QA Plan Summary
NCSX Modular Coil Winding Form Machining

Spec Ref	Activity	Visual Mfg Ref.	Ref Procedure	Witness/Hold Point	Reporting/Documentation Req
	Manufacturing Planning- QA planning- Production Support	65707/6.0 -Sub:0 Op#:10			
	Final Inspection----Prepare part for source inspection.----Review and complete QA data package per QAP and the requirements of the product specification NCSX-CSPEC-141-03-05 September 23- 2004.--Contact CFT to review data package prior to notifying source inspection.	65707/6.0 -Sub:0 Op#:20			
	SOURCE INSPECTION - FINAL ACCEPTANCE OF PART AND DATA PACKAGE. HAVE SOURCE INSPECTOR STAMP AND SIGN C OF C.	65707/6.0 -Sub:0 Op#:30		Hold Point	
5.1; 5.3; 5.4	Package and Ship----Build a box/crate suitable for protecting the part from the environment.----Weigh the finished part and metal stamp the value in pounds on the casting in the area marked on the customer drawing.----Part must be protected and wrapped in plastic prior to inserting into the crate. Refer to PS583.----Part is to be shipped to PPPL in Princeton- NJ per QAP shipping address.----Crate must be marked/stenciled per the MTM drawing.	65707/6.0 -Sub:0 Op#:40	PS583		
	Receive customer supplied material. ----Customer material data package will not be received with the part. This record will be obtained and linked later.----Part Number: SE141-116 Rev: 7--Part Description: PRODUCTION WINDING FORM TYPE-C	65707/6.0 -Sub:1 Op#:10			
	Setup and machine the flange faces and flange periphery to within .100- stock.	65707/6.0 -Sub:1 Op#:18			
	SET CASTING ON RISERS WITH DATUM -E- FLANGE DOWN. ROUGH MACHINE OUTSIDE POLOIDAL BREAK FLANGES TO WITHIN .030- OF FINISH. MACHINE POLOIDAL BREAK THROUGH THE FLANGES AND CASTING WALL TO 2.050- LEAVING THE T SECTION TO BE CUT AT A LATER TIME.	65707/6.0 -Sub:1 Op#:20			
	USING TABS CUT FROM CUSTOMER SUPPLIED MATERIAL- WELD TEMPORARY SHIM IN PLACE. WELD TABS TO SHIM AND TABS TO CASTING. (DO NOT WELD SHIM DIRECTLY TO CASTING)--USE MACHINED QUALIFIERS TO HELP POSITION THE SHIM.	65707/6.0 -Sub:1 Op#:25			
	SET UP FIXTURE PLATE MTMFX-3099 AND MACHINE LOCATING PADS AS NECESSARY.--SET UP CASTING WITH DATUM -E- AGAINST THE FIXTURE.--- MACHINE THE REMAINING PORTION OF THE POLOIDAL BREAK TO 2.050-.--- FINISH MACHINE DATUM -D- WING SURFACES AND ALL AREAS BELOW THE T SECTION.--- MACHINE T SECTION TO WITHIN .030-.--- FINISH MACHINE DATUM -D- FLANGE.--	65707/6.0 -Sub:1 Op#:30			
	SET UP FIXTURE PLATE MTMFX-3100 AND MACHINE LOCATING PADS AS NECESSARY.--SET UP CASTING WITH DATUM -D- AGAINST THE FIXTURE.--- FINISH MACHINE DATUM -E- WING SURFACES AND ALL AREAS BELOW THE T SECTION.--- MACHINE T SECTION TO WITHIN .030-.--- FINISH MACHINE DATUM -E- FLANGE.--	65707/6.0 -Sub:1 Op#:35			
	CD-1 (SETUP 1)--SET UP MTMFX-3099 ON ANGLE PLATE.--LOAD PART WITH DATUM -D- FLANGE UP.--VERIFY FLATNESS OF DATUM -D- FACE AND RECORD RESULTS IN IDC (SEE LINKED DATUM -D- MAP)--RECORD TOOLING BALL LOCATIONS IN IDC.--COMPLETE ALL PROGRAMS FOR SETUP 1.	65707/6.0 -Sub:1 Op#:50			IDC: 18
	CD-2 (SETUP 2)--SET CASTING ON RISERS WITH DATUM -D- FLANGE UP. --RECORD TOOLING BALL LOCATIONS IN IDC. COMPLETE ALL PROGRAMS FOR SETUP 2.	65707/6.0 -Sub:1 Op#:55			IDC: 4
