

Major
Tool & Machine, Inc.

Workorder Part ID Qty Drawing ID / Rev **Engineer** 64880/2.0 BLUE/DOUG MCCORKLE Panel Segment Forming Dies Sub ID Part ID Drawing ID / Rev Panel Segment Forming Dies 0 Operation Resource QtyPer StartQty EndQt Drawing ID / Rev Sub: 0 / Seq: 10 700-BLUE TEAM, ENGINEERING 1.00 1.00 1.00 (R) ENGINEERING / DIE DESIGN PLANNING / TECHNICAL SUPPORT IDC Count: 0 Dwg Count: 0 Pgm Count: 0 QAP Count: 0 NDT Count: 0 WPS Count: 0 Piece # Part ID Drawing ID / Rev Vendor **Dimensions** 10 30.0 BUSHING (C) L-48-16 CARR-LANE MTM RECEIVING NOTE: DELIVER TO DOUG McCORKLE UPON RECEIPT. QAP Count: 0 Piece # Part ID Drawing ID / Rev Vendor **Dimensions** 20 E71T-1_045_FCAW-WELD WIRE,FCAW .045 DIA 0.0 Vendor Part ID: E71T-1_045_FCAW (C) QAP Count: 1 StartQty EndQt Drawing ID / Rev Operation Resource **QtyPer** 1.00 Sub: 0 / Seq: 15 751-CAD/CAM - MEDIUM MILLING 1.00 1.00 (R) N/C PROGRAMMING AND CAD: DIE SETS 1 THROUGH 5. IDC Count: 0 Dwg Count: 0 Pgm Count: 0 QAP Count: 0 WPS Count: 0 Drw N/A NDT Count: 0 StartQty EndQt Drawing ID / Rev Operation Resource **QtyPer** Sub: 0 / Seq: 20 825-FINAL INSPECTION - PLANTS 1 1.00 1.00 1.00 (R) FINAL INSPECTION VISUAL INSPECT AND PHOTOGRAPH EACH DIE SET ENSURE EACH DIE SET IS PERMANENTLY IDENTIFIED IDC Count: 0 Dwg Count: 0 Pgm Count: 0 QAP Count: 0 NDT Count: 0 WPS Count: 0 Sub ID Part ID Qty Drawing ID / Rev DIE SET # 1 MTMFX-2884, MTMFX

W:64880/2-0 /Inc Matl /Inc Legs

Page: 2 Date:12/23/03 **User ID: MCCORKLE**

Workorder Part ID Qty Drawing ID / Rev Engineer 64880/2.0

BLUE/DOUG MCCORKLE

Parent Sub:0 Op:20

Operation QtyPer StartQty EndQt Drawing ID / Rev Resource Sub: 1 / Seq: 5 1.00 1.00 1.00 SE121-001P / A 820-RECEIVING INSPECTION

(C) INSPECT BLANK SIZE PER DRAWING

VERIFY EDGES ARE SMOOTH AND CORNERS HAVE RADII APPLIED.

INSPECT MATERIAL THICKNESS VISUAL INSPECT SURFACE FINISH INSPECT MAGNETIC PERMEABILITY

RECORD IDC DATA

Specification: ASTM A800 Rev: 2001 Part Number: SE121-001P-2 PANEL 1D Part Description: DEVELOPMENT PANEL

Customer: PPPL

10

Specification: ASTM B443 Rev: 00 Specification: ASTM B46.1 Rev: 95

IDC Count: 3 Dwg Count: 0 Pgm Count: 0 QAP Count: 6 NDT Count: 0 WPS Count: 0

SE121 / --

Piece # Part ID Drawing ID / Rev Vendor **Dimensions**

Vendor Part ID: SE120-002-2 PANEL 1

(C) PANEL BLANK AWJ CUT FROM .375" INCONEL 625 TO PROVIDED GEOMETRICAL SHAPE

(SE120-002-2 PANEL # 1.DXF, REV. --)

MATERIAL REQUIREMENTS: INCONEL 625 (UNS N06625) PER ASTM B 443-00 ANNEALED

MAGNETIC PERMEABILITY SHALL NOT EXCEED 1.00 (REF. ASTM A800).

SURFACE MUST BE PROTECTED FROM CONTACT WITH IRON AND IRON ALLOY MATERIALS

CERTS & MILL TEST REPORTS REQ'D WITH SHIPMENT.

SE120-002-2 PANEL 1-PANEL BLANK .375" THK INCONEL 625

APPROXIMATE OVERALL SIZE: 68 X 82

Material Certification:

Part Number: SE121-001P-2 PANEL 1D Part Description: DEVELOPMENT PANEL Specification: ASTM A800 Rev: 01

Specification: ASTM B443 Rev: 00 Specification: ASTM B46.1 Rev: 95

QAP Count: 6

1810

Operation Resource **QtyPer** StartQty EndQt Drawing ID / Rev Sub: 1 / Seq: 10 340-VERSON 500 1.00 SE121 / A

(C) "SPOT IN" / DEVELOP DIE SET AND PANEL FORMING PROCESS:

LOAD, ALIGN, AND BOLT DIE SET # MTMFX-2883 MTMFX-2884 INTO THE PRESS.

ENSURE THE DIE SET FACES ARE CLEAN AND FREE OF DIRT, OIL, GRIME, FOREIGN MATTER, RAISED OR EMBEDDED MATERIAL, ETC.... WIPE THE DIE-SET FACES

CLEAN WITH ISOPROPANOL PRIOR TO INSTALLING THE PANEL. INSTALL / POSITION THE PANEL BLANK INTO THE DIE SET.





Workorder 64880/2.0 Part ID Qty Drawing ID / Rev

Engineer
BLUE/DOUG MCCORKLE

HYDRAULIC FORM THE PANEL TO ACHIEVE THE GEOMETRICAL SHAPE CONFORMING TO INSPECTION GAGE # MTMFX-2903.

NOTE THAT THE FINAL PANEL TO GAGE GAP TOLERANCE IS .094" MAX. IT IS DESIRED TO GET AS CLOSE TO THIS AS POSSIBLE PRIOR TO ANNEALING. CLOSELY WATCH THE FORMING, WRINKLING, AND SPRING-BACK CHARACTERISTICS OF THE MATERIAL DURING THE FORMING PROCESS. WHEN IT'S APPARENT THE MATERIAL IS WORK HARDENING TO A DEGREE THAT FORMING BECOMES DIFFICULT, OR THE PHYSICAL INTEGRITY OF THE MATERIAL IS AT RISK, PROCEED TO THE NEXT SEQUENTIAL OPERATION (BLAST AND ANNEAL). A FINAL FORMING SEQUENCE IS PROVIDED FOR "FINAL SIZING" AFTER THE MATERIAL HAS BEEN ANNEALED.

ENSURE THE PANEL MATERIAL EXTENDS BEYOND THE PERIMETER OF THE TRIM-LINES OF THE GAGE BY AT LEAST 1" (TO PROVIDE ADEQUATE STOCK ALLOWANCE FOR RE-POSITIONING, RE-STRIKING, AND ACCURATE TRIMMING).

Drw N/A IDC Count: 0 Dwg Count: 5 Pgm Count: 0 QAP Count: 0 NDT Count: 0 WPS Count: 0

Operation Resource OtvPer StartOtv EndQt Drawing ID / Rev Sub: 1 / Seq: 12 1.00 SE121-001P / A 260-SANDBLAST 1.00 1.00 BLAST THE ENTIRE PANEL 100% USING 180-220 GRIT VIRGIN ALUMINUM OXIDE MEDIA TO REMOVE ANY RESIDUE FROM THE FORMING PROCESS. (U) Dwg Count: 0 IDC Count: 0 Pgm Count: 0 NDT Count: 0 WPS Count: 0 QAP Count: 0

OperationResourceQtyPerStartQtyEndQtDrawing ID / RevService IDSub: 1 / Seq: 15520-SUBLET, EXOTIC HEAT TREAT1.001.001.00\$E121-001P / ATHRML TR/NA SA

(U) SOLUTION ANNEAL FORMED PANEL PER THE FOLLOWING:

ATTACH A MINIMUM OF THREE EQUALLY SPACED THERMOCOUPLES TO THE FORMED PANEL CHARGE FURNACE AND HEAT PART UNTIL THERMOCOUPE READINGS ARE WITHIN 1900 +/-15F.

CHARGE FORWACE AND HEAT FART UNTIL THERMOCOUTE READINGS ARE WITHIN 1700 17-131.

HOLD PART TEMPERATURE AT 1900 DEGREES F. (+/- 15 DEGREES) HOLD FOR 45 MINUTES (+/ 5 MINUTES)

RAPID COOL (VIA. WATER QUENCHING OR FORCED AIR CIRCULATION) TO 1000 DEGREES F. OPEN AIR COOL TO AMBIENT TEMP.

Specification: AMS2774 Rev: JUL95 Certification: H/T CERTIFICATE Part Number: SE121-001P-2 PANEL 1D Part Description: DEVELOPMENT PANEL

Customer: PPPL

Furnace charts: FURNACE CHART

IDC Count: 0 Dwg Count: 0 Pgm Count: 0 QAP Count: 6 NDT Count: 0 WPS Count: 0

 Operation
 Resource
 QtyPer
 StartQty
 EndQt
 Drawing ID / Rev

 Sub: 1 / Seq: 17
 340-VERSON 500
 1.00
 1.00
 1.00
 SE121-001P / A

(U) RELOAD THE PREFORMED PANEL INTO THE DIE SET.

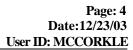
"RE-STRIKE" HYDRAULIC FORM THE PANEL TO ACHIEVE THE GEOMETRICAL SHAPE CONFORMING TO INSPECTION GAGE # MTMFX-2903.

PANEL TO GAGE GAP TOLERANCE: .094" MAX.

NOTIFY O/A FOR VERIFICATION PRIOR TO MOVING THE PART TO THE NEXT WORK CENTER

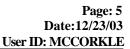
LAYOUT TRIM-LINES ON THE PANEL ESTABLISHED FROM THE MACHINED PERIMETER OF THE INSPECTION GAGE.

IDC Count: 0 Dwg Count: 0 Pgm Count: 0 QAP Count: 0 NDT Count: 0 WPS Count: 0





Workorder 64880/2.0	Part ID		Qty 1	Drawing ID / Rev			ineer E/DOUG MCCORKLE		
Operation Sub: 1 / Seq: 20 (R)	Resource QtyPer StartQty EndQt Drawing ID / Rev 805-INPROCESS INSPECTION - PLA 1.00 1.00 1.00 SE121-001P / A VERIFY PROFILE TO INSPECTION GAGE #MTMFX-2903. GAP TOLERANCE: .094" MAX. RECORD IDC DATA FORWARD THIS PANEL TO SANDBLAST WITH A MOVE TICKET FROM 64880-26/1 SEQ. 50								
	IDC Count: 1	Dwg Cou	nt: 0	Pgm Count: 0	QAP Count: 0	NDT Count: 0	WPS Count: 0		
Sub ID	Part ID CORE # 1 MTMFX-2884		Qty 1	Drawing ID / Rev MTMFX-2884 / A Parent Sub:1 Op:10					
Operation Sub: 6 / Seq: 5 (C)	ResourceQtyPer751-CAD/CAM - MEDIUM MILLING1.00N/C PROGRAMMING1.00	1.00	1.00	t Drawing ID / Rev					
	IDC Count: 0	Dwg Cou	nt: 0	Pgm Count: 0	QAP Count: 0	NDT Count: 0	WPS Count: 0		
Operation Sub: 6 / Seq: 10	ResourceQtyPer800-RECEIVING1.00RECEIVE AND INSPECT THE CAST KIRKSITE BLOCK (T.	1.00	1.00	t Drawing ID / Rev SE121 / A					
(C) Piece # 10 (C)	IDC N/A IDC Count : 0 Part ID	Dwg Cou		Pgm Count: 0 Drawing ID / Rev	QAP Count: 0 Vendor	NDT Count: 0 Dimensions	WPS Count: 0		
	PUNCH #1: KIRKSITE BLOCK: 24*66*70				QAP Count: 0				
Operation Sub: 6 / Seq: 20 (C)	Resource 162-DORRIES SCHARMANN GANTR 1.00 SETUP AND FACE ONE SIDE FLAT (MINIMAL STOCK RE SETUP ON FLAT SURFACE AND BORE HOLES IN SIDES F MACHINE KEYING / ALIGMENT FEATURES PER DRAWIN N/C MACHINE (SCRIBE) DIE SET NUMBER ON THE FRON (1.0 - 2.0" CHARACTER HEIGHT) ROUGH MACHINE PROFILE PER PROGRAM	1.00 MOVAL) OR LIFTING P NG. INSTALL	1.00 PROVISI						
	IDC Count: 0	Dwg Cou	nt: 5	Pgm Count: 32	QAP Count: 0	NDT Count: 0	WPS Count: 0		
Operation Sub: 6 / Seq: 30 (C)	Resource QtyPer 162-DORRIES SCHARMANN GANTR 1.00 REPOSITION WITH 3D PROFILE FACING SPINDLE, INDIC FINISH MACHINE PROFILE PER PROGRAM	1.00	1.00	t Drawing ID / Rev SE121 / A CONSTRUCTION FEAT	URES				





