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Standard Practice for Identification and Categorization of Tooling[1]

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1. Scope

1.1 This practice describes the differentiation, identification, and categorization criteria for tooling, both unique and more general in nature. The physical markings should allow for one or more of the following to be ascertained: part number, serial number, ownership, revision, or symbology, or combination thereof.

1.2 Definitions for the unique subcategories that make up the tooling family will be described. These subcategories help to differentiate tooling categories for use in identification, control, and record keeping.

1.3 This practice is intended to be applicable and appropriate for all entities that hold tooling regardless of ownership or acquisition methodology. This practice further provides the detailed information to provide the flexibility of common nomenclature, identification, and tracking of unique tooling.

1.4 Items not covered but defined by this practice include, but are not limited to: consumable property, special test equipment (STE), plant equipment, general or special machinery equipment, and expendable tools.

1.5 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.*

2. Referenced Documents

2.1 *ASTM Standards:*[2]

E2135 Terminology for Property and Asset Management

E2279 Practice for Establishing the Guiding Principles of Property Asset Management

3. Terminology

3.1 *Definitions*—In addition to the below definitions, also reference Terminology E2135.

3.1.1 *unique tooling, n*—items that are custom made and are of such a specialized nature that without substantial modification or alteration their use is limited to the development or production of particular supplies/product or parts thereof, or performing particular services; usually are accountable and reportable property to a customer contract; also known as *special tooling*. Unique tooling can also be a system comprised of or contains common off-the-shelf items that are integrated together into the unique tool in a manner that provides specialized automated manufacturing capabilities uniquely configured and used to manufacture a certain product or part(s).

3.1.2 Other tooling types:

3.1.3

3.1.3.1 *expendable (tools), n*—property that can be consumed or become scrap as a result of intended use like drill bits.

3.1.3.2 *hand tools, n*—tools that are smaller in size, commercial off-the-shelf products typically stored and controlled by the mechanic/technician that the individual deploys as necessary, often without other administrative controls: hammers, screwdrivers, wrenches, planers, rake, shovels, and so forth; may be powered by hand, battery, electricity, etc.

3.1.3.3 *machined tools, n*—brake dies, joggle dies, joggle blocks, etc., which are usually considered part of or an accessory of the actual machine and not special to one peculiar product.

3.1.3.4 *standard tooling, n*—commercial off-the-shelf products for use in the manufacturing process (for example, drills, reamers, power saws, riveting tools, etc.); tooling that is often pooled and issued as required for the manufacturing process.

3.2 *Definitions of Terms Specific to This Standard:*

3.2.1 *installation kit tools, n*—installation-type tools that are usually delivered with the product to the customer; typically considered issued material or components of the installation kit.

3.2.2 *manufacturing/shop aids, n*—an aid made for the manufacturing process that is used to assist in the drilling, layout, and positioning of a part (for example, shim, plate,

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[2] For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

etc.); items of benefit to the mechanic/technician that are typically not called out in the manufacturing specifications.

3.2.3 *tool number, n*—primary identifier/part number, which often matches the part number or product number for which it is used to make.

3.2.4 *tool serial, n*—numerical unique identifier assigned in the manufacturing process of the tool, which becomes a manufacturer's serial number.

3.2.5 *tool series/multi, n*—numerical series used to identify the manufacturing batch or sequence from which this tool was made from; and multi represents the unique line number count of a tool made within a certain series.

3.2.6 *tool symbols, n*—alpha characters that create symbols used to identify a family or a specific type of unique tool that an organization or industry can use to associate like unique tools (for example, "AJ" equals an *assembly jig tool*, "DT" equals a *drill template tool*, etc.).

3.2.6.1 *Discussion*—See Appendix X1 for a partial list of published common unique tool symbols for use.

4. Significance and Use

4.1 The categorization and identification of tooling has a wide range of advantages to assist in maintaining an uninterrupted, productive, and cohesive business practice. These include, but are not limited to, identifying operation critical items, increasing tool utilization, and helping to allocate resources and manage production.