	CE-2 (SETUP 4)--SET CASTING ON RISERS WITH DATUM -E- FLANGE UP. --RECORD TOOLING BALL LOCATIONS IN IDC. --COMPLETE ALL PROGRAMS FOR SETUP 4.	65707/6.0 -Sub:1 Op#:60			IDC: 4
	CE-1 (SETUP 3)--SET UP MTMFX-3100 ON ANGLE PLATE.--LOAD PART WITH DATUM -E- FLANGE UP.--VERIFY FLATNESS OF DATUM -E- FACE AND RECORD RESULTS ON IDC (SEE LINKED DATUM -E- MAP)--RECORD TOOLING BALL LOCATIONS IN IDC.--COMPLETE ALL PROGRAMS FOR SETUP 3.--	65707/6.0 -Sub:1 Op#:70			IDC: 19
	POLOIDAL BREAK OPERATION (SETUP 5)--- INSTALL MTMFX-3099 ON RISERS. --- TACK WELD FIXTURE TO RISER BLOCKS TO PREVENT MOVEMENT.--- LOAD PART ON FIXTURE WITH DATUM -D- FLANGE UP. --- TACK WELD DATUM -E- FLANGE TO THE FIXTURE ON EITHER SIDE OF THE POLOIDAL BREAK.--- TACK WELD BRACING TO PREVENT MOVEMENT OF THE POLOIDAL BREAK WHEN THE TEMPORARY SHIM IS REMOVED. TABS MADE FROM THE CASTING MATERIAL ARE TO BE WELDED TO THE BRACING AND THEN THE TABS WELDED TO THE CASTING.--- RECORD TOOLING BALL LOCATIONS IN IDC. --- REMOVE SHIM AND FINISH MACHINE POLOIDAL BREAK.--- INSTALL DRILL FIXTURE AND COMPLETE GUN DRILLING OPERATION.--- COMPLETE ALL REMAINING PROGRAMS FOR SETUP 5.--- REMOVE THE DRILL FIXTURE AND INSTALL THE TWO TAPERED PINS. PLACE ALUMINUM BLOCKS IN THE POLOIDAL BREAK AND CLAMP OVER THE BLOCKS TO MINIMIZE ANY MOVEMENT DURING HANDLING. --- VERIFY THAT QUALIFIERS HAVE BEEN CUT ON THE OUTER DIAMETERS OF THE -D- AND -E- FLANGES ACROSS THE POLOIDAL BREAK. THIS WILL BE USED FOR ALIGNMENT DURING THE ASSEMBLY OPERATION.--- CUT THE TACKS AND BRACING LOOSE AND REMOVE THE PART FROM THE FIXTURE.--	65707/6.0 -Sub:1 Op#:80			IDC: 4
3.1.1.4 4.2.6	PROTECT PART FROM METAL CONTAMINATION DUE TO CONTACT WITH IRON- SPECIFICALLY WHEN RIGGING PART FOR MOVEMENT.--ALL GRINDING WHEELS AND DISKS MUST BE VIRGIN MATERIAL NOT PREVIOUSLY USED ON ANY OTHER MATERIAL TO AVOID MATERIAL CONTAMINATION.----- FINISH HAND TAPPING OF 3/8-16 HOLES USING TAP GUIDE (IF REQUIRED)--- START BLENDING T-SECTION--- HAND GRIND 1/16 CHAMFER ON ALL SPLIT LINE EDGES OF POLOIDAL BREAK AND ON ALL THRU HOLES AT POLOIDAL BREAK.--- HAND GRIND VPI GROOVE WHERE REQUIRED.--- DEBURR WING AREAS TO REMOVE ANY SHARPNESS FROM MACHINING (SCALLOPS DO NOT NEED TO BE REMOVED).--- CHECK ALL ACCESSIBLE T CLEARANCES USING MTMFX-3473 CHECKING FIXTURE--- HAND GRIND 1/16 TO 3/32 CHAMFER ON OUTER EDGE OF T IN ALL ACCESSIBLE AREAS.--- FINISH ALL OTHER REQUIRED DEBURRING ON DATUM -D- SIDE PRIOR TO MOVING PART TO PLANT 2 FOR FLIPPING.	65707/6.0 -Sub:1 Op#:85			
3.1.1.4 4.2.6	PROTECT PART FROM METAL CONTAMINATION DUE TO CONTACT WITH IRON- SPECIFICALLY WHEN RIGGING PART FOR MOVEMENT.--ALL GRINDING WHEELS AND DISKS MUST BE VIRGIN MATERIAL NOT PREVIOUSLY USED ON ANY OTHER MATERIAL TO AVOID MATERIAL CONTAMINATION.----- FLIP PART AND SET UP ON DATUM -D-.--- START BLENDING T SECTION---- DEBURR WING AREAS TO REMOVE ANY SHARPNESS FROM MACHINING (SCALLOPS DO NOT NEED TO BE REMOVED).--- CHECK ALL ACCESSIBLE T CLEARANCES USING MTMFX-3473 CHECKING FIXTURE--- HAND GRIND 1/16 TO 3/32 CHAMFER ON OUTER EDGE OF T IN ALL ACCESSIBLE AREAS.--- USING 1/4- NUMBERS- STAMP NUMBERS ON FACE OF T PER DRAWING. USE DRAWING SE141-116-2MTM REV 6A FOR STAMPING NUMBERS.--	65707/6.0 -Sub:1 Op#:88			IDC: 6