Part ID Drawing ID / Rev Workorder Engineer BLUE/DOUG MCCORKLE 64880/2.0 IDC Count: 0 Pgm Count: 32 QAP Count: 0 NDT Count: 0 WPS Count: 0 Dwg Count: 5 Operation StartQty EndQt Drawing ID / Rev Resource **QtyPer** Sub: 6 / Seq: 40 105-DEBURR PLT 1 LOW BAY 1.00 1.00 APPLY LAYOUT DIE TO THE INTERIOR OF THE FINISHED PART OUTLINE (APPROXIMATE FROM THE CAVITY SCRIBE LINES). BARBER / BLEND SCALLOPS (C) SMOOTH TO AN APROXIMATE AVERAGE SURFACE FINISH OF 125 MICRO-INCHES (REMOVING APPROXIMATELY 1/2 OF THE EXISTING SCALLOPS). IDC Count: 0 Dwg Count: 0 Pgm Count: 0 QAP Count: 0 NDT Count: 0 WPS Count: 0 Operation Resource **QtyPer** StartQty EndQt Drawing ID / Rev Sub: 6 / Seq: 50 1.00 SE121 / A 815-CMM - GANTRY - PLANT 2 1.00 1.00 (C) INSPECT PROFILE (CMM) PER PROGRAM / 3D MODEL GEOMETRY. RECORD IDC DATA Part Number: PUNCH # 1 Dimensional Report: CMM DATA SHEET IDC Count: 1 Dwg Count: 5 Pgm Count: 1 QAP Count: 2 NDT Count: 0 WPS Count: 0 Sub ID Part ID Drawing ID / Rev Qty CAVITY # 1 MTMFX-2883 MTMFX-2883 / A Parent Sub:1 Op:10 QtyPer StartQty EndQt Drawing ID / Rev Operation Resource Sub: 7 / Seq: 5 1.00 1.00 751-CAD/CAM - MEDIUM MILLING 1.00 (C) N/C PROGRAMMING IDC Count: 0 Dwg Count: 0 Pgm Count: 0 QAP Count: 0 NDT Count: 0 WPS Count: 0 Operation Resource QtyPer StartQty EndQt Drawing ID / Rev Sub: 7 / Seq: 10 800-RECEIVING 1.00 1.00 1.00 SE121 / A (C) RECEIVE AND INSPECT THE CAST KIRKSITE BLOCK (TAPE MEASURE) PER MTM P.O. IDC Count: 0 Dwg Count: 5 Pgm Count: 0 QAP Count: 0 NDT Count: 0 WPS Count: 0 Piece # Part ID Drawing ID / Rev Vendor Qty **Dimensions** 1.0 10 (C) DIE #1: KIRKSITE BLOCK: 26*66*70 QAP Count: 0 Operation Resource OtvPer StartQty EndQt Drawing ID / Rev 1.00 SE121 / A Sub: 7 / Seq: 20 152-TC-5000 1.00 1.00 SETUP AND FACE ONE SIDE FLAT (MINIMAL STOCK REMOVAL) (C) SETUP ON FLAT SURFACE AND BORE HOLES IN SIDES FOR LIFTING PROVISIONS PER DRAWING MACHINE KEYING / ALIGMENT FEATURES PER DRAWING. INSTALL LIFTING PINS.



WPS Count: 0

THRML TR/NA SA



(C)

Part ID Workorder Drawing ID / Rev Engineer

64880/2.0 BLUE/DOUG MCCORKLE

N/C MACHINE (SCRIBE) DIE SET NUMBER ON THE FRONT FACE

(1.0 - 2.0" CHARACTER HEIGHT)

ROUGH MACHINE PROFILE PER PROGRAM

IDC Count: 0 Dwg Count: 5 Pgm Count: 0 OAP Count: 0 NDT Count: 0 WPS Count: 0

Operation Resource OtvPer StartQty EndQt Drawing ID / Rev

Sub: 7 / Seq: 30 162-DORRIES SCHARMANN GANTR 1.00 1.00 1.00 SE121 / A

REPOSITION WITH 3D PROFILE FACING SPINDLE. INDICATE ALIGNMENT / CONSTRUCTION FEATURES

FINISH MACHINE PROFILE PER PROGRAM

Dwg Count: 5 NDT Count: 0 WPS Count: 0 IDC Count: 0 Pgm Count: 32 QAP Count: 0

OAP Count: 0

NDT Count: 0

Operation QtyPer StartQty EndQt Drawing ID / Rev Resource

Sub: 7 / Seq: 40 105-DEBURR PLT 1 LOW BAY 1.00 1.00 1.00

APPLY LAYOUT DIE TO THE INTERIOR OF THE FINISHED PART OUTLINE. BARBER / BLEND SCALLOPS SMOOTH TO AN APROXIMATE AVERAGE SURFACE FINISH (C) OF 125 MICRO-INCHES (REMOVING APPROXIMATELY 1/2 OF THE EXISTING SCALLOPS). USE EXTREME CARE NOT TO REMOVE THE PART OUTLINE AND

Pgm Count: 0

INSPECTION GAGE LAYUP SPOTS (APPROXIMATELY 6" GRID PATTERN). NOTIFY ENGINEERING (DOUG McCORKLE) WHEN COMPLETE Dwg Count: 0

Operation Resource **QtyPer** StartQty EndQt Drawing ID / Rev

IDC Count: 0

Sub: 7 / Seq: 50 1.00 SE121 / A 815-CMM - GANTRY - PLANT 2 1.00 1.00

INSPECT PROFILE (CMM) PER PROGRAM / 3D MODEL GEOMETRY. (C) RECORD IDC DATA

Part Number: DIE # 1

Dimensional Report: CMM DATA SHEET

IDC Count: 1 Dwg Count: 5 Pgm Count: 1 OAP Count: 2 NDT Count: 0 WPS Count: 0

1.00 SE121-001P / A

Sub ID Part ID Qty Drawing ID / Rev

23 PANEL ANNEAL (ADDED DURING DE

Parent Sub:1 Op:10

Operation QtyPer StartQty EndQt Drawing ID / Rev Service ID Resource 1.00

Sub: 23 / Seq: 10 520-SUBLET, EXOTIC HEAT TREAT (C) SOLUTION ANNEAL FORMED PANEL PER THE FOLLOWING:

ATTACH A MINIMUM OF THREE EQUALLY SPACED THERMOCOUPLES TO THE FORMED PANEL

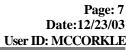
CHARGE FURNACE AND HEAT PART UNTIL THERMOCOUPE READINGS ARE WITHIN 1900 +/-15F.

HOLD PART TEMPERATURE AT 1900 DEGREES F. (+/- 15 DEGREES) HOLD FOR 45 MINUTES (+/ 5 MINUTES)

1.00

RAPID COOL (VIA. WATER QUENCHING OR FORCED AIR CIRCULATION) TO 1000 DEGREES F. OPEN AIR COOL TO AMBIENT TEMP.

Specification: AMS2774 Rev: JUL95 Certification: H/T CERTIFICATE





Workorder Part ID Drawing ID / Rev Engineer 64880/2.0 BLUE/DOUG MCCORKLE Part Number: SE120-002-2 PANEL 1 Part Description: DIE DEVELOPMENT PANEL Customer: PPPL Furnace charts: FURNACE CHART IDC Count: 0 Dwg Count: 0 Pgm Count: 0 OAP Count: 6 NDT Count: 0 WPS Count: 0 Sub ID Part ID Drawing ID / Rev Qty 16 MTMFX-2903 INSPECTION GAGE FO Parent Sub:1 Op:20 Operation Resource QtyPer StartQty EndQt Drawing ID / Rev Service ID Sub: 16 / Seq: 10 450-SUBLET 1.00 1.00 1.00 MISC/SUBLET PRODUCE PROFILE INSPECTION GAGE (SE120-002-2 PANEL 1) FROM MTM MACHINED FORMING DIE (OFFSET FOR .375" MATERIAL THICKNESS) (C) REFERENCE CENTRAL INDIANA PATTERN AND MOLD QUOTATION DATED 17AUG03. IDC Count: 0 Dwg Count: 0 NDT Count: 0 WPS Count: 0 Pgm Count: 0 QAP Count: 0 Operation Resource OtvPer StartOtv EndQt Drawing ID / Rev Sub: 16 / Seq: 20 815-CMM - GANTRY - PLANT 2 1.00 1.00 1.00 SE121 / --(C) INSPECT / VERIFY GAGE MTMFX-2903 PROFILE PER PROGRAM / PROVIDED 3D GEOMETRY. RECORD IDC DATA INPUT GAGE CALIBRATION DATA, ASSIGN GAGE NUMBER (NOTIFY DOUG McCORKLE OF NUMBER), AND LOG GAGE INTO THE CALIBRATION SYSTEM. PLACE GAGE SECURELY INTO IT'S STORAGE BOX. ENSURE IT IS FIRMLY SUPPORTED (SHORED UP), AND THE GAGE FACE IS STORED UPWARD AND COVERED WITH PLASTIC FOAM. IDC Count: 1 NDT Count: 0 Dwg Count: 0 Pgm Count: 0 QAP Count: 0 WPS Count: 0 Operation **QtyPer** StartQty EndQt Drawing ID / Rev Resource Sub: 16 / Seq: 30 105-DEBURR PLT 1 LOW BAY 1.00 1.00 1.00 AFTER THE GAGE HAS BEEN INSPECTED (AND ACCEPTED), REMOVE THE STRONGBACK / POSITIONING FRAMEWORK FROM THE STRUCTURE PER ENGINEERING (C) (DOUG McCORKLE) DIRECTION. DISCARD THE EXCESS FRAMEWORK, AND FORWARD THE GAGE TO THE PRESSROOM. SETNCIL THE FIXTURE NUMBER ON THE OUTER SURFACE. WPS Count: 0 IDC Count: 0 Dwg Count: 0 Pgm Count: 0 QAP Count: 0 NDT Count: 0 Sub ID Part ID Drawing ID / Rev Qty DIE SET # 2 MTMFX-2886, MTMFX Parent Sub:0 Op:20 **QtyPer** StartQty EndQt Drawing ID / Rev Operation Resource 1.00 1.00 SE121-001P / A Sub: 2 / Seq: 5 820-RECEIVING INSPECTION 1.00 (C) INSPECT BLANK SIZE PER DRAWING

MTTRAVLR.qrp W:64880/2-0/Inc Matl/Inc Legs

VERIFY EDGES ARE SMOOTH AND CORNERS HAVE RADII APPLIED.



Page: 8
Date:12/23/03
User ID: MCCORKLE

Workorder Part ID Qty Drawing ID / Rev Engineer
64880/2.0 1 / BLUE/DOUG MCCORKLE

INSPECT MATERIAL THICKNESS
VISUAL INSPECT SURFACE FINISH

INSPECT MAGNETIC PERMEABILITY

RECORD IDC DATA

Specification: ASTM A800 Rev: 2001 Part Number: SE121-001P-2 PANEL 2D Part Description: DEVELOPMENT PANEL

Customer: PPPL

Specification: ASTM B443 Rev: 00 Specification: ASTM B46.1 Rev: 95

IDC Count: 3 Dwg Count: 0 Pgm Count: 0 QAP Count: 6 NDT Count: 0 WPS Count: 0

Piece # Part ID Qty Drawing ID / Rev Vendor Dimensions
10 SE120-002-2 PANEL 2-PANEL BLANK .375" THK INCONEL 625 1.0 SE121 / -- 1810

Vendor Part ID: SE120-002-2 PANEL 2

(C) PANEL BLANK AWJ CUT FROM .375" INCONEL 625 TO PROVIDED GEOMETRICAL SHAPE

(SE120-002-2 PANEL # 2.DXF, REV. --)

MATERIAL REQUIREMENTS: INCONEL 625 (UNS N06625) PER ASTM B 443-00 ANNEALED

MAGNETIC PERMEABILITY SHALL NOT EXCEED 1.00 (REF. ASTM A800).

SURFACE MUST BE PROTECTED FROM CONTACT WITH IRON AND IRON ALLOY MATERIALS

CERTS & MILL TEST REPORTS REQ'D WITH SHIPMENT.