4.2 Tooling has a wide range of applications. This practice is intended to clarify the differences between the different groups of tooling and provide identification symbolism for standard communication across industries.

4.3 The identification of unique tooling reflected in this practice will provide inclusive and comparative insight into the availability regardless of ownership or acquisition methodology, tooling type, specifics of its internal assignment and use, or possible future requirements. This identification combination allows the shop floor to identify readily the family of tools required in the manufacturing process and recall readily the correct tool for usage.

5. Categorization, Identification, and Control of Tooling

5.1 The following criteria constitute characteristics that distinguish and differentiate ordinary tooling from unique tooling:

Unique tooling is specialized in nature,
Unique tooling is used for the development, production, or services of particular supplies or parts, and
Unique tooling performs a particular functionality, and is uniquely designed for that part or product.

5.1.1 Other tooling categories (see definitions in 3.1.3) that may be administratively tracked and identified individually only as determined necessary by the organization for the operational control or maintenance tracking purposes, if under the enterprise capital threshold (Practice E2279) include:

Standard tools,
Hand tools,
Expendable/perishable tools,
Installation kit tools,
Machined tools, and
Manufacturing shop aids.

5.1.2 Identification and control should be to the level both prudent and necessary to the scope or business in conjunction with cost of control considerations and risk factors.

5.2 If items in the other tooling categories are determined to need to be administratively controlled, they can be assigned a unique identification number (for example, bar code, etc.). Key data elements are often the manufacturer's name, model, or part number, or combination thereof.

5.3 Identification of unique tooling will be all inclusive for items owned by the entity as well as items not owned by the entity.

5.3.1 Unique tooling, regardless of ownership, may include, but are not necessarily limited to (also see Appendix X1):

Assembly jigs,
Fixtures,
Patterns,
Dies,
Molds,
Gauges,
Templates,
Custom robotic manufacturing systems, and
Laser based manufacturing systems deployed as manufacturing visual or measuring systems.

5.3.2 The data elements that create unique identification for unique tooling and are used in combination with each other to equal a unique individual tool (see Section 3 for definition) are:

Tool number,
Tool symbol (see 3.2.6), and
Tool series/multi. (see 3.2.5).

5.3.3 Other associated key information:

Tracking identification number (for example, barcode, etc.), and
Manufacturer's name.

5.4 Available tooling includes all on hand items, including those not currently in use to the extent that the tooling has been identified and is tracked or pooled.

6. Usage

6.1 The identification method outlined by this practice can be used to determine unique identification of tooling for use in tracking and controlling tooling.

6.2 An entity may identify unique tooling available to support the goals and mission of the entity and, over time, leverage this information to enhance performance.

6.3 The tooling identification and categorization defined (regardless of ownership) provides a framework that may be used to communicate clearly and consistently between entities.

6.4 This practice may suggest additional related or derivative standards based on this concept.

7. Keywords

7.1 definition; dies; fixtures; gauges; hand tools; jigs; machine tools; machined tools; manufacturing aids; molds; patterns; perishable tooling; personal tools; shop aids; special tooling; standard tooling; taps; tooling; types of tooling; unique tooling

APPENDIX

(Nonmandatory Information)

X1. UNIQUE TOOL SYMBOLS

X1.1 Table X1.1 represents the common symbology/description table used in industry and listed for common reference.

