



MANUFACTURER NAME, ADDRESS				MANUFACTURING QUALITY PLAN				CUSTOMER:					
NES COMPANY INC 333 RT 46 W BLDG B SUITE 170 FAIRFIELD, NJ 07004				ITEM:				P.O NO / DATE:					
				QAP NO:				PROJECT NO:					
				REV:				MODEL:		QTY:			
				DATE:				TAG NO:		PG:			
SR. NO. 01	COMPONENT / OPERATION 02	CHARACTERISTICS 03	CLASS 04	TYPE OF CHECK 05	QNTM. OF CHECK 06	REFERENCE DOCUMENT 07	ACCEPTANCE NORMS 08	FORMAT OF RECORD 09		AGENCY 10			REMARKS 11
									D	M	C	O	

**I. RAW MATERIAL (SS COMPONENTS)**

1.1	BODY (CASING)	Surface defects Chemical Mechanical Testing  Ultrasonic Testing (Fabricated Butt Weld Joint)	MA MA MA  MA	Visual Chemical Tensile  Ultrasonic Test	100% 1/ Heat 1/ Heat  100%	Approved Drawing / Datasheet / ASTM A240 Gr SS 316L  ASME Sec V, Article 4 & 23	Approved Drawing / Datasheet / ASTM Gr SS 316L  ASME Sec V, Article 4 & 23	-- Manufacture TC Manufacture TC  IR	- ✓ ✓  ✓	P P P  P	- ✓ ✓  ✓	- ✓ ✓  ✓	As per EN 10204 TYPE 3.1
1.2	HEAD (DE & IE) CONE (DE & IE) ROTOR	Surface defects Chemical Mechanical	MA MA MA	Visual Chemical Mechanical	100% 1/ Heat 1/ Heat	Approved Drawing / Datasheet / ASTM A351 Gr CF3M	Approved Drawing / Datasheet / ASTM A351 GrCF3M	-- Foundry TC Foundry TC	- ✓ ✓	P P P	- ✓ ✓	- ✓ ✓	As per EN 10204 TYPE 3.1
1.3	SHAFT	Chemical Mechanical UT > Ø40 Dia.	MA MA MA	Chemical Mechanical UT > Ø40 Dia.	1/ lot 1/ lot 100%	Approved Drawing / Datasheet / AISI Gr SS 316L / ASTM A388 for UT	Approved Drawing / Datasheet / AISI Gr SS 316L / REFERNOTE2	Supplier TC Supplier TC IR	✓ ✓ ✓	P P P	✓ ✓ ✓	✓ ✓ ✓	As per EN 10204 TYPE 3.1
1.4	SHAFT SLEEVE	Visual Chemical Mechanical	MA MA MA	Visual Chemical Mechanical	100% 1/ lot 1/ lot	Approved Drawing / Datasheets / ASTM A276 Gr SS 316L	Approved Drawing / Datasheet / ASTM A276 Gr SS 316L	-- Supplier TC Supplier TC	- ✓ ✓	P P P	- ✓ ✓	- ✓ ✓	As per EN 10204 TYPE 3.1
1.5	ACCESSORIES:  SMF, DMF, Silencer cum Water Separator, Common Base Frame for Pump/Motor/Belt Guard	Surface Defects Chemical Mechanical	MA MA MA	Visual Chemical Mechanical	100% 1/ lot 1/ lot	Approved Drawing / Datasheet	Approved Drawing / Datasheet	Mfr TC	- ✓ ✓	P P p	- ✓ ✓	- ✓ ✓	As per EN 10204 TYPE 3.1 ( OR ) Sample Test per Heat from any Approved Lab

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1.6	Bought out Items: Gauges, Strainers, Valves, "V"-Pulleys for Pump & Motor, "V"- Belts, Seal Water line, Foundation Bolts Etc.	Balancing & Material Test certificate for Pump "V"- Pulleys, TC's for Gauges, Motor "V"- Pulley, "V"- Belts, Strainers, Valves, Seal Water Pipeline, Foundation Bolts Etc.	MA	Verification of Material and Review of TC's	100%	Approved Drawing / Datasheet	Approved Drawing / Datasheet	Review of Manufacture's TC's	✓	P	V	V	
1.7	Bearings	Make Model Type, Bearing life	MA MA MA	Verification	100%	Approved Drawing / Datasheet	Approved Drawing / Datasheet	Manufacture COC	✓	P	V	V	

## II. IN-PROCESS; INSPECTION

2.1	Machining of Components	Surface defects Dimensional DPT on Machined Components	MA MA MA	Visual Measurement DPT	100% 100% 100%	Manufacturing Drawing / ASTM E-165	Manufacturing Drawing / ASTM E-165 No Linear Indications	-- -- IR	- - ✓	P P P	-- -- V	-- -- V	
2.2	Hydrotest of BODY Test Pressure	Casing Integrity	MA	Hydrostatic Test	100%	Approved Drawing / Datasheet / 30min @ 2.1 kg/cm <sup>3</sup>	Approved Drawing / Datasheet / No Leakage	IR	✓	P	W	W	For manufacturer & [REDACTED] 100% Witness. For Customer one per model witness.