QA Plan Summary
NCSX Modular Coil Winding Form Machining

Spec Ref	Activity	Visual Mfg Ref.	Ref Procedure	Witness/Hold Point	Reporting/Documentation Req
	HAND GRIND VPI GROOVE AND AREAS OF CAST STOCK THAT WERE NOT REMOVED BY MACHINING. SEE ROB BACKEK FOR DETAILS.	65707/6.0 -Sub:1 Op#:89			
5.2	PROTECT PART FROM METAL CONTAMINATION DUE TO CONTACT WITH IRON- SPECIFICALLY WHEN RIGGING PART FOR MOVEMENT.--MOVE PART INTO WASH BOOTH. --THOROUGHLY CLEAN AND DRY ALL SURFACES AND HOLES PER SECTION 9 OF PS583. --PARTS TO BE WASHED USING HEATED- DE-MINERALIZED WATER- AND IF NECESSARY- A MILD NON-CHLORINATED CLEANING SOLUTION (E.G. SIMPLE GREEN®- OR AUTHORIZED EQUIVALENT)- USING MTM'S HIGH PRESSURE WASHER. THE SPRAY PRESSURE AT THE NOZZLE WILL BE APPROXIMATELY 1-000 TO 1-500 PSI AND THE CLEANING SOLUTION TEMPERATURE WILL BE APPROXIMATELY 150°F.--HAVE INSPECTION VERIFY THE CLEANLINESS OF THE CASTING PRIOR TO REMOVING FROM THE WASH BOOTH.--	65707/6.0 -Sub:1 Op#:90	PS583		IDC: 1
4.2.7.1 4.2.7.2.2	PT 100% OF FINISHED MACHINED SURFACES ONLY. SEE PS582 FOR PROCESSING INSTRUCTIONS. ----MTM CERTIFICATION TO INCLUDE THE INFORMATION PER SUPPLEMENTARY REQUIREMENTS S1 OF ASTM A903/A903M----MTM NDT Cert: LPI CERTIFICATION--Specification: ASTM A903/A903M--Method: E165--Acceptance: ASTM A903/A903M LEVEL 1	65707/6.0 -Sub:1 Op#:100	PS582		MTM NDT Cert
	GOVERNMENT SOURCE INSPECTOR TO WITNESS PT RESULTS.	65707/6.0 -Sub:1 Op#:101			
3.1.1.8	THE -T- AREAS DEFINED AS -HIGH STRESS- ARE TO BE RT 100%. SEE PS581 FOR PROCESS INSTRUCTIONS.----HAND SKETCH A LAYOUT OF ALL FILM LOCATIONS ON ATTACHED RT MAP. ----ALL FILM IS TO BE DOUBLED UP IN ORDER TO SUPPLY THE CUSTOMER WITH A COMPLETE SET OF FILM.----SPECIFICATIONS: ASTM A703/A703M SUPPLEMENTARY REQUIREMENT S5----PROCEDURE/METHOD: ASTM E94 AND ASTM E142 (USE OF A WIRE PENETRAMETER MAY BE NECESSARY INSTEAD OF THE HOLE TYPE TO ENSURE OBJECTIVE 2% OF THICKNESS RESOLUTION/SENSITIVITY)----ACCEPTANCE CRITERIA: NO DEFECT LARGER THAN .080- MAJOR DIMENSION IS ALLOWED.----SCAN RT CERTIFICATION- AND HAND SKETCHED MAP AND LINK IN QAP TO THIS OPERATION.----Certification: RADIOGRAPHIC INSPECTION--Map(s): RT MAP Rev: --Part Number: SE141-116 Rev: 8--Part Description: WINDING FORM TYPE-C--Material Type: 316 SST--Material Thickness: VARIES	65707/6.0 -Sub:1 Op#:110	PS581		Certification / Map(s)
	GOVERNMENT SOURCE INSPECTOR TO WITNESS RT RESULTS.	65707/6.0 -Sub:1 Op#:111		Hold Point	
4.25 4.2.5.3	PERFORM A MAG PERMEABILITY CHECK OF THE MACHINED SURFACES USING A SEVERN PERMEABILITY INDICATOR GAGE. PERMEABILITY SHOULD BE NO GREATER THAN 1.02µ.----CHECK THE PERMEABILITY IN 3 PLACES ON EACH SIDE OF THE T SECTION AT LOCATIONS ADJACENT TO EVERY 5TH HOLE STARTING WITH HOLE 5 AND ENDING WITH HOLE 95. INSPECT ONE POINT ON THE T SECTON- ANOTHER BELOW THE VPI GROOVE AND THE LAST POINT ON THE FLANGE. REPEAT THIS PROCESS ON BOTH SIDES OF THE PART. THERE WILL BE A TOTAL OF 57 POINTS INSPECTED PER SIDE. ----COMPLETE THE IDC INDICATING THE PERMEABILITY RANGE.--Part Number: SE141-116 Rev: 8--Part Description: PRODUCTION WINDING FORM TYPE-C	65707/6.0 -Sub:1 Op#:120	PS584		IDC: 2
	SOURCE FOR MAG PERMEABILITY	65707/6.0 -Sub:1 Op#:121		Hold Point	
	SET PART ON RISERS WITH DATUM -D- FLANGE DOWN. PLACE A RISER ON EITHER SIDE OF THE POLOIDAL BREAK TO ENABLE CLAMPING TO ENSURE THAT THE DATUMS ARE COPLANER. LAY A STRAIGHT EDGE ACROSS THE DATUM -D- FLANGE TO VERIFY ALIGNMENT. ENSURE RADIAL ALIGNMENT BY LAYING A STRAIGHT EDGE ACROSS THE QUALIFIERS CUT ON THE OD OF EACH FLANGE. USE CLAMPS AS NECESSARY TO FORCE THE CASTING INTO POSITION.--ONCE THE ALIGNMENT IS SET- INSTALL THE POLOIDAL BREAK SHIM ASSEMBLY AND ACCOMPANYING HARDWARE AND INSULATION PER THE ASSEMBLY DRAWING.--VERIFY CLEARANCE OF Ø.001- - Ø.002 BETWEEN BUSHING AND BOLT PER DRAWING NOTE 13. RECORD RESULTS IN IDC.--APPLY THRED-GARD ANTI-SEIZE TO HARDWARE PER DRAWING NOTE 10.--TORQUE THE ASSEBMLY TO 1500 FT-LBS.--VERIFY GAP AT POLOIDAL BREAK PER IDC.--Part Number: SE141-116 Rev: 8--Part Description: WINDING FORM TYPE-C	65707/6.0 -Sub:1 Op#:130			IDC: 4
3.1.1.4 3.2.2.1 3.2.2.2 4.2.6	CMM INSPECT AND COMPLETE IDC. OUTPUT INSPECTION RESULTS FOR VERIFICATION USING VERISURF SOFTWARE.----Part Number: SE141-116 Rev: 8--Part Description: WINDING FORM TYPE-C	65707/6.0 -Sub:1 Op#:132	PS593		IDC: 83
	SOURCE FOR DIMENSIONAL	65707/6.0 -Sub:1 Op#:133		Hold Point	
3.1.1.3 4.2.3.1 4.2.3.2	THE RESISTANCE OF THE MID-PLANE ELECTRICAL INSULATION SHALL BE GREATER THAN 500 KOHMS WHEN TESTED AT 100 VDC.----TEST 1:--THE INSULATION RESISTANCE BETWEEN THE MID-PLANE POLOIDAL BREAK SHIM AND WINDING FORM SHALL BE MEASURED. DURING THIS TEST- THE BOLTS SHOULD BE IN THEIR NORMAL STATE (I.E.- ELECTRICALLY -FLOATING-). THE MID-PLANE SHIM SHALL BE CONNECTED TO ONE SIDE OF THE MEGGER- AND THE CASTING SHALL BE CONNECTED TO THE OTHER. RECORD RESULTS IN IDC.----TEST 2:--ALL OF THE BOLTS SHALL BE ELECTRICALLY CONNECTED (JUMPERED) TOGETHER IN ONE GROUP. THE MID-PLANE CASTING (SHIM) AND THE WINDING FORM SHALL BE ELECTRICALLY CONNECTED TOGETHER IN A SECOND GROUP. THE INSULATION RESISTANCE BETWEEN THE JUMPERED BOLTS (GROUP 1) AND THE JUMPERED WINDING FORM AND MID-PLANE (GROUP 2) SHALL BE MEASURED FOR COMPLIANCE. RECORD RESULTS IN IDC.----Part Number: SE141-103--Part Description: MCWF ASSEMBLY TYPE-C	65707/6.0 -Sub:1 Op#:140			IDC: 2
	SOURCE FOR ELECTRICAL TEST	65707/6.0 -Sub:1 Op#:150		Hold Point	
	MACHINE BOTH SIDES OF SHIM TO A FULL CLEAN UP. THICKNESS TO FINISH AT 2.050 +0/-.003. MACHINE ONE OF THE LONG SIDES TO A CLEAN UP. 4 INCH WIDTH DIMENSION IS NOT CRITICAL.----NO IDC IS NECESSARY. THIS IS A TEMPORARY SHIM PIECE.	65707/6.0 -Sub:8 Op#:20			

