



Automatic Fastener Feeding Systems



Lou Zampini & Associates
2 Douglas Pike, Rt. 7
Smithfield, RI 02917
1 800 353 4676
FAX 1 401 679 0165

Automatic Fastener Feeding Systems

The Improvement of productivity and quality has been the driving force in the development of the CP Desoutter range of fastener feeding systems. By automatically presenting the fastener to the tool, dramatic reductions in assembly cycle times, typically in region of 30-40%, can be achieved.

High Quality, Low Cost Automation

CP Desoutter has been supplying automatic feed machinery to manufacturers and OEM's since 1960. Our reputation for good design, reliability and providing solutions has been earned in the only way possible – by getting it right for our customers.

We supply the means to reduce cycle times and improve quality of assembly, within a budget.

CP's world-wide service network and application centres provide our customers with unrivalled product support across the world. There is no better partner for your automation projects wherever they are.

Application Based Product

The range includes a number of standard products of differing levels of automation along with the facilities to produce special units to match your specific application needs.

Screw Presenters

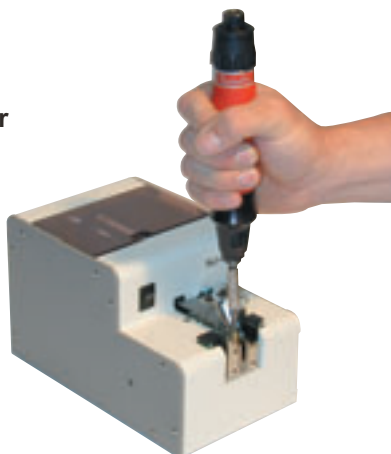
Generally used with smaller screws (M1.4-5.0) on bench assembly work with tools using magnetic or suction pick up or spring finder sleeves.

The main benefits of the screw presenters are:

- An increase in productivity due to less handling of screws
- A reduction in manufacturing cost due to:
 - Increased productivity
 - Less screw wastage

The screw presenter features a bowl in which the screws are stored. A brush then pushes the screws into a guide rail, which vibrates moving the screws to a position where the operator can locate on the head of the screw.

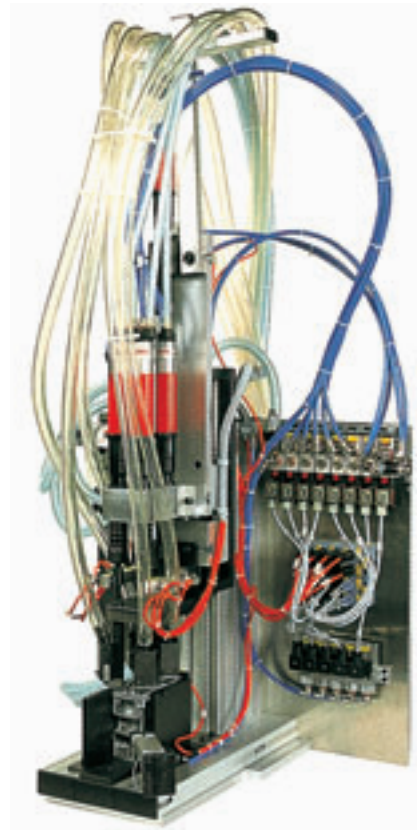
Screw Presenter



BM2001 Automatic Feed System

Productivity, Quality, Cost Reduction

VCF Automatic Feed System



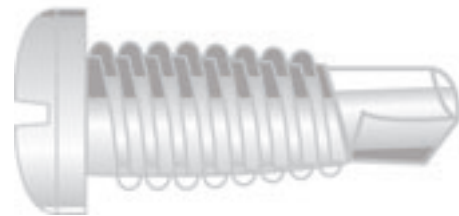
Automation using Feed Systems

Automatic Feed Systems

The Automatic Feed Systems are larger units that feature a vibratory bowl for storing and presenting the fasteners to a customised escapement that releases the fastener to the tool at the appropriate time in the cycle. These units can be utilised in either manual operations or incorporated within a fully automated fastening system.

Automatic Feed Systems can offer:

- Productivity through faster cycle times by
 - Positioning the fastener at the tool tip prior to each cycle
 - The elimination of fastener handling by the operator
 - Introducing cost effective automation
- Improved ergonomics
 - Single driving action on manual systems
 - No fastener handling
- Quality of assembly
 - Less fastener handling
 - Can be used with shut off pneumatic or electric tools along with DC assembly systems
- Reduction in production costs
 - Higher production rates
 - Use within automation
 - Less waste and component rejection



Automatic Feed Systems

Two basic models make up the range:

VCF Range

Aimed at high volume production, the VCF range is modular and features a small programmable controller that controls the entire fastening cycle, ensuring the fastener is reliably fed to the tool. Each screw is correctly orientated by the vibratory action of the bowl, then presented to the gate selector for delivery into the feed tube. When not in use both the bowl vibration and aligning air vents are automatically shut off, thus saving energy.