TABLE X1.1 Unique Tool Symbols and Descriptions

Tool Symbol	Tool Nomenclature
ABFX	Assembly boring fixture
ACMT	Apply chemical mill template
ACT	Alignment and check tool
ADG	Secondary drill gage
ADF	Automated drill fixture
ADT	Apply drill template
AFT	Assembly facility tool
AJ	Assembly jig
AJA	Assembly jig accessory
AJFX	Assembly jig and fixture
AJTF	Assembly jig and transport fixture
AK	Alignment kit
AM	Assembly model
AMF	Assembly machine fixture
APFX	Apply fixture
API	Arbor press insert
APRJ	Apply router jig
APST	Applied paint spot template
ASFX	Assembly fixture
ASMT	Assembly template
ASTF	Assembly and transport fixture
AT	Apply template
ATDJ	Applied trim and drill jig
ATDT	Apply trim and drill template
ATT	Apply trim template
ATTM	Applied template, masking
BAF	Balance fixture
BAJ	Bonding assembly jig
BD	Blanking die
BDF	Bonding fixture
BF	Boring fixture
BFD	Bland and form die
BITE	Base installation test equipment
BJ	Bonding jig
BLDI	Blank die
BLTO	Bladder tool
BMB	Bonding hydropress block
BNFM	Bond form
BNFX	Bond fixture
BOBR	Boring bar
BOF	Bonding fixture
BOFX	Boring fixture
BPD	Blank and pierce die
BPFD	Blank, pierce, and form die
BR	Ballast rack
BRD	Brake die
BRF	Broaching fixture
BRLT	Bonding reference layout template
BSF	Bore sight fixture
BSHF	Bonding shaper fixture
BSST	Bonding stock size template
BT	Blanking tool
BTF	Bond test fixture
BTSB	Bonding tool sub base
CABF	Composite assembly bond fixture
CAM	Cam template
CB	Core box
CBTO	Core bonding tool
CCFCD	Contour checking fixture
CD	Casting die
CDT	Conformal drill template
CF	Checking fixture
CFB	Creep form block
CFBT	Creep form block template
CFD	Cutoff and form die
CFF	Creep form fixture
CHF	Core-handling fixture
CHFD	Ceramic hot-forming die
CKF	Check fixture
CKT	Check template
CLFX	Clamping fixture
CLTS	Calibration test stand
CM	Control master
CMD	Compression molding die
CMFX	Core mill fixture
CMT	Chemical mill template
CND	Coining die
COD	Cutoff die
COFP	Composite fiber placement tape
COTA	Composite tape
CPD	Cutoff and pierce die
CPFD	Cutoff, pierce, and form die
CS	Caul sheet
CST	Cross-section template
CT	Contour template
CTA	Composite cure tool (aluminum)
CTB	Composite cure tool (BMI)
CTI	Composite cure tool (INVAR)
CTM	Composite tool mandrel
CTMM	Cure tool matched metal
CTN	Composite cure tool (nickel coated)
CTS	Composite cure tool (steel)
CTT	Core trim template
CUB	Cleanup buck
CUF	Curing fixture
CUFX	Cure fixture
CUTO	Composite understructure tool
DBFX	Diffusion bonding fixture
DBJ	Dip brazing jig
DBT	Developed blank template
DCM	Die-casting mold
DCP	Drill cluster plate
DCT	Die construction template
DD	Drop hammer die
DF	Drill fixture
DFT	Design facility tool