APPROXIMATE OVERALL SIZE: 35 X 53

Drw N/A

QAP Count: 6

QAP Count: 0

NDT Count: 0

WPS Count: 0

 Operation
 Resource
 QtyPer
 StartQty
 EndQt
 Drawing ID / Rev

 Sub: 2 / Seq: 10
 341-PACIFIC 750
 1.00
 1.00
 1.00
 SE121 / A

(C) "SPOT IN" / DEVELOP DIE SET AND PANEL FORMING PROCESS:

LOAD, ALIGN, AND BOLT DIE SET # MTMFX-2886, MTMFX-2885 INTO THE PRESS.

ENSURE THE DIE SET FACES ARE CLEAN AND FREE OF DIRT, OIL, GRIME, FOREIGN MATTER, RAISED OR EMBEDDED MATERIAL, ETC.... WIPE THE DIE-SET FACES CLEAN WITH ISOPROPANOL PRIOR TO INSTALLING THE PANEL.

INSTALL / POSITION THE PANEL BLANK INTO THE DIE SET.

HYDRAULIC FORM THE PANEL TO ACHIEVE THE GEOMETRICAL SHAPE CONFORMING TO INSPECTION GAGE # MTMFX-2903.

NOTE THAT THE FINAL PANEL TO GAGE GAP TOLERANCE IS .094" MAX. IT IS DESIRED TO GET AS CLOSE TO THIS AS POSSIBLE PRIOR TO ANNEALING. CLOSELY WATCH THE FORMING, WRINKLING, AND SPRING-BACK CHARACTERISTICS OF THE MATERIAL DURING THE FORMING PROCESS. WHEN IT'S APPARENT THE MATERIAL IS WORK HARDENING TO A DEGREE THAT FORMING BECOMES DIFFICULT, OR THE PHYSICAL INTEGRITY OF THE MATERIAL IS AT RISK, PROCEED TO THE NEXT SEQUENTIAL OPERATION (BLAST AND ANNEAL). A FINAL FORMING SEQUENCE IS PROVIDED FOR "FINAL SIZING" AFTER THE MATERIAL HAS BEEN ANNEALED.

ENSURE THE PANEL MATERIAL EXTENDS BEYOND THE PERIMETER OF THE TRIM-LINES OF THE GAGE BY AT LEAST 1" (TO PROVIDE ADEQUATE STOCK

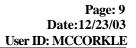
ALLOWANCE FOR RE-POSITIONING, RE-STRIKING, AND ACCURATE TRIMMING).

IDC Count: 0

Pgm Count: 0

Dwg Count: 5

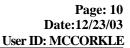
Operation Resource QtyPer StartQty EndQt Drawing ID / Rev





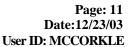
Workorder Part ID Drawing ID / Rev Engineer 64880/2.0 BLUE/DOUG MCCORKLE 1.00 1.00 1.00 SE121-001P / A Sub: 2 / Seq: 12 260-SANDBLAST (R) SHOT BLAST THE ENTIRE PANEL 100% USING 180-220 GRIT VIRGIN ALUMINUM OXIDE MEDIA TO REMOVE ANY RESIDUE FROM THE FORMING PROCESS. REFER TO PP478 FOR HANDLING REQUIREMENTS Specification: PP478 Rev: 1 IDC Count: 0 Dwg Count: 0 Pgm Count: 0 OAP Count: 1 NDT Count: 0 WPS Count: 0 Operation Resource OtvPer StartQty EndQt Drawing ID / Rev Service ID Sub: 2 / Seq: 15 520-SUBLET, EXOTIC HEAT TREAT 1.00 1.00 SE121-001P / A THRML TR/NA SA (C) SOLUTION ANNEAL FORMED PANEL PER THE FOLLOWING: ATTACH A MINIMUM OF THREE EQUALLY SPACED THERMOCOUPLES TO THE FORMED PANEL CHARGE FURNACE AND HEAT PART UNTIL THERMOCOUPE READINGS ARE WITHIN 1900 +/-15F. HOLD PART TEMPERATURE AT 1900 DEGREES F. (+/- 15 DEGREES) HOLD FOR 45 MINUTES (+/ 5 MINUTES) RAPID COOL (VIA. WATER QUENCHING OR FORCED AIR CIRCULATION) TO 1000 DEGREES F. OPEN AIR COOL TO AMBIENT TEMP. NOTE THAT THIS SEQUENCE IS POSITIONED AFTER THE FORMING OPERATION TO BE USED AT THE DESCRETION OF MANUFACTURING. RETURN TO PREVIOUS SEQUENCE TO COMPLETE THE FORMING AFTER ANNEAL CYCLE. Specification: AMS2774 Rev: JUL95 Certification: H/T CERTIFICATE Part Number: SE121-001P-2 PANEL 2D Part Description: DEVELOPMENT PANEL Customer: PPPL Furnace charts: FURNACE CHART IDC Count: 0 Dwg Count: 0 Pgm Count: 0 OAP Count: 6 NDT Count: 0 WPS Count: 0 Operation OtvPer StartQty EndQt Drawing ID / Rev Resource Sub: 2 / Seq: 17 340-VERSON 500 1.00 1.00 1.00 SE121-001P / A (R) RELOAD THE PREFORMED PANEL INTO THE DIE SET. "RE-STRIKE" HYDRAULIC FORM THE PANEL TO ACHIEVE THE GEOMETRICAL SHAPE CONFORMING TO INSPECTION GAGE # MTMFX-2903. PANEL TO GAGE GAP TOLERANCE: .094" MAX. NOTIFY Q/A FOR VERIFICATION PRIOR TO MOVING THE PART TO THE NEXT WORK CENTER LAYOUT TRIM-LINES ON THE PANEL ESTABLISHED FROM THE MACHINED PERIMETER OF THE INSPECTION GAGE. IDC Count: 0 Dwg Count: 0 NDT Count: 0 WPS Count: 0 Pgm Count: 0 QAP Count: 0 Operation QtyPer StartQty EndQt Drawing ID / Rev Resource Sub: 2 / Seq: 20 805-INPROCESS INSPECTION - PLA 1.00 1.00 1.00 SE121-001P / A (R) VERIFY PROFILE TO INSPECTION GAGE #MTMFX-2904. GAP TOLERANCE: .094" MAX. RECORD IDC DATA FORWARD PANEL TO STORES IDC Count: 1 Dwg Count: 0 Pgm Count: 0 OAP Count: 0 NDT Count: 0 WPS Count: 0 Sub ID Part ID Drawing ID / Rev

W:64880/2-0 /Inc Matl /Inc Legs





Part ID Drawing ID / Rev Workorder Engineer 64880/2.0 BLUE/DOUG MCCORKLE 8 MTMFX-2886 / A CORE # 2 MTMFX-2886 Parent Sub:2 Op:10 StartQty EndQt Drawing ID / Rev Operation Resource QtyPer 1.00 Sub: 8 / Seq: 5 1.00 751-CAD/CAM - MEDIUM MILLING 1.00 (C) N/C PROGRAMMING IDC Count: 0 Dwg Count: 0 Pgm Count: 0 QAP Count: 0 NDT Count: 0 WPS Count: 0 Operation **QtyPer** StartQty EndQt Drawing ID / Rev Resource Sub: 8 / Seq: 10 1.00 1.00 SE121 / A 800-RECEIVING 1.00 RECEIVE AND INSPECT THE CAST KIRKSITE BLOCK (TAPE MEASURE) PER MTM P.O. (C) IDC Count: 0 Dwg Count: 5 QAP Count: 0 NDT Count: 0 WPS Count: 0 Pgm Count: 0 Piece # Drawing ID / Rev Part ID Qty Vendor **Dimensions** 1.0 10 (C) PUNCH #2: KIRKSITE BLOCK: 19*27*49 QAP Count: 0 Operation Resource **QtyPer** StartQty EndQt Drawing ID / Rev Sub: 8 / Seq: 20 160-30FT MITSU 1.00 SE121 / A SETUP AND FACE ONE SIDE FLAT (MINIMAL STOCK REMOVAL) (C) SETUP ON FLAT SURFACE AND BORE HOLES IN SIDES FOR LIFTING PROVISIONS PER DRAWING MACHINE KEYING / ALIGMENT FEATURES PER DRAWING. INSTALL LIFTING PINS. N/C MACHINE (SCRIBE) DIE SET NUMBER ON THE FRONT FACE (1.0 - 2.0" CHARACTER HEIGHT) ROUGH MACHINE PROFILE PER PROGRAM IDC Count: 0 Dwg Count: 5 Pgm Count: 0 QAP Count: 0 NDT Count: 0 WPS Count: 0 Operation Resource **QtyPer** StartQty EndQt Drawing ID / Rev Sub: 8 / Seq: 30 160-30FT MITSU 1.00 1.00 SE121 / A REPOSITION WITH 3D PROFILE FACING SPINDLE, INDICATE ALIGNMENT / CONSTRUCTION FEATURES (C) FINISH MACHINE PROFILE PER PROGRAM Dwg Count: 5 Pgm Count: 0 OAP Count: 0 WPS Count: 0 IDC Count: 0 NDT Count: 0 Operation **QtyPer** StartQty EndQt Drawing ID / Rev Resource Sub: 8 / Seq: 40 1.00 1.00 105-DEBURR PLT 1 LOW BAY 1.00 (C) APPLY LAYOUT DIE TO THE INTERIOR OF THE FINISHED PART OUTLINE (APPROXIMATE FROM THE CAVITY SCRIBE LINES). BARBER / BLEND SCALLOPS SMOOTH TO AN APROXIMATE AVERAGE SURFACE FINISH OF 125 MICRO-INCHES (REMOVING APPROXIMATELY 1/2 OF THE EXISTING SCALLOPS). IDC Count: 0 Dwg Count: 0 Pgm Count: 0 QAP Count: 0 NDT Count: 0 WPS Count: 0



Major
Tool & Machine, Inc.

Part ID Qty Drawing ID / Rev Workorder Engineer 64880/2.0 BLUE/DOUG MCCORKLE QtyPer Operation Resource StartQty EndQt Drawing ID / Rev Sub: 8 / Seq: 50 815-CMM - GANTRY - PLANT 2 1.00 1.00 1.00 SE121 / A INSPECT PROFILE (CMM) PER PROGRAM / 3D MODEL GEOMETRY. (C) RECORD IDC DATA Part Number: PUNCH # 2 Dimensional Report: CMM DATA SHEET Dwg Count: 5 IDC Count: 1 Pgm Count: 1 QAP Count: 2 NDT Count: 0 WPS Count: 0 Sub ID Part ID Qty Drawing ID / Rev CAVITY # 2 MTMFX-2885 MTMFX-2885 / A Parent Sub:2 Op:10 Operation QtyPer StartQty EndQt Drawing ID / Rev Resource Sub: 9 / Seq: 5 751-CAD/CAM - MEDIUM MILLING 1.00 1.00 1.00 (C) N/C PROGRAMMING IDC Count: 0 Dwg Count: 0 QAP Count: 0 NDT Count: 0 WPS Count: 0 Pgm Count: 0 StartQty EndQt Drawing ID / Rev Operation Resource QtyPer Sub: 9 / Seq: 10 800-RECEIVING 1.00 1.00 1.00 SE121 / A (C) RECEIVE AND INSPECT THE CAST KIRKSITE BLOCK (TAPE MEASURE) PER MTM P.O. QAP Count: 0 NDT Count: 0 WPS Count: 0 IDC Count: 0 Dwg Count: 5 Pgm Count: 0 Piece # Part ID Qty Drawing ID / Rev Vendor **Dimensions** 1.0 10 (C) DIE #2: KIRKSITE BLOCK: 22*28*50 QAP Count: 0 Operation Resource QtyPer StartQty EndQt Drawing ID / Rev Sub: 9 / Seq: 20 1.00 1.00 1.00 SE121 / A 162-DORRIES SCHARMANN GANTR (C) SETUP AND FACE ONE SIDE FLAT (MINIMAL STOCK REMOVAL) SETUP ON FLAT SURFACE AND BORE HOLES IN SIDES FOR LIFTING PROVISIONS PER DRAWING MACHINE KEYING / ALIGMENT FEATURES PER DRAWING. INSTALL LIFTING PINS. N/C MACHINE (SCRIBE) DIE SET NUMBER ON THE FRONT FACE (1.0 - 2.0" CHARACTER HEIGHT) ROUGH MACHINE PROFILE PER PROGRAM IDC Count: 0 Dwg Count: 5 Pgm Count: 32 QAP Count: 0 NDT Count: 0 WPS Count: 0 Operation **QtyPer** StartQty EndQt Drawing ID / Rev Resource Sub: 9 / Seq: 30 1.00 1.00 1.00 SE121 / A 162-DORRIES SCHARMANN GANTR



