

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 (unless of course it is required for a task that is taught in another area).

The NATEF tool lists are organized into three basic categories: *Hand Tools*, *General Lab/Shop Equipment*, and *Specialty Tools and Equipment*. The specialty tools section is further separated into the four NATEF task categories. 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 *Specialty Tools and Equipment*, the program need only have those tools for the areas 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.
- E. No specific brand names for tools and equipment are specified or required.
- F. Although the NATEF Standards recommend that programs encourage their students to begin to build their own individual tools sets prior to entry into the industry, there is no requirement to do so. NOTE: Industry surveys indicate that most (90%) employers require that a candidate for employment provide his/her own basic hand tool set in order to be hired as an entry-level technician.

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, in proper working order, and in sufficient quantity and capacity to provide quality instruction.

GENERAL SHOP EQUIPMENT

Air Blow Guns - OSHA Standard

Air System - Air Compressor

Air Hoses - with quick release couplings

Air Lines

Regulator

Water Extractors

Air Transformer/Regulators

Coolant Drain Pan

Corrosion Protection Application Equipment

Creepers

Exhaust Fans

Grounded Extension Cords

Heat Lamp

Hood Props

Infrared Contact Thermometer

Jack Stands

Nozzle

Oil Drain/Storage Pan

Overhead Ventilation - for welding area

Part Cart

Powered Vehicle Mover (recommended)

Pressure Washer (optional)

Shammies

Service Jacks

Shop Brooms

Dust Pans

Floor Squeegee

Floor Mop and Bucket

Sponges

Step Ladder

Storage Cabinets

Towels

Trash Cans in accordance with local, state, and federal regulations

Trouble/Work Lights – non-incandescent

Vacuum Cleaner

Aluminum Dust Extraction System – Wet Mix Technology (Optional)

Water Hose

Work Benches – steel top with vice
Work Stands - portable
Wheel Caster System (Wheel Dollies)

SPECIAL SAFETY ITEMS

(All equipment must meet or exceed federal, state, and local regulations.)

Bloodborn Pathogen Kit

*Ear Protection - for students, instructors, and visitors

Eye Wash Basin

Eye Wash Station, portable (saline)

Fire Extinguishers - by type as required

First Aid Kit (per written first aid policy)

Flammable Material Storage Locker - meeting fire and building codes

Hazardous Spill Response Kit

Lineman Gloves (for use with hybrid vehicles)

OSHA "Right to Know" Compliance Kit

Protective Gloves and Clothing - for handling paint and related chemicals

Respiratory Protection Equipment – as required by OSHA

Safety Cans - for solvents, rags, etc.

*Safety Glasses, Clear and Tinted Face Shields, and Goggles - for students, instructors, and visitors

*Safety Shoes - as required

Safety Shower - as required

Vacuum System - for air sanders - dust extraction vacuum – stand alone or central system (recommended)

*** = Individual Student Items**

HAND TOOLS

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

COMMON HAND TOOLS

Adjustable Wrenches - 6" and 12"

Allen Wrench Set - Standard (.050" - 3/8")

Allen Wrench Set - Metric (2mm - 7mm)

Chisel Set

Combination Wrenches:

Standard (1/4" - 1") (optional)

Metric (7mm - 19mm)

Crowfoot Wrench Set - Metric (optional)

Crowfoot Wrench Set - Standard (optional)

Drill Motors - 3/8" and 1/2" variable speed, reversible

Flare Nut (tubing) Wrenches:

Standard 3/8" - 3/4" (optional)

Metric 10mm - 17mm
Flashlight and batteries
Hack Saw and blades
Hammers:
 16 oz. Ball Peen
 Brass
 Dead Blow Mallet
 Plastic Tip
 Sledge
 Soft Faced
 Rubber Mallet
Ignition Wrench Set – Standard (optional) and Metric
Impact Wrenches - 3/8" and 1/2"
Inspection Mirror
Pickup Tool - magnetic and claw type
Pliers:
 Combination
 Hose Clamp
 Locking Jaw
 Needle Nose
 Side Cutting
 Slip Joint (Water Pump)
 Snap Ring Plier Set - internal and external
Punch Set
Screwdriver - Blade Type:
 Stubby
 6", 9", 12"
 Offset
Screwdrivers - Phillips:
 Stubby #1, #2
 6" #1, #2
 12" #3
 Offset #2
Screwdrivers - Posidrive Set #1, #2, #3, #4
Torx® Set:
 T-8, T-10, T-15, T-20, T-25,
 T-27, T-30, T-40, T-50, T-55
Torx® External Set:
 E-4, E-5, E-6, E-8,
 E-10, E-12, E-14, E16
Torx® Tamper Proof Set:
 T8, T10, T15, T20, T27,
 T30, T40, T45, T50, T55
Screw Extractor Set
Screw Starter:
 Phillips