QA Plan Summary
NCSX Modular Coil Winding Form Machining

Spec Ref	Activity	Visual Mfg Ref.	Ref Procedure	Witness/Hold Point	Reporting/Documentation Req
	RECEIVE CUSTOMER SUPPLIED CASTING	65707/6.0 -Sub:2 Op#:10			
	MACHINE THE SHIM COMPLETE PER THE DRAWING AND CNC PROGRAMS.	65707/6.0 -Sub:2 Op#:20			
	ASSEMBLE (5) OF THE INSULATING SLEEVES INTO THE SHIM AND BOND USING LOCTITE 411. DO NOT INSTALL THE BUSHINGS IN THE OUTSIDE HOLES. THEY WILL BE INSTALLED LATER.	65707/6.0 -Sub:2 Op#:30			
	SAW OFF 16- AND MOVE TO NEXT WORK CENTER.	65707/6.0 -Sub:3 Op#:10			
	MACHINE PER THE DRAWING FOR A SLIP FIT WITH MATING DETAIL. OBTAIN FINISHED MACHINED CASTING SHIM BEFORE FINAL SIZING THE O.D. OF THE SLEEVE.	65707/6.0 -Sub:3 Op#:20			
	RECEIVE MATERIAL--NOTIFY CFT AND FORWARD MATERIAL STORES.	65707/6.0 -Sub:4 Op#:10			
	SAW OFF 30- LENGTH AND MOVE TO NEXT WORK CENTER.	65707/6.0 -Sub:5 Op#:10			
	MACHINE PER THE DRAWING FOR A SLIP FIT WITH MATING DETAIL. CHECK FINISHED MACHINED CASTING BEFORE FINAL SIZING THE O.D. OF THE SLEEVE.	65707/6.0 -Sub:5 Op#:20			
	RECEIVE MATERIAL	65707/6.0 -Sub:7 Op#:10			
	MACHINE THE PROFILE LEAVING STOCK PER PROGRAM.----ALSO MACHINE OUT FLAT STOCK PIECES FOR SHIMS BEHIND THE OUTSIDE OF POLOIDAL BREAK FLANGE PER CNC PROGRAM.	65707/6.0 -Sub:7 Op#:20			
	SAW TO A LENGTH OF 6.75-.	65707/6.0 -Sub:9 Op#:10			
	MACHINE BEARING PLATES COMPLETE FROM MATERIAL SUPPLIED BY MAJOR TOOL.--VENDOR TO SUPPLY DIMENSIONAL INSPECTION REPORT.--MTM TO DO ALL NDT TESTING PER NOTE 5.--Part Number: SE141-137 Rev: 1--Part Description: BEARING PLATE--Dimensional Report: VENDOR SUPPLIED--Dimensional Report: VENDOR SUPPLIED	65707/6.0 -Sub:9 Op#:30			
4.2.5 3.1.1.5.2	PERFORM A MAGNETIC PERMEABILITY CHECK USING A SEVERN PERMEABILITY INDICATOR GAGE. PERMEABILITY SHOULD BE NO GREATER THAN 1.03µ.--Part Number: SE141-137 Rev: 1--Part Description: BEARING PLATE DETAIL	65707/6.0 -Sub:9 Op#:40	PS584		IDC: 3
	SAW TO A LENGTH OF 10.5-.	65707/6.0 -Sub:10 Op#:10			
	MACHINE BEARING PLATES COMPLETE FROM MATERIAL SUPPLIED BY MAJOR TOOL.--VENDOR TO SUPPLY DIMENSIONAL INSPECTION REPORT.--MTM TO DO ALL NDT TESTING PER NOTE 5.--Part Number: SE141-138 Rev: 1--Part Description: BEARING PLATE--Dimensional Report: VENDOR SUPPLIED--Dimensional Report: VENDOR SUPPLIED	65707/6.0 -Sub:10 Op#:30			
4.2.5 3.1.1.5.2	PERFORM A MAGNETIC PERMEABILITY CHECK USING A SEVERN PERMEABILITY INDICATOR GAGE. PERMEABILITY SHOULD BE NO GREATER THAN 1.03µ.--Part Number: SE141-138 Rev: 1--Part Description: BEARING PLATE DETAIL	65707/6.0 -Sub:10 Op#:40	PS584		IDC: 3
	RECEIVE HARDWARE- SCAN CERTIFICATIONS AND COMPLETE IDC.--MOVE TO STORES--	65707/6.0 -Sub:11 Op#:10			
	PLACE THE FOLLOWING IN STORES:--7 PCS - DS141-036 STUD--14 PCS - DS141-060 NUT	65707/6.0 -Sub:11 Op#:20			
	RECEIVE HARDWARE- SCAN CERTIFICATIONS AND COMPLETE IDC.----	65707/6.0 -Sub:12 Op#:10			