Operation

Resource

Page: 12 Date:12/23/03 User ID: MCCORKLE

Workorder Part ID Qty Drawing ID / Rev Engineer 64880/2.0 BLUE/DOUG MCCORKLE (C) REPOSITION WITH 3D PROFILE FACING SPINDLE, INDICATE ALIGNMENT / CONSTRUCTION FEATURES FINISH MACHINE PROFILE PER PROGRAM IDC Count: 0 Dwg Count: 5 Pgm Count: 32 OAP Count: 0 NDT Count: 0 WPS Count: 0 Operation QtyPer StartQty EndQt Drawing ID / Rev Resource Sub: 9 / Seq: 40 105-DEBURR PLT 1 LOW BAY 1.00 1.00 1.00 APPLY LAYOUT DIE TO THE INTERIOR OF THE FINISHED PART OUTLINE. BARBER / BLEND SCALLOPS SMOOTH TO AN APROXIMATE AVERAGE SURFACE FINISH (C) OF 125 MICRO-INCHES (REMOVING APPROXIMATELY 1/2 OF THE EXISTING SCALLOPS). USE EXTREME CARE NOT TO REMOVE THE PART OUTLINE AND INSPECTION GAGE LAYUP SPOTS (APPROXIMATELY 6" GRID PATTERN). NOTIFY ENGINEERING (DOUG McCORKLE) WHEN COMPLETE IDC Count: 0 Dwg Count: 0 Pgm Count: 0 OAP Count: 0 NDT Count: 0 WPS Count: 0 Operation OtvPer StartQty EndQt Drawing ID / Rev Resource Sub: 9 / Seq: 50 815-CMM - GANTRY - PLANT 2 1.00 SE121 / A 1.00 INSPECT PROFILE (CMM) PER PROGRAM / 3D MODEL GEOMETRY. (C) RECORD IDC DATA Part Number: DIE # 2 Dimensional Report: CMM DATA SHEET IDC Count: 1 Dwg Count: 5 Pgm Count: 1 OAP Count: 2 NDT Count: 0 WPS Count: 0 Sub ID Part ID Drawing ID / Rev Qty MTMFX-2904 INSPECTION GAGE FO 17 Parent Sub:2 Op:20 OtvPer StartQty EndQt Drawing ID / Rev Service ID Operation Resource Sub: 17 / Seq: 10 450-SUBLET 1.00 1.00 1.00 MISC/SUBLET PRODUCE PROFILE INSPECTION GAGE (SE120-002-2 PANEL 2) FROM MTM MACHINED FORMING DIE (OFFSET FOR .375" MATERIAL THICKNESS) (C) REFERENCE CENTRAL INDIANA PATTERN AND MOLD QUOTATION DATED 17AUG03. IDC Count: 0 Dwg Count: 0 Pgm Count: 0 QAP Count: 0 NDT Count: 0 WPS Count: 0 Operation StartQty EndQt Drawing ID / Rev Resource **QtyPer** Sub: 17 / Seq: 20 815-CMM - GANTRY - PLANT 2 1.00 1.00 1.00 SE121 / --INSPECT / VERIFY GAGE MTMFX-2904 PROFILE PER PROGRAM / PROVIDED 3D GEOMETRY. (C) RECORD IDC DATA INPUT GAGE CALIBRATION DATA, ASSIGN GAGE NUMBER (NOTIFY DOUG McCORKLE OF NUMBER), AND LOG GAGE INTO THE CALIBRATION SYSTEM. PLACE GAGE SECURELY INTO IT'S STORAGE BOX. ENSURE IT IS FIRMLY SUPPORTED (SHORED UP), AND THE GAGE FACE IS STORED UPWARD AND COVERED WITH PLASTIC FOAM. IDC Count: 1 Dwg Count: 0 Pgm Count: 0 OAP Count: 0 NDT Count: 0 WPS Count: 0

MTTRAVLR.qrp W:64880/2-0 /Inc Matl /Inc Legs

QtyPer StartQty EndQt Drawing ID / Rev



64880/2.0

(C)

Page: 13 Date:12/23/03 er ID: MCCORKLE

BLUE/DOUG MCCORKLE

Workorder Part ID User ID: MCCORKLE

User ID: MCCORKLE

User ID: MCCORKLE

Sub: 17 / Seq: 30 105-DEBURR PLT 1 LOW BAY 1.00 1.00 1.00

(R) AFTER THE GAGE HAS BEEN INSPECTED (AND ACCEPTED), REMOVE THE STRONGBACK / POSITIONING FRAMEWORK FROM THE STRUCTURE PER ENGINEERING

(DOUG McCORKLE) DIRECTION. DISCARD THE EXCESS FRAMEWORK, AND FORWARD THE GAGE TO THE PRESSROOM.

IDC Count: 0 Dwg Count: 0 Pgm Count: 0 QAP Count: 0 NDT Count: 0 WPS Count: 0

Sub ID Part ID Qty Drawing ID / Rev 3 DIE SET # 3 MTMFX-2892, MTMFX 1 /

Parent Sub:0 Op:20

OperationResourceQtyPerStartQtyEndQtDrawing ID / RevSub: 3 / Seq: 5820-RECEIVING INSPECTION1.001.001.00\$E121-001P / A

INSPECT BLANK SIZE PER DRAWING INSPECT MATERIAL THICKNESS VISUAL INSPECT SURFACE FINISH INSPECT MAGNETIC PERMEABILITY

RECORD IDC DATA

Specification: ASTM A800 Rev: 2001 Part Number: SE121-001P-2 PANEL 3D Part Description: DEVELOPMENT PANEL

Customer: PPPL

Specification: ASTM B443 Rev: 00 Specification: ASTM B46.1 Rev: 95

IDC Count: 3 Dwg Count: 0 Pgm Count: 0 QAP Count: 6 NDT Count: 0 WPS Count: 0

Piece #Part IDQtyDrawing ID / RevVendorDimensions10SE120-002-2 PANEL 3-PANEL BLANK .375" THK INCONEL 6251.0SE121 / --1810

Vendor Part ID: SE120-002-2 PANEL 3

(C) PANEL BLANK AWJ CUT FROM .375" INCONEL 625 TO PROVIDED GEOMETRICAL SHAPE

(SE120-002-2 PANEL # 3.DXF, REV. --)

MATERIAL REQUIREMENTS: INCONEL 625 (UNS N06625) PER ASTM B 443-00 ANNEALED

MAGNETIC PERMEABILITY SHALL NOT EXCEED 1.00 (REF. ASTM A800).

SURFACE MUST BE PROTECTED FROM CONTACT WITH IRON AND IRON ALLOY MATERIALS

CERTS & MILL TEST REPORTS REQ'D WITH SHIPMENT.

APPROXIMATE OVERALL SIZE: 65 X 84.4

Material Certification:

Part Number: SE121-001P-2 PANEL 3D Part Description: DEVELOPMENT PANEL

Specification: ASTM A800 Rev: 01 Specification: ASTM B443 Rev: 00 Specification: ASTM B46.1 Rev: 95

QAP Count: 6



Resource

Operation

Page: 14 Date:12/23/03 User ID: MCCORKLE

Workorder Part ID Qty Drawing ID / Rev Engineer
64880/2.0 1 / BLUE/DOUG MCCORKLE

QtyPer StartQty EndQt Drawing ID / Rev

Sub: 3 / Seq: 10 340-VERSON 500 1.00 1.00 1.00 SE121 / A

(C) "SPOT IN" / DEVELOP DIE SET AND PANEL FORMING PROCESS:

LOAD, ALIGN, AND BOLT DIE SET # MTMFX-2892, MTMFX-2887 INTO THE PRESS.

 $ENSURE\ THE\ DIE\ SET\ FACES\ ARE\ CLEAN\ AND\ FREE\ OF\ DIRT,\ OIL,\ GRIME,\ FOREIGN\ MATTER,\ RAISED\ OR\ EMBEDDED\ MATERIAL,\ ETC....\ WIPE\ THE\ DIE-SET\ FACES$

CLEAN WITH ISOPROPANOL PRIOR TO INSTALLING THE PANEL. INSTALL / POSITION THE PANEL BLANK INTO THE DIE SET.

HYDRAULIC FORM THE PANEL TO ACHIEVE THE GEOMETRICAL SHAPE CONFORMING TO INSPECTION GAGE # MTMFX-2903.

NOTE THAT THE FINAL PANEL TO GAGE GAP TOLERANCE IS .094" MAX. IT IS DESIRED TO GET AS CLOSE TO THIS AS POSSIBLE PRIOR TO ANNEALING. CLOSELY WATCH THE FORMING, WRINKLING, AND SPRING-BACK CHARACTERISTICS OF THE MATERIAL DURING THE FORMING PROCESS. WHEN IT'S APPARENT THE MATERIAL IS WORK HARDENING TO A DEGREE THAT FORMING BECOMES DIFFICULT, OR THE PHYSICAL INTEGRITY OF THE MATERIAL IS AT RISK, PROCEED TO THE NEXT SEQUENTIAL OPERATION (BLAST AND ANNEAL). A FINAL FORMING SEQUENCE IS PROVIDED FOR "FINAL SIZING" AFTER THE MATERIAL HAS

BEEN ANNEALED.

ENSURE THE PANEL MATERIAL EXTENDS BEYOND THE PERIMETER OF THE TRIM-LINES OF THE GAGE BY AT LEAST 1" (TO PROVIDE ADEQUATE STOCK

ALLOWANCE FOR RE-POSITIONING, RE-STRIKING, AND ACCURATE TRIMMING).

Drw N/A IDC Count: 0 Dwg Count: 5 Pgm Count: 0 QAP Count: 0 NDT Count: 0 WPS Count: 0

OperationResourceQtyPerStartQtyEndQtDrawing ID / RevSub: 3 / Seq: 12260-SANDBLAST1.001.001.00SE121-001P / A

(C) SHOT BLAST THE ENTIRE PANEL 100% USING 180-220 GRIT VIRGIN ALUMINUM OXIDE MEDIA TO REMOVE ANY RESIDUE FROM THE FORMING PROCESS.

IDC Count: 0

Dwg Count: 0

Pgm Count: 0

QAP Count: 0

NDT Count: 0

WPS Count: 0

OperationResourceQtyPerStartQtyEndQtDrawing ID / RevService IDSub: 3 / Seq: 15520-SUBLET, EXOTIC HEAT TREAT1.001.001.00\$E121-001P / ATHRML TR/NA \$A

(C) SOLUTION ANNEAL FORMED PANEL PER THE FOLLOWING:

 ${\tt ATTACH} \ {\tt A} \ {\tt MINIMUM} \ {\tt OF} \ {\tt THREE} \ {\tt EQUALLY} \ {\tt SPACED} \ {\tt THERMOCOUPLES} \ {\tt TO} \ {\tt THE} \ {\tt FORMED} \ {\tt PANEL}$

CHARGE FURNACE AND HEAT PART UNTIL THERMOCOUPE READINGS ARE WITHIN 1900 +/-15F.

HOLD PART TEMPERATURE AT 1900 DEGREES F. (+/- 15 DEGREES) HOLD FOR 45 MINUTES (+/ 5 MINUTES)

 $RAPID\ COOL\ (VIA.\ WATER\ QUENCHING\ OR\ FORCED\ AIR\ CIRCULATION)\ TO\ 1000\ DEGREES\ F.\ OPEN\ AIR\ COOL\ TO\ AMBIENT\ TEMP.$

NOTE THAT THIS SEQUENCE IS POSITIONED AFTER THE FORMING OPERATION TO BE USED AT THE DESCRETION OF MANUFACTURING. RETURN TO PREVIOUS

SEQUENCE TO COMPLETE THE FORMING AFTER ANNEAL CYCLE.

