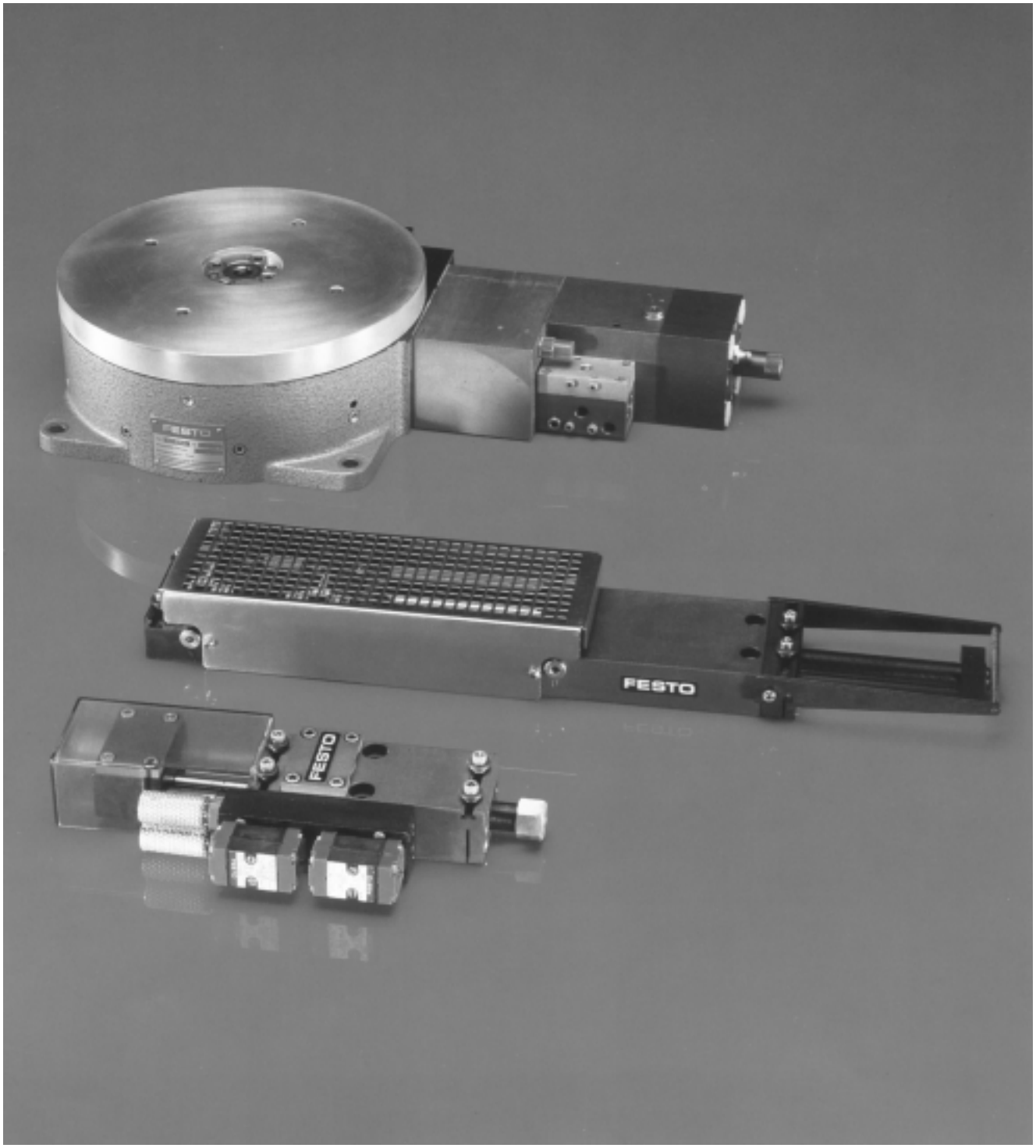
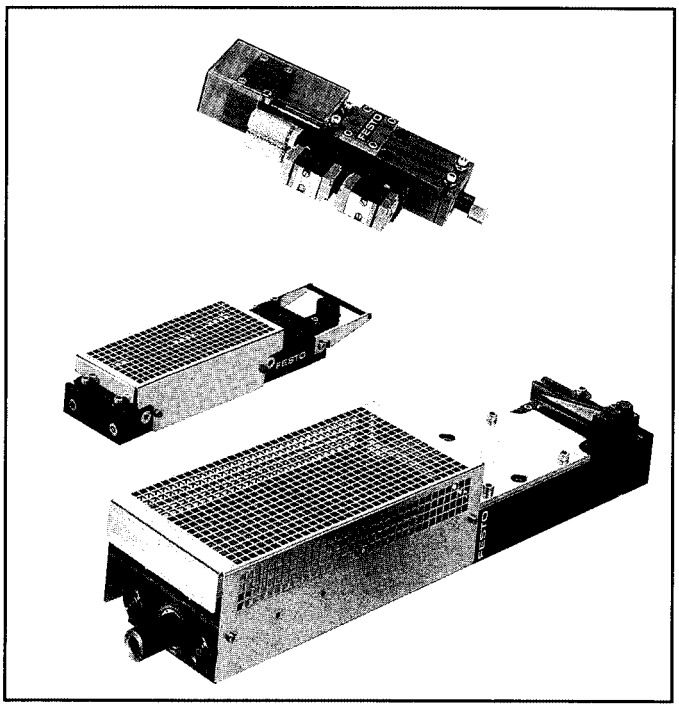
Pneumatic Feed Units and Rotary Indexing Tables



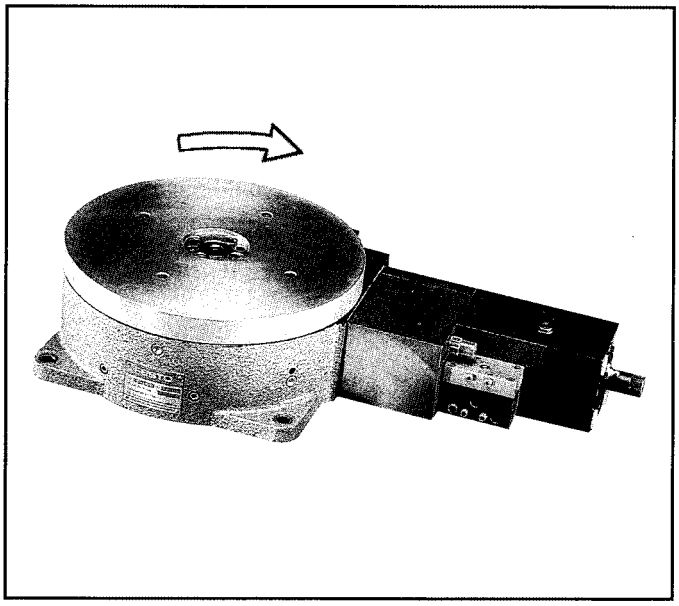
FESTO

Pneumatic Feed Units, Rotary Indexing Tables
Contents



Pneumatic Feed Units

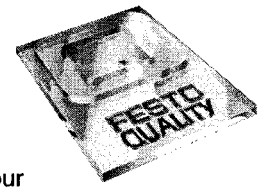
Festo pneumatic strip feed units offer a compact, space-saving solution for push or pull feeding of strip materials, belts, profiles etc. made of metal, plastic, wood, textiles etc. They are available in four sizes, for feeding strip widths up to 25 mm, 50 mm, 100 mm, and 200 mm respectively.



Pneumatic Rotary Indexing Tables

Festo pneumatic rotary indexing tables, feature a heavy-duty 270 mm (10-1/2") turntable, integral speed control, and hydraulic cushioning for smooth, accurate indexing. They are available with either 4, 6, 8, 12, or 24 standard indexing stations.

Festo Pneumatic Feed Units and Indexing Tables Offer Field-Proven Performance and Dependability



Now you can easily incorporate strip-feed and or indexing functions into your stand-alone machine or integrate them into larger automated production applications using Festo pneumatic feed units and rotary indexing tables.

These heavy-duty, self-contained units are industry-proven in a wide variety of applications, providing long-life, dependable operation in harsh industrial environments.

Festo also offers a complete range of pneumatic components and accessories, providing you with a single-source resource for your automation needs.

Festo order numbers consist of a part number and a type. When ordering feed units, also specify the desired valve(s) and accessories for the type of actuation desired, as described below.

