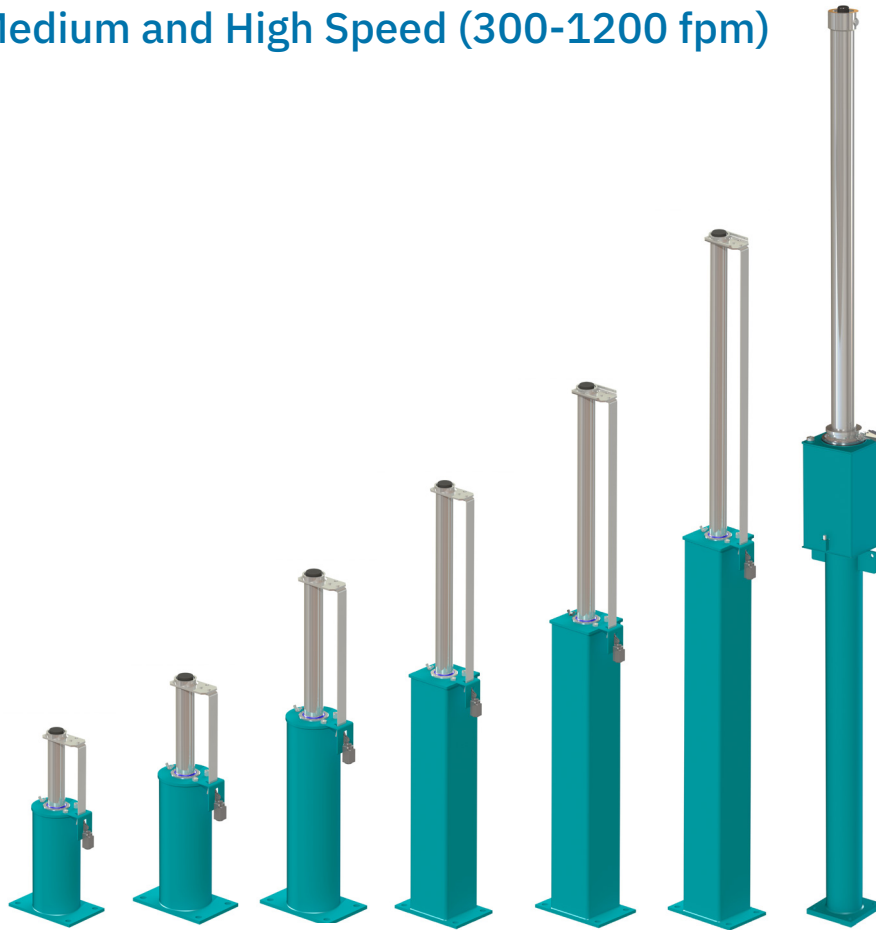


LB SERIES

Medium and High Speed (300-1200 fpm)



The Oleo Oil Buffer LB series incorporates gas spring technology to provide a premium and robust passenger safety solution for medium to high speed, high mass elevators.

Oleo buffers are designed and built according to strict engineering standards, universally approved and globally certified.

LB buffers have been installed into thousands of landmark buildings since they were introduced more than 30 years ago.

- LB 16
 - LB 18
 - LB 20
 - LB 25
 - LB 32
 - LB 35
 - LB 40
 - *LB 50
 - *LB 55
 - *LB 60
- * Special Order*

Specifications

Product	LB 16	LB 18	LB 20	LB 25	LB 32	LB 35	LB 40
Rated Speed	300	350	400	500	600	700	800
Stroke	7.99"	9.8"	11.81"	18.19"	27.52"	34.69"	44.92"
Overall Height	24.3"	28.5"	33"	47.7"	67.2"	83"	106"
Compressed Height	15.6 "	17.9"	20.5"	28.8"	38.9"	47.6"	60.4"
Min Load (lbs)	1102	1102	1102	1102	1543	2204	2204
Max Load (lbs)	18364	18364	18364	18364	18364	18364	18364
Ship Wt (lbs)	53	59	64	86	122	147	181
Delco SKU	C-11-3300	C-11-3350	C-11-3400	C-11-3500	C-11-3600	C-11-3700	C-11-3800

LB HANDLING

When handling LB buffers ensure your regional health and safety laws are adhered to.

Use the Eye Bolt when lifting Oleo LB buffers, shown in Figure 1.

