment is allowed by this permit if the equipment performs in accordance with the terms and conditions of this Permit to Install. **(R 336.1201(6)(b))**
4. The Department may, after notice and opportunity for a hearing, revoke this Permit to Install if evidence indicates the process or process equipment is not performing in accordance with the terms and conditions of this permit or is violating the Department's rules or the Clean Air Act. **(R 336.1201(8), Section 5510 of Act 451, PA 1994)**
5. The terms and conditions of this Permit to Install shall apply to any person or legal entity that now or hereafter owns or operates the process or process equipment at the location authorized by this Permit to Install. If the new owner or operator submits a written request to the Department pursuant to R 336.1219 and the Department approves the request, this permit will be amended to reflect the change of ownership or operational control. The request must include all of the information required by subrules (1)(a), (b), and (c) of R 336.1219 and shall be sent to the District Supervisor, Air Quality Division, Michigan Department of Environmental Quality. **(R 336.1219)**
6. Operation of this equipment shall not result in the emission of an air contaminant which causes injurious effects to human health or safety, animal life, plant life of significant economic value, or property, or which causes unreasonable interference with the comfortable enjoyment of life and property. **(R 336.1901)**
7. The permittee shall provide notice of an abnormal condition, start-up, shutdown, or malfunction that results in emissions of a hazardous or toxic air pollutant which continue for more than one hour in excess of any applicable standard or limitation, or emissions of any air contaminant continuing for more than two hours in excess of an applicable standard or limitation, as required in Rule 912, to the Department. The notice shall be provided not later than two business days after start-up, shutdown, or discovery of the abnormal condition or malfunction. Written reports, if required, must be filed with the Department within 10 days after the start-up or shutdown occurred, within 10 days after the abnormal conditions or malfunction has been corrected, or within 30 days of discovery of the abnormal condition or malfunction, whichever is first. The written reports shall include all of the information required in Rule 912(5). **(R 336.1912)**
8. Approval of this permit does not exempt the permittee from complying with any future applicable requirements which may be promulgated under Part 55 of 1994 PA 451, as amended or the Federal Clean Air Act.
9. Approval of this permit does not obviate the necessity of obtaining such permits or approvals from other units of government as required by law.
10. Operation of this equipment may be subject to other requirements of Part 55 of 1994 PA 451, as amended and the rules promulgated thereunder.

11. Except as provided in subrules (2) and (3) or unless the special conditions of the Permit to Install include an alternate opacity limit established pursuant to subrule (4) of R 336.1301, the permittee shall not cause or permit to be discharged into the outer air from a process or process equipment a visible emission of density greater than the most stringent of the following. The grading of visible emissions shall be determined in accordance with R 336.1303. **(R 336.1301)**
  - a) A six-minute average of 20 percent opacity, except for one six-minute average per hour of not more than 27 percent opacity.
  - b) A visible emission limit specified by an applicable federal new source performance standard.
  - c) A visible emission limit specified as a condition of this Permit to Install.
  
12. Collected air contaminants shall be removed as necessary to maintain the equipment at the required operating efficiency. The collection and disposal of air contaminants shall be performed in a manner so as to minimize the introduction of contaminants to the outer air. Transport of collected air contaminants in Priority I and II areas requires the use of material handling methods specified in R 336.1370(2). **(R 336.1370)**
  
13. The Department may require the permittee to conduct acceptable performance tests, at the permittee's expense, in accordance with R 336.2001 and R 336.2003, under any of the conditions listed in R 336.2001. **(R 336.2001)**

**SPECIAL CONDITIONS**

**EMISSION UNIT SUMMARY TABLE**

The descriptions provided below are for informational purposes and do not constitute enforceable conditions.

