



«ANNEX A» Technical Requirements and Specifications

Protocol Number: 5430-2025-10-939

TECHNICAL CHARACTERISTICS

The detailed technical specifications of the main unit, the portable dimpler, and the required accompanying accessories are described in the Detailed Description. An indicative proposed solution that meets the technical requirements of this section is also provided.

To facilitate understanding of the technical specifications, the part numbers of a specific model are listed as an example. This reference is provided solely for explanatory purposes and does not imply any limitation on the final selection to this particular model.

Example Unit Disclaimer / Introduction

The Hot Dimpling Unit presented in Annex A (e.g., Zephyr ZT2409G) is provided solely as an illustrative example of the technical capabilities, performance, and features expected. It is intended to clarify the level of functionality required and to guide prospective contractors in understanding the desired technical characteristics.

Prospective contractors are encouraged to propose or submit offers for the example unit (e.g., Zephyr ZT2409G) or for similar units from other manufacturers, provided that the proposed units meet or exceed the technical requirements specified in Annex A. Reference to the example unit does not limit the choice of supplier or the model offered, nor should it be interpreted as a preference for the specific example.

Suppliers are fully responsible for ensuring that their proposed equipment complies with all technical specifications in Annex A and is capable of safe, complete, and immediate operation, even if certain components, features, or accessories differ from the example unit.

1. Main Unit (Control Unit, e.g., Code: ZT2409G)

The control unit is responsible for managing and regulating temperature and pressure before they reach the portable configuration tool. It shall have the following features:

- Digital control panel with the ability to adjust temperature, pressure, and time.
- Pressure control system capable of adjusting the pressure at different stages of the dimpling process.
- Management and regulation of the heating elements of the portable dimpler.
- “Thermocouple Break Protection” safety system, which prevents operation in the event of thermocouple failure.
- Pressure regulators – The system includes low and high-pressure regulators, allowing precise adjustment of pressure at different stages of the dimpling process. The exact number of regulators and the requirement for spare parts will be confirmed by the supplier.
- Power supply: 110V / 50–60Hz.
- Compressed air operation: 90 PSI.
- Pyrometers – The system is equipped with temperature regulators for continuous measurement and control. Additionally, four spare parts (e.g., Code: ZP-450-135) must be supplied for immediate replacement in case of damage.

2. Portable Ram Coin Dimpler (e.g., Code: ZT2012D)

The portable tool performs hot dimpling and is connected to the main control unit. It shall have the following features:



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- Fixed Jaw Yoke Type, designed for precision in forming cavities.
- Temperature control via the control panel, with a maximum limit of at least 800°F.
- Pneumatic operation: Operates with 90 PSI air pressure.
- Maximum forming force: 12,000 lbs, suitable for forming aluminum sheets.
- Maximum aluminum thickness: 0.072" and compatible with fasteners up to 1/4" rivets or #10 screws.

Compatibility: Can be used with multiple types of forming tools (punch & die assemblies), the exact required quantities and types of which are specified in the **Detailed Description**.

3. Accompanying Electrical & Pneumatic Equipment

- **Power cord:** (1) 110V / 50–60Hz for the main control unit.
- **Thermocouples:** Required for the operation of the punch heating element, plus (3) spare thermocouples for replacement in case of failure. Thermocouples are essential for measuring temperature and transmitting the signal to the digital control panel.
- **Temperature control cables:** (2) cables connecting the thermocouples to the control panel – 1x main, 1x spare.
- **Control panel connection cable:** (1) cable connecting the control panel to the dimpler (Portable Ram Coin Dimpler or Blind Pull Gun Dimpler).
- **Heating element connection cable set:** (2) sets – 1x main, 1x spare.
- **Compressed air supply hose:** (1) hose, 90 PSI, at least 3 meters in length.
- **Grounding cable:** (1) cable for safe operation.

4. Heating Elements & Spare Parts

- **Heating elements:** (3) resistors (heaters) supplied as spare parts for immediate replacement in case of failure.

5. Additional Accompanying Equipment & Consumables

- **Fuses:** (10) units.
- **Air connection:** (1) 3/8" cross air connection.

Documentation:

The new Hot Dimpling Unit and all accompanying equipment shall be provided with:

- **Operation and maintenance manual.**
- **List of all part numbers** of the components.
- **Any other relevant technical information** necessary for the correct use and maintenance of the equipment.



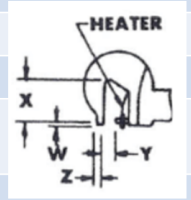
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Detailed Description

DIMPLER	
Power Source	Pneumatic operation
Maximum forming force	12,000 lbs (rated at 90 PSI air pressure)
MAXIMUM FORCE ON DIES (rated at 90 psi) SIZE (length, width, height)	12,000 22x4.5x7.0
OVERALL YOKE (length, width, depth)	8.7x1.5x9.0
"W" DIMENSION (edge to center of dimpling tool)	.50
"X" DIMENSION (inches) (throat reach)	4.68
"Y" DIMENSION- (See Note 1.throat gap, Max. open)	.62
"Z" DIMENSION	1
CAPACITY (maximum gauge and fastener) Aluminum Alloy	.072-#10 Screw .072- 1/4 Rivet
DIE ASSEMBLY (type)	SHORT STANDARD



