

TOOLS AND EQUIPMENT

Local employer needs and the availability of funds are key factors for determining each program's structure and operation. The NATEF Standards recognize that not all programs have the same needs, nor do all programs teach 100 % of the NATEF tasks. Therefore, the basic philosophy for the tools and equipment requirement is as follows: *for all tasks which are taught in the program, the training should be as thorough as possible with the tools and equipment necessary for those tasks.* In other words, if a program does not teach a particular task, the tool from the tool list associated with that task is not required.

The NATEF tool lists are organized into three basic categories: *Hand Tools*, *General Lab/Shop Equipment*, and *Tools and Equipment by Level*. When referring to the tools and equipment list, please note the following:

- A. The organization of the tool list is not intended to dictate how a program organizes its tool crib or student tool sets (i.e., which tools should be in a student set, if utilized, and which should be in the tool crib or shop area).
- B. Quantities for each tool or piece of equipment are determined by the program needs; however, sufficient quantities to provide quality instruction should be on hand.
- C. For *Tools and Equipment by Level*, the program need only have those tools for the level being accredited.
- D. Programs may meet the equipment requirements by borrowing special equipment or providing for off-site instruction (e.g., in a dealership or independent repair shop). Use of borrowed or off-site equipment *must* be appropriately documented. No specific brand names for tools and equipment are specified or required.
- E. Although the NATEF Standards recommend that programs encourage students to begin to build their own tool sets, this is not a requirement. However, many employers require an entry-level automobile technician provide his/her own basic hand tool set.

HAND TOOLS

**(Contained in individual sets or the tool crib
in sufficient quantities to permit efficient instruction)**

Air Blow Gun (meeting OSHA requirements)
Allen (Wrench or Socket) Set - Standard (.050" - 3/8")
Allen (Wrench or Socket) Set - Metric (2mm - 8mm, 10mm, 12mm)
Battery Post Cleaner
Battery Terminal Pliers
Battery Terminal Puller
Chisels:
 Cape 5/16"
 Cold 3/8", 3/4"
Chisel Holder
Claw Type Pickup Tool
Combination Wrenches:
 Standard (1/4" – 1 1/4")
 Metric (7mm - 24mm)
Crowfoot Wrench Set - Metric
Crowfoot Wrench Set – Standard
Ear Protection
Feeler Gauge (Blade Type):
 .002" - .040"
 .006mm - .070mm
Files:
 Coarse 6" and 12"
 Fine 6" and 12"
 Half Round 12"
 Round 6" and 12"
Flare Nut (tubing) Wrenches:
 3/8" - 3/4"
 10mm - 17mm
Flashlight
Fuse Puller
Fused Jumper Wire Set (with various adapters)
Hack Saw
Hammers:
 16 oz. Ball Peen
 Brass
 Dead Blow Plastic Mallet
 Plastic Tip
 Rubber Mallet
Inspection Mirror
Magnetic Pickup Tool
Pliers:
 Combination 6"
 Hose Clamp

- Locking Jaw
- Needle Nose 6"
- Side Cutting
- Slip Joint (Water Pump)
- Pry Bars:
 - Rolling Head
 - Straight
- Punches:
 - Center
 - Brass Drift
 - Pin 1/8", 3/16", 1/4", 5/16 "
 - Taper 3/8", 1/2", 5/8"
- Safety Glasses (meeting OSHA requirements)
- Scraper:
 - Carbon 1"
 - Gasket 1"
- Screwdriver - Blade Type:
 - Stubby
 - 6", 9", 12"
 - Offset
- Screwdriver - Phillips:
 - Stubby #1, #2
 - 6" #1, #2
 - 12" #3
 - Offset #2
- Screwdriver - Impact Driver Set
- Screw Starter:
 - Phillips
 - Standard
- Socket Set - 1/4" Drive:
 - 1/4" - 1/2" Standard Depth
 - 1/4" - 1/2" Deep
 - 6mm - 12mm Standard Depth
 - 6mm - 12mm Deep
 - Flex/Universal Type
 - 3", 6" Extensions
 - Ratchet
- Socket Set - 3/8" Drive:
 - 5/16" - 3/4" Standard Depth (6 point)
 - 3/8" - 3/4" Deep (6 point)
 - 10mm - 19mm Standard Depth
 - 10mm - 19mm Deep
 - 3", 5", 10" Extensions
 - Flexhead Ratchet
 - Ratchet
 - Spark Plug Sockets 5/8", 13/16"
 - Speed Handle
 - Universal Joint

