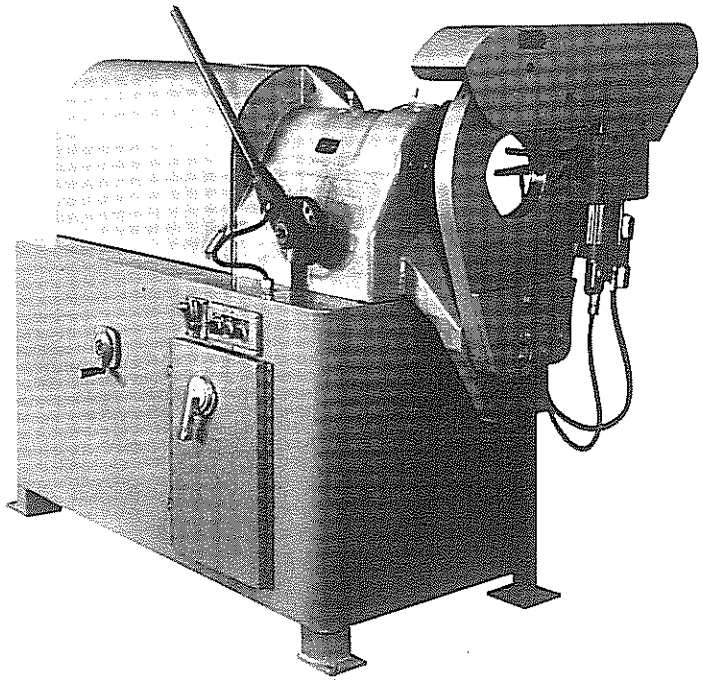
# 8CP

Model 8CP is the largest in the family of PHI end-finishing machines, and can be used to flare, bead, debur and square tubes or pipes with outside diameters up to 8 inches.

An air cylinder with heavy duty linkage holds the tube or pipe firmly in place during each operation, preventing slippage and ensuring that all forming is done within appropriate specifications.

| 8CP | |
|---|---|
| **Flaring** | Annealed ferrous, Nonferrous & Stainless steel: 1¼" to 8" O.D. x .125" max. W.T. |
| **Beading** | Annealed ferrous, Nonferrous & Stainless steel: 1¼" to 8" O.D. x .065" max. W.T. |
| **Squaring & Deburring** | Annealed ferrous, Nonferrous & Stainless steel: 1¼" to 8" O.D. |
| **Spindle Speed** | Vari-speed drive 70-550 RPM |
| **Clamping** | Pneumatic cylinder—<br>heavy duty overhead jaw linkage |
| **Electrical** | 2 HP motor, magnetic starter,<br>fused disconnect. |
| **Dimensions** | Length, 68"—Width, 35"—Height, 54"<br>Floor to spindle C/L, 41" |
| **Shipping Weight** | 2200 pounds |
| **Features** | Bead height adjustable ⅜" maximum.<br>Air cylinder powered—<br>switch operated. Positive solenoid indexed bead positioning.<br>Semi-automatic beading cycle<br>1¼" O.D. and up. |
| **Accessories Furnished With Machine** | 8CP-101 (108203) Die Adaptor<br>8CP-100 (104454) Spindle Adaptor |
| **Optional Accessories Available** | 8CP-1045 Die Adaptor 108399<br>35CP-10 (103647) Spindle Adaptor<br>6CP-100 (104454) Spindle Adaptor<br>105338 F/C Head<br>FCH-30 (105018) F/C Head<br>104998 F/C Head<br>Auto Feed—Square and Deburring only |

The Model 8CP also features a variable-speed drive for efficient operation, regardless of material or wall thickness. Hard materials such as stainless steel can be deburred at slower speeds, for example, without undue wear of the blades. Other special features of the Model 8CP include an adjustable bead height and positive solenoid indexing.



Model 8CP

# FLARING

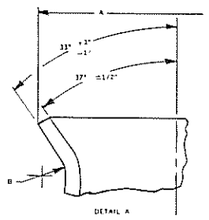
• MEETS SPECIFICATIONS OF MS33583
SAE STANDARDS ALSO AVAILABLE

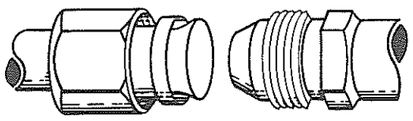
**Squaring, Deburring, Flaring**

Flared joints form liquid-tight, air-tight connections at the ends of tubing or pipe.