<b>Emission Unit ID</b>	<b>Emission Unit Description (Process Equipment &amp; Control Devices)</b>	<b>Flexible Group ID</b>
EUHEATTREAT1	2.5 MMBtu/hr natural gas fired heat treat furnace with an internal oil quench (5000 gallon). Emissions are controlled by a flare (flame curtain).	FGHEATTREAT1
EUHEATTREAT2	2.5 MMBtu/hr natural gas fired heat treat furnace with an internal oil quench (5000 gallon). Emissions are controlled by a flare (flame curtain).	FGHEATTREAT1
EUHEATTREAT3	2.5 MMBtu/hr natural gas fired heat treat furnace with an internal oil quench (5000 gallon). Emissions are controlled by a flare (flame curtain).	FGHEATTREAT1
EUHEATTREAT4	2.5 MMBtu/hr natural gas fired heat treat furnace with an internal oil quench (5000 gallon). Emissions are controlled by a flare (flame curtain).	FGHEATTREAT1
EUHEATTREAT5	2.5 MMBtu/hr natural gas fired heat treat furnace with an internal oil quench (5000 gallon). Emissions are controlled by a flare (flame curtain).	FGHEATTREAT1
EUHEATTREAT6	2.5 MMBtu/hr natural gas fired heat treat furnace with an internal oil quench (5000 gallon). Emissions are controlled by a flare (flame curtain).	FGHEATTREAT1
EUENDOGEN1	2.58 MMBtu/hr natural gas fired endothermic generator for supplying the atmospheres of the heat treat furnaces.	FGHEATTREAT1
EUENDOGEN2	2.58 MMBtu/hr natural gas fired endothermic generator for supplying the atmospheres of the heat treat furnaces.	FGHEATTREAT1
EUWASHER1	0.8 MMBtu/hr natural gas fired aqueous washer for removing quench oil residue from the parts.	FGHEATTREAT1
EUWASHER2	0.8 MMBtu/hr natural gas fired aqueous washer for removing quench oil residue from the parts.	FGHEATTREAT1
EUWASHER3	0.8 MMBtu/hr natural gas fired aqueous washer for removing quench oil residue from the parts.	FGHEATTREAT1
EUTEMPER1	1.2 MMBtu/hr natural gas fired tempering furnace.	FGHEATTREAT1
EUTEMPER2	1.2 MMBtu/hr natural gas fired tempering furnace.	FGHEATTREAT1
EUTEMPER3	1.2 MMBtu/hr natural gas fired tempering furnace.	FGHEATTREAT1
EUTEMPER4	1.2 MMBtu/hr natural gas fired tempering furnace.	FGHEATTREAT1
EUTEMPER5	1.2 MMBtu/hr natural gas fired tempering furnace.	FGHEATTREAT1
EUTEMPER6	1.2 MMBtu/hr natural gas fired tempering furnace.	FGHEATTREAT1
EUTEMPER7	1.2 MMBtu/hr natural gas fired tempering furnace.	FGHEATTREAT1
EUTEMPER8	1.2 MMBtu/hr natural gas fired tempering furnace.	FGHEATTREAT1
Changes to the equipment described in this table are subject to the requirements of R 336.1201, except as allowed by R 336.1278 to R 336.1290.		

**FLEXIBLE GROUP SUMMARY TABLE**

The descriptions provided below are for informational purposes and do not constitute enforceable conditions.

<b>Flexible Group ID</b>	<b>Flexible Group Description</b>	<b>Associated Emission Unit IDs</b>
FGHEATTREAT1	Heat treat processes for heat treating and tempering metal parts. The heat treat processes consist of six heat treat furnaces with internal oil quench tanks, three aqueous washers and eight tempering furnaces. Additionally, there are two endothermic generators that provide the atmospheres of the heat treating furnaces. Emissions from the heat treat furnaces are controlled by flares (flame curtain on each furnace).	EUHEATTREAT1 through EUHEATTREAT6, EUENDOGEN1, EUENDOGEN2, EUWASHER1 through EUWASHER3, EUTEMPER1 through EUTEMPER8

**The following conditions apply to: FGHEATTREAT1**

**DESCRIPTION:** Heat treat processes for heat treating and tempering metal parts. The heat treat processes consist of six heat treat furnaces with internal oil quench tanks, three aqueous washers and eight tempering furnaces. Additionally, there are two endothermic generators that provide atmospheres of the heat treating furnaces. Emissions from the heat treat furnaces are controlled by flares (flame curtain)

**Emission Units:** EUHEATTREAT1, EUHEATTREAT2, EUHEATTREAT3, EUHEATTREAT4, UHEATTREAT5, EUHEATTREAT6, EUENDOGEN1, EUENDOGEN2, EUWASHER1, EUWASHER2, EUWASHER3, EUTEMPER1, EUTEMPER2, EUTEMPER3, EUTEMPER4, EUTEMPER5, EUTEMPER6, EUTEMPER7, EUTEMPER8