TABLE X1.1 *Continued*

Tool Symbol	Tool Nomenclature
DFVA	Drill fixture vacuum assisted
DHD	Drop hammer die
DHF	Drivematic holding fixture
DIT	Drivematic indexing template
DJ	Drill jig
DKD	Dinking die
DLT	Developed layout template
DM	Draw and bending mandrel
DMT	Chemical mill template
DP	Dummy part
DPF	Drill plate fixture
DPFT	Design profile template
DPMA	Dummy part master
DPP	Duplicating pattern—production
DRD	Draw die
DRP	Drill plate (assembly)
DRT	Drill template
DSB	Drill spacer block (metallic)
DT	Developed template (layout)
DT	Drill template
DUC	Duplicating cam
DUP	Duplicating pattern
DUT	Duplicating template
EAC	Electrical adaptor cable
EBD	Economy blanking die
EBPD	Economy blank and pierce die
ECC	Electrochemical cathodes
ECF	Envelop check fixture
ECKF	Electrical check fixture
ED	Extrusion die
EDMF	Electron discharge machining fixture
EHSD	Expansion hot size die
EIF	Engine installation fixture
EIJ	Erco indexing jig
EJB	Electrical jig board
EJBT	Electrical jig board template
EJT	Erco jig template
EM	Engraving master
EMAS	Electronic mate and alignment system
EMF	Electromachine fixture
ETB	Electrical test box
ETTP	Etch template
FAJ	Floor assembly jig
FB	Form block
FBT	Form block template
FCT	Form-cutting tool
FD	Form die
FDF	Form die forging
FDI	Form die—impact
FDP	Form die—press
FDS	Form die swage
FG	Facility gage
FGD	Forging die
FM	Facility master
FMD	Form-molding die
FME	Floor-mounted equipment
FPML	Fiber placement mandrel
FR	Forming roll
FTPA	Fabricated tool pattern
FTTO	Functional test tool
FXFM	Fixture frame, ICY
GCL	Glass cloth layout
GF	Grinding fixture
GGF	Gear-grinding fixture
GHF	Gear-hobbing fixture
GMCG	Master control gage
GMLO	Graphite master layout
GRD	Glass rock die
GSF	Gear-shaving fixture
GSHF	Gear-shaping fixture
GT	General tool
GTF	Gear-testing fixture
HAC	Harness adaptor cable
HAJ	Handling jig
HB	Hydropress block

TABLE X1.1 *Continued*

Tool Symbol	Tool Nomenclature
HBFD	Hydraulic bulge form die
HCFM	Honeycomb-forming mold
HCT	Hole-checking template
HCUF	Honeycomb cure fixture
HD	Hammer die
HF	Holding fixture
HFB	Hand form block
HFD	Hot form die (arbor press insert)
HFHT	Handling fixture-hoist tool (sling)
HFIA	Holding fixture integration and assembly
HFLA	Handling fixture—line access
HFLD	Holding fixture—line dolly
HFPR	Handling fixture—production
HFTB	Handling fixture—tow bar
HFTO	Hot form tool
HGRD	Heated glass rock die
HJ	Handling jig
HJA	Handling jig accessory
HJI	Hufford jaw insert
HJTF	Holding jig and transport fixture
HLT	Hole-locating template
HOBF	Honeycomb braze fixture
HOCF	Honeycomb crushing fixture
HOFX	Holding fixture
HOMF	Honeycomb milling fixture
HPFM	Hydropress form
HRBD	Harness board
HRF	Hand-router fixture
HRTO	Hand-router tool
HSD	Hot -sizing die
HSF	Hot -sizing fixture
HSP	Hydroshear plate
HTB	Heat treat block
HTFX	Heat treat fixture
HTN	Hand tool nonstandard
HXBF	Hexply bonding fixture
IAT	Inspection apply template
ICF	Interface check fixture
ICM	Investment casting mold
ICT	Interchangeability control tool
IG	Inspection gage
IJ	Installation jig
IM	Injection mold
IMF	Inspection machine fixture
INFX	Inspection fixture
ITCT	Index trim and contour template
ITT	Index trim template
JB	Joggle blocks
JD	Joggle die
JDT	Jig drill template
JGDI	Joggle die
JGTA	JGADS tape
JM	Jig master
JMA	Jig master accessory
JT	Jig template
LCRF	Leak check restraining fixture
LCT	Layout contour template
LF	Lathe fixture
LJ	Locating jig
LM	Lay-up mandrel
LOSM	Line-of-sight master
LSTA	Laser tape
LT	Layout template
LTE	Laser-tracking equipment
LUM	Lay-up mandrel
MA	Master
MAC	Master control
MAF	Master facility tool
MAM	Master model
MC	Mill cutter
MCM	Machine control medium
MD	Mold die
MDG	Master drill gage
MDL	Master dimensions layout
ME	Mechanical equipment

