EAST/WEST INDUSTRIES, INC.
AN INNOVATIVE COMPANY

EWI-PC-1000

Revision T
MAY 17, 2024

EAST/WEST PROCESS CODES

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1.0 SCOPE

1.1 The purpose of this document is to present, in abbreviated form, the various processes employed in preparing metals to accept protecting finish coats, as well as inspection processes.

1.2 Reference should be made to MIL-STD-171, titled “Finishing of Metal and Wood Surfaces” and to MIL-HDBK-132 (cancelled), titled “Protective Finishes for Metal and Wood Surfaces”. Use of these two reference documents along with the process code index spelling out applicable specifications will ensure that the correct processes have been employed.

2.0 APPLICABLE DOCUMENTS

The documents listed in the 3.0 set forth, in detail, the steps to be performed in order that the requirements of the process be fully met.

See 5.0 for the **Error! Reference source not found.**.

3.0 PROCESS CODES

E/W CODE	PROCESS	APPLICABLE SPECIFICATION	TITLE
P1	General (& Sheet Metal)	MOI-1000 Section II	General Workmanship Standards
P2	Machining	MOI-1000 Sections II & III	General Workmanship Standards
P3	Assembly	MOI-1000 Section IV	General Workmanship Standards
P4	Finish	MOI-1000 Section V	General Workmanship Standards
COMBINATION CODES			
P5	Heat Treat	per Code PC	
	Magnetic Particle	per Code PH	
	Shot peen	per Code PY (1)	
INDIVIDUAL CODES			
PA	Castings	SAE AMS2175 (S/S AMS-STD-2175) (S/S MIL-STD-2175)	Castings, Classification and Inspection of
PB	Heat Treat (Aluminum)	SAE AMS2770 (S/S SAE AMS H 6088)	Heat Treatment of Aluminum Alloys
PC	Heat Treat (Steel)	SAE AMS H 6875 (Raw Material) (S/S MIL-H-6875)	Heat Treatment of Steel Raw Materials
		SAE AMS 2759 (Parts) (ref. AMS-H-6875 para 6.3 & 3.4)	Heat Treatment of Steel Parts
PD	Inspection, General Requirements	MIL HDBK 6870 (S/S MIL-I-6870)	Inspection Requirements, Non-Destructive for Aircraft Materials and Parts
PE	Laminate	L-P-383 (1)	Plastic Material, Polyester Resin, Glass Fiber Base Low Pressure Laminated
PF	Lubrication	EW34002	Lubricant, Solid Film, Heat Cured, Corrosion Inhibiting
PG	Not Used-	-	-
PH	Magnetic Particle	ASTM-E1444 (S/S MIL-STD-1949) (S/S MIL-I-6868)	Magnetic Particle Testing
		NOTE: Specify Grade IAW MIL-STD-1907 [ref. Codes PH thru PH(D)]	
	PH	Grade A - Critical parts with above normal integrity	
	PH(B)	Grade B - Parts with high but well distributed stresses	
	PH(C)	Grade C - Parts with moderate stresses	
	PH(D)	Grade D - Castings with low stresses adjacent to Grade A, B, or C areas (Rarely used for all sections of castings)	
PI	Painting	See EWI-FC-1000	East/West Finish Codes
PJ	Passivation	See EWI-FC-1000 Code P	East/West Finish Codes
PJ (C)	Passivation (Castings)	See EWI-FC-1000 Code P(C)	East/West Finish Codes