Standard

Socket Set - 1/4" Drive:

1/4" - 1/2" Standard Depth (optional)
1/4" - 1/2" Deep
6mm - 12mm Standard Depth (optional)
6mm - 12mm Deep
Flex/Universal Type - Metric (standard optional)
Universal Joint
3", 6" Extensions
Ratchet

Socket Set - 3/8" Drive:

5/16" - 3/4" Standard Depth (6 point) (optional)
3/8" - 3/4" Deep (6 point) (optional)
9mm - 19mm Standard Depth (optional)
9mm - 19mm Deep
3", 6", 12", 18" Extensions
Flexhead Ratchet
Impact Sockets - 3/8" - 3/4" Standard (optional)
Impact Sockets - 10mm - 19mm
Impact Driver
Ratchet

Universal Joint

Socket Set - 1/2" Drive:

7/16" - 1 1/8" Standard Depth (optional)
7/16" - 1 1/8" Deep (optional)
10mm - 25mm Standard Depth (optional)
10mm - 25mm Deep
5", 10" Extensions
Flex Handle (Breaker Bar)
Impact Sockets Standard 7/16" - 1 1/8" (optional)
Impact Sockets 12mm - 32mm
Impact Driver
Ratchet

Torque Wrenches (Sound/Click)Type:

3/8" Drive in. lb. (30 - 250)
3/8" Drive ft. lb. (5 - 75)
1/2" Drive ft. lb. (50 - 250)

MISCELLANEOUS TOOLS

Caulking Gun
C-clamps - assorted
Drill with applicable bits for spot weld removal (carbide)
Files - for steel and aluminum
Gear Puller Set - heavy duty with attachments
Heat Gun
Hole Saw Set - 1/2" to 2"
Lug Wrench
Oil Can (Pump Type)
Panel Splitter (hand held blades/accessories)
Pry Bar Set
Putty Knife
Rivet Guns - heavy duty blind and large for 3/16" and 1/4"
Sanding Tools - assorted
Scrapers
Scratch Awl
Tap and Die Sets - Metric (standard optional)
Tape Measure – Standard and Metric
Tin Snips
Tire Pressure Gauge
Tire Inflator
Twist Drill Sets:
 Standard - 1/64" - 1/4" by 1/16" and Metric Equivalent
 Standard - 1/4" - 1/2" by 1/16" and Metric Equivalent
 Wire Brushes - hand and powered
Special Removing and Releasing Tools:
 Door handle removing tool
 Door hinge spring and pin remover
 Miscellaneous interior and exterior trim removing tools
 Moulding removal tools
 Spring lock line removal tool set (A/C, fuel line, etc.)
 Stationary glass removal tools
 Windshield wiper removing tool

BODY WORKING TOOLS

Assorted files - for metal and plastic finishing, including:
 Body Files
 Hand Sanding Pads
 Metal Files
 Mixing Board
 Sanding Blocks (short and long)
 Sanding Boards (short and long)
Body Hammers:

Cross Chisel
Door Skin Hammer
General Purpose Pick
Large Face Finishing
Long Pick
Short Utility Pick
Shrinking

Dollies:

Bumping File
Dinging Spoon
Door skin Dolly
Fender Dolly
Inside Heavy Duty Spoon
Inside High Crown
Inside Medium Crown
Spoon Dolly (“Dolly on a stick”)
Toe Dolly
Universal Dolly

Filler Spreaders and Applicators - assorted types and sizes

Picks - assorted

ALUMINUM REPAIR TOOLS (RECOMMENDED)

[Abrasives](#)

[Belt Piercing Rivet Guns](#)

[Dedicated \(Clean\) Repair Station](#)

[Dent Pulling Equipment](#)

[Dollies](#)

[GMAW Welder Synergic Pulse](#)

[Hammers](#)

[Wet Mix Technology Dust Extraction System](#)

SPECIALTY TOOLS AND EQUIPMENT

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.