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2.3	Hydrotest of Silencer / Separator Vessel	Silencer Integrity	MA	Hydrostatic Test	100%	Approved Drawing / Datasheet / 30min @ 1.5 kg/cm <sup>3</sup>	Approved Drawing / Datasheet / No Leakage	IR	✓	P	W	W	
2.4	Balancing of Rotor Shaft Assembly	Static & Dynamic Balancing	MA	Balancing	100%	Approved Drawing / Datsheet / ISO 1940 Gr 6.3	Approved Drawing / Datasheet / ISO 1940 Gr 6.3	Balancing Report	✓	P	W	W	For Manufacturer & [REDACTED] 100% Witness. For Customer one per model Witness.
2.5	Fabrication of SMF, DMF, Common Base Frame for Pump & Motor, Silencer cum Water Separator & Belt Guard (OSHA STD)	Surface Defects Dimensional Weld Defects	MA MA MA	Visual Measurement SP Test	100% 100% Butt weld 100%	Approved Drawing / Datasheet / Manufacturing Drawing / Mfg. Std.	Approved Drawing / Datasheet & Manufacturing Drawing / Mfg. Std.	-- -- IR	- - ✓	P P P	V V V	V V V	
2.6	Assembly of Vacuum Pump	Dimensional & Completeness	MA	Measurement Visual	100%	Approved Drawing / Datasheet / Manufacturing Drawing	Approved Drawing / Datasheet / Manufacturing Drawing	IR	-	P	V	V	

### III. FINAL INSPECTION

3.1	Assembly of Vacuum Pump with Complete Accessories	Dimensional Conformity Completeness	MA MA	Measurement Visual	100% 100%	Approved Drawings / Datasheet	Approved Drawing / Datasheet	Dim. Record	✓ ✓	P P	W W	W W	
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3.2	Performance Test With Job Motor	Capacity	MA	Performance Test	100%	Approved Drawings / Datasheet / BS:1571-Part 2	Approved Drawing / Datasheet / bs:1571-Part 2	Performance Test results with Graph and Sample Calculation Sheet	✓	P	W	W	Note: 1. Noise Level and Vibration will be measured for reference only. Actual values will be demonstrated at site. 2. Tolerance on Capacity ±5% Power ±6%
		Power	MA		100%	1975 & Pneurop	1975 & Pneurop		✓	P	W	W	
		Speed	MA		100%	6612-1984	6612-1984		✓	P	W	W	
		Vibration	MA		100%	Vibration ISO 2372 Class IIC, 75 Microns with velocity 4.5 mm/sec Peak to Peak	Vibration ISO 2372 Class IIC, 75 Microns with velocity 4.5 mm/sec Peak to Peak		✓	P	W	W	
		Noise	MA		100%	Noise Level 85 dB @ 1m Horizontally from the nearest surface of equipment and at a height of 1m above floor level in elevation.	Noise Level 85 dB @ 1m Horizontally from the nearest surface of equipment and at a height of 1m above floor level in elevation.		✓	P	W	W	
		Bearing Temp. Rise	MA		100%	35°C above Ambient Temperature	35°C above Ambient Temperature		✓	P	W	W	

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3.3	Review of QA Doc		MA	Verify	100%	As per Approved MQP	As per Approved MQP		✓	P	V	V	
3.4	Painting	Shade, DFT, Adhesion	MA	Shade, DFT, Adhesion	100% Random	Approved Painting Schedule	Approved Painting Schedule	IR	✓	P	W	W	

**NOTE:** 1. ALL MATERIAL SHALL BE AS PER APPROVED DRAWING / DATE SHEET

2. FOR ULTRASONIC TEST THE ACCEPTANCE NORMS ARE WHEN BACKWALL ECHO IS SET TO 100% OF FULL SCREEN HEIGHT (FSH), A DEFECT ECHO SHOULD NOT EXCEED 20% OF FSH AND THE LOSS OF BACKWALL ECHO AT A MAGNITUDE OF MORE THAN 20% IS NOT ACCEPTABLE.

3. For SS material or alloy steel, PMI is done by NES Company. Witnessed by [REDACTED] at final Mockup Assembly.

4. This QAP is read in conjunction with the enclosed [REDACTED] control plan annexure for all the inspection clauses of Review / Witness accordingly.

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