Type Key:

Pneumatic Feed Units, Type BV-...

Feed units for material widths up to 0.98 in / 25 mm

Part No.	Type
9473	BV-25-20-2
9775	BV-25-50-2

Maximum Feed Length
20 - 0.79 in / 20 mm
50 - 1.97 in / 50 mm

Maximum Material Width
25 - 0.98 in / 25 mm

Pneumatic Feed Unit

Valves
For pneumatic actuation, order 2 dominating double pilot valves, type JD-5-3.3.
For electrical actuation, order 1 dominating double pilot valve, type JD-5-3.3, and 1 single solenoid valve, either low-watt MEH-5-3.3 (coil included), or MFH-5-3.3 (order coil separately).

Part No.	Type
6534	JD-5-3.3 (for pneumatic actuation)
6068	MFH-5-3.3 (for solenoid
12906	MEH-5-3.3 valve actuation)

Orifice
5 way, 2 position valve

JD - Dominating double pilot valve
MFH - Single solenoid valve with manual override
MEH - Low watt single solenoid valve with manual override

Feed units for material widths up to 7.87 in / 200 mm

Part No.	Type
2014	BV-50-40
3646	BV-50-100
2015	BV-100-70-C
2016	BV-100-200-C
3534	BV-200-125-C
2017	BV-200-250-C
4650	BV-200-350-C

Maximum Feed Length
40 (1.57 in / 40 mm)
70 (2.76 in / 70 mm)
100 (3.94 in / 100 mm)
125 (4.92 in / 125 mm)
200 (7.87 in / 200 mm)
250 (9.84 in / 250 mm)
350 (13.78 in / 350 mm)

Maximum Material Width
50 (1.97 in / 50 m
100 (3.94 in / 100 mm)
200 (7.87 in / 200 mm)

Pneumatic Feed Unit

Valves

Part No.	Type
4802	VL-8-3/8-B
4801	MLC-8-3/8-B

Connection
8 ported, 4 way, 2 position valve

VL - Single pilot valve (for pneumatic actuation)
MLC - Single solenoid valve (for electrical actuation)

Valve Coils: The part number for Type MEH includes a low watt solenoid E-coil. For Type MFH and MLC valves, the solenoid F-coil/C-coil must be ordered separately. The F and C-coils are available in a wide range of voltages.
Accessories: Solenoid sockets, cables and accessories must be ordered separately, except as noted.

Ordering Example, Pneumatic Feed Unit:
To order a pneumatic feed unit with a feed length between 0-4.92 in / 125 mm, a maximum material width of 7.87 in / 200 mm, electrical actuation with a 110 Volt AC, 60 Hz coil and a socket with LED and 8.2 ft. / 2.5 m cable, then order:

Description	Part No.	Type
Pneumatic Feed Unit	3534	BV-200-125-C
Single Solenoid Valve	4801	MLC-8-3/8-B
110 Volt AC, 60 Hz. Coil	34406	MSW-110-60-OD
Socket with LED and 8.2 ft / 2.5 m Cable	30932	KMC-1-220-2.5-LED

Ordering Example: Pneumatic Rotary Indexing Table

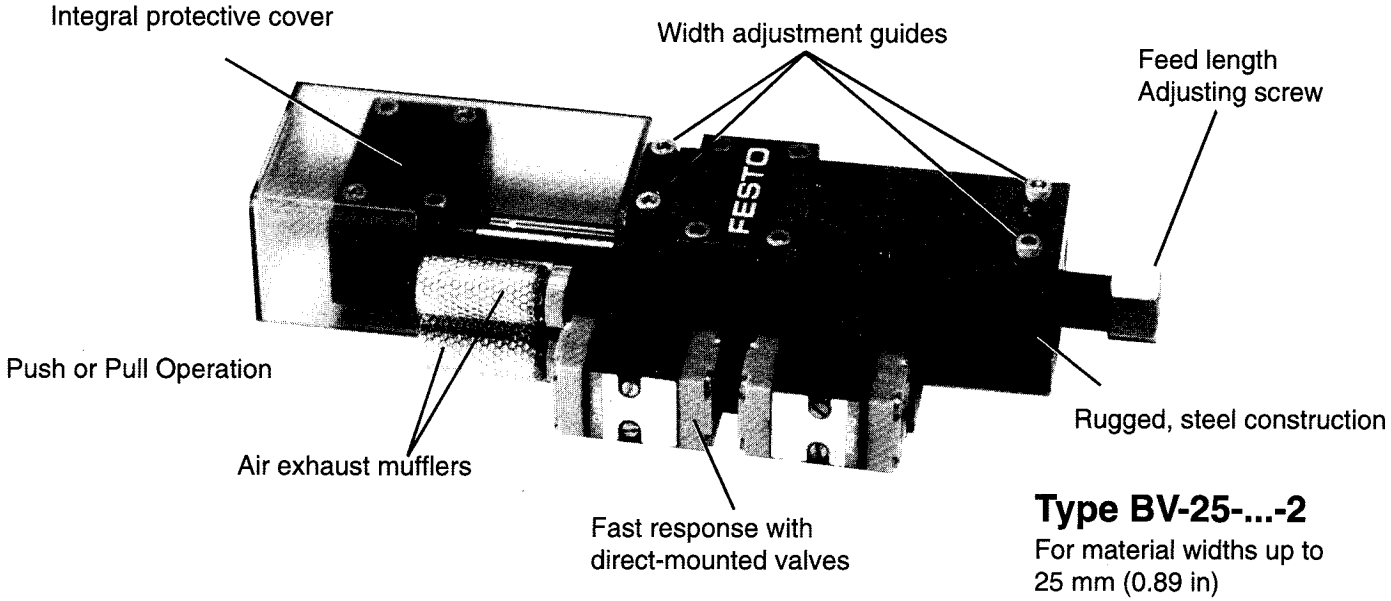
Part No.	Type
3729	ST-270-A-8

Number of Index Stations (Available standard index stations: 4, 6, 8, 12, 24)
Turntable diameter
(10.62 in / 270 mm)
Pneumatic Rotary Indexing Table

Note: Special single index stations available upon special order. Contact Festo.

Festo Pneumatic Feed Units are compact, space-saving components for feeding belts, strips, rods, profiles and tubing made of metal, plastic, wood, textiles, etc.

- **High cycle rates to 650/min**
- **Feed forces up to 180 lbf**
- **Quick, easy to install**
- **Adjustable cushioning for quiet, vibration-free operation**
- **Direct pneumatic, electric, or remote actuation**
- **Easily synchronized to machine speed**

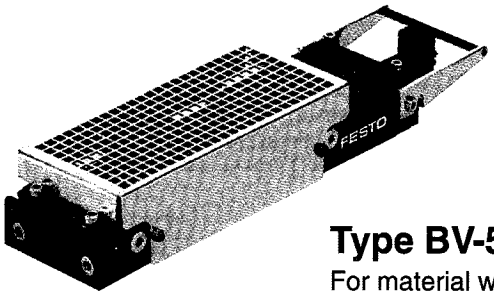


Type BV-25-...-2
For material widths up to 25 mm (0.89 in)

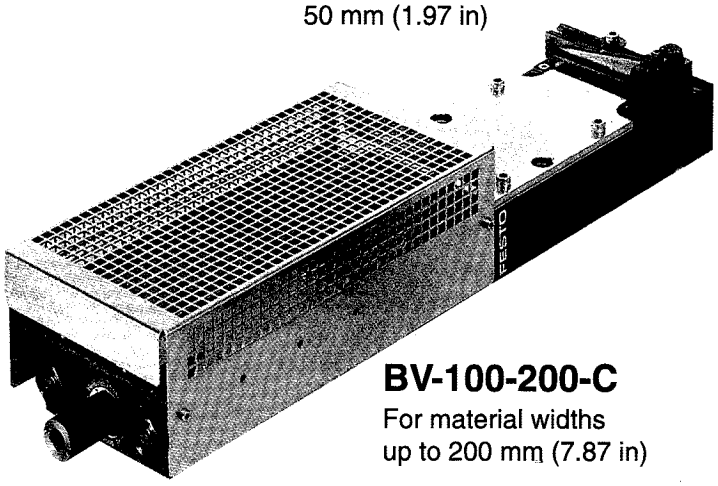
Festo pneumatic feed units are available in nine sizes, offering feed ranges up to 350 mm and material widths up to 200 mm.