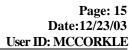
Specification: AMS2774 Rev: JUL95 Certification: H/T CERTIFICATE Part Number: SE121-001P-2 PANEL 3D Part Description: DEVELOPMENT PANEL

Customer: PPPL

Furnace charts: FURNACE CHART

IDC Count: 0 Dwg Count: 0 Pgm Count: 0 QAP Count: 6 NDT Count: 0 WPS Count: 0

Operation Resource QtyPer StartQty EndQt Drawing ID / Rev





Workorder 64880/2.0	Part ID	Qty 1	Drawing ID / Rev		Engine BLUE/I					
Sub: 3 / Seq: 20 (C)	805-INPROCESS INSPECTION - PLA VERIFY PROFILE TO INSPECTION GA RECORD IDC DATA FORWARD PANEL TO STORES	1.00 GE #MTMFX-2905. C		SE121-001P / A .094" MAX.						
		IDC Count: 1	Dwg Count: 0	Pgm Count: 0	QAP Count: 0	NDT Count: 0	WPS Count: 0			
Sub ID 10	Part ID CORE # 3 MTMFX-2892		Qty 1	Drawing ID / Rev MTMFX-2892 / A Parent Sub:3 Op:10						
Operation Sub: 10 / Seq: 5 (C)	Resource 751-CAD/CAM - MEDIUM MILLING N/C PROGRAMMING	QtyPer 1.00	StartQty EndQt 1.00 1.00	t Drawing ID / Rev						
		IDC Count: 0	Dwg Count: 0	Pgm Count: 0	QAP Count: 0	NDT Count: 0	WPS Count: 0			
Operation Sub: 10 / Seq: 10	Resource 800-RECEIVING	QtyPer 1.00	1.00 1.00	Drawing ID / Rev SE121 / A						
(C) Piece # 10	RECEIVE AND INSPECT THE CAST KI	IDC Count : 0	Dwg Count: 5 Qty 1.0	Pgm Count: 0 Drawing ID / Rev	QAP Count: 0 Vendor	NDT Count: 0 Dimensions	WPS Count: 0			
(C)	PUNCH #3: KIRKSITE BLOCK: 29*57*7	76			QAP Count: 0					
Operation Sub: 10 / Seq: 20 (C)	Resource 162-DORRIES SCHARMANN GANTR 1.00 1.00 1.00 SET21 / A SETUP AND FACE ONE SIDE FLAT (MINIMAL STOCK REMOVAL) SETUP ON FLAT SURFACE AND BORE HOLES IN SIDES FOR LIFTING PROVISIONS PER DRAWING MACHINE KEYING / ALIGMENT FEATURES PER DRAWING. INSTALL LIFTING PINS. N/C MACHINE (SCRIBE) DIE SET NUMBER ON THE FRONT FACE (1.0 - 2.0" CHARACTER HEIGHT) ROUGH MACHINE PROFILE PER PROGRAM									
		IDC Count: 0	Dwg Count: 5	Pgm Count: 32	QAP Count: 0	NDT Count: 0	WPS Count: 0			
Operation Sub: 10 / Seq: 30 (C)	Resource 162-DORRIES SCHARMANN GANTR REPOSITION WITH 3D PROFILE FACIN FINISH MACHINE PROFILE PER PROG		1.00 1.00	t Drawing ID / Rev SE121 / A CONSTRUCTION FEAT	URES					
		IDC Count: 0	Dwg Count: 5	Pgm Count: 32	QAP Count: 0	NDT Count: 0	WPS Count: 0			



(C)

SETUP AND FACE ONE SIDE FLAT (MINIMAL STOCK REMOVAL)

N/C MACHINE (SCRIBE) DIE SET NUMBER ON THE FRONT FACE

SETUP ON FLAT SURFACE AND BORE HOLES IN SIDES FOR LIFTING PROVISIONS PER DRAWING

MACHINE KEYING / ALIGMENT FEATURES PER DRAWING. INSTALL LIFTING PINS.

Page: 16 Date: 12/23/03 **User ID: MCCORKLE**

Part ID Workorder Qty Drawing ID / Rev Engineer 64880/2.0 BLUE/DOUG MCCORKLE

Operation QtyPer StartQty EndQt Drawing ID / Rev Resource Sub: 10 / Seq: 40 1.00 1.00 1.00 105-DEBURR PLT 1 LOW BAY APPLY LAYOUT DIE TO THE INTERIOR OF THE FINISHED PART OUTLINE (APPROXIMATE FROM THE CAVITY SCRIBE LINES). BARBER / BLEND SCALLOPS (C) SMOOTH TO AN APROXIMATE AVERAGE SURFACE FINISH OF 125 MICRO-INCHES (REMOVING APPROXIMATELY 1/2 OF THE EXISTING SCALLOPS). IDC Count: 0 Dwg Count: 0 NDT Count: 0 WPS Count: 0 Pgm Count: 0 QAP Count: 0 Operation StartQty EndQt Drawing ID / Rev Resource **QtyPer** Sub: 10 / Seq: 50 1.00 SE121 / A 815-CMM - GANTRY - PLANT 2 1.00 1.00 (C) INSPECT PROFILE (CMM) PER PROGRAM / 3D MODEL GEOMETRY. RECORD IDC DATA Part Number: PUNCH # 3 Dimensional Report: CMM DATA SHEET IDC Count: 1 Dwg Count: 5 QAP Count: 2 NDT Count: 0 WPS Count: 0 Pgm Count: 1 Sub ID Part ID Drawing ID / Rev 11 CAVITY # 3 MTMFX-2887 MTMFX-2887 / A Parent Sub:3 Op:10 Operation Resource **QtyPer** StartQty EndQt Drawing ID / Rev Sub: 11 / Seq: 5 1.00 1.00 1.00 751-CAD/CAM - MEDIUM MILLING (C) N/C PROGRAMMING IDC Count: 0 Dwg Count: 0 Pgm Count: 0 WPS Count: 0 OAP Count: 0 NDT Count: 0 Operation Resource **QtyPer** StartQty EndQt Drawing ID / Rev Sub: 11 / Seq: 10 800-RECEIVING 1.00 1.00 SE121 / A (C) RECEIVE AND INSPECT THE CAST KIRKSITE BLOCK (TAPE MEASURE) PER MTM P.O. Dwg Count: 5 QAP Count: 0 NDT Count: 0 IDC Count: 0 Pgm Count: 0 WPS Count: 0 Piece # Part ID Drawing ID / Rev Vendor **Dimensions** Qty 1.0 10 (C) DIE #3: KIRKSITE BLOCK: 26*58*78 QAP Count: 0 Operation QtyPer StartQty EndQt Drawing ID / Rev Resource Sub: 11 / Seq: 20 1.00 1.00 SE121 / A 162-DORRIES SCHARMANN GANTR 1.00



Page: 17 Date:12/23/03 **User ID: MCCORKLE**

WPS Count: 0

WPS Count: 0

Service ID

NDT Count: 0

Workorder Part ID Drawing ID / Rev Engineer 64880/2.0 BLUE/DOUG MCCORKLE

(1.0 - 2.0" CHARACTER HEIGHT)

ROUGH MACHINE PROFILE PER PROGRAM

WPS Count: 0 IDC Count: 0 Dwg Count: 5 Pgm Count: 32 QAP Count: 0 NDT Count: 0

Operation Resource OtvPer StartQty EndQt Drawing ID / Rev

Sub: 11 / Seq: 30 1.00 1.00 SE121 / A 162-DORRIES SCHARMANN GANTR 1.00

(C) REPOSITION WITH 3D PROFILE FACING SPINDLE. INDICATE ALIGNMENT / CONSTRUCTION FEATURES

FINISH MACHINE PROFILE PER PROGRAM

IDC Count: 0 Dwg Count: 5 Pgm Count: 32 OAP Count: 0 NDT Count: 0 WPS Count: 0

QAP Count: 0

Operation OtvPer StartQty EndQt Drawing ID / Rev Resource

Sub: 11 / Seq: 40 105-DEBURR PLT 1 LOW BAY 1.00 1.00 1.00

APPLY LAYOUT DIE TO THE INTERIOR OF THE FINISHED PART OUTLINE. BARBER / BLEND SCALLOPS SMOOTH TO AN APROXIMATE AVERAGE SURFACE FINISH (C) OF 125 MICRO-INCHES (REMOVING APPROXIMATELY 1/2 OF THE EXISTING SCALLOPS). USE EXTREME CARE NOT TO REMOVE THE PART OUTLINE AND

INSPECTION GAGE LAYUP SPOTS (APPROXIMATELY 6" GRID PATTERN). NOTIFY ENGINEERING (DOUG McCORKLE) WHEN COMPLETE

IDC Count: 0 Dwg Count: 0 Pgm Count: 0 NDT Count: 0

Operation Resource **QtyPer** StartQty EndQt Drawing ID / Rev

Sub: 11 / Seq: 50 1.00 1.00 SE121 / A 815-CMM - GANTRY - PLANT 2

(C) INSPECT PROFILE (CMM) PER PROGRAM / 3D MODEL GEOMETRY.

RECORD IDC DATA Part Number: DIE # 3

Resource

Dimensional Report: CMM DATA SHEET

IDC Count: 1 Dwg Count: 5 QAP Count: 2 NDT Count: 0 WPS Count: 0 Pgm Count: 1

Pgm Count: 0

Sub ID Part ID Drawing ID / Rev Qty 18

MTMFX-2905 INSPECTION GAGE FO Parent Sub:3 Op:20

QtyPer StartQty EndQt Drawing ID / Rev Operation Sub: 18 / Seq: 10 MISC/SUBLET 450-SUBLET 1.00 1.00 1.00

PRODUCE PROFILE INSPECTION GAGE (SE120-002-2 PANEL 3) FROM MTM MACHINED FORMING DIE (OFFSET FOR .375" MATERIAL THICKNESS) (C)

REFERENCE CENTRAL INDIANA PATTERN AND MOLD QUOTATION DATED 17AUG03.

IDC Count: 0 Dwg Count: 0 QAP Count: 0

Operation Resource QtyPer StartQty EndQt Drawing ID / Rev

Sub: 18 / Seq: 20 815-CMM - GANTRY - PLANT 2 1.00 1.00 1.00 SE121 / --

(R) INSPECT / VERIFY GAGE MTMFX-2905 PROFILE PER PROGRAM / PROVIDED 3D GEOMETRY.



Operation

Page: 18 Date:12/23/03 **User ID: MCCORKLE**

Workorder Part ID Qty Drawing ID / Rev Engineer 64880/2.0 BLUE/DOUG MCCORKLE

RECORD IDC DATA

INPUT GAGE CALIBRATION DATA, ASSIGN GAGE NUMBER (NOTIFY DOUG McCORKLE OF NUMBER), AND LOG GAGE INTO THE CALIBRATION SYSTEM.

Pgm Count: 0

PLACE GAGE SECURELY INTO IT'S STORAGE BOX.

ENSURE IT IS FIRMLY SUPPORTED (SHORED UP), AND THE GAGE FACE IS STORED UPWARD AND COVERED WITH PLASTIC FOAM. Dwg Count: 0

Resource OtvPer StartQty EndQt Drawing ID / Rev

IDC Count: 1

Sub: 18 / Seq: 30 105-DEBURR PLT 1 LOW BAY 1.00 1.00 1.00

(R) AFTER THE GAGE HAS BEEN INSPECTED (AND ACCEPTED), REMOVE THE STRONGBACK / POSITIONING FRAMEWORK FROM THE STRUCTURE PER ENGINEERING

(DOUG McCORKLE) DIRECTION. DISCARD THE EXCESS FRAMEWORK, AND FORWARD THE GAGE TO THE PRESSROOM.

WPS Count: 0 IDC Count: 0 Dwg Count: 0 Pgm Count: 0 OAP Count: 0 NDT Count: 0

OAP Count: 0

1810

NDT Count: 0

WPS Count: 0

Sub ID Part ID Drawing ID / Rev

DIE SET # 4 MTMFX-2889, MTMFX 1

Parent Sub:0 Op:20

StartQty Operation Resource OtvPer EndQt Drawing ID / Rev Sub: 4 / Seq: 5 820-RECEIVING INSPECTION 1.00 1.00 1.00 SE121-001P / A

(C) INSPECT BLANK SIZE PER DRAWING

INSPECT MATERIAL THICKNESS VISUAL INSPECT SURFACE FINISH

INSPECT MAGNETIC PERMEABILITY

RECORD IDC DATA

Specification: ASTM A800 Rev: 2001 Part Number: SE121-001P-2 PANEL 4D Part Description: DEVELOPMENT PANEL

Customer: PPPL

Specification: ASTM B443 Rev: 00 Specification: ASTM B46.1 Rev: 95

Dwg Count: 0 QAP Count: 6 NDT Count: 0 WPS Count: 0 IDC Count: 3 Pgm Count: 0

SE121 / --

Piece # Part ID Drawing ID / Rev Vendor **Dimensions**

Vendor Part ID: SE120-002-2 PANEL 4

PANEL BLANK AWJ CUT FROM .375" INCONEL 625 TO PROVIDED GEOMETRICAL SHAPE (C)

(SE120-002-2 PANEL # 4.DXF, REV. --)

MATERIAL REQUIREMENTS: INCONEL 625 (UNS N06625) PER ASTM B 443-00 ANNEALED

MAGNETIC PERMEABILITY SHALL NOT EXCEED 1.00 (REF. ASTM A800).