Quality Assurance Documentation for Part ID: SE141-103 - Item: 9

Workorder: 65707/6-0 Sub:1 Op:140

Part: SE141-103 - MODULAR COIL WINDING FORM TYPE-C - PRODUCTION MODULAR COIL WINDING FORM TYPE-C

Drawing ID: SE141-103 Rev: 3			INSPECTION INSTRUCTIONS			RESULTS		INSPECTED BY		
SHEET	ZONE	CHARACTERISTIC	GAGE/EQUIP	BY	SAMPLE	SER#	DATA/REMARKS	INSP	VERFD	AUDIT
*		TEST 1	MULTIMETER	QA						
		RESISTANCE TO BE >500 kohms								
		CHECK RESISTANCE BETWEEN THE								
		MID-PLANE POLOIDAL BREAK SHIM								
(10)		AND THE WINDING FORM.								
*		TEST 2	MULTIMETER	QA						
		RESISTANCE TO BE >500 kohms								
		CHECK RESISTANCE BETWEEN THE								
		JUMPERED BOLTS AND JUMPERED								
		MID-PLANE CASTING AND WINDING								
(20)		FORM.								

Quality Assurance Documentation for Part ID: SE141-116 - Item: 12

Workorder: 65707/6-0 Sub:1 Op:88

Part: SE141-116 - MODULAR COIL WINDING FORM TYPE-C - PRODUCTION MODULAR COIL WINDING FORM TYPE-C

Drawing ID: SE141-116 Rev: 8			INSPECTION INSTRUCTIONS			RESULTS		INSPECTED BY		
SHEET	ZONE	CHARACTERISTIC	GAGE/EQUIP	BY	SAMPLE	SER#	DATA/REMARKS	INSP	VERFD	AUDIT
* (10)		VERIFY CLEARANCE BELOW VPI GROOVE ON BOTH SIDES OF THE T SECTION USING MTMFX-3473		MFG						
* (20)		22 PLACES DATUM E FLANGE VERIFY 2" CLEARANCE ABOVE 3" COUNTERBORE SURFACE USING MTMFX-3564.		MFG						
* (30)		26 PLACES DATUM D FLANGE VERIFY 2" CLEARANCE ABOVE 3" COUNTERBORE SURFACE USING MTMFX-3564.		MFG						
6* (40)	F3	VERIFY THAT 1" DIAMETER COOLING HOLES PASS COMPLETELY THROUGH CASTING WITH NO INTERFERENCE FROM CASTING STOCK.		MFG	4					
9* (50)	D7	VERIFY THAT 1" DIAMETER COOLING HOLES PASS COMPLETELY THROUGH CASTING WITH NO INTERFERENCE FROM CASTING STOCK.		MFG	4					
9* (60)	F3	VERIFY THAT 1" DIAMETER COOLING HOLES PASS COMPLETELY THROUGH CASTING WITH NO INTERFERENCE FROM CASTING STOCK.		MFG	4					

Quality Assurance Documentation for Part ID: SE141-116 - Item: 16

Workorder: 65707/6-0 Sub:1 Op:120

Part: SE141-116 - MODULAR COIL WINDING FORM TYPE-C - PRODUCTION MODULAR COIL WINDING FORM TYPE-C

Drawing ID: SE141-116 Rev: 8			INSPECTION INSTRUCTIONS		RESULTS			INSPECTED BY		
SHEET	ZONE	CHARACTERISTIC	GAGE/EQUIP	BY	SAMPLE	SER#	DATA/REMARKS	INSP	VERFD	AUDIT
*		DATUM -E- SIDE		QA						
		MAG PERMEABILITY TO BE NO								
		GREATER THAN 1.02µ.								
		CHECK 3 PLACES ADJACENT TO								
(10)		EVERY 5TH HOLE IN T SECTION.								
*		DATUM -D- SIDE		QA						
		MAG PERMEABILITY TO BE NO								
		GREATER THAN 1.02µ.								
		CHECK 3 PLACES ADJACENT TO								
(20)		EVERY 5TH HOLE IN T SECTION.								