TABLE X1.1 *Continued*

Tool Symbol	Tool Nomenclature
MEDM	Manufacturing engineering data model
MEXT	Mandrel extraction tool
MF	Mill fixture
MFB	Mill fixture base (laminate)
MG	Master gage
MGM	Manufacturing graphics master
MHF	Marwin holding fixture
MIT	Miscellaneous tool (unique)
MJD	Mass joggle die
MKTA	Marking tape
MLFX	Mill fixture (metallic) with TMCM
MLO	Master layout
MLT	Master layout template
MM	Master model
MOLD	Mold
MP	Metal pattern
MRBK	Marwin router block
MRTO	Miscellaneous reference tool
MS	Master sample (part)
MSIR	Master IR tape
MSPM	Master precision machine tape
MT	Masking template
MTE	Manufacturing test equipment (CKF)
MTFX	Mate fixture
MTT	Master tooling template
MU	Mockup
ND	Notching die
OCT	Optical comparator template
OHME	Overhead mechanical equipment
OP	Orthomat plot
OT	Optical tool
OTM	Optical tooling master
PAT	Plastic apply template (drill template)
PAT	Pattern
PAT	Plastic apply trim tool SLA process
PATT	Plastic apply trim
PB	Profile block
PBD	Pierce-blank die
PBD	Power brake die
PBDB	Pierce-blank die (Class B)
PBT	Pierce-blank tool
PC	Protective cover (laminate or metal, not perishable)
PCD	Pierce cutoff die
PCE	Production check equipment
PCFF	Post-curing form fixture
PCFX	Post-cure fixture
PCHF	Paint cell-holding fixture
PCRV	Protective cover
PD	Pierce die
PD	Process sheet
PDD	Program dimensioned drawing
PDSM	Production sample part
PEA	Process equipment accessory
PFB	Preform block
PFCD	Pierce form and cutoff die
PFD	Pierce and form die
PFF	Preform fixture
PFP	Plastic-faced plaster
PFS	Preform screen
PFT	Profile template
PFTT	Preform tool
PG	Plug gage
PHF	Process-holding fixture
PHFX	Process-holding fixture
PHL	Pinhole locator
PHT	Photo template
PI	Production illustration
PJPA	Project plate autoclave
PKUJ	Pickup jig
PLM	Plastic laminating mold
PLRF	Planner fixture
PM	Plate master
PMCM	Permanent mold casting mold
PMD	Pressure mold die
PME	Portable mechanical equipment

TABLE X1.1 *Continued*

Tool Symbol	Tool Nomenclature
PMF	Profile mill fixture
PMTT	Polymeric transfer tool
PMU	Plaster mockup
PPP	Production part pattern
PPTA	Point-to-point tape
PRBG	Pin router block guide
PRBK	Pin router block
PRD	Pressing die
PRE	Protective equipment- unique
PRG	Parabolic radius gauge
PRT	Portable router tool
PS	Production sample
PSD	Protection or service device, or both
PST	Paint spot template
PT	Profile template
PTE	Production test equipment
PTTO	Pressure test tool
PUJ	Pickup jig
RAJ	Riveting assembly jig
RATF	Rotate and transportation fixture
RB	Router board
RBK	Radial arm router block
RBT	Rough blanking template
RCCS	Rubber cast caul sheet
RCF	Roller coat fixture
RCTA	Robotic coating tape
RDT	Router Drill template
RE	Repair equipment
REPT	Reference photo template
RF	Router fixture
RG	Ring gage
RGAD	Reprogrammable gantry applied drill
RGFX	Rigging fixture (alignment and check fixture)
RIT	Riveting tool
RIVB	Reusable internal vacuum bag
RJ	Riveting jig
RLT	Reference layout template
RM	Rubber mold
RMF	Ream fixture (laminate)
RMST	Rapid manufacturing soft tooling
RP	Roll pad (assembly)
RPFM	Rubilith positive film
RRHF	Radar range-holding fixture
RST	Rough saw template
RT	Rigging tool
RTMD	Resin transfer mold die
RTML	Resin transfer mold layup
RWJ	Resistance weld jig
SA	Sample assembly
SAF	Saw fixture
SAFX	Saw fixture
SAT	Subassembly template
SB	Shaper block
SC	Scaffolding- unique
SCD	Stretch compression die
SCFM	Syncore forming mold
SCJ	Stretch chuck jaws
SD	Shaving die
SDFD	Stretch draw form die
SDT	Stock and drill template
SED	Segmented expanding die
SEG	Secondary gage
SF	Saw fixture
SFB	Spinning form block
SFI	Shaper fixture insert
SHB	Silhouette harness board
SHF	Shaper fixture
SHFD	Superplastic hot form die
SK	Sketch
SLD	Slitting die
SLFX	Skin-locating fixture
SLG	Sling
SMD	Slush mold die
SME	Shipping mechanical
SMF	Spar mill fixture