Flexible Socket Set 3/8" - 3/4"
Flexible Socket Set 10mm - 19mm
Socket Set - 1/2" Drive:
7/16" - 1 1/8" Standard Depth
7/16" - 1 1/8" Deep
10mm - 24mm Standard Depth
10mm - 24mm Deep
3", 6", 12" Extensions
Flex Handle (Breaker Bar)
Ratchet
Spark Plug Feeler Gauge (Gap Tool)
Tape Measure – Standard and Metric
Test Light (12V and self-powered)
Tire Pressure Gauge
Tire Tread Depth Gauge
Torque Wrench:
3/8" Drive (10 - 250 lb. in.)
3/8" Drive (5 - 75 lb. ft.)
1/2" Drive (50 - 250 lb. ft.)
Torx® Set (screwdrivers and/or sockets):
T-8 to T-60
Wire Brush

GENERAL LAB/SHOP EQUIPMENT

The tools and equipment on this list are used in general lab/shop work but are not generally considered to be individually owned hand tools. A well-equipped, accredited program should have all of these general tools and equipment readily available and in sufficient quantity to provide quality instruction.

Air Chisel Set (various bits)
Air Compressor and Hoses
Air Pressure Regulator
Air Ratchet (3/8" drive)
Automotive Stethoscope (electronic recommended)
Axle Stands (Jack Stands)
Axle Support Stands (Screw Jacks)
Battery Charger
Battery/Starter/Charging System Tester
Bearing Packer (hand operated)
Belt Tension Gauge
Bench or Pedestal Grinder
Coolant/Combustion Gas Detector (recommended)
Coolant Tester
Cooling System Pressure Tester and Adapters
Creeper
Cylinder Leakage Tester
Dial Indicator with Flex Arm and Clamp Base
Digital Multimeter (DMM) with various lead sets (sufficient quantities to meet instruction goals)
Drain Pans
Drill - 3/8" variable speed, reversible
Drill - 1/2" variable speed, reversible
Electric Heat Gun
Engine Coolant Recovery Equipment or Recycler or Coolant Disposal Contract Service
Extension Cords
Face Shields
Fender Covers
Floor Jack (1½ Ton Minimum)
Hand Held Vacuum Pump
Hoist(s)
Hood Prop
Hydraulic Press with adapters
Impact Socket Sets - 3/8" Drive (Standard and Metric)
Impact Sockets - 1/2" Drive (7/16" - 1 1/8")
Impact Sockets - 1/2" Drive (12mm – 24mm)
Impact Sockets – 1/2" Drive Deep (30 mm, 32 mm, 36mm)
Impact Wrench - 1/2" Drive
Impact Wrench - 3/8" Drive
Jumper Cables