SURFACE MUST BE PROTECTED FROM CONTACT WITH IRON AND IRON ALLOY MATERIALS

CERTS & MILL TEST REPORTS REQ'D WITH SHIPMENT.

SE120-002-2 PANEL 4-PANEL BLANK .375" THK INCONEL 625

APPROXIMATE OVERALL SIZE: 26.75 X 71

Material Certification:



(C)

(C)

Date:12/23/03 **User ID: MCCORKLE**

Workorder Part ID Drawing ID / Rev Engineer 64880/2.0 BLUE/DOUG MCCORKLE

> Part Number: SE121-001P-2 PANEL 4D Part Description: DEVELOPMENT PANEL

Specification: ASTM A800 Rev: 01 Specification: ASTM B443 Rev: 00 Specification: ASTM B46.1 Rev: 95

QAP Count: 6

Operation QtyPer StartQty EndQt Drawing ID / Rev Resource

Sub: 4 / Seq: 10 341-PACIFIC 750 1.00 1.00 1.00 SE121 / A

LOAD, ALIGN, AND BOLT DIE SET # MTMFX-2889, MTMFX-2888 INTO THE PRESS.

ENSURE THE DIE SET FACES ARE CLEAN AND FREE OF DIRT, OIL, GRIME, FOREIGN MATTER, RAISED OR EMBEDDED MATERIAL, ETC.... WIPE THE DIE-SET FACES CLEAN WITH ISOPROPANOL PRIOR TO INSTALLING THE PANEL.

INSTALL / POSITION THE PANEL BLANK INTO THE DIE SET.

"SPOT IN" / DEVELOP DIE SET AND PANEL FORMING PROCESS:

HYDRAULIC FORM THE PANEL TO ACHIEVE THE GEOMETRICAL SHAPE CONFORMING TO INSPECTION GAGE # MTMFX-2903.

NOTE THAT THE FINAL PANEL TO GAGE GAP TOLERANCE IS .094" MAX. IT IS DESIRED TO GET AS CLOSE TO THIS AS POSSIBLE PRIOR TO ANNEALING. CLOSELY WATCH THE FORMING, WRINKLING, AND SPRING-BACK CHARACTERISTICS OF THE MATERIAL DURING THE FORMING PROCESS. WHEN IT'S APPARENT THE MATERIAL IS WORK HARDENING TO A DEGREE THAT FORMING BECOMES DIFFICULT, OR THE PHYSICAL INTEGRITY OF THE MATERIAL IS AT RISK, PROCEED TO THE NEXT SEQUENTIAL OPERATION (BLAST AND ANNEAL). A FINAL FORMING SEQUENCE IS PROVIDED FOR "FINAL SIZING" AFTER THE MATERIAL HAS BEEN ANNEALED.

ENSURE THE PANEL MATERIAL EXTENDS BEYOND THE PERIMETER OF THE TRIM-LINES OF THE GAGE BY AT LEAST 1" (TO PROVIDE ADEQUATE STOCK ALLOWANCE FOR RE-POSITIONING, RE-STRIKING, AND ACCURATE TRIMMING).

Drw N/A IDC Count: 0 Dwg Count: 5 Pgm Count: 0 OAP Count: 0 NDT Count: 0 WPS Count: 0

Operation StartQty EndQt Drawing ID / Rev Resource **QtyPer** Sub: 4 / Seq: 12 260-SANDBLAST 1.00 1.00 1.00 SE121-001P / A

SHOT BLAST THE ENTIRE PANEL 100% USING 180-220 GRIT VIRGIN ALUMINUM OXIDE MEDIA TO REMOVE ANY RESIDUE FROM THE FORMING PROCESS.

IDC Count: 0 Dwg Count: 0 Pgm Count: 0 QAP Count: 0 NDT Count: 0 WPS Count: 0

Operation StartQty EndQt Drawing ID / Rev Service ID Resource OtvPer Sub: 4 / Seq: 15 520-SUBLET, EXOTIC HEAT TREAT 1.00 1.00 SE121-001P / A THRML TR/NA SA

(C)

SOLUTION ANNEAL FORMED PANEL PER THE FOLLOWING:

ATTACH A MINIMUM OF THREE EQUALLY SPACED THERMOCOUPLES TO THE FORMED PANEL

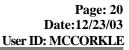
CHARGE FURNACE AND HEAT PART UNTIL THERMOCOUPE READINGS ARE WITHIN 1900 +/-15F.

HOLD PART TEMPERATURE AT 1900 DEGREES F. (+/- 15 DEGREES) HOLD FOR 45 MINUTES (+/ 5 MINUTES)

RAPID COOL (VIA. WATER QUENCHING OR FORCED AIR CIRCULATION) TO 1000 DEGREES F. OPEN AIR COOL TO AMBIENT TEMP.

NOTE THAT THIS SEQUENCE IS POSITIONED AFTER THE FORMING OPERATION TO BE USED AT THE DESCRETION OF MANUFACTURING. RETURN TO PREVIOUS SEQUENCE TO COMPLETE THE FORMING AFTER ANNEAL CYCLE.

Specification: AMS2774 Rev: JUL95 Certification: H/T CERTIFICATE





Workorder Part ID Qty Drawing ID / Rev Engineer 64880/2.0 BLUE/DOUG MCCORKLE Part Number: SE121-001P-2 PANEL 4D Part Description: DEVELOPMENT PANEL Customer: PPPL Furnace charts: FURNACE CHART IDC Count: 0 Dwg Count: 0 Pgm Count: 0 OAP Count: 6 NDT Count: 0 WPS Count: 0 QtyPer Operation Resource StartQty EndQt Drawing ID / Rev Sub: 4 / Seq: 20 805-INPROCESS INSPECTION - PLA 1.00 1.00 SE121-001P / A VERIFY PROFILE TO INSPECTION GAGE #MTMFX-2906. GAP TOLERANCE: .094" MAX. (R) RECORD IDC DATA FORWARD PANEL TO STORES IDC Count: 1 Dwg Count: 0 Pgm Count: 0 QAP Count: 0 NDT Count: 0 WPS Count: 0 Sub ID Part ID Drawing ID / Rev MTMFX-2889 / A 12 CORE # 4 MTMFX-2889 Parent Sub:4 Op:10 **QtyPer** StartQty EndQt Drawing ID / Rev Operation Resource Sub: 12 / Seq: 5 751-CAD/CAM - MEDIUM MILLING 1.00 1.00 1.00 (C) N/C PROGRAMMING IDC Count: 0 Dwg Count: 0 Pgm Count: 0 OAP Count: 0 NDT Count: 0 WPS Count: 0 Operation Resource **QtyPer** StartQty EndQt Drawing ID / Rev Sub: 12 / Seq: 10 800-RECEIVING 1.00 1.00 1.00 SE121 / A (C) RECEIVE AND INSPECT THE CAST KIRKSITE BLOCK (TAPE MEASURE) PER MTM P.O. IDC Count: 0 Dwg Count: 5 Pgm Count: 0 QAP Count: 0 NDT Count: 0 WPS Count: 0 Piece # Part ID Qty Drawing ID / Rev Vendor **Dimensions** 10 1.0 (C) PUNCH #4: KIRKSITE BLOCK: 13*29*76 OAP Count: 0 Operation QtyPer StartQty EndQt Drawing ID / Rev Resource Sub: 12 / Seq: 20 160-30FT MITSU 1.00 1.00 1.00 SE121 / A (C) SETUP AND FACE ONE SIDE FLAT (MINIMAL STOCK REMOVAL) SETUP ON FLAT SURFACE AND BORE HOLES IN SIDES FOR LIFTING PROVISIONS PER DRAWING MACHINE KEYING / ALIGMENT FEATURES PER DRAWING. INSTALL LIFTING PINS. N/C MACHINE (SCRIBE) DIE SET NUMBER ON THE FRONT FACE (1.0 - 2.0" CHARACTER HEIGHT) ROUGH MACHINE PROFILE PER PROGRAM



Page: 21 Date:12/23/03 User ID: MCCORKLE

Part ID Drawing ID / Rev Workorder Engineer 64880/2.0 BLUE/DOUG MCCORKLE IDC Count: 0 QAP Count: 0 NDT Count: 0 WPS Count: 0 Dwg Count: 5 Pgm Count: 0 Operation StartQty EndQt Drawing ID / Rev Resource **QtyPer** Sub: 12 / Seq: 30 SE121 / A 160-30FT MITSU 1.00 1.00 1.00 REPOSITION WITH 3D PROFILE FACING SPINDLE, INDICATE ALIGNMENT / CONSTRUCTION FEATURES (C) FINISH MACHINE PROFILE PER PROGRAM IDC Count: 0 Dwg Count: 5 Pgm Count: 0 QAP Count: 0 NDT Count: 0 WPS Count: 0 Operation Resource **QtyPer** StartQty EndQt Drawing ID / Rev Sub: 12 / Seq: 40 105-DEBURR PLT 1 LOW BAY 1.00 1.00 1.00 (C) APPLY LAYOUT DIE TO THE INTERIOR OF THE FINISHED PART OUTLINE (APPROXIMATE FROM THE CAVITY SCRIBE LINES). BARBER / BLEND SCALLOPS SMOOTH TO AN APROXIMATE AVERAGE SURFACE FINISH OF 125 MICRO-INCHES (REMOVING APPROXIMATELY 1/2 OF THE EXISTING SCALLOPS). IDC Count: 0 Dwg Count: 0 Pgm Count: 0 QAP Count: 0 NDT Count: 0 WPS Count: 0 Operation QtyPer StartQty EndQt Drawing ID / Rev Resource Sub: 12 / Seq: 50 815-CMM - GANTRY - PLANT 2 1.00 1.00 1.00 SE121 / A (C) INSPECT PROFILE (CMM) PER PROGRAM / 3D MODEL GEOMETRY. RECORD IDC DATA Part Number: PUNCH # 4 Dimensional Report: CMM DATA SHEET IDC Count: 1 Dwg Count: 5 QAP Count: 2 NDT Count: 0 WPS Count: 0 Pgm Count: 1 Sub ID Drawing ID / Rev Part ID 13 CAVITY # 4 MTMFX-2888 MTMFX-2888 / A Parent Sub:4 Op:10 Operation Resource **QtyPer** StartOtv EndQt Drawing ID / Rev Sub: 13 / Seq: 5 1.00 1.00 1.00 751-CAD/CAM - MEDIUM MILLING (C) N/C PROGRAMMING WPS Count: 0 IDC Count: 0 Dwg Count: 0 Pgm Count: 0 QAP Count: 0 NDT Count: 0 Operation Resource **QtyPer** StartOty EndQt Drawing ID / Rev Sub: 13 / Seq: 10 1.00 1.00 SE121 / A 800-RECEIVING 1.00 (C) RECEIVE AND INSPECT THE CAST KIRKSITE BLOCK (TAPE MEASURE) PER MTM P.O. IDC Count: 0 Dwg Count: 5 Pgm Count: 0 OAP Count: 0 NDT Count: 0 WPS Count: 0 Piece # Part ID Otv Drawing ID / Rev Vendor **Dimensions** 1.0 10 (C) DIE #4: KIRKSITE BLOCK: 16*30*77 QAP Count: 0



(C)

Page: 22 Date:12/23/03 **User ID: MCCORKLE**

Workorder Part ID Drawing ID / Rev Engineer 64880/2.0 BLUE/DOUG MCCORKLE

Operation QtyPer StartQty EndQt Drawing ID / Rev Resource

Sub: 13 / Seq: 20 160-30FT MITSU 1.00 1.00 1.00 SE121 / A

> SETUP AND FACE ONE SIDE FLAT (MINIMAL STOCK REMOVAL) SETUP ON FLAT SURFACE AND BORE HOLES IN SIDES FOR LIFTING PROVISIONS PER DRAWING

MACHINE KEYING / ALIGMENT FEATURES PER DRAWING. INSTALL LIFTING PINS.