To obtain an effective, long-lasting seal, each end of the tube or pipe must be formed to the exact shape of the matching flare fittings.

Tooling supplied by PHI meets this objective. And in almost every case, the same end-finishing machine can be used to perform the required squaring and deburring of the cut end—before the flare is formed.





**Typical Applications:** Hydraulic systems and fuel lines in the aircraft, auto, heating and cooling industries.

**STANDARD MS33584 DIMENSIONS FOR FLARED TUBING**

| Tube Size Nominal OD Inches | A Diameter | | | | B ±.010 Radius Inches |
|---|---|---|---|---|---|
| | Aluminum Alloy Tubing Inches | | Steel Tubing Inches | | |
| 1/8 | .200 | | .200 | | |
| 3/16 | .302 | | .302 | | |
| 1/4 | .359 | | .359 | | .032 |
| 5/16 | .421 | +.000 | .421 | +.000 | |
| 3/8 | .484 | −.010 | .484 | −.010 | .046 |
| 1/2 | .656 | | .656 | | |
| 5/8 | .781 | | .781 | | .062 |
| 3/4 | .937 | | .937 | | .078 |
| 1 | 1.187 | | 1.187 | | |
| 1-1/4 | 1.500 | | 1.500 | | .093 |
| 1-1/2 | 1.721 | +.000 | 1.721 | +.000 | |
| 1-3/4 | 2.106 | −.015 | 2.106 | −.015 | |
| 2 | 2.356 | | 2.356 | | |
| 2-1/2 | 2.856 | | 2.856 | | .109 |
| 3 | 3.356 | | 3.356 | | |

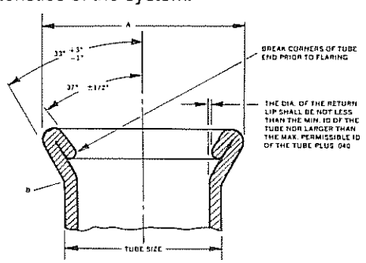
# DOUBLE FLARING

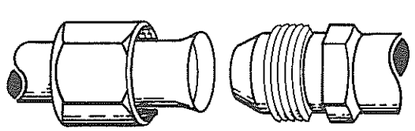
• MEETS SPECIFICATIONS OF MS33584
SAE STANDARDS ALSO AVAILABLE

**Double-lap Flaring**

Double-lap flares provide added-strength joints which are more resistant to fatigue and provide a better seal than single-thickness flares.

Douple-lap flares formed by PHI machinery and tooling are free of cracks and pitmarks. The joint is also designed so that the inside surface of the flare has a larger diameter than the inside diameter of the tube or pipe and, therefore, does not interfere with flow characteristics of the system.

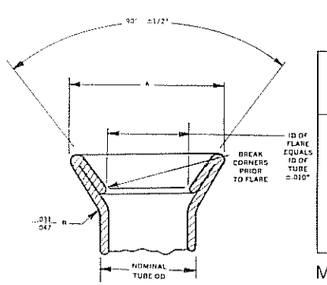


**Typical Applications:** Thin-wall tubing connections that are subject to shock, vibration, or high internal pressures such as automobile brake lines and critical aircraft hydraulic lines.

**STANDARD MS33583 DIMENSIONS FOR 37° DOUBLE-FLARED TUBING**

| Tube Size Nominal OD Inches | A +.000 −.010 Dia. Inches | B ±.010 Rad Inches | Wall Thickness Inches | Min. ID Inches |
|---|---|---|---|---|
| 1/8 | .200 | | | |
| 3/16 | .302 | .032 | .028<br>.035 | .114<br>.100 |
| 1/4 | .359 | | .028<br>.035 | .178<br>.159 |
| 5/16 | .421 | | .035<br>.049 | .224<br>.198 |
| 3/8 | .484 | .046 | .028<br>.035<br>.049 | .310<br>.288<br>.261 |




**STANDARD DIMENSIONS FOR 45° DOUBLE-FLARED TUBING**

| Nominal T—OD Inches | A—Dia. Inches ±.005 |
|---|---|
| 1/8 | .187 |
| 3/16 | .275 |
| 1/4 | .355 |
| 5/16 | .420 |
| 3/8 | .495 |
| 7/16 | .565 |
| 1/2 | .635 |