Master Puller Set
Micrometer (Depth)
Micrometers - 0-1", 1-2", 2-3", 3-4", 4-5" (Outside Type)
Oil Can - Pump Type
Oil Filter Wrench and Sockets
Oxy-Acetylene Torch Set
Parts Cleaning Tank and Gloves (non-solvent based cleanser suggested)
Remote Starter Switch
Scan Tool OBDII w/CAN capability or Personal Computer (PC) with equivalent interface (appropriate capability to support tasks taught)
Screw Extractor Set
Seat Covers
Serpentine Belt Tensioner Tools
Snap Ring Pliers Set - external
Snap Ring Pliers Set - internal
Soldering Gun
Soldering Iron (Pencil Tip)
Spark Plug Boot Puller
Tap and Die Set - Standard
Tap and Die Set – Metric
Temperature Sensing Device
Thread Repair Insert Kit
Tire Inflator Chuck
Trouble/Work Lights (Non-incandescent)
Tube Quick Disconnect Tool Set
Tubing Bender
Tubing Cutter/Flaring Set (Double-lap and ISO)
Twist Drill Set - 1/64" - 1/2"
Ultra Violet Leak Detection Device (Black Light)
Used Oil Receptacle with extension neck and funnel
Valve Core Removing Tool
Vernier Calipers
 0 - 6"
 0 - 125mm
Wheel Chocks
Workbenches with vises

SPECIALTY TOOLS AND EQUIPMENT WITHIN EACH ACCREDITATION CATEGORY

This section covers the tools and equipment a lab/shop should have for training in any given specialty area. This equipment is specialized and it must be available in the lab/shop or to the program. No specific type or brand names are identified because they will vary in each local situation.

For all tasks which are taught in the program, the training should be as thorough as possible with the tools and equipment necessary for those tasks. In other words, if a program does not teach a particular task, the tool from the tool list associated with that task is not required.

MAINTENANCE & LIGHT REPAIR

SUSPENSION & STEERING

- Brake Pedal Depressor
- Hand Grease Gun
- Shock Absorber Tools
- Tire Mounting Machine (rim clamp type)
- Tire Patching Tools and Supplies
- Wheel Balancer - Electronic Type
- Wheel Weight Pliers

BRAKES

- Bearing Seal and Race Driver Set
- Brake Bleeder, Pressure or Vacuum
- Brake Disc Micrometer
- Brake Drum Micrometer and Calibration Equipment
- Brake Fluid Test Strips or Kit
- Brake Lathe (bench with disc and drum service attachments)
- Brake Lathe (on car)
- Brake Shoe Adjusting Gauge
- Brake Spring Remover/Installer
- Brake Spring Pliers
- Brake Spoon
- Piston Retraction Set
- Wheel Stud Service Kit

ENGINE PERFORMANCE

- Compression Tester
- Cylinder Power Balance Tester
- Infrared Thermometer (or appropriate substitute)
- Vacuum/Pressure Gauge

ELECTRICAL/ELECTRONIC SYSTEMS

Connector Pick Tool Set
Door Panel Trim Tool(s)
Headlight Aimer or Screen
Heat Gun (or equivalent for heat shrinking operations)
Wire and Terminal Repair Kit

MANUAL DRIVE TRAIN AND AXLES

Axle Nut Socket Set (or equivalent)
Spindle Rethreader Die Set
Universal Joint Tools

ENGINE REPAIR

Antifreeze/Coolant Tester

SPECIALTY TOOLS AND EQUIPMENT

AUTOMOBILE SERVICE TECHNOLOGY

SUSPENSION & STEERING

Ball Joint Press and other Special Tools
Brake Pedal Depressor
Bushing Driver Set
Coil Spring Compressor Tool
Chassis Ear (recommended)
Frame Angle Gauge or Portable Digital Protractor (appropriate for tasks being taught)
Hand Grease Gun
Inner Tie Rod End Tool
Pitman Arm Puller
Power Steering Pump Pulley Special Tool Set (appropriate for tasks being taught)
Shock Absorber Tools
Steering Angle Gauge or Portable Digital Protractor (appropriate for tasks being taught)
Steering Column Special Tool Set (appropriate for teaching tasks being utilized)
Strut Spring Compressor Tool
Tie Rod Puller
Tire Mounting Machine (rim clamp type)
Tire Patching Tools and Supplies
Tire Pressure Monitoring System (TPMS) Tool (appropriate for tasks being taught)
Wheel Alignment Equipment-4 wheel (including alignment tools)
Wheel Balancer - Electronic Type
Wheel Weight Pliers