The feed path on the BV-25-20, is infinitely adjustable over the entire stroke; on the BV-25-50 it is infinitely adjustable from 20-50 mm. On Types BV-100-... and BV-200-..., the total stroke is divided into several ranges which are used for coarse setting. Fine setting is then achieved by means of an adjusting screw.The set stroke-length will be accurately retained, even for long periods of time.

On all sizes you have a choice of push or pull operation. The units have an automatic equalization of tension feature so no tension adjustment is necessary. Depending on the application, feed accuracies between 0.02 and 0.05 mm can be obtained.



Type BV-50-40
For material widths up to 50 mm (1.97 in)



BV-100-200-C
For material widths up to 200 mm (7.87 in)

Festo Pneumatic Feed Units, Industry-proven Performance

Festo pneumatic feed units have been applied in a wide variety of applications in virtually every industry around the world to feed strip material in automated processing stations.

Typical applications include:
- Cutting
- Drilling
- Forming
- Molding
- Punching, etc.
- Stamping
- Labelling
- Riveting
- Pressing

Quick Precision Feeding and Long Lasting Durability

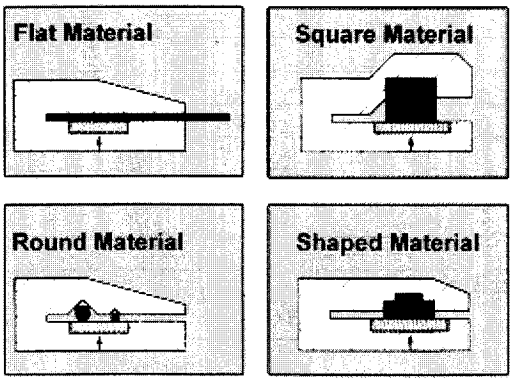
Festo Pneumatic Feed Units are designed for precise feeding and durabilty and are able to withstand the most extreme conditions.

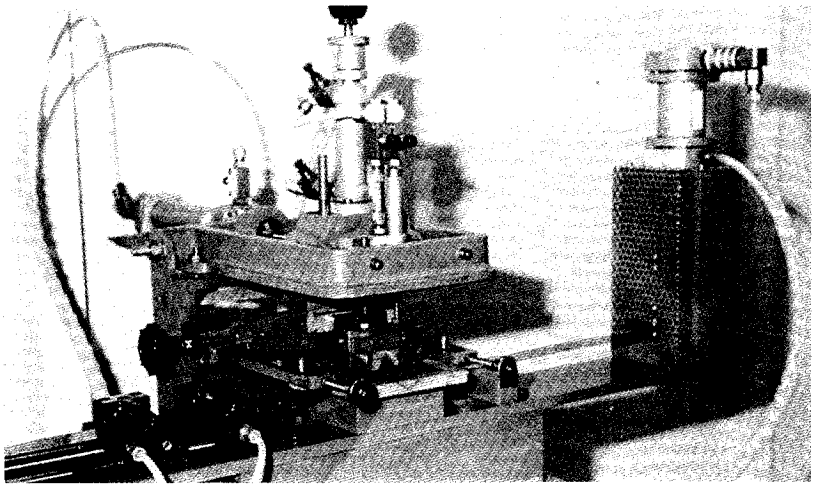
The guide rods and bearings are hardened and ground, the cylinder bores are honed and the housing is anodized. In addition, all parts which come into contact with the material to be conveyed are hardened or hard-chrome plated.

Festo Feed Units Can Handle A Wide Range of Materials:

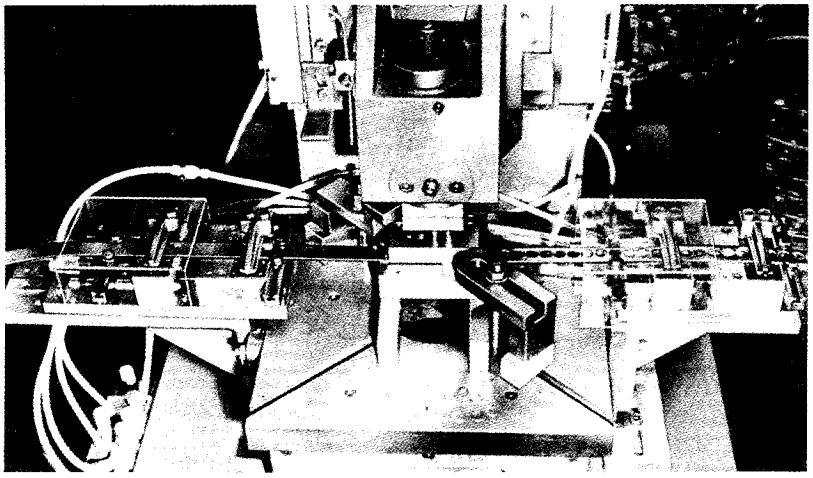
- Adjustable clamping pressure for sensitive or soft material
- Open collet for material to be fed from the side (BV-50 and above)
- Transporting material which is wider than the width of the unit
- Chucks that are shaped appropriately are able to feed round material, tubing and profiles

Materials suitable for use with Festo Pneumatic Feed Units

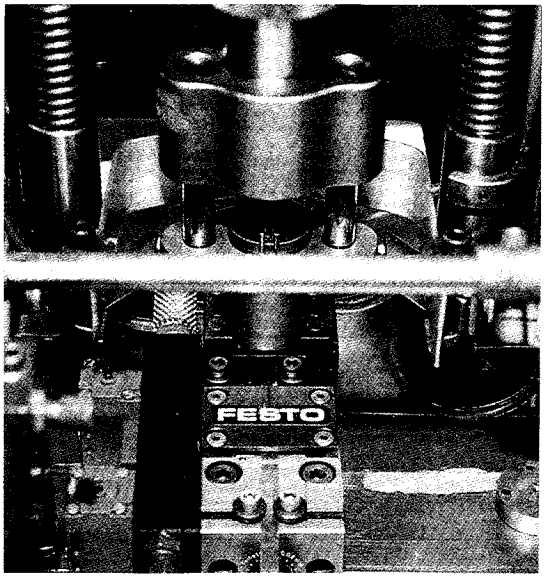




Silk Screen Printing Press: A plastic strip is fed by a feed unit. The strip is imprinted and then cut to length by a pneumatic cylinder.

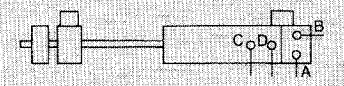


Feed Units on an Eccentric Press: Spacers are punched out of steel strip.



Compact Design suitable for both pushing and pulling applications

Pneumatic Feed Units
with Safety Guard
Type BV-...



FESTO feed units are compact, space-saving devices for feeding strip, flat, rod, profiled bar and tube stocks of metal, plastic, wood, textiles, and other material.

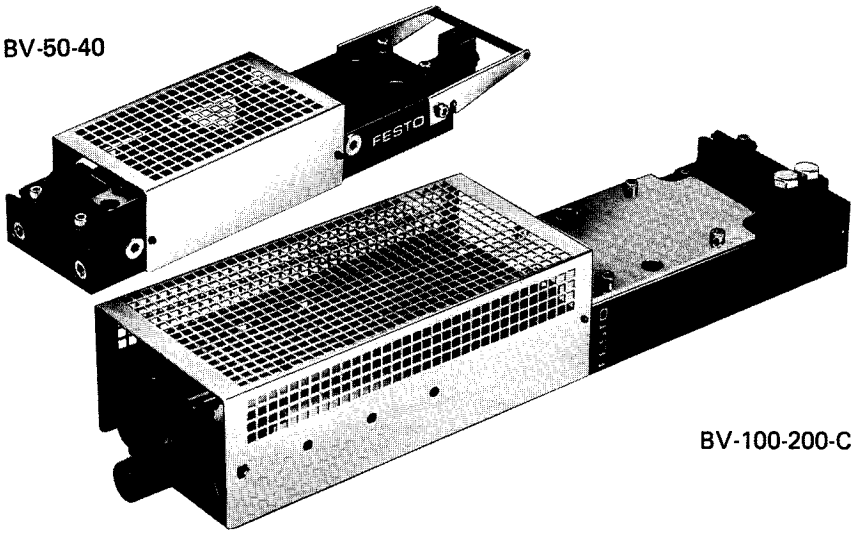
The feed units can be used in either "push" or "pull" mode. Mounted at any angle, they achieve full functional efficiency. Rate of feed, feed length, clamping force and thrust are adjustable.