STRUCTURAL ANALYSIS AND DAMAGE REPAIR

Everything listed under Non-Structural Analysis and Damage Repair (Body Components) plus:

Frame/Unibody Straightening Equipment -

 Bench/rack or floor-mounted system with multiple pull capacity
Body over frame and unibody anchoring systems

Three-dimensional Measuring System with the capability to measure the total vehicle.

Tram Gauges

NON-STRUCTURAL ANALYSIS AND DAMAGE REPAIR (BODY COMPONENTS)

Abrasive Cut-off Tool and Discs

Anchoring System (recommended)

Heat Shrinking Tool

Car Lift (capable of totally lifting the vehicle) (recommended)

GMAW/MIG Welders and accessories (flow meter, cart, gas cylinder, nozzle cleaner)

Plasma Cutting Torch (recommended)

Portable Hydraulic Ram - with attachments

Plastic and Adhesives Tools-

 Plastic Welder

 Die Grinding Tool Set

 Disc Grinder - 3"

 Structural Adhesives Guns (dispenser) - two-component

Portable Power Tools -

 Abrasive Blaster and appropriate personal safety equipment (recommended)

 Eraser Wheel

 Grinders

 Heat Monitoring Crayons

 Hole Punch

 Metal Shears (optional)

 Mini Belt Sander for removal of plug welds

 Nibbler (optional)

 Power Reciprocating Saw and Blades

Sanders
Spot Weld Removal Tool
Pulling and Holding Equipment Set - to include:
Body Clamps (recommended)
Cable or Chain Ratchet (recommended)
Carbide Bits
Panel Splitter
Safety Chains/Cables
Sill Clamps (recommended)
Slide Hammer - complete with attachments
Stationary Power Tools -
Bench Grinder
Drill Press (recommended)
Welding Safety Equipment - to include:
Aprons
Face Shields
Gloves
Goggles
Helmets
Jackets
Respirators
Safety Glasses
Skull Cap
Welding Blanket
Welding Pliers
And all appropriate safety equipment
Squeeze-type Resistant Spot Welder (STRSW) (recommended)
Weld-on Pulling Tool and Attachments

MECHANICAL AND ELECTRICAL COMPONENTS

A/C Recycle/Recovery Machine
Battery Charger - with boost capability
Battery Post Cleaner
Battery Terminal Pliers
Battery Terminal Puller
Brake Bleeder - vacuum assisted
Brake Spoon
Chassis Lubricator
Connector Pick Tool Set
Coolant Tester
Cooling System Pressure Tester
DMM (Digital Multimeter)
Feeler Gauge (Blade Type):
.002" - .040"
.006mm - .070mm

Flexible Dial Indicator Gauge
Jumper Wire Set (with various adapters)
Laptop with applicable Diagnostic Software and Tools
Oil Filter Wrenches
Plugs and Caps for hydraulic, fluid, and A/C lines
Portable Battery Jump Box
Pressure Bleeder/Scan Box for bleeding antilock braking system
Scan Tool with OBDII capabilities
Soldering Gun/Iron
Vac and Fill equipment to extract fluids (oil, transmission, etc.)
Wheel Alignment System (4-wheel) (optional)
Wire and Terminal Repair Kit

PAINTING AND REFINISHING

Air Amplifier/Venturi style blower used to dry waterborne paint (optional)
Air Cap Test Gauge (optional)
Power Sanders
Color-matching Light System
Electronic Dry Film Thickness Gauge with a + or - of 1/10th of a mil thickness capabilities
Enclosed Paint Spray Booth to comply with local, state and federal regulation (downdraft booth recommended)
Gun Washer for Waterbase (Optional)
Hand Sanding Pads
Masking Equipment -
 Car Covers
 Paper and Tape Dispenser
 Wheel Covers
Paint Mixing Bank with Measuring Equipment
Paint Mixing Room (separate explosion-proof room per NFPA regulations)
Paint Shaker
Paint Storage Room/Locker in accordance with local, state, and federal regulations
Personal Safety Equipment (painting gloves, suits, hoods, respirators, etc.)
Portable Paint Curing Equipment (infrared)
Positive Pressure Air Respirator
Prep Station - (recommended) in accordance with local, state, and federal regulations
Sanding Blocks (short and long)
Spray Guns -
 HVLP (high volume low pressure) or compliant
Spray gun cleaning equipment in accordance with local, state, and federal regulations
UV Curing Light (optional)
Variable Speed Buffer/Polisher
Viscosity Cups
Waste disposal/recycle program in accordance with local, state, and federal regulation
Waterborne Spray Gun Equipment (Optional)

DEFINITIONS – TECHNICAL TERMS

ABRADE – (see SAND).

