PDR-OPS-013 QUALITY INSPECTION PROTOCOL FOR WEATHER SEALS

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1. PURPOSE AND SCOPE

1. This Quality Inspection Protocol ("Protocol") establishes mandatory

2. This Protocol applies to all weather seals incorporated into the Blue

2. DEFINITIONS

1. "Weather Seal" means any gasket, seal, or barrier designed to prev

2. "Critical Failure" means any defect that compromises the seal's abi

3. "Batch" means a production lot of weather seals manufactured und

3. INSPECTION REQUIREMENTS

1. Pre-Installation Inspection

a) Visual examination for surface defects, deformities, or manufacturi
anomalies

b) Dimensional verification using calibrated measurement tools

c) Durometer testing for shore hardness compliance

d) Documentation of batch number and manufacturing date

2. Material Verification

a) Confirmation of specified synthetic rubber compound (PDR-M-458)

b) Verification of cold-resistance rating to -40 C

c) Certificate of compliance with ISO 11346 standards

d) Chemical composition analysis per batch

4. TESTING PROCEDURES

1. Environmental Testing

a) Thermal cycling: 100 cycles between -40 C and +25 C

b) Compression set testing at -30 C

c) Moisture penetration testing under simulated frost conditions

d) UV resistance validation for external seals

2. Performance Validation

a) Pressure differential testing at 2.0 bar

b) Accelerated wear testing (minimum 100,000 cycles)

c) Impact resistance at -30 C

d) Chemical resistance to standard industrial cleaners

5. QUALITY CONTROL MEASURES

1. Sampling Requirements

a) Minimum sample size: 1% of batch or 10 units, whichever is greate

b) Random selection from different areas of batch

c) Additional testing for any batch showing >0.5% defect rate

2. Documentation Requirements

a) Test results recorded in BlueCore(TM) Quality Management Syster

b) Photographic documentation of any defects

c) Retention of physical samples for 24 months

d) Maintenance of digital inspection records for 5 years

6. ACCEPTANCE CRITERIA

1. Critical Specifications

a) Shore hardness: 70 5 points

b) Dimensional tolerance: 0.1mm

c) Zero visible defects larger than 0.2mm

d) 100% seal integrity at -40 C

2. Batch Acceptance

a) Zero critical failures in sample testing

b) Maximum 0.5% minor defects per batch

c) Full compliance with all documentation requirements

d) Traceability to raw material sources

7. NON-CONFORMANCE PROCEDURES

1. Any batch failing to meet the acceptance criteria shall be:

a) Immediately quarantined

b) Marked with red "HOLD" tags

c) Recorded in the non-conformance database

d) Subjected to root cause analysis

2. Disposition Options

a) Rework (if applicable)

b) Return to supplier

c) Destruction

d) Engineering review for potential specification adjustment

8. REVISION AND CONTROL

1. This Protocol shall be reviewed annually by Quality Control and En

2. Revisions require approval from:

a) Chief Robotics Officer

b) Quality Control Director

c) Manufacturing Operations Manager

9. LEGAL COMPLIANCE

1. This Protocol is designed to comply with ISO 9001:2015, ISO/TS 1

2. All testing and documentation procedures shall adhere to relevant A

AUTHORIZATION

APPROVED AND ADOPTED this 15th day of January, 2024.

POLAR DYNAMICS ROBOTICS, INC.

By:

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By:

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