The rate of feed can be set to synchronize with the operating cycle of the machine with which the feed unit is used. Quick exhausts are provided for the feed grippers. The BV-200-... types have built-in speed controls to adjust the rate of feed.

In Types BV-100-... and BV-200-..., the overall stroke is divided into several ranges for coarse adjustment. An adjustment screw is provided for fine adjustment. Built-in cushions reduce the impact during operation.

All parts coming in contact with material transported are hardened, including polished guide rods and guide bearings.

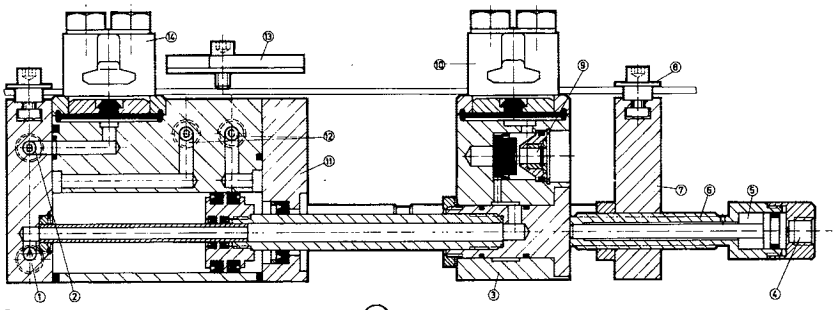
BV-50-40



BV-100-200-C

All clamping and feeding motions are centrally controlled in correct sequence by a special-purpose pneumatic valve (Type VL-8-3/8-B, see page 935) or electro-pneumatic valve (Type MCL-8-3/8-B, see page 936).

Example: Type BV-100-...



1. Feed gripper connection
2. Gripper connection
3. Feed bridge
4. Line connection for cushioning
5. Cushioning
6. Screw for fine adjustment
7. Screw for coarse adjustment
8. Guide roller for strip material
9. Quick exhaust for feed gripper
10. Feed gripper jaw
11. Built-in cushioning
12. Connections for advance and return
13. Hold-down plate
14. Gripper jaw

Order Number	2014 BV-50-40	3646 BV-50-100	2015 BV-100-70-C	2016 BV-100-200-C	3534 BV-200-125-C	2017 BV-200-250-C	4650 BV-200-350-C
Medium	Compressed air (filtered, lubricated)						
Mounting	Holes through housing						
Connection	G 1/8 ISO		G 1/4 ISO		G 3/8 ISO		
Pressure Range*	45 to 90 psi / 3 to 6 bar						
Thrust at 90 psi / 6 bar	54 lbf / 240 N		90 lbf / 400 N		180 lbf / 800 N		
Return Force at 90 psi / 6 bar	40 lbf / 180 N		72 lbf / 320 N		144 lbf / 640 N		
Clamping Force at 90 psi / 6 bar**	146 lbf / 650 N		292 lbf / 1300 N		674 lbf / 3000 N		
Feed Length in / mm	0-1.57 / 0-40	0-3.94 / 0-100	0-2.76 / 0-70	0-7.87 / 0-200	0-4.92 / 0-125	0-9.84 / 0-250	0-13.78 / 0-350
Material Width, max.	1.97 in / 50 mm		3.94 in / 100 mm		7.87 in / 200 mm		
Material Thickness, max.	0.039 in / 1 mm		0.059 in / 1.5 mm		0.079 in / 2 mm		
Materials	Housing and clamping jaws: steel; Seals: Buna N.						
Weight	8.64 lb / 3.92 kg	11.7 lb / 5.3 kg	16.36 lb / 7.42 kg	23.63 lb / 10.72 kg	46 lb / 21 kg	57 lb / 26 kg	92.1 lb / 41.8 kg

* 14 to 140°F / -10 to +60°C

** With high-power clamping jaws SA No. 1336 for BV-100-. . .: 562.5 lbf / 2500 N
SA No. 1335 for BV-200-. . .: 1215 lbf / 5400 N

Pneumatic Feed Units, Type BV-50, -100, -200-...

Performance Characteristics

Maximum Rate of Cycle and Accuracy of Feed.

These values depend largely on the mass being accelerated: The greater the weight and cycle rate of the material being fed, the greater the clamping force and bridge cushioning needed to prevent material misalignment upon completion of feed stroke.

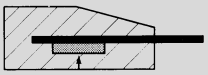
It may be necessary to use a driven reel and aligning apparatus.

If this is done a feed accuracy margin of 0.0007 to 0.001 in / 0.02 to 0.05 mm can be attained.

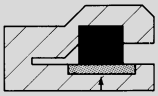
Material of varying thicknesses can be fed without any adjustment required due to the compensating clamping design.

The open clamping jaws will allow feeding of material that is wider than the clamping jaws. This design also makes it possible to insert the material from the side during set up. With the appropriate jaw design, circular material, tubes, and profiled material can be fed.

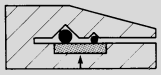
Flat material



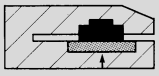
Rectangular material



Round material



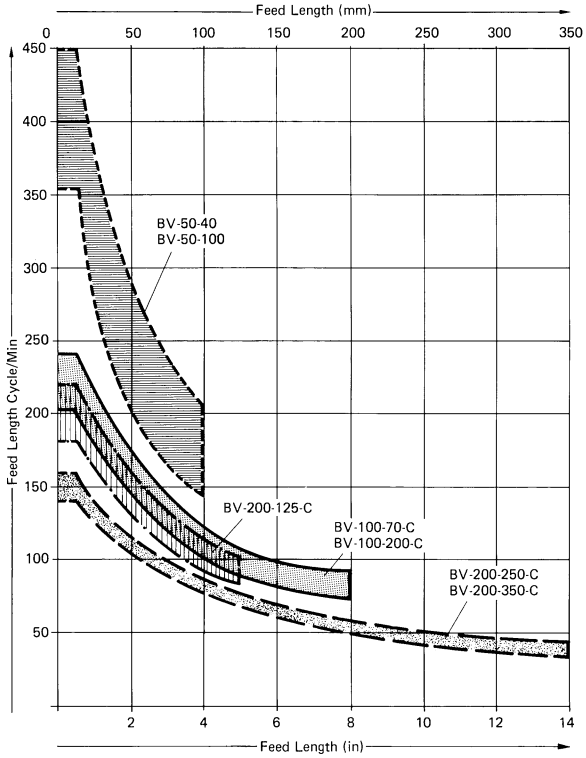
Profiled material



High force clamping jaws (force increased to 560 or 1215 lbf / 2500 or 5400 N) or adjustable height vertical clamping jaws for soft material (max. 0.8 in / 20 mm) can be supplied if desired.

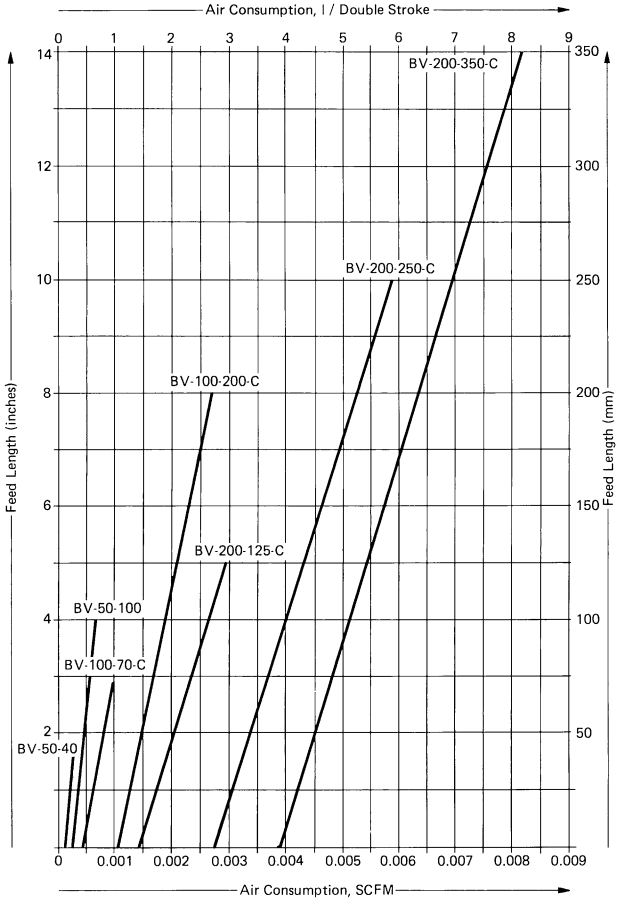
The serrated clamping pistons and jaws may be replaced, depending on application, by smooth or plastic coated models.

