UNIVER Manufacturing Company LTD.
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info@univer.co.uk
www.univer.co.uk

Locking Units

Univer locking units are Safety compliant devices with a unique patented locking spring which can absorb and dissipate kinetic energy. The locking units can be used in both safety applications and for positional control when following the guidelines of the product (see below).

Operational Guidelines for SAFETY applications

Before using this device the Installer must carry out a full risk assessment of the application and use the Locking Unit in accordance with the following recommendations. First select a Locking Unit by determining the maximum speed and load required using the tables/graphs below:-

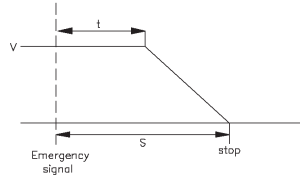
Size or bore of the equivalent cylinder	16 (shaft 6)	20 (shaft 8)	25 (shaft 10)	32 (shaft 12)	40 (shaft 16)	50 (shaft 20)	63 (shaft 20)	80 (shaft 25)	100 (shaft 25)	125 (shaft32)
Static Locking Force [N]	200	314	490	800	1260	2000	3100	5000	7850	12300
Pressure applied to the equivalent cylinder[bar]	10	10	10	10	10	10	10	10	10	10
Dynamic braking force at 1 m/s	40% of the static locking force									
Response time at 6 bar [ms]	12	12	15	20	20	25	25	30	30	40
Repeatability of locking point	< 1mm at 1 m/s									
Resistance to vibration	10 g (10-55 Hz) 30 min. on each axis									
Shock resistance [J]	2	3	4	5	8	11	15	21	29	40
Please note that the Shock Resistance can be calculated using the following formula: $E=1/2mv^2$										
Minimum release pressure [bar]	4									

Stopping Distances

In some applications, it may be necessary to know the piston rod movement between the reception of an emergency signal and its stop. The stopping distance (S) can be calculated using the following formula:

$$S = (V \cdot t) + mV^2/2f$$

S = stopping distance in m
V = speed in emergency in m/s
t = locking system response time in seconds
m = mass in Kg
f = braking force under dynamic conditions in N



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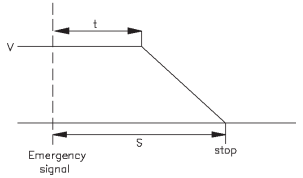
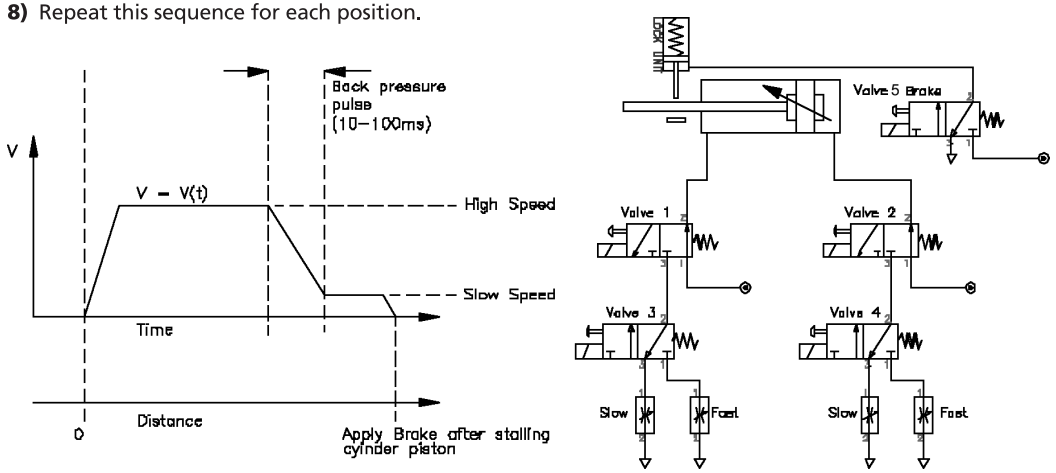