E/W CODE	PROCESS	APPLICABLE SPECIFICATION	TITLE
PK	Penetrant Inspection	ASTM-E-1417 (S/S MIL-STD-6866) (S/S MIL-I-6866)	Liquid Penetrant Inspection Examination, Standard Practice for
		Acceptance Rejection Criteria: Per MIL-STD-1907, Note 5, Quality Grade A. Etch required except where Tolerances of +/- .0003 are required	
		NOTE: Drawing should specify any ETCH MASK requirements or NO MASK	
		NOTE: Specify Grade IAW MIL-STD-1907 [ref. PK thru PK(D)]	
	PK	Grade A - Critical parts with above normal integrity	
	PK (B)	Grade B - Parts with high but well distributed stresses	
	PK (C)	Grade C - Parts with moderate stresses	
	PK (D)	Grade D - Castings with low stresses adjacent to Grade A, B, or C areas. (Rarely used for all sections of castings)	
PL	Radiographic Inspection	ASTM E1742 (S/S MIL-STD-453)	Radiographic Examination Inspection
PM	Radiographic Inspection	MIL HDBK 1264 (S/S MIL-STD-1264)	Radiographic Inspection for Soundness of Welds in **Steel** by Comparison to Graded ASTM-E-390 Reference Radiographs
PN	Radiographic Inspection	MIL HDBK 1265 (S/S MIL-STD-1265) **Alternate: use PN (1)**	Radiographic Inspection Classification and Soundness Requirements for **Steel Castings** (Specify Grade & Class on B/P)
PN(1)	Radiographic Inspection	SAE AMS 2175	Castings, Classification and Inspection of (Specify Grade & Class on B/P)
PO	Soldering - non-electrical	Cancelled (Was DOD-STD-1866)	Soldering Process, General Non-electrical, Metric
PP	Soldering - Electrical	Cancelled (Was MIL-STD-2000) (S/S MIL-S-45743)	Soldering Process, Soldering, Manual Type, High Reliability, Electrical and Electronic Equipment
PQ	Threads, J	SAE AS8879 (S/S MIL-S-8879)	Screw Threads, UNJ Profile, Inch Controlled Radius Root with Increased Minor Diameter
PR	Threads, Pipe	SAE AS71051 (S/S MIL-P-7105)	Pipe Threads, Taper, Aeronautical National Form, Symbol ANPT, Design and Inspection Standard
PS	Ultrasonic Inspection	Cancelled (S/S by PU)	
PT	Welding, Fusion, Aluminum	AWS D17.1 (Was MIL-STD-2219) (Was AWS D17.1) (S/S SAE AMS 2219) (S/S MIL-STD-2219) (Was MIL-W-8604)	Fusion Welding for Aerospace Application [Use PT(A), PT(B), or PT(C), see below]
	PT(A)	Class A Weld (For Critical Applications) (ref. AWS D17.1 para. 6.4) (Radiographic Inspection & Liquid Penetrant Inspection, except as outlined in AWS D17.1)	
	PT(B)	Class B Weld (For Non-Critical Aluminum, Structural Applications) Class B (ref. AWS D17.1 para. 6.4) (Liquid Penetrant Inspection)	
	PT(C)	Class C Weld (For Non-Critical Aluminum, & Non-Structural Applications) Class C (ref. AWS D17.1 para. 6.4) (Visual Inspection Only)	
PU	Ultrasonic Inspection	AMS-STD-2154 Type I, Class AA	Inspection, Ultrasonic, Requirements for