Standard values for cycle rates attainable at 90 psi / 6 bar operating and control pressure.
The cycle rate depends on several factors, the most important are feed length and load. In the graph, the cycle rate under low load is represented in the upper scale applicable for each type, while the cycle rate under higher load is represented in the lower scale.
To reach the upper limit, a signal advance control should be used.



Air consumption at 90 psi / 6 bar supply pressure.

Losses incurred by supply lines, control lines and valves are not taken into account.



(Ref. 8.210) (10.85) Subject to change

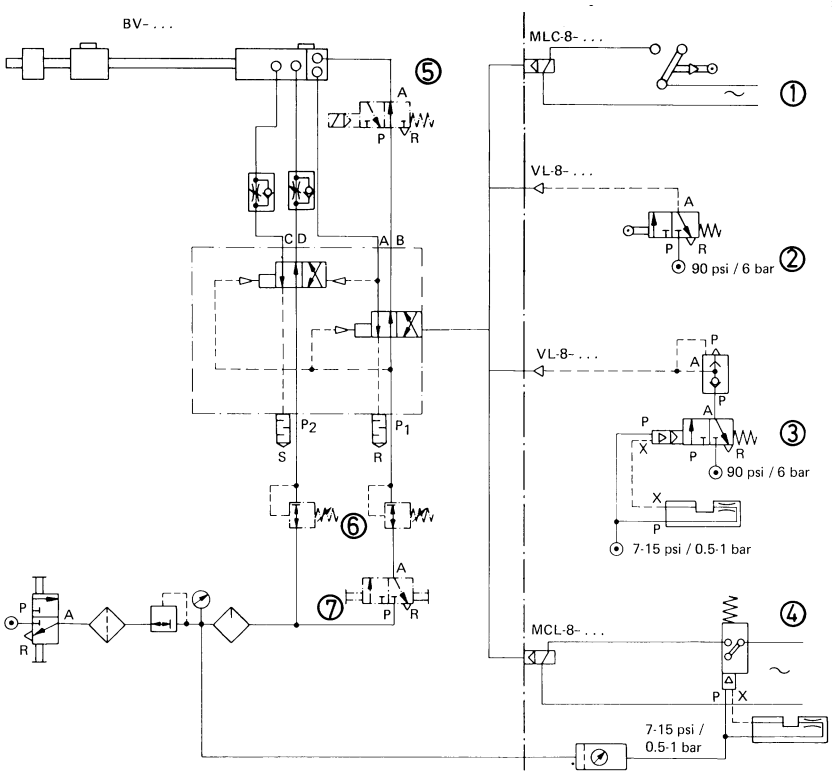
All functions of the pneumatic feed unit such as feed motion and alternate clamping are controlled by 8 way, 2 position directional control valves:

Penumatic Pilot Signal, Type VL-8-3/8-B
(see page **935**)

Electrical signal, Type MLC-8-3/8-B
(see page **936**)

These valves offer several control options, including the following (see diagram):

① Electrical control with electrical limit switch, Type ER-318
② Pneumatic pilot control with roller lever valve, Type R-3-1/4-B
③ Noncontact sensor control with air gap sensor, Type SFL-6; with appropriate amplifier/valve combination and quick exhaust valve, Type SE-...
④ Noncontact sensor control with gap sensor, Type SFL-6; and pneumatic-electrical low pressure transducer, Type PE-1000
⑤ Required only with intermediate exhaust (for use with pilot pins)
⑥ Independent pressure supply for clamps and feed cylinder
⑦ Valve for release of clamps during set up.

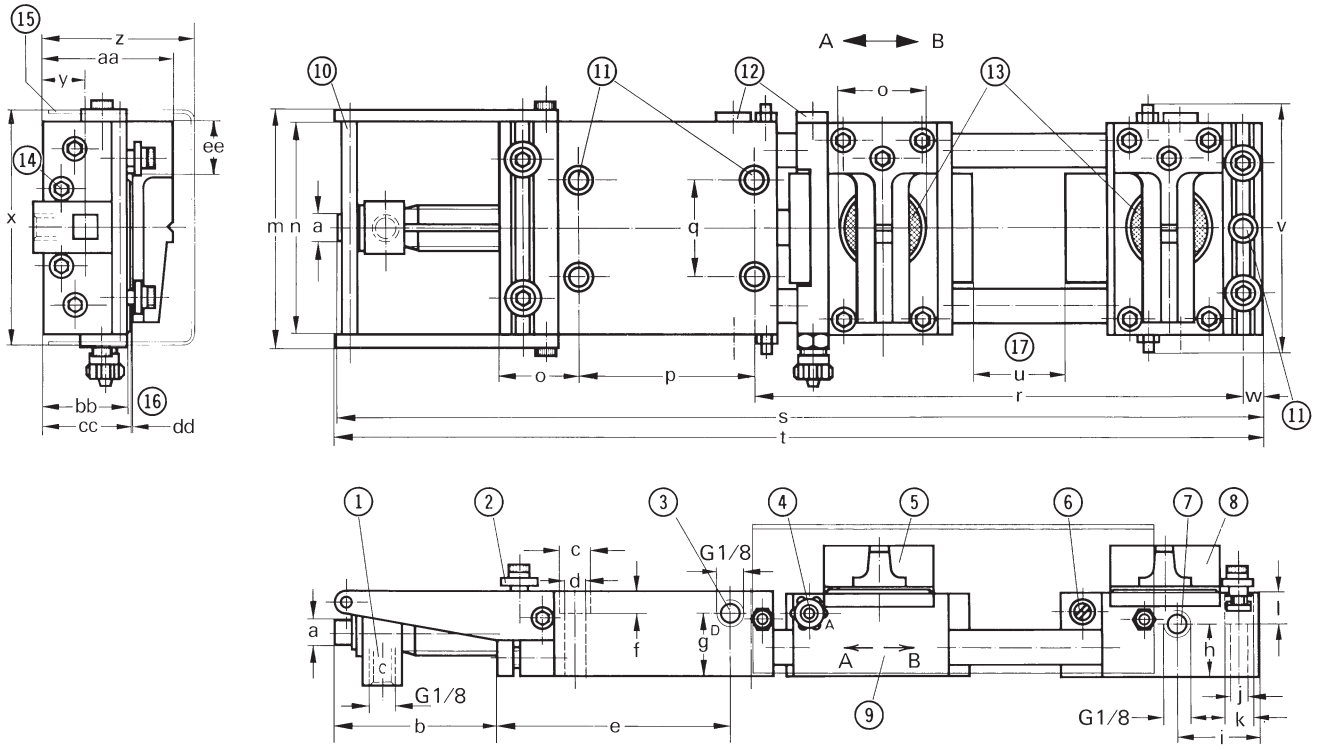


Pilot Signal for the control valve may be linear or rotary as required.
In any control mode, the feed signal should occur when dies are stripped off and the stock lies free in the die.
In high speed presses, a signal advance control device is recommended.

