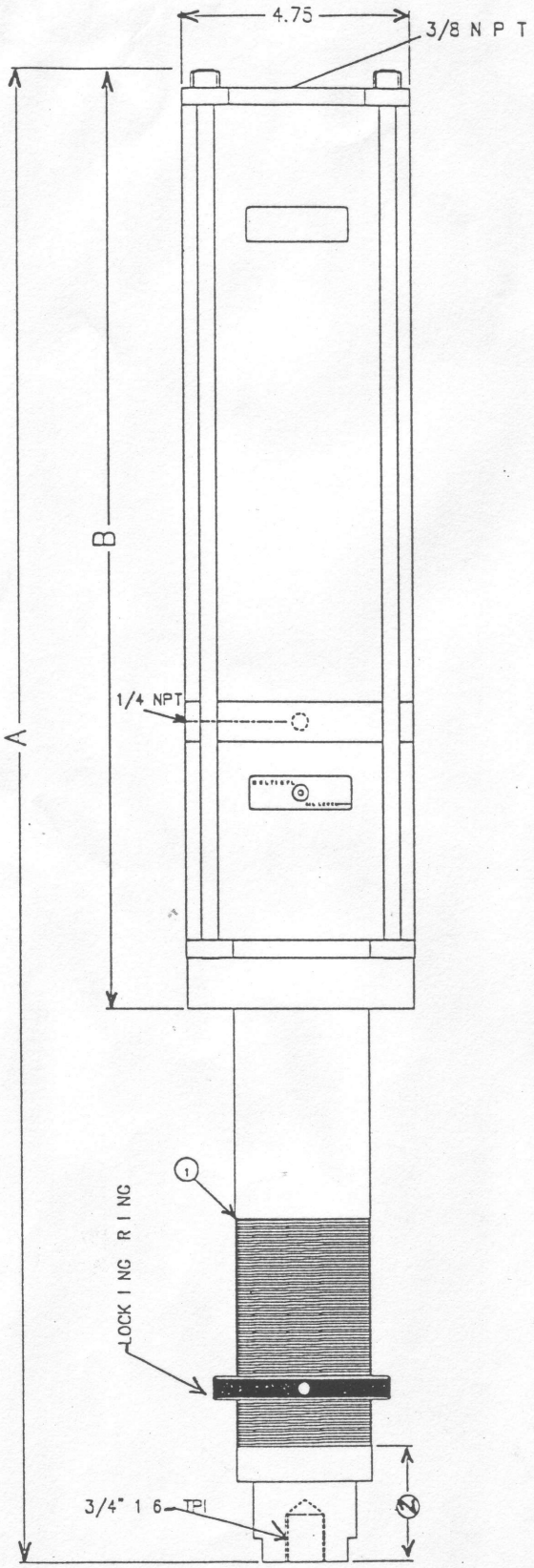


| SPECIFICATIONS | DX 25-28-16 | DX 12-14-48 | DX 12-32-32 |
|---|---|---|---|
| TONNAGE (Nominal) | 12½ | 6 | 6 |
| OVERALL STROKE | 3¼" | 2¼ " | 4" |
| POWER STROKE | ½" | 1½" | 1" |
| STROKES/ MINUTE | 30 | 30 | 30 |
| DIMENSION A | 32.75" | 32.75" | 32.75" |
| DIMENSION B | 20.75" | 20.75" | 20.75" |
| AIR CONSUMPTION @ 100 PSI | 1.5 cu ft/stroke | 1.5 cu ft/stroke | 1.5 cu ft/stroke |
| Operating Pressure: Minimum = 40 PSI Maximum = 120 PSI | | | |

| PSI | ADVANCE FORCE | POWER (ACTUAL) FORCE IN TONS (@ 2 000 lbs) | | |
|---|---|---|---|---|
| 80 | 400 lbf | 8.6 | 4 | 4 |
| 100 | 450 lbf | 10.8 | 5 | 5 |
| 120 | 500 lbf | 13 | 6 | 6 |

**Choosing the Right Multicyl:**

The two most important factors when determining which cylinder is right for an application are **tonnage and stroke**. The cylinder must have a tonnage output which is at least equivalent to the tonnage that is required to complete the work plus a 25% safety allowance for variations in air pressure, tool and material conditions.

The power stroke also must be at least long enough to match the requirements of the work including the material thickness and the spring preload in the tooling.

**Tonnage Calculations:**

Round holes: S x 3.141 x D x T  Shearing: S x Shear Length x T

Stripping: Shear Length x T x 3500 (force in pounds)

*S=tensile strength of material D=diameter T=thickness*

For example punching a .375" hole through .060" stainless steel would require a cylinder with at least 3.54 tons

(40 x 3.141 x .375 x .060) + 25% and a power stroke of at least .060".