Quality Assurance Documentation for Part ID: SE141-116 - Item: 17

Workorder: 65707/6-0 Sub:1 Op:130

Part: SE141-116 - MODULAR COIL WINDING FORM TYPE-C - PRODUCTION MODULAR COIL WINDING FORM TYPE-C

Drawing ID: SE141-103 Rev: 3			INSPECTION INSTRUCTIONS			RESULTS		INSPECTED BY		
SHEET	ZONE	CHARACTERISTIC	GAGE/EQUIP	BY	SAMPLE	SER#	DATA/REMARKS	INSP	VERFD	AUDIT
2* (10)	D3	Ø.001 - Ø.002 CHECK CLEARANCE OF ITEM 5 TO ITEM 6.	FEELER GAGES	QA						
* (15)		THE GAP BETWEEN THE POLOIDAL BREAK BUSHINGS AND FLANGE SHAL BE LESS THAN .002"	FEELER GAGES	QA						
2* (20)	F2	ENSURE THAT THE CUMULATIVE GAP AT ANY SINGLE CROSS SECTION OF THE POLOIDAL FLANGE ELEMENTS IS LESS THAN .005".	FEELER GAGES	QA						
* (30)		THE MAX. GAP AT THE POLOIDAL BREAK PERIMITER IS .015" AND CANNOT EXCEED 1/8" FROM THE EDGE	FEELER GAGES	QA						

Quality Assurance Documentation for Part ID: SE141-116 - Item: 18

Workorder: 65707/6-0 Sub:1 Op:132

Part: SE141-116 - MODULAR COIL WINDING FORM TYPE-C - PRODUCTION MODULAR COIL WINDING FORM TYPE-C

Drawing ID: SE141-116 Rev: 8			INSPECTION INSTRUCTIONS			RESULTS		INSPECTED BY		
SHEET	ZONE	CHARACTERISTIC	GAGE/EQUIP	BY	SAMPLE	SER#	DATA/REMARKS	INSP	VERFD	AUDIT
1* (10)	E8	47.19 ± .03	CMM	QA						
1* (20)	B8	47.19 ± .03	CMM	QA						
1* (30)	D6	47.19 ± .03	CMM	QA						
1* (40)	C6	47.19 ± .03	CMM	QA						
1* (50)	E6	// .02 A	CMM	QA						
1* (60)	B6	// .02 A	CMM	QA						
2* (80)	H6	2X R.187 +.025 -.005	PIN GAGE	QA						
2* (90)	G8	2X .03 X 45°		QA						
2* (100)	G8	.40 ± .010	CALIPER	QA						
2* (110)	G8	2X .030 X 45°		QA						
2* (120)	F7	2X .32	CALIPER	QA						
2* (130)	F7	2X R.11	RADIUS GAGE	QA						
2* (140)	G6	⌓ .2 R S T P TO M	CMM	QA						
2* (150)	G6	4.790 OR SHELL INTERSECT. VERIFY USING TEMPLATE PER DRAWING NOTE 16 (MTMFX-3473)		QA						
2*	G3	⌓ .2 R S T	CMM	QA						

(160)		Q TO N								
2*	G3			QA						
		4.790 OR SHELL INTERSECT.								
		VERIFY USING TEMPLATE PER								
(170)		DRAWING NOTE 16 (MTMFX-3473)								
2*	E6	⌓ .02 R S T	CMM	QA						
(180)		M TO MI								
2*	F3	⌓ .02 R S T	CMM	QA						
(182)		N TO NI								
2*	E5	⌓ .1 R S T	CMM	QA						
(185)		MI TO NI								

Drawing ID: NCSX-CSPEC-141-03 Rev: 11			**INSPECTION INSTRUCTIONS**			**RESULTS**		**INSPECTED BY**		
SHEET	**ZONE**	**CHARACTERISTIC**	**GAGE/EQUIP**	**BY**	**SAMPLE**	**SER#**	**DATA/REMARKS**	**INSP**	**VERFD**	**AUDIT**
4*	3.1.1.	√125	PROFILOMETER	QA						
		THE TWO "L" MACHINED SURFACES								
(188)		OF TEE.								

Drawing ID: SE141-116 Rev: 8			**INSPECTION INSTRUCTIONS**			**RESULTS**		**INSPECTED BY**		
SHEET	**ZONE**	**CHARACTERISTIC**	**GAGE/EQUIP**	**BY**	**SAMPLE**	**SER#**	**DATA/REMARKS**	**INSP**	**VERFD**	**AUDIT**
2*	B5	⌖ .06 R S T	CMM	QA	50%					
		96X								
		.375-16 UNC .750 DEEP								
(190)		.625 C'BORE .188 DEEP	CALIPER							
2*	B5		THREAD PLUG GA	QA	100%					
		.375-16 UNC .750 DEEP								
		GAGE 100% OF THE HOLES AND								
(195)		VERIFY CLEANLINESS.								
2*	B4	2X .06-.09 X 45°		QA						
(200)										
3*	G7	⌖ .01 A B C	CMM	QA						
(210)		8X Ø1-8 UNC THRU	THREAD PLUG GA							
3*	H3	▱ .01	CMM	QA						
(230)		DATUM -E- FLANGE								
3*	H4	√125	PROFILOMETER	QA						
(240)		DATUM -E- FLANGE								
3*	F3	▱ .01	CMM	QA						
(250)		DATUM -D- FLANGE								
3*	F3	√125	PROFILOMETER	QA						