E/W CODE	PROCESS	APPLICABLE SPECIFICATION	TITLE
PV	Welding, Fusion Steel	AWS D17.1 **(See PT above)** (Was MIL-W-8611)	Fusion Welding for Aerospace Applications (Use PV(A), PV(B), or PV(C), see below)
	PV(A)	Class A - **Radiographic inspection** (AWS D17.1 ¶ 7.3.3) in accordance with ASTM E1742. Acceptance criteria shall be in accordance with AWS D17.1, Table 7.1, Class A	
	PV(B)	Class B - **Penetrant inspection** (AWS D17.1 ¶ 7.3.1) in accordance with ASTM E1417 or equivalent using an approved Type 1 penetrant system, any method, sensitivity level 2 or better, and with or without developer. Acceptance criteria shall be in accordance with AWS D17.1, Table 7.1, Class B. Equivalent process may be used with engineering authority approval from East/West Industries.	
	PV(C)	Class C - Weld (For Non-Critical & Non-Structural Applications) (ref. AWS D17.1 para. 7.3) **(Visual Inspection Only)**	
PW	Welding, Spot	SAE AMS W 6858 (S/S MIL-W-6858)	Welding, Resistance, Spot and Seam
PX	Riveting	MIL-STD-403	Preparation for and Installation of Rivets and Screws, Rocket, Missile, and Airframe Structures
PY	Mechanical Blast	-	-
	PY	Glass Bead Blast or Tumble parts to remove sharp edges, tool marks and provide a good cosmetic finish. Glass Bead is recommended for the removal of heat treat discoloration and weld slag.	
	PY(1)	Shot Peen per SAE AMS2430; See Appendix 4.1	
	PY(2)	Grit Blast	**Note: Media** type, hardness (if applicable), size, and desired surface finish should be specified on the engineering drawing
PZ	Part Marking	MIL-STD-130	Identification Marking of U.S. Property
PAA	Cleaning	EWI-CP-001	Oxygen Cleaning with Isopropyl Alcohol
PAB	Cleaning	EWI-CP-002 (Cancelled) (S/S by EWI-CP-202)	Oxygen Cleaning with Low Titer Soap
PAC	Cleaning	EWI-CP-003 (Cancelled) (S/S by EWI-CP-202)	Oxygen Cleaning with Detergent
PAD	Cleaning	EWI-CP-201	Cleaning Procedure for Oxygen Cylinders
PAE	Cleaning	EWI-CP-202	Oxygen Cleaning with Aqueous System
PAF	Cleaning	EWI-CP-203 (Cancelled) (S/S by EWI-CP-201)	Re-Cleaning of Oxygen Cylinders
PAG	Cleaning	EWI-CP-61-101 (Cancelled) (S/S by EWI-CP-202)	Cleaning Oxygen Components with Freon
PAH	Acid Clean (Cylinders)	AMS 2700 Method 1 (Nitric) Type VI, Class 2 **(Alternate use PAJ)**	Nassau Chrome Pickle Passivate Processes PP-01 & PP-15 (ref. EWI-TP-001)
PAJ	Alkaline Clean (Cylinders)	Alkaline Clean Al_2O_3 Blast (120 grit) Alkaline Clean Passivate (AMS 2700, TY VI) Bake 350ºF – 30 minutes **(Alternate use PAH)**	Aircraft Finishing (AFC) Mechanical Clean & Passivate (ref. EWI-TP-001)

4.0 APPENDICES

4.1 PY(1) Shot Peen Ordering Information (AMS2430)

In accordance with AMS2430T, the East West Purchase Order shall provide the following Ordering Information shall be provided to the shot peen vendor. If East West does not provide any of the following, the processor shall use the provisions specified in AMS2430. Paragraph references are to AMS2430.

a) **Purchase order** number and revision level
b) **Part number** and revision level
c) **Part alloy** and tensile strength and/or hardness
See Table 4-1
d) **Quantity** of parts
e) AMS2430T
f) **Media** type, hardness, size in accordance with AMS2431. (3.1)
See Table 4-1
g) **Test strip** type. (3.2.2)
See Table 4-1
h) **Pre-shot peen cleaning** method. (3.3.3.2)
- All parts shall be cleaned with mineral spirits, aqueous cleaner, or isopropyl alcohol.
- Parts shall be visually inspected to verify freedom from grease, dirt, oil, corrosion, mechanical damage, and corrosion-preventive coatings such as anodic coatings, plating, or paint.

i) **Intensity** requirement. (3.5.1)
See Table 4-1
j) **Intensity verification** locations. (3.5.1 and 3.7)
- A minimum of **one intensity verification** is required for each variation of machine settings as shown on the process parameter sheet (3.7).
- The machine shall be **set up** to shot peen the test strip (see g) fixture and a **saturation curve** shall be established in accordance with SAE J443.
- Intensity verification shall be **performed prior to peening, every 8 hours of peening**, and at the end of lot.
- The part shall then be **inspected for coverage** in accordance with SAE J2277 at first piece inspection and final inspection.
- The **vendor's coverage production procedure** shall be documented in their Technical Plan and QMS documentation.