Pneumatic Feed Units, Type BV-50

Dimensions

Type BV-50-40
BV-50-100 (dimensions in parentheses)



(1) Connection for feed cylinder in direction A
(2) Alignment guide roller
(3) Connection for feed cylinder in direction B
(4) Connection for feed gripper (compression fitting for PL-4, PP-4, PU-4 plastic tubing)
(5) Feed gripper (can be turned 180° mirror image)
(6) Adjustable advance cushioning
(7) Connection for gripper
(8) Stationary gripper (can be turned 180° mirror image)
(9) Feed bridge
(10) Swing-up, feed-in roller
(11) Mounting holes
(12) Plugs for opposite side tubing connections
(13) Clamping pistons (interchangeable contact)
(14) Clamp screw for feed length adjustment
(15) Housing
(16) Max. clamping dimension
(17) Feed length

Connections:

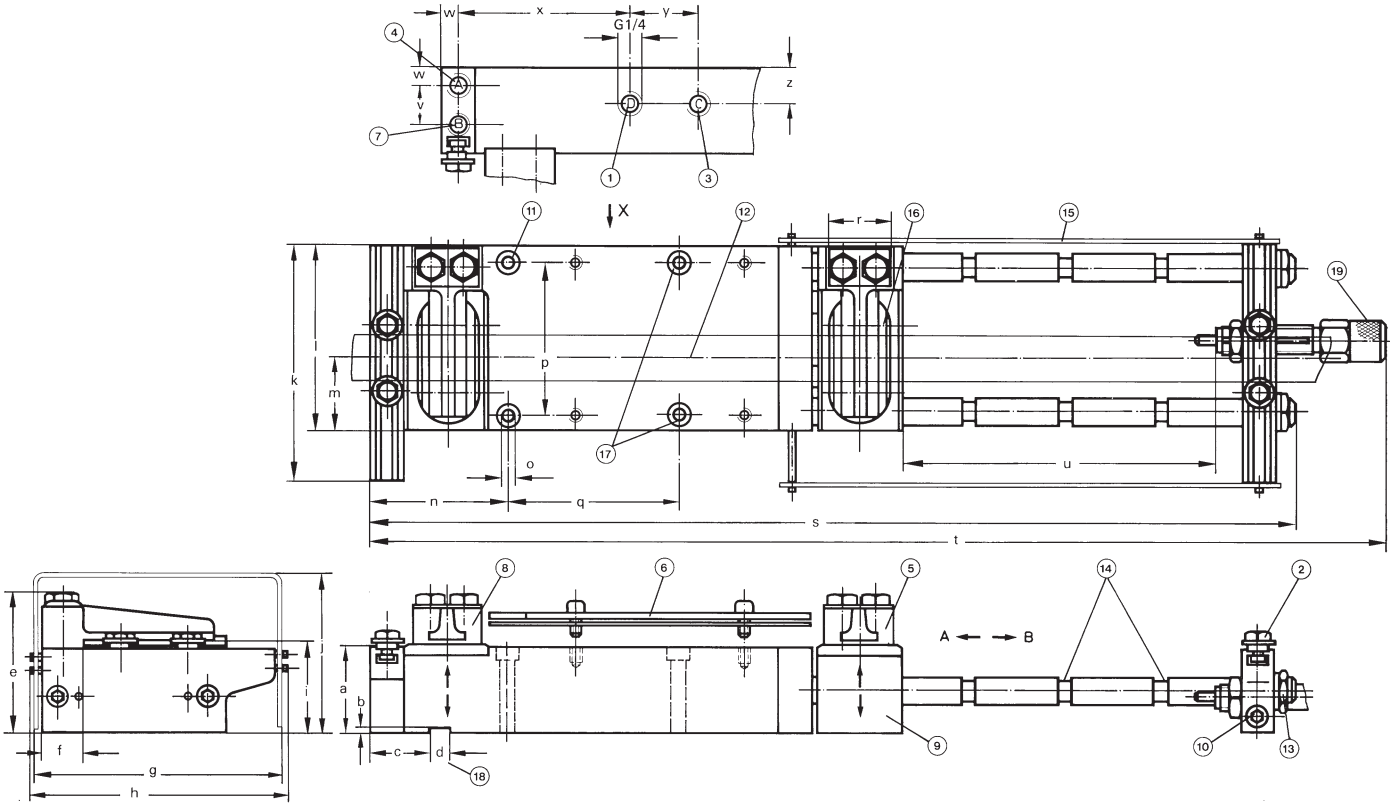
A = Feed gripper
B = Stationary gripper
C = Feed →A
D = Feed →B
Can be connected on either side of unit

Dimensions

a	0.39 in / 10 mm	k	0.43 in / 11 mm	u	1.57 (3.94) in / 40 (100) mm max
b	2.50 (4.86) in / 63.5 (123.5) mm max	l	0.51 in / 13 mm	v	3.98 in / 101 mm
c	0.53 in / 13.5 mm	m	3.54 in / 90 mm	w	0.30 in / 7.5 mm
d	0.33 in / 8.4 mm	n	3.23 in / 82 mm	x	3.58 in / 91 mm
e	3.54 (5.91) in / 90 (150) mm	o	1.18 in / 30 mm	y	0.63 in / 16 mm
f	0.33 in / 8.3 mm	p	2.68 (5.04) in / 68 (128) mm	z	2.28 in / 58 mm
g	0.94 in / 24 mm	q	1.46 in / 37 mm	aa	1.97 in / 50 mm
h	0.83 in / 21 mm	r	7.52 (9.88) in / 191 (251) mm	bb	1.26 in / 32 mm
l	1.24 in / 31.5 mm	s	14.04 (21.12) in / 356.5 (536.5) mm max	cc	1.30 in / 33 mm
j	0.28 in / 7 mm	t	14.09 (21.18) in / 358 (538) mm	dd	0.04 in / 1 mm
				ee	0.79 in / 20 mm

(Ref. 8.210.1) (10.85) Subject to change

Type BV-100-70-C (dimensions in parentheses)
BV-100-200-C



(1) Connection for feed cylinder in direction B
(2) Alignment guide rollers
(3) Connection for feed cylinder in direction A
(4) Connection for feed gripper
(5) Feed gripper
(6) Hold-down plate
(7) Connection for stationary gripper
(8) Stationary Gripper
(9) Clamping Jaw
(10) Feed cylinder stop
(11) Mounting holes
(12) Clamping plate centerline
(13) Fine feed length adjustment screw
(14) Coarse feed length adjustment grooves
(15) Housing
(16) Clamping plate
(17) Mounting holes (additional) for BV-100-200-C
(18) Alignment Keyway
(19) G 1/4 ISO connection for cushioning