(260)		DATUM -D- FLANGE								
3*	E4	⌖ .01 A B C	CMM	QA						
		8X								
		Ø1.13 THRU								
		BACK SPOT FACE Ø2.38								
(280)		MIN DEPTH FOR C'UP								
4*	H8	⌖ .060 D A N	CMM	QA						
(290)		3X Ø1.885 THRU								
4*	H8		CMM	QA						
		3X Ø1.885 +/- .003								
		Ø3.00 BACK SPOTFACE								
(291)		VERIFY MIN CLEANUP								
4*	H7	⌖ Ø.06 D A N	CMM	QA						
(300)		3X 2.000" COUNTERBORE 1.00 DP	CALIPER							
4*	H7	Ø⌊⌋ 2.000 - 2.001	MICROMETER - INT	QA						
(305)										
4*	H6	⌖ Ø.060 D A N	CMM	QA						
(310)		17X Ø1.885 THRU								
4*	H6		CMM	QA						
		3X Ø1.885 +/- .003 THRU								
		Ø3.00 BACK SPOTFACE								
(311)		VERIFY MIN CLEANUP								
4*	H5	⌖ Ø.060 D A N	CMM	QA						
(320)		3X Ø1.13								
4*	H5		CMM	QA						
		3X Ø1.13 +/- .010								
		Ø2.38 BACK SPOTFACE								
(321)		VERIFY MIN CLEANUP	CALIPER							
4*	E6	⌖ Ø.060 D A N	CMM	QA						
(340)		3X Ø1.375-6 UNC THRU								
4*	E6	⌖ Ø.060 D A N	CMM	QA						
(350)		5X Ø1.885 THRU								
4*	E6		CMM	QA						
		5X Ø1.885 +/- .003 THRU								
		Ø3.00 BACK SPOTFACE								
(351)		VERIFY MIN CLEANUP								
4*	D4	⌖ Ø.060 D A N	CMM	QA						
(360)		Ø1.885 THRU								

4* (361)	D4	 Ø1.885 +/- .003 THRU Ø3.00 BACK SPOTFACE VERIFY MIN CLEANUP	CMM	QA							
4* (370)	B5	⌖ Ø.060 D A N 3X Ø1.13	CMM	QA							
4* (371)	B5	 3X Ø1.13 +/- .010 Ø2.38 BACK SPOTFACE VERIFY MIN CLEANUP	CMM CALIPER	QA							
4* (375)	D1	 12X .25-20 UNC -2B	THREAD PLUG GA	QA							
4* (376)	G8	⌖ Ø.06 D A N 12X .25-20 UNC -2B SUMMARY OF HOLE POSITIONS. ACTUAL FEATURE CONTROL FRAME IS NOT ON DRAWING.	CMM	QA							
5* (380)	E8	⌖ Ø.060 E A J Ø1.885 THRU	CMM	QA							
5* (381)	E8	 Ø1.885 +/- .003 THRU Ø3.00 BACK SPOTFACE VERIFY MIN CLEANUP	CMM	QA							
5* (400)	F6	⌖ Ø.060 E A J 3X Ø1.375-6 UNC THRU	CMM	QA							
5* (410)	F6	⌖ Ø.06 E A J 3X 2.000" COUNTERBORE 1.00 DP	CMM CALIPER	QA							
5* (412)	F6	ØL 2.000 - 2.001	MICROMETER - INT	QA							
5* (415)	F7	 7X 1/4-20 UNC -2B	THREAD PLUG GA	QA							
5* (420)	F7	⌖ Ø.06 E A J 7X 1/4-20 UNC -2B SUMMARY OF HOLE POSITIONS. ACTUAL FEATURE CONTROL FRAME IS NOT ON DRAWING.	CMM	QA							
5* (430)	E7	⌖ Ø.060 E A J 24X Ø1.885 THRU	CMM	QA							

5* (431)	E7	24X Ø1.885 +/- .003 THRU Ø3.00 BACK SPOTFACE VERIFY MIN CLEANUP	CMM	QA							
5* (440)	E7	⌖ Ø.060 E A J 3X Ø1.5 TO 2.00 DEEP Ø3.00 TO 1.00 DEEP	CMM	QA							
5* (450)	D7	3X Ø1.885 +/- .003 THRU Ø3.00 BACK SPOTFACE VERIFY MIN CLEANUP	CMM	QA							
6* (470)	E3	4X Ø1.00 THRU	CMM	QA							
8* (650)	G7	4.00 ± .010	CALIPER	QA							
8* (750)	D7	6X Ø.375-16 UNC TO .75 DEEP .03 X 45° CHAMFER	THREAD PLUG GA	QA							
8* (760)	D7	13.6 °		QA							
8* (770)	D7	5.88 VERIFY THAT PAD MEETS THE MINIMUM OF 5.88		QA							
8* (780)	D7	2.19 ± .010		QA							
8* (790)	D7	2.19 ± .010		QA							
8* (830)	C8	2X 1.56 ± .010 THRU	CALIPER	QA							
8* (850)	C8	2X 7.50 ± .010 THRU	CALIPER	QA							
8* (860)	C8	8X R.25	RADIUS GAGE	QA							
8* (870)	C8	2X 2.52 ± .010		QA							
9*	E7	2.54 ± .010		QA							