**Design Tips**

To ensure trouble free operation of Multicyl Systems make sure that:

a) the tonnage meets the requirements of the job

b) the tooling does not have a strong pre-load which inhibits the stroke

c)in a spring loaded dieset, the lifter springs should not be excessively heavy - see user guide

d) the tooling is well guided with a balanced load distribution

e) the cyl has been cycled several times to free entrapped air

f) the air control package is connected properly

g) the air flow is not restricted

h) the air pressure is correct

i) for horizontal operation the oil filler screw is up to allow oil to transfer from reservoir into high pressure chamber

**Note : the use of a Filter, Regulator, and Lubricator is mandatory to ensure uniform performance. This is the best preventative maintenance and will increase the life of the cylinder.**

1) Class 2A thread, 75mm, 1.5mm allows fast and simple setup and adjustment, no nuts or bolts required.

2) 3.00" minimum clearance between tool and mounting plate.

3) Uses a four-way valve and quick exhaust.

TEMPLATE **DX SERIES** DOUBLE ACTING

# USER GUIDE FOR MULTICYL SYSTEMS - DX SERIES

## What is Multicyl?

Multicyl pressure intensifiers are air over oil cylinders which can provide up to 12 ½ tons of power with a variety of stroke lengths. Multiple cylinders may be used with a well guided dieset achieving up to 100 tons of combined force. Using Multicyl products is a safe, simple and cost effective way to accomplish practically any punching application.

The patented two stage action of Multicyl is designed to maximize punching capacity while using the minimum energy possible.

## The Patented Self-Adjusting Stroke of Multicyl:

The patented 'Flow By' principle allows Multicyl to self-adjust it's two stage stroke action to begin the power stroke when the resistance encountered exceeds the advance force. The stroke length will bottom out at the end of the overall stroke or wherever the power stroke is needed. Because of this self-adjusting feature our cylinders do not require a precise set-up height. An internal end stop acts as a depth control at the end of the stroke. Depth stops will also reduce the amount of air consumption if the overall stroke is reduced. The height of the cylinder can be adjusted to account for variations in tool height. For a safer operating environment the cylinder height can be adjusted to eliminate any nip points. (See safety section)

## Tooling:

Multicyl can be used with your existing tooling or we can supply a new system for your requirements. Interchangeable punch and notch tooling from such companies as Unittool, Pierce-All and Unipunch are useable with Multicyl cylinders.

Excessive cylinder maintenance may result from "misaligned tool conditions". For example: deflection or tipping of the tool may occur in a dieset with worn pins and bushings resulting in off-center load conditions. Unguided tool actions such as marking, stamping or punching should always be directly in line with the center axis of the cylinder otherwise clearance in the cylinder components may cause premature wear. Where application loads are not central or the load conditions vary the use of a flexible coupling is recommended. For more information in this regard, please refer to the 'Tooling Connection for DX Series Multicyls' template.

The use of a depth control or bumper block within the tooling is mandatory. Failure to do so may result in manufacturer's warranty being voided.

Note: When using a spring returned die-set, excessive spring resistance may cause premature power stroke, shortening the overall stroke. Light die lifter springs should be based on the upper die shoe weight.

## Safety:

OSHA Regulations Section 1910.217(c): Methods of Safeguarding Point of Operation, States that "It shall be the responsibility of the employer to provide and insure the usage of point of operation guards or properly adjusted point of operation devices on every operation performed on a (mechanical) power press, except when the point of operation opening is one fourth of an inch or less."

DX series Multicyl applications frequently require an open height which is greater than 1/4"; for these situations we offer a two hand anti-tie down air control package to enhance safety and comply with the above OSHA regulation.

## Air Controls and Operating Pressure

Multicyls run on regular shop air with minimum and maximum operating pressures of 40 and 120 PSI. Air pressure input is directly proportionate to tonnage output; ie. if the incoming air pressure is reduced by 20% then tonnage output of the cylinder will also be reduced by 20%. Multicyl air controls, which are used to operate the system, are inexpensive and simple to use. Our standard four way foot or palm control is all that is needed and can be installed in a matter of minutes using quick connect fittings.

Care should be taken to build safe, rigid cages to house your Multicyl system. Inadequate cage design is not only dangerous but may cause cage to deflect resulting in loss of power stroke. Standard cages, which can be purchased in a variety of designs and sizes, are engineered to withstand the extreme forces produced.

Use Hyspin AWS 32 non-detergent, hydraulic 150 SSU oil or equivalent. The self contained oil system eliminates the need for a separate reservoir and controls. Check oil level every year.

Multicyl units may be successfully used in the horizontal position. Upside down cylinders may be quoted by request.


**MULTICYL INC.**

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