The screw feeding system has been designed to operate with hand-operated and fixtured units. Its modular design enables it to be adjusted to suit a diverse range of customer applications including automation and multi drop.

Features

Pneumatic powered nozzle advance and retract

Screw retaining clip incorporated into nozzle

High precision gate mechanism for screw selection

Hardened tool steel gate and nozzle components

Timed vibration/air blast shut-off

Benefits

Eliminates workpiece damage and improves component accessibility by pushing the fastener through the nozzle jaws. Reduces force required by the operator to push the screw into the component.

Improved ease of use as the screw shank is visible through the jaws and so easy to locate into the component.

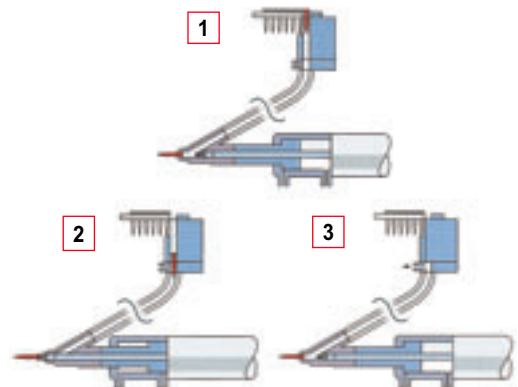
Reliable and durable operation.

Extended service life and reduced maintenance.

Energy saving and reduces exposure to noise.

Typical VCF Cycle

1. In the rest position a screw is held in the nozzle jaws for insertion into the joint. The gate selects a single orientated screw from the vibrating feed rails.
2. As the screw is inserted into the joint, it engages the bit and starts the tool. A signal to the piston then retracts the nozzle leaving both screw and bit free from the jaws. Simultaneously the gate drops a single screw into the feed tube.
3. Once the correct torque is reached the motor is shut off and piston advanced. A blast of air transports the next screw down the feed tube into position in the jaws for the next cycle.



BM2100

This unit has less features than the VCF range and is primarily for use on applications using wood or self tapping screws.

Again each screw is correctly orientated by the vibratory action of the bowl, then presented to the gate which delivers the screw to the nozzle. The BM2100 system can only be operated with hand-operated tools and incorporates a spring return nozzle.



All of the Automatic Feed Systems are fully self contained and have an integral regulator/lubricator for connection directly to a suitable air supply.

NJ Screw Presenter

- 3 Base models, NJ12,NJ23 and NJ45.
- Modular rail system to permit screws of 1.4 to 5.0mm diameter to be fed.
- Rail can be changed and the unit set up within 5 minutes.
- Simple brush and rail combination to prevent jamming.
- 30% faster feed rate due to a number of screws being fed into the rail in a single cycle.
- Presenter has built in height adjustment to allow the screw to be presented to the operator at the correct angle.



Capacity

NJ12 Thread Diameter 1.4-1.7mm, Screw Length<10mm
 NJ23 Thread Diameter 1.8-3.0mm, Screw Length<18mm
 NJ45 Thread Diameter 3.1-5.0mm, Screw Length<18mm

Dimensions	130x215x136mm	Weight	3.2kg
Max Feed Rate	2 screws/second	Bowl Capacity	Approximately 1200pcs (M3)
Power Supply	230/120V	Rated Input	12V, 500mA

All screw presenters include the appropriate rail assembly and AC adaptor.

Model codes

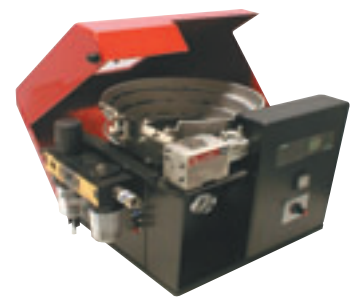
MAX SCREW SIZE	SCREW PRESENTER	RAIL ASSEMBLY STANDARD	HOLDING PLATE SHORT/COUNTERSUNK SCREWS
mm			
1.4	NJ12 2050111772	R14 2050111802	-
1.7	NJ12 2050111772	R17 2050111812	-
2	NJ23 2050111782	R20 2050111822	R20-23 2050111892
2.3	NJ23 2050111782	R23 2050111832	R20-23 2050111892
2.6	NJ23 2050111782	R26 2050111842	R26-30 2050111902
3	NJ23 2050111782	R30 2050111852	R26-30 2050111902
3.5	NJ45 2050111792	R35 2050111862	R35-40 2050111912
4	NJ45 2050111792	R40 2050111872	R35-40 2050111912
5	NJ45 2050111792	R50 2050111882	R50 2050111922