N/C MACHINE (SCRIBE) DIE SET NUMBER ON THE FRONT FACE

(1.0 - 2.0" CHARACTER HEIGHT)

ROUGH MACHINE PROFILE PER PROGRAM

IDC Count: 0 NDT Count: 0 WPS Count: 0 Dwg Count: 5 Pgm Count: 0 QAP Count: 0

Operation **QtyPer** StartQty EndQt Drawing ID / Rev Resource

Sub: 13 / Seq: 30 1.00 1.00 1.00 SE121 / A 162-DORRIES SCHARMANN GANTR

REPOSITION WITH 3D PROFILE FACING SPINDLE. INDICATE ALIGNMENT / CONSTRUCTION FEATURES (C)

FINISH MACHINE PROFILE PER PROGRAM

IDC Count: 0 Dwg Count: 5 Pgm Count: 32 QAP Count: 0 NDT Count: 0 WPS Count: 0

NDT Count: 0

WPS Count: 0

Operation Resource **QtyPer** StartQty EndQt Drawing ID / Rev

Sub: 13 / Seq: 40 105-DEBURR PLT 1 LOW BAY 1.00 1.00 1.00

APPLY LAYOUT DIE TO THE INTERIOR OF THE FINISHED PART OUTLINE. BARBER / BLEND SCALLOPS SMOOTH TO AN APROXIMATE AVERAGE SURFACE FINISH (C)

OF 125 MICRO-INCHES (REMOVING APPROXIMATELY 1/2 OF THE EXISTING SCALLOPS). USE EXTREME CARE NOT TO REMOVE THE PART OUTLINE AND

INSPECTION GAGE LAYUP SPOTS (APPROXIMATELY 6" GRID PATTERN). NOTIFY ENGINEERING (DOUG McCORKLE) WHEN COMPLETE

IDC Count: 0 Dwg Count: 0 QAP Count: 0 NDT Count: 0 WPS Count: 0 Pgm Count: 0

Operation QtyPer StartQty EndQt Drawing ID / Rev Resource

Sub: 13 / Seq: 50 815-CMM - GANTRY - PLANT 2 1.00 1.00 1.00 SE121 / A

(C) INSPECT PROFILE (CMM) PER PROGRAM / 3D MODEL GEOMETRY.

> RECORD IDC DATA Part Number: DIE # 4

Dimensional Report: CMM DATA SHEET

IDC Count: 1 Dwg Count: 5 Pgm Count: 1 QAP Count: 2

Sub ID Drawing ID / Rev Part ID 19 MTMFX-2906 INSPECTION GAGE FO 1

Parent Sub:4 Op:20

Operation Resource QtyPer StartQty EndQt Drawing ID / Rev Service ID Sub: 19 / Seq: 10 1.00 MISC/SUBLET 450-SUBLET 1.00 1.00



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Part ID Workorder Qty Drawing ID / Rev Engineer 64880/2.0 BLUE/DOUG MCCORKLE (C) PRODUCE PROFILE INSPECTION GAGE (SE120-002-2 PANEL 4) FROM MTM MACHINED FORMING DIE (OFFSET FOR .375" MATERIAL THICKNESS) REFERENCE CENTRAL INDIANA PATTERN AND MOLD QUOTATION DATED 17AUG03. IDC Count: 0 Dwg Count: 0 Pgm Count: 0 QAP Count: 0 NDT Count: 0 WPS Count: 0 Operation QtyPer StartQty EndQt Drawing ID / Rev Resource Sub: 19 / Seq: 20 815-CMM - GANTRY - PLANT 2 1.00 1.00 1.00 SE121 / --INSPECT / VERIFY GAGE MTMFX-2906 PROFILE PER PROGRAM / PROVIDED 3D GEOMETRY. (C) RECORD IDC DATA INPUT GAGE CALIBRATION DATA, ASSIGN GAGE NUMBER (NOTIFY DOUG McCORKLE OF NUMBER), AND LOG GAGE INTO THE CALIBRATION SYSTEM. PLACE GAGE SECURELY INTO IT'S STORAGE BOX. ENSURE IT IS FIRMLY SUPPORTED (SHORED UP), AND THE GAGE FACE IS STORED UPWARD AND COVERED WITH PLASTIC FOAM. IDC Count: 1 NDT Count: 0 WPS Count: 0 Dwg Count: 0 Pgm Count: 0 QAP Count: 0 Operation StartQty EndQt Drawing ID / Rev Resource **QtyPer** Sub: 19 / Seq: 30 105-DEBURR PLT 1 LOW BAY 1.00 1.00 AFTER THE GAGE HAS BEEN INSPECTED (AND ACCEPTED), REMOVE THE STRONGBACK / POSITIONING FRAMEWORK FROM THE STRUCTURE PER ENGINEERING (R) (DOUG McCORKLE) DIRECTION. DISCARD THE EXCESS FRAMEWORK, AND FORWARD THE GAGE TO THE PRESSROOM. IDC Count: 0 Dwg Count: 0 Pgm Count: 0 OAP Count: 0 NDT Count: 0 WPS Count: 0 Sub ID Part ID Drawing ID / Rev Qty 5 DIE SET # 5 MTMFX-2891, MTMFX Parent Sub:0 Op:20 OtvPer StartQty EndQt Drawing ID / Rev Operation Resource Sub: 5 / Seq: 5 820-RECEIVING INSPECTION 1.00 1.00 1.00 SE121-001P / A (C) INSPECT BLANK SIZE PER DRAWING VERIFY EDGES ARE SMOOTH AND CORNERS HAVE RADII APPLIED. INSPECT MATERIAL THICKNESS VISUAL INSPECT SURFACE FINISH INSPECT MAGNETIC PERMEABILITY RECORD IDC DATA Specification: ASTM A800 Rev: 2001 Part Number: SE121-001P-2 PANEL 5D Part Description: DEVELOPMENT PANEL Customer: PPPL Specification: ASTM B443 Rev: 00 Specification: ASTM B46.1 Rev: 95 IDC Count: 3 Dwg Count: 0 Pgm Count: 0 OAP Count: 6 NDT Count: 0 WPS Count: 0 Piece # Part ID Vendor Drawing ID / Rev Dimensions 10 SE120-002-2 PANEL 5-PANEL BLANK .375" THK INCONEL 625 SE121 / --1810 Vendor Part ID: SE120-002-2 PANEL 5

W:64880/2-0 /Inc Matl /Inc Legs



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Workorder Part ID Qty Drawing ID / Rev Engineer
64880/2.0 1 / BLUE/DOUG MCCORKLE

(C) PANEL BLANK AWJ CUT FROM .375" INCONEL 625 TO PROVIDED GEOMETRICAL SHAPE

(SE120-002-2 PANEL # 5.DXF, REV. --)

MATERIAL REQUIREMENTS: INCONEL 625 (UNS N06625) PER ASTM B 443-00 ANNEALED

MAGNETIC PERMEABILITY SHALL NOT EXCEED 1.00 (REF. ASTM A800).

SURFACE MUST BE PROTECTED FROM CONTACT WITH IRON AND IRON ALLOY MATERIALS

CERTS & MILL TEST REPORTS REQ'D WITH SHIPMENT.

APPROXIMATE OVERALL SIZE: 50 X 75.72

Material Certification:

Part Number: SE121-001P-2 PANEL 5D Part Description: DEVELOPMENT PANEL

Specification: ASTM A800 Rev: 01 Specification: ASTM B443 Rev: 00 Specification: ASTM B46.1 Rev: 95

QAP Count: 6

 Operation
 Resource
 QtyPer
 StartQty
 EndQt
 Drawing ID / Rev

 Sub: 5 / Seq: 10
 340-VERSON 500
 1.00
 1.00
 1.00
 \$E121 / A

(C) "SPOT IN" / DEVELOP DIE SET AND PANEL FORMING PROCESS:

LOAD, ALIGN, AND BOLT DIE SET # MTMFX-2891, MTMFX-2890 INTO THE PRESS.

ENSURE THE DIE SET FACES ARE CLEAN AND FREE OF DIRT, OIL, GRIME, FOREIGN MATTER, RAISED OR EMBEDDED MATERIAL, ETC.... WIPE THE DIE-SET FACES CLEAN WITH ISOPROPANOL PRIOR TO INSTALLING THE PANEL.

INSTALL / POSITION THE PANEL BLANK INTO THE DIE SET.

HYDRAULIC FORM THE PANEL TO ACHIEVE THE GEOMETRICAL SHAPE CONFORMING TO INSPECTION GAGE # MTMFX-2903.

NOTE THAT THE FINAL PANEL TO GAGE GAP TOLERANCE IS .094" MAX. IT IS DESIRED TO GET AS CLOSE TO THIS AS POSSIBLE PRIOR TO ANNEALING. CLOSELY WATCH THE FORMING, WRINKLING, AND SPRING-BACK CHARACTERISTICS OF THE MATERIAL DURING THE FORMING PROCESS. WHEN IT'S APPARENT THE MATERIAL IS WORK HARDENING TO A DEGREE THAT FORMING BECOMES DIFFICULT, OR THE PHYSICAL INTEGRITY OF THE MATERIAL IS AT RISK, PROCEED TO THE NEXT SEQUENTIAL OPERATION (BLAST AND ANNEAL). A FINAL FORMING SEQUENCE IS PROVIDED FOR "FINAL SIZING" AFTER THE MATERIAL HAS BEEN ANNEALED.

ENSURE THE PANEL MATERIAL EXTENDS BEYOND THE PERIMETER OF THE TRIM-LINES OF THE GAGE BY AT LEAST 1" (TO PROVIDE ADEQUATE STOCK ALLOWANCE FOR RE-POSITIONING, RE-STRIKING, AND ACCURATE TRIMMING).

Drw N/A IDC Count: 0 Dwg Count: 5 Pgm Count: 0 QAP Count: 0 NDT Count: 0 WPS Count: 0

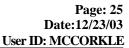
 Operation
 Resource
 QtyPer
 StartQty
 EndQt
 Drawing ID / Rev

 Sub: 5 / Seq: 12
 260-SANDBLAST
 1.00
 1.00
 1.00
 SE121-001P / A

(U) SHOT BLAST THE ENTIRE PANEL 100% USING 180-220 GRIT VIRGIN ALUMINUM OXIDE MEDIA TO REMOVE ANY RESIDUE FROM THE FORMING PROCESS.

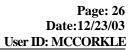
IDC Count: 0 Dwg Count: 0 Pgm Count: 0 QAP Count: 0 NDT Count: 0 WPS Count: 0

OperationResourceQtyPerStartQtyEndQtDrawing ID / RevService IDSub: 5 / Seq: 15520-SUBLET, EXOTIC HEAT TREAT1.001.005E121-001P / ATHRML TR/NA SA





Workorder Part ID Qty Drawing ID / Rev Engineer 64880/2.0 BLUE/DOUG MCCORKLE (U) SOLUTION ANNEAL FORMED PANEL PER THE FOLLOWING: ATTACH A MINIMUM OF THREE EQUALLY SPACED THERMOCOUPLES TO THE FORMED PANEL CHARGE FURNACE AND HEAT PART UNTIL THERMOCOUPE READINGS ARE WITHIN 1900 +/-15F. HOLD PART TEMPERATURE AT 1900 DEGREES F. (+/- 15 DEGREES) HOLD FOR 45 MINUTES (+/ 5 MINUTES) RAPID COOL (VIA. WATER QUENCHING OR FORCED AIR CIRCULATION) TO 1000 DEGREES F. OPEN AIR COOL TO AMBIENT TEMP. NOTE THAT THIS SEQUENCE IS POSITIONED AFTER THE FORMING OPERATION TO BE USED AT THE DESCRETION OF MANUFACTURING. RETURN TO PREVIOUS SEQUENCE TO COMPLETE THE FORMING AFTER ANNEAL CYCLE. Specification: AMS2774 Rev: JUL95 Certification: H/T CERTIFICATE Part Number: SE121-001P-2 PANEL 5D Part Description: DEVELOPMENT PANEL Customer: PPPL Furnace charts: FURNACE CHART Dwg Count: 0 IDC Count: 0 Pgm Count: 0 QAP Count: 6 NDT Count: 0 WPS Count: 0 Operation Resource **QtyPer** StartQty EndQt Drawing ID / Rev Sub: 5 / Seq: 20 1.00 SE121-001P / A 815-CMM - GANTRY - PLANT 2 1.00 1.00 (R) VERIFY PROFILE TO INSPECTION GAGE #MTMFX-2907. GAP TOLERANCE: .094" MAX. RECORD IDC DATA FORWARD PANEL TO STORES IDC Count: 1 Dwg Count: 0 Pgm Count: 0 QAP Count: 0 NDT Count: 0 WPS Count: 0 Sub ID Part ID Drawing ID / Rev Qty MTMFX-2891 / A CORE # 5 MTMFX-2891 Parent Sub:5 Op:10 **QtyPer** StartQty EndQt Drawing ID / Rev Operation Resource Sub: 14 / Seq: 5 751-CAD/CAM - MEDIUM MILLING 1.00 1.00 1.00 (C) N/C PROGRAMMING IDC Count: 0 WPS Count: 0 Dwg Count: 0 Pgm Count: 0 OAP Count: 0 NDT Count: 0 Operation Resource **QtyPer** StartQty EndQt Drawing ID / Rev Sub: 14 / Seq: 10 1.00 SE121 / A 800-RECEIVING 1.00 RECEIVE AND INSPECT THE CAST KIRKSITE BLOCK (TAPE MEASURE) PER MTM P.O. (C) Dwg Count: 5 OAP Count: 0 NDT Count: 0 IDC Count: 0 Pgm Count: 0 WPS Count: 0 Piece # Part ID Qty Drawing ID / Rev Vendor **Dimensions** 1.0 10 (C) PUNCH #5: KIRKSITE BLOCK: 26*40*53 QAP Count: 0