BRAKES

Bearing Seal and Race Driver Set
Brake Bleeder, Pressure or Vacuum
Brake Disc Micrometer
Brake Drum Micrometer and Calibration Equipment
Brake Fluid Test Strips or Kit
Brake Lathe (bench with disc and drum service attachments)
Brake Lathe (on car)
Brake Shoe Adjusting Gauge
Brake Spring Remover/Installer
Brake Spring Pliers
Brake Spoon
Master Cylinder Bleeder Kit
Piston Retraction Set
Wheel Stud Service Kit

HEATING AND AIR CONDITIONING

A/C Compressor Clutch Service Tools

A/C Service Port Adapter Set

Dye Injection Kit

Hygrometer

Leak Detector (to meet current industry standard)

Manifold Gauge Set or equivalent (to meet current industry standard)

Refrigerant Charging Station (to meet current industry standard)

Refrigerant Recovery/Recycling Machine (to meet current industry standard)

Thermometer(s) (digital)

Sealant Detector Kit

ENGINE PERFORMANCE

Cylinder Power Balance Tester

Fuel Injection Pressure Gauge Sets with Adapters

Infrared Thermometer (or appropriate substitute)

Injector Pulse Tester

Leak Detector (Smoke or Nitrogen)

Logic Probe (suggested)

Oxygen Sensor Socket

Pinch-off Pliers

Sending Unit Socket(s)

Spark Plug Thread Tap

Spark Tester

Timing Advance Light

Vacuum/Pressure Gauge

AUTOMATIC TRANSMISSION/TRANSAXLE

Transmission Jack(s)

Transmission/Transaxle Flushing Equipment (recommended)

Transmission/Transaxle Holding Fixtures

Transmission/Transaxle Removal and Installation Equipment

Transmission/Transaxle Special Tool Sets (appropriate for units being utilized)

ELECTRICAL/ELECTRONIC SYSTEMS

Connector Pick Tool Set

Door Panel Trim Tool(s)

Headlight Aimer or Screen

Heat Gun (or equivalent for heat shrinking operations)

Terminal Tension (Pin Drag) Test Kit/Terminal Probe Kit (or equivalent)

Wire and Terminal Repair Kit

MANUAL DRIVE TRAIN AND AXLES

- Axle Nut Socket Set (or equivalent)
- Clutch Alignment Set
- Clutch Pilot Bearing/Bushing Puller/Installer
- Constant Velocity Joint (CV) Service Tools:
 - Boot Installation Tool
 - Boot Clamp Pliers or Crimping Ring
- Front Wheel Drive Engine Support Fixture
- Rotating Torque Wrench (beam-type or equivalent)
- Universal Joint Tools
- Spindle Rethreader Die Set**

ENGINE REPAIR

- Antifreeze/Coolant Tester
- Oil Pressure Gauge
- Straight Edge
- Torque Angle Gauge

SPECIALTY TOOLS AND EQUIPMENT

MASTER AUTOMOBILE SERVICE TECHNOLOGY

SUSPENSION & STEERING

Ball Joint Press and other Special Tools
Brake Pedal Depressor
Bushing Driver Set
Coil Spring Compressor Tool
Chassis Ear (recommended)
Frame Angle Gauge or Portable Digital Protractor (appropriate for tasks being taught)
Hand Grease Gun
Inner Tie Rod End Tool
Pitman Arm Puller
Power Steering Pump Pulley Special Tool Set (appropriate for units being taught)
Power Steering Pressure Gauges (recommended)
Shock Absorber Tools
Strut Spring Compressor Tool
Steering Angle Gauge or Portable Digital Protractor (appropriate for tasks being taught)
Steering Column Special Tool Set (appropriate for teaching units being utilized)
Tie Rod Puller
Tire Mounting Machine (rim clamp type)
Tire Patching Tools and Supplies
Tire Pressure Monitoring System (TPMS) Tool (appropriate for tasks being taught)
Wheel Alignment Equipment-4 wheel (including alignment tools)
Wheel Balancer - Electronic Type
Wheel Weight Pliers