TABLE X1.1 *Continued*

Tool Symbol	Tool Nomenclature
SMT	Spray mask template
SNCT	Sheet metal machine control data
SP	Sample part
SPC	Spinning chuck
SPD	Stretch press die
SPF	Shot-peening fixture
SPFC	Superplastiic Foam tool (casting)
SPFD	Superplastic form die
SPFX	Shot-peen fixture
SPNF	Shot-peening fixture
SPT	Sample part template
SRF	Strain relief fixture
SRT	Stress relief tool
SS	Silk screen (assembly)
SSTO	Silk screen tool
ST	Safety tool (miscellaneous)
STB	Stretch block
STFB	Stretch form block
STP	Alignment kit
STR	Storage rack (unique)
SURF	Sequential universal rail fixture
SUT	Setup template
SWD	Swaging die
SWJ	Spot weld jig
SWT	Spot weld template
TAD	Test adaptor device
TAJ	Trunnion assembly jig
TB	Test bench
TCF	Trim and contour fixture
TCFX	Tube check fixture
TCGT	Tool and cutter grind tool
TCKF	Test check fixture
TCST	Thermal cutting stock template
TCT	Trim and contour template
TD	Trimming die
TDF	Trim and drill fixture
TDS	Tool data sheet
TE	Test equipment
TF	Trim fixture
TFC	Trim fixture clamp assisted
TFD	Tube form die
TFTFA	Temporary facility tool
TFV	Trim fixture vacuum assisted
TG	Thread gauge
TH	Test harness

TABLE X1.1 *Continued*

Tool Symbol	Tool Nomenclature
THF	Threading fixture
TJ	Trim jig
TJD	"T" coded joggle die standard holder
TMB	Tooling machine base
TMCM	Tooling machine control medium
TME	Transportation mechanical equipment
TMF	Transfer mold forming
TMLO	Tooling master layout
TMT	Transfer media tool
TOAC	Tooling accessory
TOMO	Tooling mold
TRAJ	Trunnion assembly jig
TRTF	Turnaround transport fixture
TS	Template setup
TSB	Tool subbase
TSCD	Tool specification control drawing
TSCF	Template setup check fixture
TSF	Transportation/shipping fixture
TSJ	Test jig
TT	Trim template
TTS	Tooling tolerance sketch
TUFD	Tube form die
TUI	Tool usage instructions
TUT	Tubing template
TUTT	Tubing trim template
UT	Utility tool
VCFF	Vacuum creep form fixture
VFT	Vacuum form tool
VJ	Vise jaws
VMD	Vacuum mold die
VFMO	Vacuum form mold tool
WAFB	Water form block
WAJ	Wing assembly jig
WDT	Wiedemann-developed template
WF	Weld fixture
WFB	Wire form board
WJ	Weld jig
WJB	Wire jig board
WJFX	Water jet fixture
WLFX	Weld fixture with TMCM
WP	Wood pattern
WRG	Wire-routing guide (jig board)
WS	Work stand (unique customized scaffolding)
ZDT	Interior panel drill template