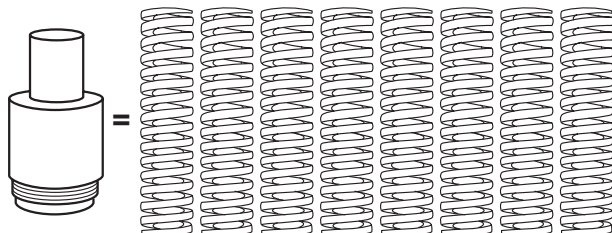


**Nitrogen cylinders provide:**

**1. Feature:** More force in less area.

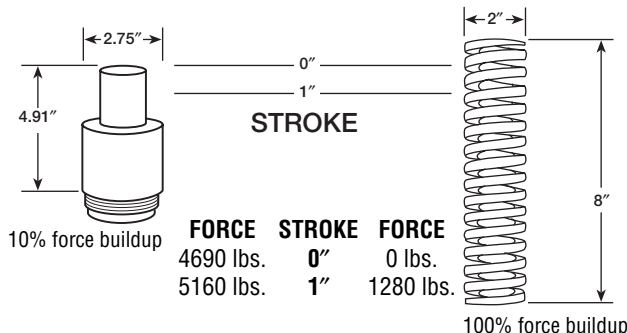
*One Nitrogen gas spring 2 3/4" in diameter can replace as many as 8 to 10 mechanical springs, with a 2" diameter, and provide the same force.*



**Benefit:** The working surface (i.e. pressure pad) is smaller, resulting in a more compact die construction.

**Result:** Saving money

**3. Feature:** Nearly constant force throughout the stroke.

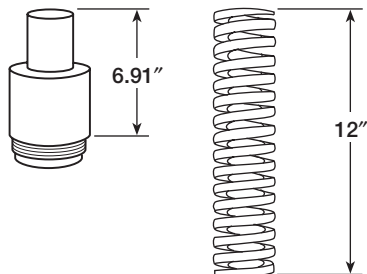


**Benefit:** Better control over the part during the forming operation.

**Result:** Better quality

**2. Feature:** Same stroke in less height.

*Consider an application requiring a 3" stroke. A mechanical spring would need to be approximately 12" tall. (The spring is deflected 25% of its total length as recommended by spring manufacturers for best life). A nitrogen gas spring with a 3" stroke is only 6.91" tall.*

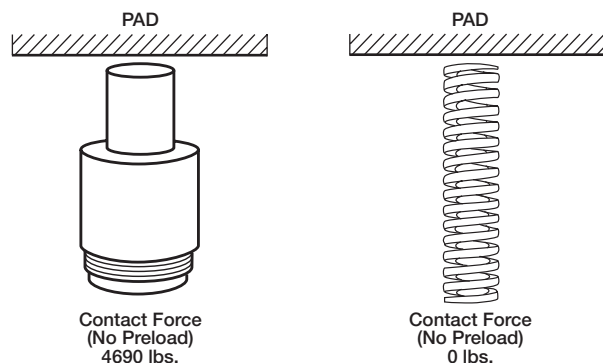


**3" STROKE REQUIRED**

**Benefit:** The die may not have to be constructed with as much shut height. The area occupied by the pressure system is shorter.

**Result:** Saving money

**4. Feature:** Full force on contact.



*Nitrogen gas springs provide full force on contact, eliminating the need to preload.*

*Springs must be preloaded to provide any force on pad contact.*

**Benefit:** The elimination of preload results in a smaller retainer system.

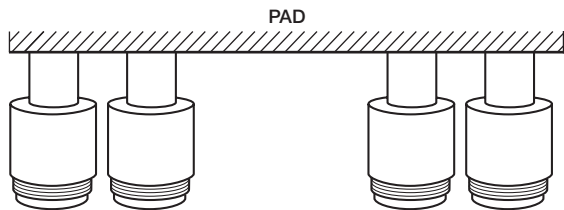
**Result:** A safer die  
Saving money



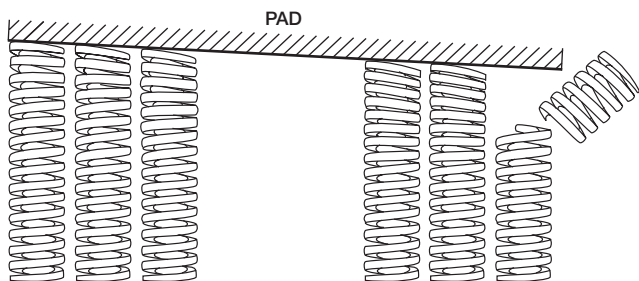
**Nitrogen Gas Spring Advantages**

*Nitrogen Systems Compared to Mechanical Springs*

**5. Feature: Balanced force.**

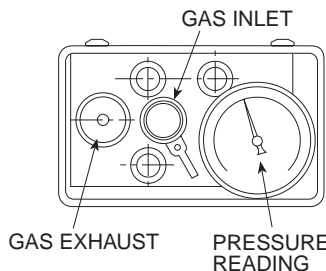
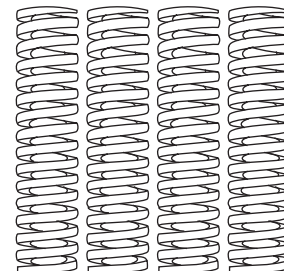
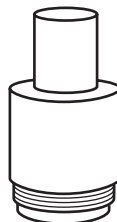