Operational Guidelines for POSITIONAL CONTROL applications

Air cylinder speed must be controlled prior to applying the Locking Unit brake by changing from normal operating speed to ramp down speed using the following guidelines:-

1) To initiate ramp-down speed de-energise valve [3] (when moving forward) or valve [4] (when moving backwards).
2) At the same time as initiating step (1) apply a back pressure of 10 - 100ms (depending on load and speed) to momentarily stall the piston by de-energising valve [1] (when moving forward) or valve [2] (when moving backwards).
3) Final approach speed is controlled by pre-setting the 'SLOW' flow control valves.
4) Before applying the Locking Unit brake stall the piston pneumatically by de-energising valve [1] (when moving forward) or valve [2] (when moving backwards). The final approach speed must be less than 6cm/sec.
5) The Locking Unit brake can now be applied by operating valve [5].
6) Always disengage lock prior to moving to a new position.
7) Control normal operating speed by pre-setting the 'FAST' flow control valves.
8) Repeat this sequence for each position.



Warning!
To ensure accurate positional control it is imperative to avoid excessive shock loads by controlling ramp down speeds and pressurising both sides of the piston in the operating cylinder (refer to control circuit above). Do not use 5/2 valves to control the air cylinder when using a Locking Unit as this will cause excessive stress on the lock mechanism.

IMPORTANT NOTES

- Univer Locking Units must not be operated beyond the maximum "shock resistance" point.
- Locking Units must not be used to lock rotating shafts.
- Any attempt to rotate the piston rod whilst the lock is applied could result in damage to the rod and may cause premature failure.
- Keep the piston rod clean at all times and where possible free from oil and grease.
- Locking Units cannot be cleaned using pressure water jets unless modified by the factory for this purpose.
- Check for signs of wear on the piston rod. Some pitting may occur over a period of time but this is not detrimental to the operation of the Locking Unit.
- Periodically measure the piston rod movement when the Locking Unit is in the locked position (maximum allowable movement: 0.2mm). Units with excessive movement must be returned to the factory for servicing.
- Product warranty is invalidated if the Locking Unit is tampered with in any way by unauthorised personnel.
- Return Locking Unit to manufacturer for repairs when rod movement exceeds 0.2mm or when the piston rod is severely damaged.
- It is important to factor in any delays relevant to the distance between the Control Valve and the Locking Unit and also the response time of the Control Valve.

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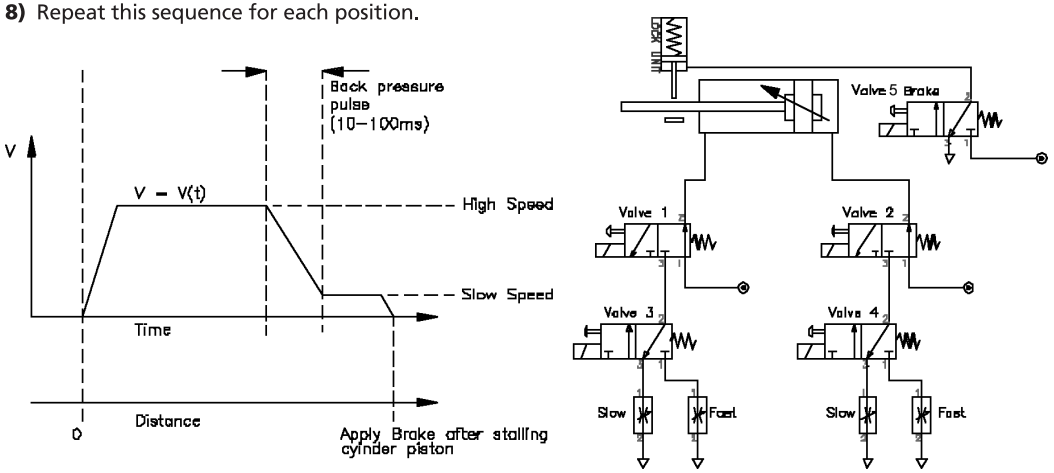

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UNIVER reserves the right to modify the technical characteristics without prior notice