k) **Coverage** requirement. (3.5.2)
- Unless otherwise noted in Table 4-1, parts shall be **100% inspected at 10X** for full/complete coverage in accordance with SAE J2277.
- If required, see applicable drawing for any locations and dimensional tolerances of areas that are designated to be free from any shot peening or as **prohibited areas**. These areas shall be **suitably masked** or otherwise handled to protect such surfaces from the shot stream.

l) **Coverage verification** method and if use of fluorescent tracer or dye marker inks requires cognizant engineering organization approval. (3.5.2)

3.5.2 Coverage

3.5.2.1 Part peening for coverage shall be developed and parts shall show full/complete coverage in accordance with SAE J2277 unless otherwise specified by the cognizant engineering organization.

3.5.2.2 Areas of the part or work piece and the dimensional tolerances of these areas that are designated in the contract or applicable drawing to be free from any shot peening or as prohibited areas shall be suitably masked or otherwise handled to protect such surfaces from the shot stream.

3.5.2.3 Peening "optional" shall mean those areas, located adjacent to shot peened areas and subject to shot impingement, may have complete, partial, or no coverage.

m) **Part locations** to be shot peened, free from peening, or peening optional. (3.5 and 3.6) See Table 4-1

n) If **externally applied forces** are permitted on part during processing. (3.4.2) See Table 4-1

o) East West requires approval of the **processor's quality control** system (4.3.1) and shot peening parameter sheet prior to production. Alternatively, NADCAP accreditation will suffice as evidence of approved QMS (AC7004)

p) **No alternative intensity verification** methods may be used without East/West approval.

q) After peening and removal of protective masks, all media and fragments shall be removed from surfaces of parts (3.9.1)
   a. Clean in accordance with h) above
   b. Corrosion resistant steel parts peened with steel media shall be **Passivated** (ref. EWI-FC-1000, Code P) to remove all iron contaminants.
   c. All other materials peened with steel media require a method approved by East West to remove all iron contaminants.

r) Parts subject to corrosion shall be protected from corrosion by a method acceptable to or specified by the purchaser (East West), as applicable, protected from handling damage, and prepared for shipping (3.9.2)
   - Part preservation/**shipping method** shall be the same as received from EWI or EWI subcontractor.

Table 4-1 Shot Peen Ordering Information

Order Information		Ref. AMS2430T	Component	
a	P.O. # and revision level		See EWI P.O.	
b	**Part Number**		**396D552-11, -13**	TBA
	Revision		See 4.1b)	
-	Nomenclature		Tube, Stanchion	
c	Alloy		420 per AMS 5621	
	tensile strength and/or hardness		(240 KSI min) Rc 49 – 52	
d	Quantity of parts		See 4.1d)	
e	Shot Peen Specification		See 4.1e)	
f	Media type and hardness	AMS2431, 3.1	AMS2431/2, ASH-230	
	Media size		170 Min (AMS2430 Table 8)	
g	Test strip type	3.2.2	SAE J442 “A” Strips	
h	Pre-shot peen cleaning method	3.3.3.2	See 4.1h)	
I	Intensity requirement	3.5.1	0.010A (-.002A, +.005A per AMS2430 Table 8)	
j	Intensity verification locations	3.5.1 & 3.7	See 4.1j)	
k	Coverage requirement	3.5.2	See 4.1k)	
			100% OD, ID N/A	
i	Coverage verification method		See 4.1l)	
	fluorescent tracer or dye marker inks requires EWI approval			
m	Peening Location	3.5 & 3.6	peening required all over entire external diameter	
n	External forces permitted during processing	3.4.2	No external forces are permitted	
o	EWI approval of the processor's quality control system	4.3.1	See 4.1o)	
	EWI approval of shot peening parameter sheet	4.3.2 & 3.7		
p	alternative intensity verification methods	3.7.1.1	See 4.1p)	
q	Post-shot peen cleaning method	3.9.1	See 4.1q)	
	Responsibility (EWI or Vendor)			
r	Part preservation/shipping method	3.9.2 & 5.1	See 4.1r)	