Dimensions

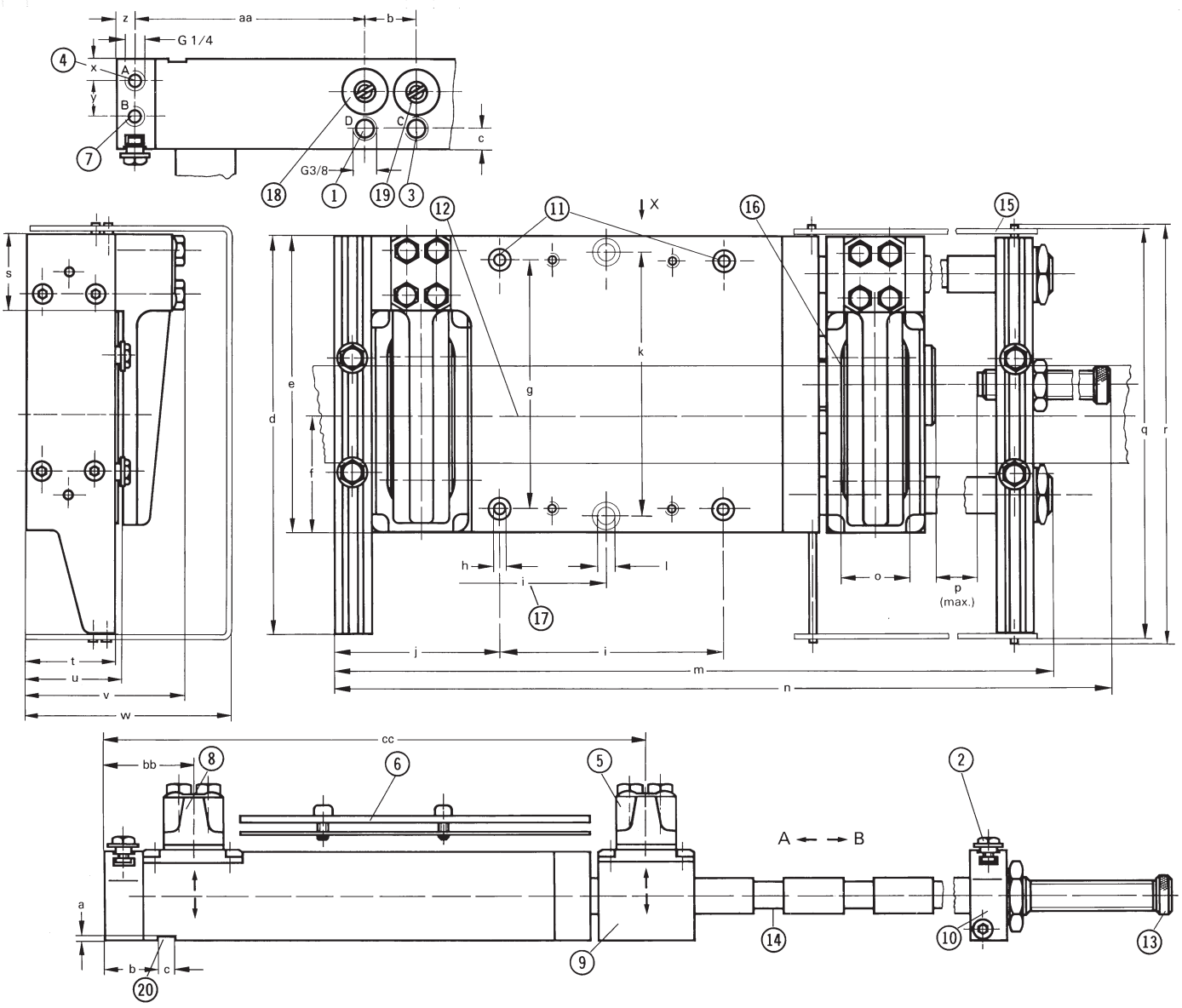
a	1.97 in / 50 mm	n	3.15 in / 80 mm
b	0.08 in / 2 mm	o	0.33 in / 8.4 mm
c	1.38 in / 35 mm	p	3.54 in / 90 mm
d	0.47 in / 12 mm	q	3.94 in / 100 mm
e	3.31 in / 84 mm	r	1.42 in / 36 mm
f	0.98 in / 25 mm	s	21.45 (11.26) in / 545 (286) mm
g	5.71 in / 145 mm	t	24.88 (14.68) in / 632 (373) mm max
h	6.02 in / 153 mm	u	7.87 (2.76) in / 200 (70) mm max
i	2.09 in / 53 mm	v	0.91 in / 23 mm
j	3.74 in / 95 mm	w	0.39 in / 10 mm
k	5.51 in / 140 mm	x	3.94 (2.28) in / 100 (58) mm
l	4.33 in / 110 mm	y	1.57 in / 40 mm
m	1.71 in / 43.5 mm	z	0.85 in / 21.5 mm

Connections:
A = Feed gripper
B = Stationary gripper
C = Feed → A
D = Feed → B

Pneumatic Feed Units, Type BV-200

Dimensions

Type BV-200-125-C (two mounting holes only), BV-200-250-C and BV-200-350-C



1. Connection for feed cylinder in direction B
2. Alignment guide rollers
3. Connection for feed cylinder in direction A
4. Connection for feed gripper
5. Feed gripper
6. Hold-down plate
7. Connection for stationary gripper
8. Stationary gripper
9. Clamping jaw
10. Feed cylinder stop
11. Mounting holes
12. Clamping plate centerline
13. Fine feed length adjustment screw
14. Coarse feed length adjustment grooves
15. Housing
16. Clamping plate
17. Mounting holes in BV-200-125-C
18. Speed control, direction A
19. Speed control, direction B
20. Alignment keyway

Dimensions

a	0.08 in / 2 mm
b	1.38 in / 35 mm
c	0.47 in / 12 mm
d	10.63 in / 270 mm
e	7.87 in / 200 mm
f	2.95 in / 75 mm
g	6.61 in / 168 mm
h	0.33 in / 8.4 mm
i	5.91 in / 150 mm
j	4.33 in / 110 mm
k	7.09 in / 180 mm
l	2 x 0.41 in / 2 x 10.5 mm
m	17.20/27.05/34.92 in / 437/687/887 mm
n	21.06/30.91/38.78 in / 535/785/985 mm
o	1.77 in / 45 mm
p	4.92/9.84/13.78 in / 125/250/350 mm
q	10.90 in / 277 mm
r	11.30 in / 287 mm
s	1.93 in / 49 mm
t	2.36 in / 60 mm
u	2.52 in / 64 mm
v	4.13 in / 105 mm
w	5.43 in / 138 mm
x	0.55 in / 14 mm
y	0.91 in / 23 mm
z	0.49 in / 12.5 mm
aa	6.10 in / 155 mm

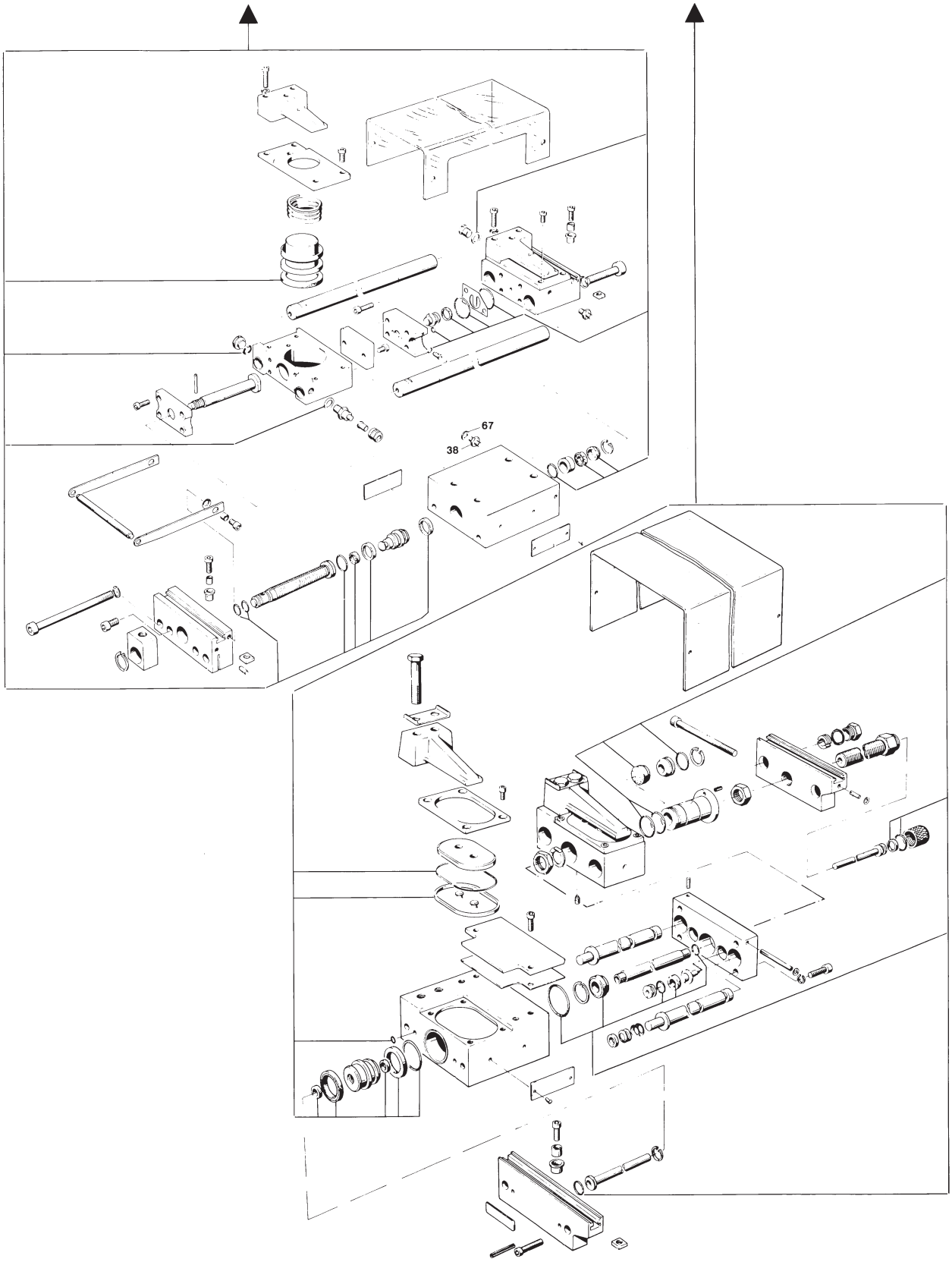
Connections:
A = Feed gripper
B = Stationary gripper
C = Feed → A
D = Feed → B