MEETS SPECIFICATIONS OF SAE



# BEADING

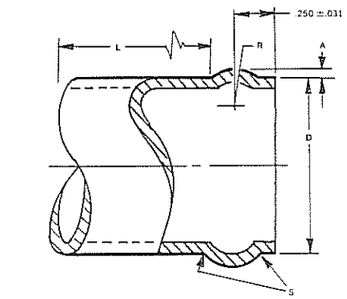
• MEETS SPECIFICATIONS OF MS33660
SAE STANDARDS ALSO AVAILABLE

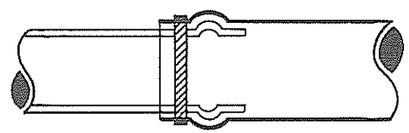
**Beading**

Beading is a versatile end-finishing technique that can be applied to a variety of industrial applications.

In conjunction with an O-ring, for example, beaded joints can be used to interconnect exhaust tubes or low-pressure fuel lines.

Beads can also be used to dampen vibration in solid lines, or to increase the effectiveness of the seal when a rubber or fabric sleeve is clamped to a metal duct.



**Typical Applications:** Low pressure air, exhaust, and liquid systems in the automotive, appliance and boating fields.

**STANDARD MS33660 DIMENSIONS FOR BEADING**

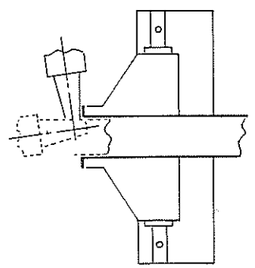
| Size Number | D Tube OD Inches | D Tolerance for Length L Type A End Inches | A ±.003 Bead Height Inches | L Minimum Length | R Maximum Radius | S Maximum Radius |
|---|---|---|---|---|---|---|
| 4 | 1/4 | | .031 | | | |
| 5 | 5/16 | | .033 | | | |
| 6 | 3/8 | +.003 | .035 | | .125 | .062 |
| 8 | 1/2 | −.010 | | | | |
| 10 | 5/8 | | .038 | | | |
| 12 | 3/4 | +.004<br>−.010 | | | | |
| 16 | 1 | | .062 | | | |
| 20 | 1-1/4 | | | | | |
| 24 | 1-1/2 | +.005 | .072 | | | |
| 28 | 1-3/4 | −.010 | | | | |
| 32 | 2 | | | .750 | | |
| 40 | 2-1/2 | +.006 | .082 | | | |
| 46 | 3 | −.010 | | | | |
| 52 | 3-1/4 | | | | | |
| 56 | 3-1/2 | | | | .156 | .093 |
| 60 | 3-3/4 | | | | | |
| 64 | 4 | | | | | |
| 68 | 4-1/4 | +.008 | | | | |
| 72 | 4-1/2 | −.010 | | | | |
| 76 | 4-3/4 | | .088 | | | |
| 80 | 5 | | | | | |
| 84 | 5-1/4 | | | | | |
| 88 | 5-1/2 | | | | | |
| 92 | 5-3/4 | ±.010 | | | | |
| 96 | 6 | | | | | |

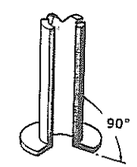
# FLANGING

**Flanging**

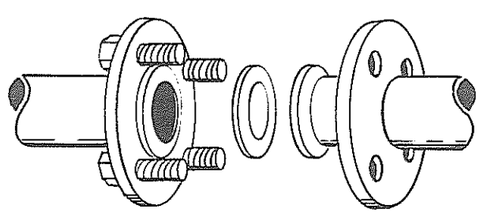
Pipe-flanging machines permit the joining of pipe sections without the need for costly welded flanges and the associated temporary tack welding, slag removal and x-ray inspection.

A prefabricated slip flange is placed against the assembly on an adjacent pipe section. A disc-shaped rubber seal placed between the two formed flanges prevents any leaks. Problems in lining-up bolt holes are eliminated with the use of slip flanges which rotate freely on the pipe. Standard flanges can still be used.





FLANGED TUBE



**Typical Applications:** Chemical plants, petroleum refineries, power plants, and pipelines.

# CAPACITY RANGE FOR END-FINISHING MACHINES