(900)										
9* (910)	E7	5.08 ± .010		QA						
9* (920)	F3	4X Ø1.0 THRU VERIFY THAT HOLES BREAK COMPLETELY THROUGH INSIDE OF CASTING	CALIPER	QA						
9* (930)	F3	2X Ø .50 ± .010 THRU	CALIPER	QA						
9* (940)	E3	2.44 ± .010	CALIPER	QA						
9* (950)	E3	1.22 ± .010		QA						
9* (960)	C7	4X Ø1.0 THRU VERIFY THAT HOLES BREAK COMPLETELY THROUGH INSIDE OF CASTING	CALIPER	QA						
9* (970)	C6	2X Ø.25 T.C. HOLE		QA						
Drawing ID: SE141-116 Rev: 7			**INSPECTION INSTRUCTIONS**			**RESULTS**		**INSPECTED BY**		
SHEET	**ZONE**	**CHARACTERISTIC**	**GAGE/EQUIP**	**BY**	**SAMPLE**	**SER#**	**DATA/REMARKS**	**INSP**	**VERFD**	**AUDIT**
10* (980)	C8	⌓ .125 A B C	CMM	QA						
Drawing ID: SE141-116 Rev: 8			**INSPECTION INSTRUCTIONS**			**RESULTS**		**INSPECTED BY**		
SHEET	**ZONE**	**CHARACTERISTIC**	**GAGE/EQUIP**	**BY**	**SAMPLE**	**SER#**	**DATA/REMARKS**	**INSP**	**VERFD**	**AUDIT**
10* (990)	D5	⌓ .5 A B C DATUM -D- SIDE INNER CAST	CMM	QA						
Drawing ID: SE141-116 Rev: 7			**INSPECTION INSTRUCTIONS**			**RESULTS**		**INSPECTED BY**		
SHEET	**ZONE**	**CHARACTERISTIC**	**GAGE/EQUIP**	**BY**	**SAMPLE**	**SER#**	**DATA/REMARKS**	**INSP**	**VERFD**	**AUDIT**
10* (1010)	C4	⌓ .125 A B C DATUM -E- SIDE LARGE WING	CMM	QA						
Drawing ID: SE141-116 Rev: 8			**INSPECTION INSTRUCTIONS**			**RESULTS**		**INSPECTED BY**		
SHEET	**ZONE**	**CHARACTERISTIC**	**GAGE/EQUIP**	**BY**	**SAMPLE**	**SER#**	**DATA/REMARKS**	**INSP**	**VERFD**	**AUDIT**
10* (1030)	D1	⌓ .5 A B C DATUM -E- SIDE INNER CAST	CMM	QA						

Drawing ID: SE141-116 Rev: 7			INSPECTION INSTRUCTIONS			RESULTS		INSPECTED BY		
SHEET	**ZONE**	**CHARACTERISTIC**	**GAGE/EQUIP**	**BY**	**SAMPLE**	**SER#**	**DATA/REMARKS**	**INSP**	**VERFD**	**AUDIT**
10*	E1		CMM	QA						
		MACHINE / GRIND THIS AREA								
(1035)		TO PROFILE OF +.05/-.10								
Drawing ID: NCSX-CSPEC-141-03 Rev: 10			**INSPECTION INSTRUCTIONS**			**RESULTS**		**INSPECTED BY**		
SHEET	**ZONE**	**CHARACTERISTIC**	**GAGE/EQUIP**	**BY**	**SAMPLE**	**SER#**	**DATA/REMARKS**	**INSP**	**VERFD**	**AUDIT**
4*	3.1.1.		PROFILOMETER	QA						
		UOS ALL MACHINED SURFACES								
		TO BE 250 RMS SURFACE FINISH								
(1040)		RECORD RANGE								
Drawing ID: SE141-116 Rev: 8			**INSPECTION INSTRUCTIONS**			**RESULTS**		**INSPECTED BY**		
SHEET	**ZONE**	**CHARACTERISTIC**	**GAGE/EQUIP**	**BY**	**SAMPLE**	**SER#**	**DATA/REMARKS**	**INSP**	**VERFD**	**AUDIT**
1*			SCALE	QA						
		NOTE 9								
		RECORD THE WEIGHT								
		OF THE PART								
(1050)		6000LBS MAX								

Quality Assurance Documentation for Part ID: SE141-137 - Item: 21

Workorder: 65707/6-0 Sub:9 Op:40

Part: SE141-137 - -

Drawing ID: SE141-137 Rev: 1			INSPECTION INSTRUCTIONS			RESULTS		INSPECTED BY			
SHEET	ZONE	CHARACTERISTIC	GAGE/EQUIP	BY	SAMPLE	SER#	DATA/REMARKS	INSP	VERFD	AUDIT	
1*	G2		MASTER GAGE	QA		J-1165	BETWEEN 1.03 AND 1.	503-B.H			R
		RECORD MAGNETIC PERMEABILITY.					05				
		RESULTS TO BE NO GREATER THAN									
(10)		1.03µ PER RFD 14-011.						02-08-06			

Quality Assurance Documentation for Part ID: SE141-138 - Item: 24

Workorder: 65707/6-0 Sub:10 Op:40

Part: SE141-138 - -

Drawing ID: SE141-138 Rev: 1			INSPECTION INSTRUCTIONS			RESULTS		INSPECTED BY			
SHEET	ZONE	CHARACTERISTIC	GAGE/EQUIP	BY	SAMPLE	SER#	DATA/REMARKS	INSP	VERFD	AUDIT	
1*	G2		MASTER GAGE	QA		J-1165	BETWEEN 1.03 AND 1.	503-B.H			R
		RECORD MAGNETIC PERMEABILITY.					05				
		RESULTS TO BE NO GREATER THAN									
(10)		1.03µ PER RFD 14-011.						02-08-06			

Employees: 503-B.Houk