BRAKES

Bearing Seal and Race Driver Set
Brake Bleeder, Pressure or Vacuum
Brake Disc Micrometer
Brake Drum Micrometer and Calibration Equipment
Brake Fluid Test Strips or Kit
Brake Lathe (bench with disc and drum service attachments)
Brake Lathe (on car)
Brake Shoe Adjusting Gauge
Brake Spring Remover/Installer
Brake Spring Pliers
Brake Spoon
Master Cylinder Bleeder Kit
Piston Retraction Set
Wheel Stud Service Kit

HEATING AND AIR CONDITIONING

A/C Compressor Clutch Service Tools

A/C Service Port Adapter Set

Dye Injection Kit

Hygrometer

Leak Detector (to meet current industry standards)

Manifold Gauge Set or equivalent (to meet current industry standards)

Refrigerant Charging Station (to meet current industry standards) or equivalent

Refrigerant Identification Equipment

Refrigerant Recovery/Recycling Machine (to meet current industry standards)

Thermometer(s) (digital)

Sealant Detector Kit

ENGINE PERFORMANCE

Cylinder Power Balance Tester

Four or Five Gas Exhaust Analyzer (Five Gas recommended)

Fuel Injection Pressure Gauge Sets with Adapters

* Graphing Multimeter (GMM) and/or Digital Storage Oscilloscope (DSO)

Infrared Thermometer (or appropriate substitute)

Injector Pulse Tester

Leak Detector (Smoke or Nitrogen)

Logic Probe (appropriate for tasks being taught)

Oxygen Sensor Socket

Pinch-off Pliers

Sending Unit Socket(s)

Spark Plug Thread Tap

Spark Tester

Timing Advance Light

Vacuum/Pressure Gauge

* Also necessary to accomplish tasks in other MAST categories (Brakes and Electrical/Electronic Systems)

AUTOMATIC TRANSMISSION/TRANSAXLE

Differential Set-up Tools

Hydraulic Pressure Gauge Set

Transmission Jack(s)

Transmission/Transaxle Flushing Equipment (recommended)

Transmission/Transaxle Removal and Installation Equipment

Transmission/Transaxle Holding Fixtures

Transmission/Transaxle Special Tool Sets (appropriate for units being utilized)

ELECTRICAL/ELECTRONIC SYSTEMS

Connector Pick Tool Set
Door Panel Trim Tool(s)
Headlight Aimer or Screen
Heat Gun (or equivalent for heat shrinking operations)
Terminal Tension (Pin Drag) Test Kit/Terminal Probe Kit (or equivalent)
Wire and Terminal Repair Kit

MANUAL DRIVE TRAIN AND AXLES

Axle Nut Socket Set (or equivalent)
Clutch Alignment Set
Clutch Pilot Bearing/Bushing Puller/Installer
Constant Velocity Joint (CV) Service Tools:
 Boot Installation Tool
 Boot Clamp Pliers or Crimping Ring
Front Wheel Drive Engine Support Fixture
Rotating Torque Wrench (beam-type or equivalent)
Special Tools for Transmissions/Transaxles (appropriate for units being taught)
Spindle Rethreader Die Set
Universal Joint Tools

ENGINE REPAIR

Ball (Small Hole) Gauges
Cam Bearing Driver Set (suggested)
Camshaft Holding Tool (appropriate for units being taught)
Cylinder Deglazer
Dial Bore Indicator
Antifreeze/Coolant Tester
Engine Stands/Benches
Inside Micrometer Set:
 0 - 6"
 0 - 125mm
Oil Pressure Gauge
Outside Micrometer Set:
 0 - 6"
 0 - 125mm
Portable Crane - 1/2 Ton
Ring Compressor
Ring Expander
Ring Groove Cleaner
Precision Straight Edge
Telescopic Gauge Set
Torque Angle Gauge

V-Blocks
Valve Spring Compressor
Valve Spring Tester