**POLLUTION CONTROL EQUIPMENT:** Flare (flame curtain) for each of the heat treat furnaces

**I. EMISSION LIMITS**

<b>Pollutant</b>	<b>Limit</b>	<b>Time Period / Operating Scenario</b>	<b>Equipment</b>	<b>Testing / Monitoring Method</b>	<b>Underlying Applicable Requirements</b>
1. VOC	5.2 tpy	12-month rolling time period as determined at the end of each calendar month	FGHEATTREAT1	SC VI.2	R 336.1702(a)

**II. MATERIAL LIMITS**

<b>Material</b>	<b>Limit</b>	<b>Time Period / Operating Scenario</b>	<b>Equipment</b>	<b>Testing / Monitoring Method</b>	<b>Underlying Applicable Requirements</b>
1. Metal	20,000 tpy	12-month rolling time period as determined at the end of each calendar month	FGHEATTREAT1	SC VI.2	R 336.1205(1)(a)

2. The permittee shall only combust pipeline quality natural gas in any process in FGHEATTREAT1. **(R 336.1205(1)(a))**

### **III. PROCESS/OPERATIONAL RESTRICTIONS**

NA

### **IV. DESIGN/EQUIPMENT PARAMETERS**

1. The permittee shall not operate any of the heat treating furnaces with oil quench of FGHEATTREAT1 unless the flares are installed, maintained, and operated in a satisfactory manner. Satisfactory operation includes but is not limited to maintaining and operating the flares according to manufacturer specifications. **(R 336.1702(a), R 336.1910)**

### **V. TESTING/SAMPLING**

Records shall be maintained on file for a period of five years. **(R 336.1201(3))**

NA

### **VI. MONITORING/RECORDKEEPING**

Records shall be maintained on file for a period of five years. **(R 336.1201(3))**

1. The permittee shall complete all required calculations in a format acceptable to the AQD District Supervisor and make them available by the end of the calendar month, for the previous calendar month, unless otherwise specified in any monitoring/recordkeeping special condition. **(R 336.1702(a))**
2. The permittee shall keep the following information on a monthly basis for FGHEATTREAT1:
  - a. The tons of metal processed per calendar month.
  - b. The tons of metal processed per 12-month rolling time period as determined at the end of each calendar month.
  - c. The VOC emission factor (in lbs VOC/ton metal) for each heat treating process. Using an emission factor of 0.52 lb of VOC/ton of metal processed, or upon completion of a stack test, an emission factor based upon the most recent stack test result shall be used.
  - d. VOC mass emission calculations determining the monthly emission rate in tons per calendar month.
  - e. VOC mass emission calculations determining the annual emission rate in tons per 12-month rolling time period as determined at the end of each calendar month.

The permittee shall keep all records on file at the facility and make them available to the Department upon request. **(R 336.1205, R 336.1702(a))**

### **VII. REPORTING**

1. Within 30 days after completion of the installation, construction, reconstruction, relocation, or modification authorized by this Permit to Install, the permittee or the authorized agent pursuant to Rule 204, shall notify the AQD District Supervisor, in writing, of the completion of the activity. Completion of the installation, construction, reconstruction, relocation, or modification is considered to occur not later than commencement of trial operation of any of the heat treating processes. **(R 336.1201(7)(a))**



**VIII. STACK/VENT RESTRICTIONS**

The exhaust gases from the stacks listed in the table below shall be discharged unobstructed vertically upwards to the ambient air unless otherwise noted:

<b>Stack &amp; Vent ID</b>	<b>Maximum Exhaust Diameter/Dimensions (inches)</b>	<b>Minimum Height Above Ground (feet)</b>	<b>Underlying Applicable Requirements</b>
1. SVHEATTREAT1	48 x 55	58	R 336.1225 R 336.2803, R 336.2804, 40 CFR 52.21(c) & (d)
2. SVHEATTREAT2	48 x 55	58	R 336.1225 R 336.2803, R 336.2804, 40 CFR 52.21(c) & (d)

**IX. OTHER REQUIREMENTS**

NA