VCF Automatic Feed System

Capacity

Screw length Must exceed 1.2 x Head Diameter
 VCF4532 Thread <M3.2, Screw Length <20mm
 VCF4565 Thread <M3.2, Screw Length >20mm
 Thread >M3.2, <M6.5, Screw Length <40mm

Dimensions	435x140x370mm	Weight	39kg
Max Feed Rate	60 screws/second*	Bowl Capacity	2.5 litres
Control Circuitry	PLC	Max Screw Head (D)	15mm
Power Supply	220-240V 50Hz	Air Pressure	6.3 bar



* Although the VCF can deliver 60 fasteners/minute, the practical max cycle rate (including fastener insertion) is approximately 40 fasteners/min when incorporated in an automated process.

Options

- Can be used in automated systems
- Multi drop systems available
- Special nozzles for applications with limited access
- Nut and set screw feed versions
- Can be used with all tool types, pneumatic and electric

Product Range

BM2100 Automatic Feed System

Capacity

Screw length	Pan Head Countersunk Maximum 40mm	Must exceed 1.3 x Head Diameter Must exceed 1.5 + Head Diameter
Head Diameter	Maximum 13mm	
Thread Diameter	Maximum 5.5mm	

Dimensions

310x380x290mm

Max Feed Rate

25 screws/min

Control Circuitry

Manual

Power Supply

220-240V 50Hz

Weight

21kg

Bowl Capacity

0.8 litres

Max Screw Head (D)

15mm

Air Pressure

6.3 bar



Options

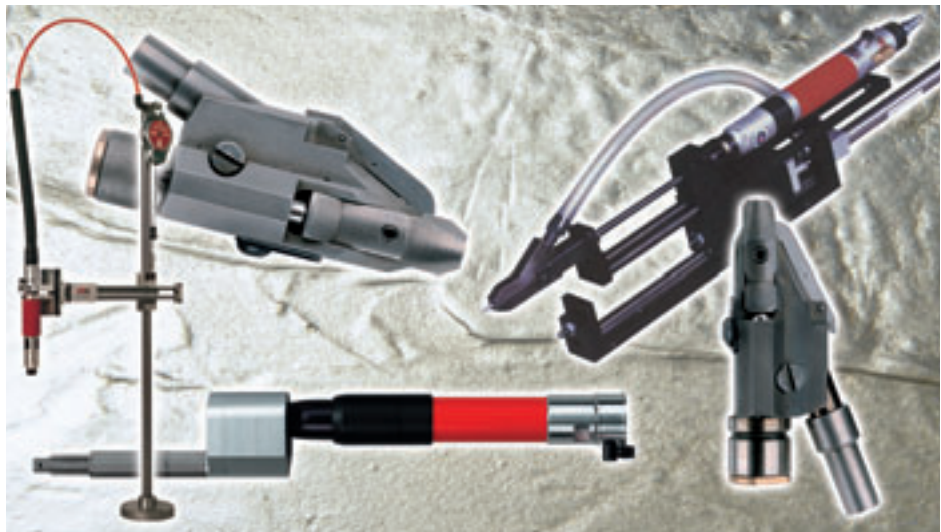
- Depth control
- Special nozzles for applications with limited access

Component Parts for Automation

Many of the parts used by CP Desoutter for manufacturing assembly systems are available as component parts for the construction of machines or automated assembly.

Parts include:

- Nozzles
- Slides
- Stands
- Bowl feeders
- Offset heads
- Spring loaded shafts



Important considerations

Fastener Types

The standard fastener feeding systems are able to feed most shank heavy screws. It is important that the screw is sufficiently large to enable it to be retained by the nozzle jaws, and seat correctly in the bowl rails.

Nut set screws (grub screws) and screws with captive washers can usually be fed using special units but this will depend on the type of the fastener.

Fastener Quality

The reliability of the fastener feeding system is greatly affected by fastener quality. The components within the feeder are sized to provide the optimum performance for a certain fastener. If the fastener dimensions vary significantly, feeding cycle times can be reduced and/or blockages occur within the feeder or nozzle. It is always recommended that a good quality of fastener is used, preferably ones which have been checked or sorted (e.g. optically checked)

Component Accessibility

An important consideration when determining the suitability of an application is accessibility. Sufficient space around the area into which fastener is being placed is required to enable the nozzle to correctly position the fastener for tightening. Special nozzles and actuators are available for applications where access is limited, e.g. screw in a recess, other parts restricting access, etc.