5.0 REVISIONS

Table 5-2 TABLE OF REVISIONS

TABLE OF REVISIONS					
Rev	Date	By	Description of Change		
			Code	Change	Reference
A	9-21-94	J.W	PF:	EW34002	(WAS) MIL-L-8937
			PH	ASTM-E-1444	(WAS) MIL-STD-1949
			PI	EWI-FC-1000	(WAS) EWI-FC-001
			PK:	MIL-STD-6866	(WAS) MIL-I-6866
			PT	MIL-STD-2219	(WAS) MIL-W-8604
			PV	MIL-STD-2219	(WAS) MIL-W-8611
			PAB	S/S BY PAE	
			PAC	S/S BY PAE	
			PAF	S/S BY PAD	
			PAG	S/S BY PAE	
B	3-10-03	J.W.	PJ:	ASTM-A-967	(WAS) MIL-S-5002 (EAI 1A)
			PJ(C):	Added (EAI 1A)	
			PS	S/S BY PU	(conflict with GAC Code)
			PK	ASTM-E-1417	(WAS) MIL-STD-6866 (Quality Assurance Log # 97-191) (EAI 1A)
			PU	Added	(Supersedes PS)
C	9/8/06	J.W.	Para 1.2	"… MIL-HDBK-132 (cancelled), titled "Protective Finishes for Metal and Wood Surfaces"	(WAS) "…MIL HDBK-132 titled Military Handbook.")
			Para. 2.0	"… the following Table …"	(WAS) "…Appendix I of this specification…"
			PA	SAE AMS 21	(WAS) MIL-STD-2175)
			PB	SAE AMS 2175	(WAS) MIL-H-6088)
			PC	SAE AMS H 6088	(WAS) MIL-H-6875)
			PD	MIL HDBK 6870	(WAS) MIL-I-6970)
			PL	ASTM E 1742	(WAS) MIL-STD-453)
			PM	MIL HDBK 1264	(WAS) MIL-STD-1264)
			PN	MIL HDBK 1265	(WAS) MIL-STD-1265)
				(ADDED) alternate PN(1)	
				(ADDED) Specify Grade & Class on B/P	
			PN (1)	(ADDED)	
			PO	Cancelled Spec	(WAS) DOD-STD-1866)
			PP	Cancelled Spec	(WAS) MIL-S-45743)
			PQ	SAE AS 8879	(WAS) MIL-S-8879)

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Rev	Date	By	Description of Change		
			Code	Change	Reference
C (cont.)					
			PR	SAE AS 7105	(WAS) MIL-P-7105
			PV	SAE AMS 2219	(WAS) MIL-STD-2219)
			PW	SAE AMS W 6858	(WAS) MIL-W-6858
			PY	Deleted Applicable Spec	(WAS) MIL-STD-852)
D	5/27/2009	J.W.	P1 thru P4	(ADDED)	
			PJ	See EWI-FC-1000 Code P	
			PJ (C)	See EWI-FC-1000 Code P(C)	(WAS) SAE AS7105)
			PR	SAE AS71051	
			PW	(SAE AMS W 6858)	(WAS) SAE AMS W 6858
			PX	(MIL-STD-403)	(WAS) MIL-STD-403
E	5/21/2012	J.W.	PC	(ADDED) Decarb Samples for 400 CRES	
F	7/23/2012	J.W.	PC	(ADDED) SAE AMS2759 Heat Treatment of Steel Parts	(DELETED) Decarburization Samples are required for 400 Stainless (ref Para 3.4
G	4/30/2013	C.I.	PT & PV	AWS D17.1	(WAS) MIL-STD-2219
H	10/16/14	A.S.		(ADDED) COMBINATION **CODES**	
			P5	(ADDED) Codes PC, PH, PY (1)	
			PT(A)	Welding, Fusion Aluminum, Class A	
			PT(B)	Welding, Fusion Aluminum, Class B	
			PT(C)	Welding, Fusion Aluminum, Class C	
			PV(A)	Welding, Fusion Steel, Class A	
			PV(B)	Welding, Fusion Steel, Class B	
			PV(C)	Welding, Fusion Steel, Class C	
			PY(1)	(ADDED) Shot Peen per SAE AMS2430	
J	8/10/2016	CI		(deleted) Chief Engineer sign off	
			PY	Glass Bead Blast	(WAS) Glass Bead Peening Procedures
K	12/19/16	C.I.	PK	(Added) Acceptance Rejection Criteria	
				(Added) Etch Required…	