Workorder Part ID Qty Drawing ID / Rev Engineer 64880/2.0 BLUE/DOUG MCCORKLE QtyPer StartQty EndQt Drawing ID / Rev Operation Resource Sub: 14 / Seq: 20 162-DORRIES SCHARMANN GANTR 1.00 1.00 1.00 SE121 / A (C) SETUP AND FACE ONE SIDE FLAT (MINIMAL STOCK REMOVAL) SETUP ON FLAT SURFACE AND BORE HOLES IN SIDES FOR LIFTING PROVISIONS PER DRAWING MACHINE KEYING / ALIGMENT FEATURES PER DRAWING. INSTALL LIFTING PINS. N/C MACHINE (SCRIBE) DIE SET NUMBER ON THE FRONT FACE (1.0 - 2.0" CHARACTER HEIGHT) ROUGH MACHINE PROFILE PER PROGRAM Dwg Count: 5 WPS Count: 0 IDC Count: 0 Pgm Count: 32 QAP Count: 0 NDT Count: 0 Operation Resource **QtyPer** StartQty EndQt Drawing ID / Rev Sub: 14 / Seq: 30 162-DORRIES SCHARMANN GANTR 1.00 1.00 1.00 SE121 / A REPOSITION WITH 3D PROFILE FACING SPINDLE, INDICATE ALIGNMENT / CONSTRUCTION FEATURES (C) FINISH MACHINE PROFILE PER PROGRAM IDC Count: 0 Dwg Count: 5 Pgm Count: 32 QAP Count: 0 NDT Count: 0 WPS Count: 0 Operation Resource **QtyPer** StartQty EndQt Drawing ID / Rev Sub: 14 / Seq: 40 105-DEBURR PLT 1 LOW BAY 1.00 1.00 1.00 APPLY LAYOUT DIE TO THE INTERIOR OF THE FINISHED PART OUTLINE (APPROXIMATE FROM THE CAVITY SCRIBE LINES). BARBER / BLEND SCALLOPS (C) SMOOTH TO AN APROXIMATE AVERAGE SURFACE FINISH OF 125 MICRO-INCHES (REMOVING APPROXIMATELY 1/2 OF THE EXISTING SCALLOPS). IDC Count: 0 Dwg Count: 0 WPS Count: 0 Pgm Count: 0 QAP Count: 0 NDT Count: 0 Operation QtyPer StartQty EndQt Drawing ID / Rev Resource Sub: 14 / Seq: 50 815-CMM - GANTRY - PLANT 2 1.00 1.00 1.00 SE121 / A (C) INSPECT PROFILE (CMM) PER PROGRAM / 3D MODEL GEOMETRY. RECORD IDC DATA Part Number: PUNCH # 5 Dimensional Report: CMM DATA SHEET IDC Count: 1 Dwg Count: 5 Pgm Count: 1 OAP Count: 2 NDT Count: 0 WPS Count: 0 Sub ID Drawing ID / Rev Part ID 15 CAVITY # 5 MTMFX-2890 MTMFX-2890 / A Parent Sub:5 Op:10 Operation Resource QtyPer StartQty EndQt Drawing ID / Rev Sub: 15 / Seq: 5 1.00 1.00 1.00 751-CAD/CAM - MEDIUM MILLING N/C PROGRAMMING (C) IDC Count: 0 Dwg Count: 0 Pgm Count: 0 QAP Count: 0 NDT Count: 0 WPS Count: 0



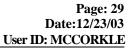
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Part ID Workorder Qty Drawing ID / Rev Engineer 64880/2.0 BLUE/DOUG MCCORKLE Operation Resource OtvPer StartQty EndQt Drawing ID / Rev Sub: 15 / Seq: 10 800-RECEIVING 1.00 1.00 1.00 SE121 / A (C) RECEIVE AND INSPECT THE CAST KIRKSITE BLOCK (TAPE MEASURE) PER MTM P.O. IDC Count: 0 Dwg Count: 5 Pgm Count: 0 OAP Count: 0 NDT Count: 0 WPS Count: 0 Piece # Part ID Drawing ID / Rev Vendor **Dimensions** 10 1.0 (C) DIE #5: KIRKSITE BLOCK: 27*42*60 QAP Count: 0 Operation StartQty EndQt Drawing ID / Rev Resource OtvPer Sub: 15 / Seq: 20 1.00 SE121 / A 162-DORRIES SCHARMANN GANTR 1.00 1.00 (C) SETUP AND FACE ONE SIDE FLAT (MINIMAL STOCK REMOVAL) SETUP ON FLAT SURFACE AND BORE HOLES IN SIDES FOR LIFTING PROVISIONS PER DRAWING MACHINE KEYING / ALIGMENT FEATURES PER DRAWING. INSTALL LIFTING PINS. N/C MACHINE (SCRIBE) DIE SET NUMBER ON THE FRONT FACE (1.0 - 2.0" CHARACTER HEIGHT) ROUGH MACHINE PROFILE PER PROGRAM IDC Count: 0 Dwg Count: 5 Pgm Count: 32 OAP Count: 0 NDT Count: 0 WPS Count: 0 Operation **QtyPer** StartQty EndQt Drawing ID / Rev Resource Sub: 15 / Seq: 30 162-DORRIES SCHARMANN GANTR 1.00 1.00 1.00 SE121 / A REPOSITION WITH 3D PROFILE FACING SPINDLE, INDICATE ALIGNMENT / CONSTRUCTION FEATURES (C) FINISH MACHINE PROFILE PER PROGRAM IDC Count: 0 Dwg Count: 5 Pgm Count: 32 QAP Count: 0 NDT Count: 0 WPS Count: 0 Operation Resource **QtyPer** StartQty EndQt Drawing ID / Rev Sub: 15 / Seq: 40 1.00 105-DEBURR PLT 1 LOW BAY 1.00 1.00 APPLY LAYOUT DIE TO THE INTERIOR OF THE FINISHED PART OUTLINE. BARBER / BLEND SCALLOPS SMOOTH TO AN APROXIMATE AVERAGE SURFACE FINISH (C) OF 125 MICRO-INCHES (REMOVING APPROXIMATELY 1/2 OF THE EXISTING SCALLOPS). USE EXTREME CARE NOT TO REMOVE THE PART OUTLINE AND INSPECTION GAGE LAYUP SPOTS (APPROXIMATELY 6" GRID PATTERN). NOTIFY ENGINEERING (DOUG McCORKLE) WHEN COMPLETE IDC Count: 0 Dwg Count: 0 Pgm Count: 0 OAP Count: 0 WPS Count: 0 NDT Count: 0 Operation **QtyPer** StartQty EndQt Drawing ID / Rev Resource Sub: 15 / Seq: 50 1.00 SE121 / A 815-CMM - GANTRY - PLANT 2 1.00 1.00 (C) INSPECT PROFILE (CMM) PER PROGRAM / 3D MODEL GEOMETRY. RECORD IDC DATA Part Number: DIE # 5 Dimensional Report: CMM DATA SHEET



Page: 28 Date:12/23/03 **User ID: MCCORKLE**

Part ID Drawing ID / Rev Workorder Engineer 64880/2.0 BLUE/DOUG MCCORKLE IDC Count: 1 QAP Count: 2 NDT Count: 0 WPS Count: 0 Dwg Count: 5 Pgm Count: 1 Sub ID Part ID Drawing ID / Rev Qty 20 MTMFX-2907 INSPECTION GAGE FO Parent Sub:5 Op:20 Operation Resource QtyPer StartQty EndQt Drawing ID / Rev Service ID Sub: 20 / Seq: 10 450-SUBLET 1.00 1.00 1.00 MISC/SUBLET (C) PRODUCE PROFILE INSPECTION GAGE (SE120-002-2 PANEL 5) FROM MTM MACHINED FORMING DIE (OFFSET FOR .375" MATERIAL THICKNESS) REFERENCE CENTRAL INDIANA PATTERN AND MOLD QUOTATION DATED 17AUG03. NDT Count: 0 WPS Count: 0 IDC Count: 0 Dwg Count: 0 Pgm Count: 0 QAP Count: 0 Operation QtyPer StartQty EndQt Drawing ID / Rev Resource Sub: 20 / Seq: 20 815-CMM - GANTRY - PLANT 2 1.00 1.00 1.00 SE121 / --INSPECT / VERIFY GAGE MTMFX-2907 PROFILE PER PROGRAM / PROVIDED 3D GEOMETRY. (R) RECORD IDC DATA INPUT GAGE CALIBRATION DATA, ASSIGN GAGE NUMBER (NOTIFY DOUG McCORKLE OF NUMBER), AND LOG GAGE INTO THE CALIBRATION SYSTEM. PLACE GAGE SECURELY INTO IT'S STORAGE BOX. ENSURE IT IS FIRMLY SUPPORTED (SHORED UP), AND THE GAGE FACE IS STORED UPWARD AND COVERED WITH PLASTIC FOAM. IDC Count: 1 Pgm Count: 0 NDT Count: 0 WPS Count: 0 Dwg Count: 0 QAP Count: 0 Operation Resource OtvPer StartQty EndQt Drawing ID / Rev Sub: 20 / Seq: 30 1.00 105-DEBURR PLT 1 LOW BAY 1.00 (R) AFTER THE GAGE HAS BEEN INSPECTED (AND ACCEPTED), REMOVE THE STRONGBACK / POSITIONING FRAMEWORK FROM THE STRUCTURE PER ENGINEERING (DOUG McCORKLE) DIRECTION. DISCARD THE EXCESS FRAMEWORK, AND FORWARD THE GAGE TO THE PRESSROOM. IDC Count: 0 Dwg Count: 0 Pgm Count: 0 OAP Count: 0 NDT Count: 0 WPS Count: 0 Sub ID Part ID Qty Drawing ID / Rev 2.2. LIFTING PINS Parent Sub:0 Op:20 Operation Resource QtyPer StartQty EndQt Drawing ID / Rev Sub: 22 / Seq: 10 1.00 405-SAWS-PLANT 2 1.00 1.00 (C) SAW AND DEBURR ROUND STOCK PER MATERIAL CARDS. IDC Count: 0 Dwg Count: 0 Pgm Count: 0 OAP Count: 0 NDT Count: 0 WPS Count: 0 **Dimensions** Piece # Part ID Qty Drawing ID / Rev Vendor 1018_32-BAR,ROUND,CR. 2.0" DIA 440.0 5068 10 11 Vendor Part ID: 1018_32 Mfg Part ID: 1018 MATERIAL BAR.ROUND.CR. 2.0" DIA (C)





Workorder Part ID Qty Drawing ID / Rev Engineer

64880/2.0 BLUE/DOUG MCCORKLE

1018 MATERIAL

CERTS AND MILL TEST REPORTS REQ'D WITH SHIPMENT.

STOCK SIZE 12 FT

QAP Count: 2

Piece # Part ID Qty Drawing ID / Rev Vendor Dimensions

) 1018_713-BAR,ROUND,CR. 3.0" DIA 20.0 5068 .5

Vendor Part ID: 1018_713

Mfg Part ID: 1018 MATERIAL

(C) 1018 MATERIAL

BAR, ROUND, CR. 3.0" DIA

CERTS AND MILL TEST REPORTS REQ'D WITH SHIPMENT

STOCK SIZE 12 FT

QAP Count: 1

Operation Resource QtyPer StartQty EndQt Drawing ID / Rev
Sub: 22 / Seq: 20 215-HGIH PROGRAM 1.00 1.00 1.00 1.00
(C) PREP AND WELD FLANGE TO PIN PER ENGINEERING INSTRUCTION

(3/16 to 1/4" FILLET WELD) 40 PIECES ARE REQUIRED.

NOTIFY DOUG McCORKLE WHEN COMPLETE

IDC Count: 0 Dwg Count: 0 Pgm Count: 0 QAP Count: 0 NDT Count: 0 WPS Count: 2

WPS190 Rev:1 FCAW SEM----WPS192 Rev:2 GTAW MAN

GTAW - Manual Fillers: ER70S-2_035_GTAW / ER70S-2_045_GMAW / ER70S-2_062_GMAW / ER70S-2_062_GTAW / ER70S-2_093_GMAW / ER70S-2_093_GTAW

FCAW - Semi-automatic Fillers: E70T-1_045_FCAW / E70T-1_062_FCAW / E70T-1_093_FCAW

Notes: