 Bus Climate Control York, Pa USA	Drawing No. Y66-18024	Rev. 1
Title: DRAWING INTERPRETATION (Fabricated Parts & Assemblies)	Date 02OCT2024 Sheet 1 of 3	

1. PURPOSE:

This Engineering Requirement was developed to enhance the interpretation of BCC global drawings for fabricated sheet metal, round tubing (i.e. copper, steel, aluminum etc.) piece parts and various separable and inseparable assembly drawings. Since design personnel follow many Drafting Standards during the process of preparing drawings, it was deemed necessary to provide a condensed version of highlights from those standards to aid in understanding drawing content and design intent.

2. SCOPE:

The requirements contained in this document are applicable to all BCC global drawings that specify Engineering Requirement Y66-18024.

3. GENERAL DRAWING INTERPRETATIONS:

- 3.1. Critical Characteristics, Functional Requirements and Process Requirements will be clearly specified on the drawing in accordance with BCC Drafting Standard Y66-18027.
- 3.2. Balloon call outs on charted assembly drawings will sometimes include additional information (e.g. - 00 & -01 only) to further clarify intent for specific assembly configuration(s).

4. SHEET METAL PART REQUIREMENTS AND DRAWING INTERPRETATIONS:

- 4.1. Parts must be free of burrs and sharp edges.
- 4.2. Material surfaces, part features and centerlines not dimensioned and shown either perpendicular or parallel to each other are implied to be at 90° or 180° apart respectively.
- 4.3. Dimensional tolerances are defined in the title block, unless otherwise specified on the drawing.
- 4.4. The sheet metal thickness tolerance is controlled within the material specification number shown on the drawing.
- 4.5. Bend reliefs are to be used and sized accordingly to prevent cracking and distorting unless otherwise specified.

5. MATERIALS OF CONCERN include but are not limited to the following:


Material of Concern	Typical Bus Climate Control Component / Process
Brominated flame retardants	Insulation, plastics for electromechanical components (i.e. contactors, relays, terminal blocks, pumps, etc.)
Cadmium	Relays, contactors, starters, thermostats, motors, braze rod, sight glasses
Chromium (VI)	Fasteners, (i.e. screws, studs, etc.), aluminum extrusions, castings, coils
Lead	Printed circuit boards, compressor & fan motor bearings
Chlorinated solvents	Cleaning operations.

5.1. Materials of Concern (i.e. MOC05) Regulation Maximum Concentration values:

This directive permits the use of “banned” substances in spare parts to repair, or the use of, equipment put on the market before July 1, 2006.

This directive allows

- for 0.1% by weight in homogeneous materials for lead, mercury, hexavalent chromium, polybrominated biphenyls (PBB) & polybrominated diphenyl ethers (PBDE).
- for 0.01% by weight in homogeneous materials for cadmium.
- for use of cadmium on electrical contacts.
- for lead as an alloying element in steel containing up to 0.35% lead by weight, aluminum containing up to 0.4% lead by weight and as a copper alloy containing up to 4% lead by weight.

 Bus Climate Control York, Pa USA	Drawing No. Y66-18024	Rev. 1
Title: DRAWING INTERPRETATION (Fabricated Parts & Assemblies)	Date 02OCT2024 Sheet 2 of 3	

- for lead in lead-bronze bearing shells and bushings
- for the use of DecaBDE in polymeric applications

5.2. Supplier Identification & Notification of MOC's

The supplier shall be responsible for notifying both BCC Engineering & Purchasing Departments, in writing, of any MOC's supplied in any part or assembly furnished to BCC. Manufacturing processes shall be identified by supplier, manufacturing and/or quality personnel.

6. TUBING PART REQUIREMENTS AND DRAWING INTERPRETATIONS:

- 6.1. All tubes must be free of burrs, dirt, oil and other contaminants that would prevent a proper braze or weld joint. Refrigerant tubes (i.e. copper & steel) must also be free of obstructions which would hinder refrigerant flow.
- 6.2. Refrigerant tubes must not exceed the contamination limits of BCC Corporation Engineering Requirement Z-293.
- 6.3. Tolerance on the tube; outside diameter, wall thickness, inside diameter and roundness are controlled within the material specification number shown on the drawing or parts list.
- 6.4. Finished bent refrigerant tubes must meet the following quality requirements of BCC Engineering requirement B-247. Material surfaces, part features and centerlines not dimensioned and shown either perpendicular or parallel to each other are implied to be at 90° or 180° apart respectively.
- 6.5. Centerline bend radius is specified on the part drawing.


7. WELDMENT REQUIREMENTS & DRAWING INTERPRETATIONS:

When welded assemblies are purchased from an outside supplier in lieu of being manufactured internally to BCC, then the following requirements are invoked in addition too any stated within the drawing document.

- 7.1. Welding symbols described on the drawing are shown in accordance with standards set forth in the American Welding Society specification, AWS 2.4 or International Standard ISO 2553, latest versions.
- 7.2. Completed weld assemblies must be free of all weld scale and weld spatter.
- 7.3. Completed weld assemblies must be square within the overall tolerances specified on the drawing.
- 7.4. If no specific dimension or tolerance for controlling weld distortion is stated on the drawing, then such distortion should be held to a minimum. Suppliers should contact BCC purchasing department for further direction, if there are any questions or concerns with the finished part.

8. PAINTED PART REQUIREMENTS:

- 8.1. Prior to paint, parts must be metal finished to remove all gross defects, burrs and scratches. In addition, the threaded portion of all fasteners shall be protected from the paint process. Parts must be cleaned per paint manufacturers recommendations

 Bus Climate Control York, Pa USA	Drawing No. Y66-18024	Rev. 1
Title: DRAWING INTERPRETATION (Fabricated Parts & Assemblies)	Date 02OCT2024 Sheet 3 of 3	

9. ADDITIONAL REQUIREMENTS:

- 9.1. Parts must be clean and free of contaminants.
- 9.2. Parts must be marked with BCC part number on the part, unless it is prohibitive due to being cost effective, the size, shape, or material of the part. BCC name and part number must be marked on the shipping container. In addition, for parts that are exported to the U.S., the part shipping container must be marked in accordance with U.S. Code of Federal Regulations (CFR) 19-S, Part 134, Country of Origin Marking Requirements.
- 9.3. Packaging: Must be adequate to protect parts from shipping damage, dirt and corrosive elements. All wood packaging materials used for International trade must comply with ISPM #15 of the International Plant Protection Convention.
- 9.4. No deviation from the construction defined by an approved sample or detailed specification (on file in Bus Climate Control Engineering Department) will be made without approval from Bus Climate Control Purchasing Department.