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Rev	Date	By	Description of Change		
			Code	Change	Reference
L	11/20/18	C.I.		(UPDATED) cover sheet to reflect new address.	
M	12/14/18	C.I.	PK	(ADDED) NOTE: Drawing should specify any ETCH MASK requirements or NO MASK.	
N	5/1/2019	J.W.	PAH	(ADDED) ref. ECR 19-081	
			PAJ	(ADDED) ref. ECR 19-119	
P	03/11/2021	C.I.		All pages renumbered.	**(ref. ECR 19-194 and ECR 20-287)**
			PV(A	Radiographic inspection (AWS D17.1 ¶ 7.4) in accordance with ASTM E1417. Acceptance criteria shall be in accordance with AWS D17.1, Table 7.1, Class A.	(WAS) Class A Weld (For Critical Applications) (ref. AWS D17.1 para. 6.4) (Radiographic Inspection & Liquid Penetrant Inspection, except as outlined in AWS D17.1)
			PV(B)	Penetrant inspect (AWS D17.1 ¶ 7.4) in accordance with ASTM E1742 or equivalent using an approved Type 1 penetrant system, any method, sensitivity level 2 or better, and with or without developer. Equivalent process may be used with engineering authority approval from East West Industries.	(WAS) Class B Weld (For Non-Critical Structural Applications) (ref. AWS D17.1 para. 6.4) (Liquid Penetrant Inspection)
			PV(C)	Class C Weld (For Non-Critical & Non-Structural Applications) (ref. AWS D17.1 para. 7.3) (Visual Inspection Only)	(WAS) Class C Weld (For Non-Critical & Non-Structural Applications) (ref. AWS D17.1 para. 6.4) (Visual Inspection Only)
			PH	**(ADDED)** Specify Grade IAW MIL-STD-1907 PH Grade A - Critical Parts with above normal integrity PH(B) Grade B - Parts with high but well distributed stresses PH(C) Grade C - Parts with moderate stresses PH(D) Grade D - Castings with low stresses adjacent to Grade A, B, or C areas (Rarely used for all sections of castings)	**(ref. ECR 20-185)**
			PK	**(ADDED)** Specify Grade IAW MIL-STD-1907 PK Grade A - Critical Parts with above normal integrity PK(B) Grade B - Parts with high but well distributed stresses PK(C) Grade C - Parts with moderate stresses PK(D) Grade D - Castings with low stresses adjacent to Grade A, B, or C areas (Rarely used for all sections of	

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Rev	Date	By	Description of Change		
			Code	Change	Reference
				castings)	
R	7/25/2022	C.I.	PU	AMS-STD-2154, Type I, Class AA	(WAS) Cancelled (WAS) MIL-STD-1875. (ref. ECR 21-156)
			PV(A)	Updated (ref. ECR 22-157)	
			PV(B)	Updated (ref. ECR 22-157)	
			PY(2)	(ADDED)	(ref. ECR 22-139, 404D304)
T	05/17/2024	C.I.	PAH	(ref. EWI-TP-001)	(WAS) (ref. EWI-TP-001, para. 6.0)
			PAJ	(ref. EWI-TP-001)	(WAS) (ref. EWI-TP-001, para. 6.0)
		J.W.	PY	"Glass Bead Blast or Tumble parts to remove sharp edges, tool marks and provide a good cosmetic finish. Glass Bead is recommended for the removal of heat treat discoloration and weld slag."	(WAS) "Glass Bead Blast" (ref ECR 24-056)
			PY(1)	(ADDED) "… See Appendix 4.1" (ADDED) Appendix 4.1	