Required Punches

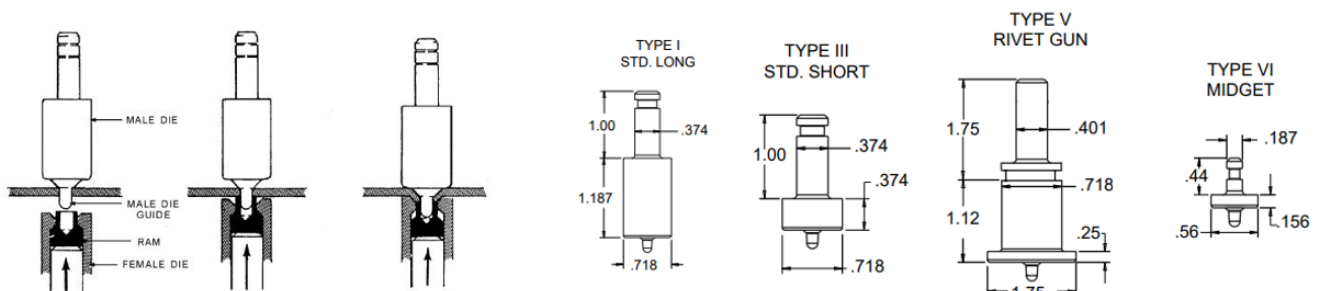


Image 3 The forming of dimple is a combined bending and stretching operation.

Required Punches for C-130J applications.

A/A	TYPE	FASTENER	DISCRIPTION	REFERENCE	QUANTITY
1	TYPE I	AN426 Rivet(100°)	Punch Assy	5/32 ''	4
2	TYPE I	AN426 Rivet(100°)	Punch Assy	3/16 ''	4
3	TYPE III	AN426 Rivet(100°)	Punch Assy	5/32 ''	4
4	TYPE III	AN426 Rivet(100°)	Punch Assy	3/16 ''	4
5	TYPE VI	AN426 Rivet(100°)	Punch Assy	5/32 ''	4
6	TYPE VI	AN426 Rivet(100°)	Punch Assy	3/16 ''	4
7	TYPE I	AN & NAS Screw (100°)	Punch Assy	#10	4
8	TYPE III	AN & NAS Screw (100°)	Punch Assy	#10	4

The corresponding female dies, which must be compatible with the above Punch Assys. (2) are required for each of the 8 types described in the table above.

Indicative proposed model:



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PORTABLE MODEL ZT2409G



Image 1 ZEPHYR ZT2409G.

ZT2012D

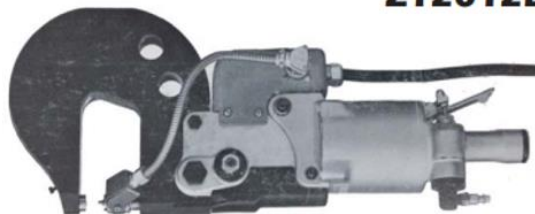
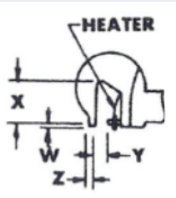


Image 2 Portable Ram Coin Dimpler.

DIMPLER NUMBER	ZT2012D	
POWER SOURCE	C.P. 355	
WEIGHT WITH CABLE (lbs. approximate]	34.0	
MAXIMUM FORCE ON DIES (rated at 90 psi) SIZE (length, width, height)	12,000 22x4.5x7.0	
OVER-ALL YOKE (length, width, depth)	8.7x1.5x9.0	
"W" DIMENSION (edge to center of dimpling tool)	.50	
"X" DIMENSION (inches) (throat reach)	4.68	
"Y" DIMENSION- (See Note 1.throat gap, Max. open)	.62	
"Z" DIMENSION	1	
CAPACITY (maximum gauge and fastener) Aluminum Alloy	.072-#10 Screw .072- 1/4 Rivet	
HEATER RECOMMENDED Upper (Punch)	ZT1880D10A	
DIE ASSEMBLY (type)	SHORT STANDARD	
PUNCH ASSEMBLY (type)	STANDARD TYPE I	



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Required Punches and dies for C-130J applications.

A/A	CODE	DISCREPTION	REFERENCE	QUANTITY	DISCREPTION	QUANTITY
1	ZT1855-5/32	Punch Assy	5/32 ''	4	Compatible Female Die	2
2	ZT1855-3/16	Punch Assy	3/16 ''	4	Compatible Female Die	2
3	ZT1852-5/32	Punch Assy	5/32 ''	4	Compatible Female Die	2
4	ZT1852-3/16	Punch Assy	3/16 ''	4	Compatible Female Die	2
5	ZT1895-5/32	Punch Assy	5/32 ''	4	Compatible Female Die	2
6	ZT1895-3/16	Punch Assy	3/16 ''	4	Compatible Female Die	2
7	ZT1865-10	Punch Assy	#10	4	Compatible Female Die	2
8	ZT1862-10	Punch Assy	#10	4	Compatible Female Die	2