*Nitrogen gas springs provide balanced force on the pad at all times. A pad using springs becomes imbalanced as springs fatigue and/or break.*



- Benefit:** The force is always balanced under the pad.
- Result:** Less punch breakage  
Longer punch life  
Better quality parts

**7. Feature: Force adjustability.**

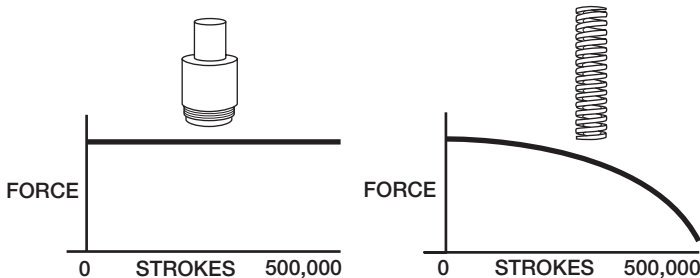


*To adjust the force of the nitrogen system, simply add or subtract nitrogen gas through the control panel. The pressure gauge will give an accurate pressure reading. This is done while the die is still in the press.*

*To adjust spring force you must pull the dies and change the springs or increase preload on existing springs.*

- Benefit:** Adjust the force quickly and easily. The force is known after adjustments are made.
- Result:** Save time  
Save money

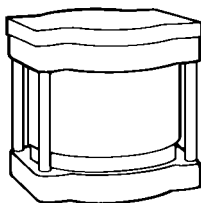
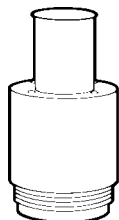
**6. Feature: Consistent force.**



- Benefit:** The pad force is consistent. The force can be repeated each time the die goes into the press.
- Result:** Consistent quality parts



1. Feature: Consistent force.

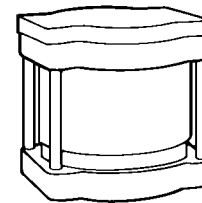
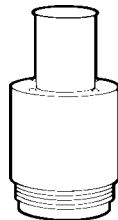


*Nitrogen systems are closed systems and not subject to force fluctuation.*

*Air cushions often fluctuate in force as air demands the change throughout the plant.*

**Benefit:** Provides the same force with every stroke.  
**Result:** Consistent quality parts

4. Feature: Balanced force.

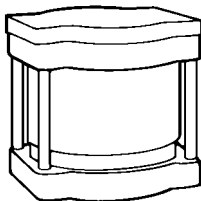
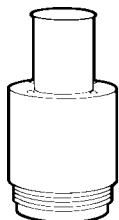


*A nitrogen system provides perfectly balanced force on the pressure pad.*

*An air cushion will provide uneven pad pressure if the cushion is off-center loaded or pins are not the same length.*

**Benefit:** Better quality parts.  
Reduced scrap levels.  
**Result:** Increased revenue  
Higher productivity

2. Feature: Reduced die set-up time.

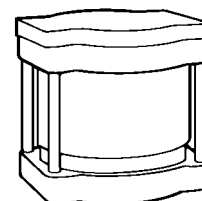
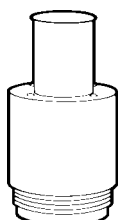


*Nitrogen systems in the die eliminate the need for spotting and shimming of air pins.*

*The use of air cushion, in most cases, requires clearing slugs off the air pad and spotting and shimming pins.*

**Benefit:** The press becomes more productive.  
**Result:** Increased revenue

5. Feature: The force is placed where needed.

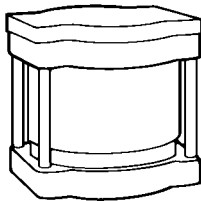
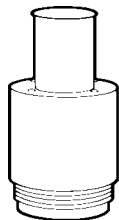


*Nitrogen gas springs can be placed exactly where the force is needed.*

*The hole pattern in a bolster dictates where the force can be applied using an air cushion.*

**Benefit:** Precise control in the forming process.  
**Result:** Better quality parts

3. Feature: Press versatility.



*Nitrogen systems in the die provide for the flexibility of press selection.*

*When air cushions are used, press selection may be limited.*

**Benefit:** Better utilization of presses.  
**Result:** More efficient operation  
Higher productivity