Scale drawing for mounting bracket by request

(Ref. 8.210.2) (10.85) Subject to change

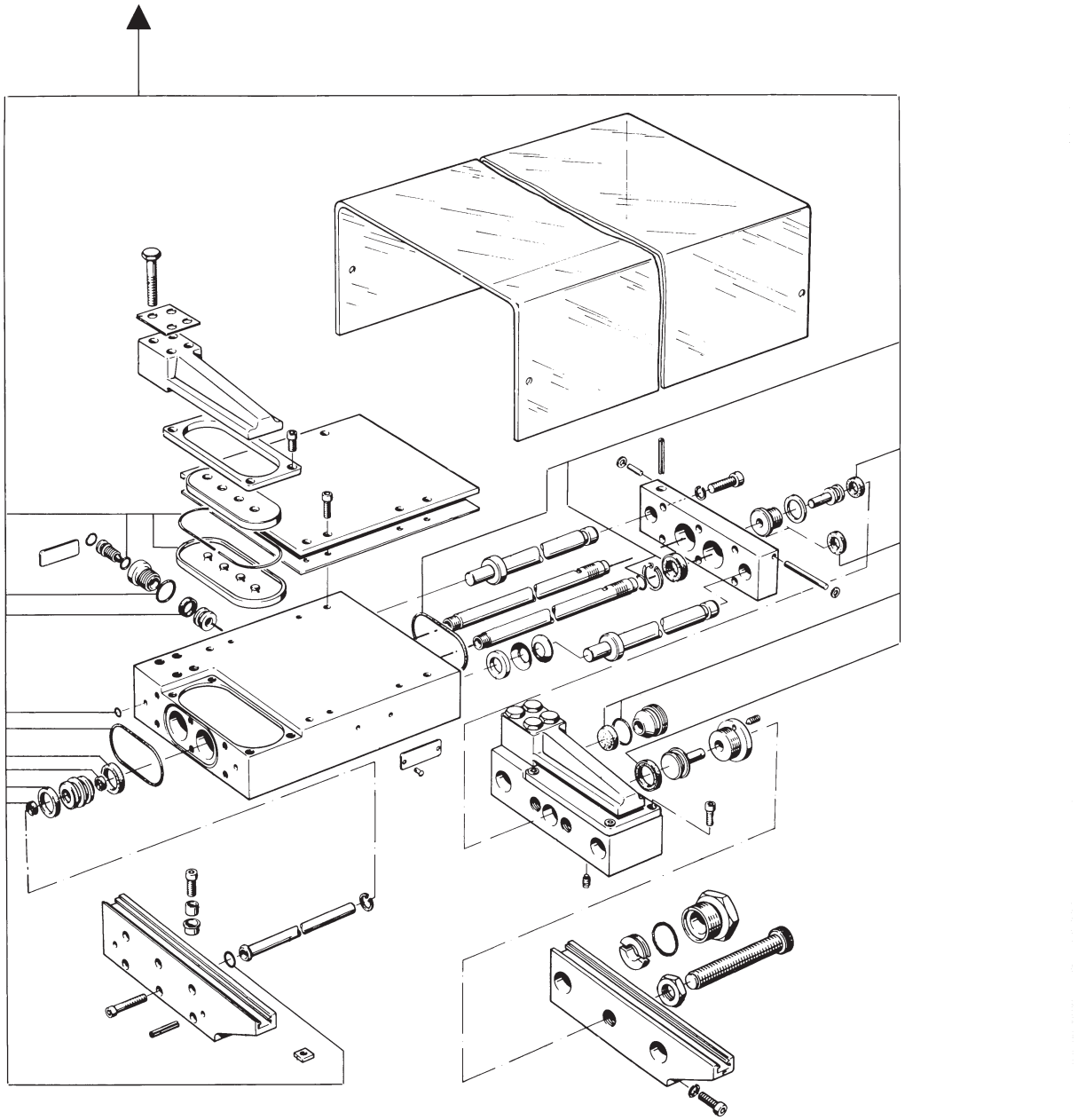
Wear Parts Kit

Order Number	BV-50- . . .	BV-100- . . .
For Type	104116	104117



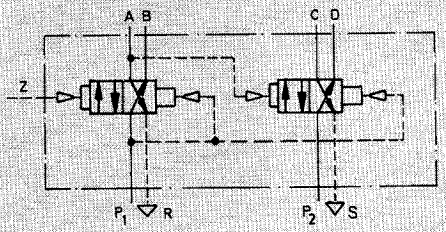
Wear Parts Kit

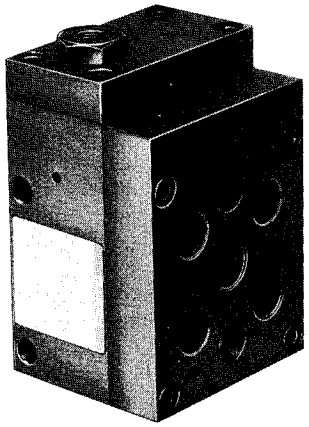
Order Number	BV-200- . . .
For Type	104118



Single Pilot Valve,
Spring Return for Pneumatic Feed Unit

Type VL-8-3/8-B

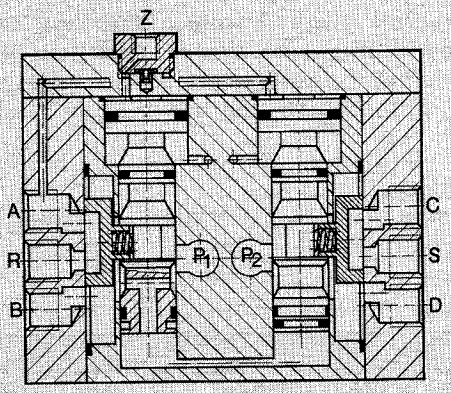




This valve is used to control feed motion and alternate clamping on FESTO strip feed units.

Different feed and clamping pressures are possible by varying pressures to P_1 and P_2.

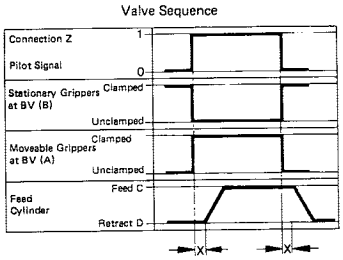
To achieve a high switching frequency, the length of the control line to connection Z should not exceed 6 feet / 2 meters.



P_1 = Supply to Clamping Cylinder
P_2 = Supply to Feed Cylinder
D, C = Ports for Feed Cylinder
B, A = Ports for Clamping Cylinder
R, S = Exhaust
Z = Pilot Line

The 2 x 4 way, 2 position directional control valve remains shifted while pilot pressure is applied at Z. The flow in the first four-way, two-position valve changes from $P_1 \rightarrow B$ to $P_1 \rightarrow A$. When the pressure in line A builds up to at least 50% of the pressure at P_1, the second four-way, two-position valve will be shifted. The flow changes from $P_2 \rightarrow D$ to $P_2 \rightarrow C$. Similarly, the four-way, two-position directional control valves are returned by a differential piston area after pilot pressure at Z is removed. In this way the delay between shifting of the two 4 way, 2 position valves allows the clamping jaws to be reversed first, followed by extension or retraction of feed cylinders in the strip feeding unit.

Valve Movement



X = Feed Cylinder Delayed Action

Order Number		4802 VL-8-3/8-B
Medium		Compressed air (filtered, lubricated)
Mounting		Through-holes in housing
Connection	Working Ports	G 3/8 ISO
	Pilot Port	G 1/8 ISO
Orifice Size		0.35 in / 9 mm
C_V Factor ($P \rightarrow A$)		1.80 C_V / 1800 l/min
Pressure Range*		30-150 psi / 2-10 bar
Min Pilot Pressure Range at 90 psi / 6 bar		45 psi / 3 bar
Response Time at 90 psi / 6 bar		75 ms
Design		Slide valve
Materials		Housing: Al, hard coat anodized. Seals: Buna N.
Weight		2.910 lb / 1.320 kg

* -4 to +176°F / -20 to +80°C