ACTIVE SUSPENSION SYSTEM – A continuously controlled self-adjusting suspension system.

ADJUST – To bring components or equipment to specified operational settings.

AIR PURIFYING RESPIRATOR – Uses a filter, cartridge, or canister to remove specific air contaminants by passing ambient air through the purifying element.

ALIGN (REALIGN) – To adjust components to a line or predetermined relative position.

ANALYZE – To examine the relationship of components of an operation.

ANCHOR – To hold in place.

APPLY – To put on, attach, or affix chemicals, components or parts by spraying, brushing, spreading or using hardware.

BLEED – To remove air from a closed system.

BUFF – To remove fine scratches, usually from a painted surface, using a fine abrasive such as compounds and polishes.

CHECK – (SEE VERIFY).

CLEAN – To rid component of extraneous matter for the purpose of reconditioning, repairing, measuring, or reassembling.

COLD SHRINK – To restore contour, shape, and dimensions to stretched sheet metal areas utilizing appropriate hammer and dolly techniques.

CONDITION – To prepare for future action.

DENIB – To remove dust/dirt particles in a painted surface.

DETERMINE – To establish the type and extent of damage to a component or the procedure to be used to affect the necessary repair.

DEVELOP (PLAN) – To identify, arrange or organize the steps or procedural components into a logical sequence of actions.

DIAGNOSE – To locate the root cause or nature of a problem by using a specified procedure.

EVACUATE – To remove air, fluid or vapor from a closed system by use of a vacuum pump.

FEATHEREDGE – To taper and smooth the edges of a damaged area using abrasives.

FILL (REFILL) – To bring fluid level to specified point or volume.

FLUSH – To use a fluid to clean an internal system.

GRIND – To remove material using a motor-driven abrasive wheel, [belt](#), disk or pad.

HEAT SHRINK – To restore contour, shape and dimensions to stretched sheet metal areas by applying heat and utilizing appropriate hammer and dolly techniques.

IDENTIFY – To establish the identity of a vehicle or component prior to service; to determine the nature or degree of a problem.

INSPECT (CHECK) – To verify condition by performing an operational or comparative examination.

INSTALL (REINSTALL) – To secure or attach a component in its proper position in a system.

LEAK TEST – To check for and/or locate leaks in a component or system.

LOCATE – To find by using tools, measuring instruments, equipment or the senses.

MASK – To protect a component or area from incidental damage from the application of refinishing materials.

MEASURE – To compare existing dimensions to specified dimensions by the use of calibrated instruments and gauges.

MIX – To combine or blend into one mass or mixture.

PERFORM – To accomplish a procedure in accordance with established methods and standards.

PLAN – (see DEVELOP)

PROTECT – To take actions to prevent damage to areas of the vehicles adjacent to the repair area.

REALIGN – (see ALIGN)

REDUCE – To lower the viscosity of a refinishing material.

REFILL – (see FILL)

REFINISH – To apply cleaners, paint, and other finishing materials to the repair areas.

REINSTALL – (see INSTALL)

REMOVE – To disconnect and separate a component from a system.

REPAIR (RESTORE) – To return damaged areas to acceptable size, dimensions, shape, performance characteristics and condition.

REPLACE – To exchange a damaged component with a new or used component.

RESTORE – (SEE REPAIR)

ROUGH SAND – To remove body filler, primer/substrate, or finish materials using coarse abrasives.

SAND (ABRADE) – To abrade or level the surface.

SCUFF – To abrade or degloss a surface for the purpose of adhesion.

SELECT – To choose the correct part, tool, equipment or setting during an assembly, adjustment or procedure.

SETUP – To select and assemble components, assemblies or parts in order or combination to produce desired results.

STORE – To organize and put away parts, hardware, and components for future retrieval and use.

STRAIGHTEN – To remove bends, creases, and other damage while returning a component to acceptable size, shape, and condition.

STRUCTURAL COMPONENTS – Any part of a vehicle's structure that bears loads, provides strength, and when removed or altered would compromise the integrity of the vehicle.

SUBSTRATE – A painted, primed or bare surface.

TINT – To adjust the color or hiding ability of refinishing materials.

VERIFY (CHECK) – To confirm a condition, adjustment or setting.

WASH – To clean by spraying, dipping, rinsing, rubbing or scrubbing.

WELD – To join metal or plastic pieces together by using a thermal process, often adding filler material to the joint.