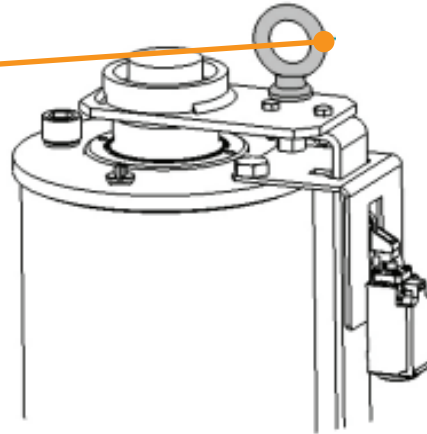


Figure 1

Always confirm the weight of the buffer to be lifted and ensure that a suitable lifting method is used.

WARNING
DO NOT lift buffer with the striker or switch bracket shown in Figure 2. Avoid contact as this may cause damage.

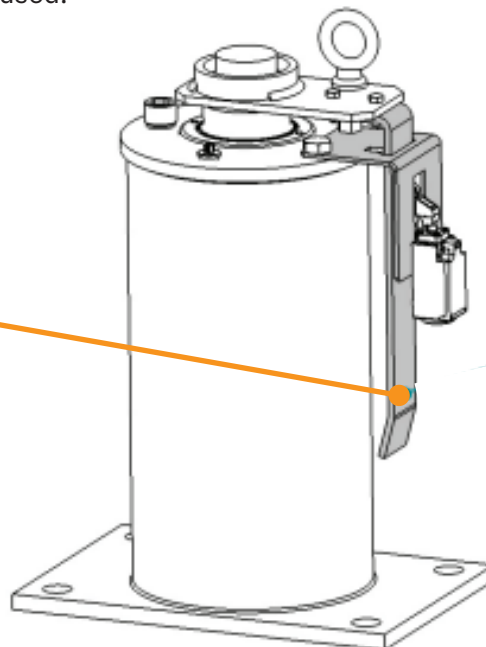


Figure 2

Scope of Delivery

- Oleo buffers are supplied with a standard finish suitable for a dry conditions (finished Oleo Green Primer). The standard finish is not suitable for wet, corrosive conditions.

Oleo LB buffers are supplied without oil.

Should there be any discrepancies contact Oleo International before proceeding.

Indication of Use

- Environmental temperature acceptable conditions in line with EN81-20 (0.4.16) Ambient Temperatures.

WARNING

The Oleo LB elevator buffer is supplied containing compressed gas, the plunger is held in the fully compressed condition during transportation by means a bolt, this should not be removed until the buffer is in its final installed position.

Installation Procedure

- Ensure the buffer has been secured into this installation position.
- Oleo recommends a bold size M16 for fixing and all four fixing positions are used.
- Ensure this area at the base of the buffer, shown in figure 3 is supported.
- At this point the buffer is still compressed in its transportation state, now the buffer can be released by removing the eye bolt. The following is the recommended removal procedure.
- For a controlled release, lower the elevator car (or equivalent) onto the buffer leaving the eye bolt exposed. This mass must be at least equivalent to the minimum mass of the specified buffer.
- Minimum mass of the buffer show on the table below:

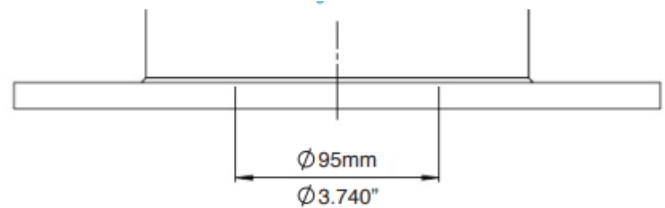


Figure 3

Buffer Model	LB 16	LB 18	LB 20	LB 23	LB 25	LB 32	LB 35	LB 40
Min. Mass								
kg	500	500	500	500	500	700	1000	1000
lbs	1102	1102	1102	1102	1102	1543	2205	2205

Installation Procedure (Continued)

- To release the plunger, undo the eye bolt. See Figure 4.
- Discard transportation eye bolt and spacer shown in Figure 4.
- If used, remove the elevator car (or equivalent) and this will control the recoil of the buffer.
- After periods of being held in the compressed state during transportation and storage, the plunger may require assistance to initially extend. This should be done using a rubber dead blow mallet to tap the underside of the buffer head (GREEN in Figure 4) at 90 degree intervals until the plunger extends.
- Once fully extended and stroked the buffer will perform as designed.
- Buffers are to be fitted vertically parallel to guide rail $\pm 5\text{mm}$.

DANGER

Now to release the plunger.
DO NOT stand over the plunger for releasing.

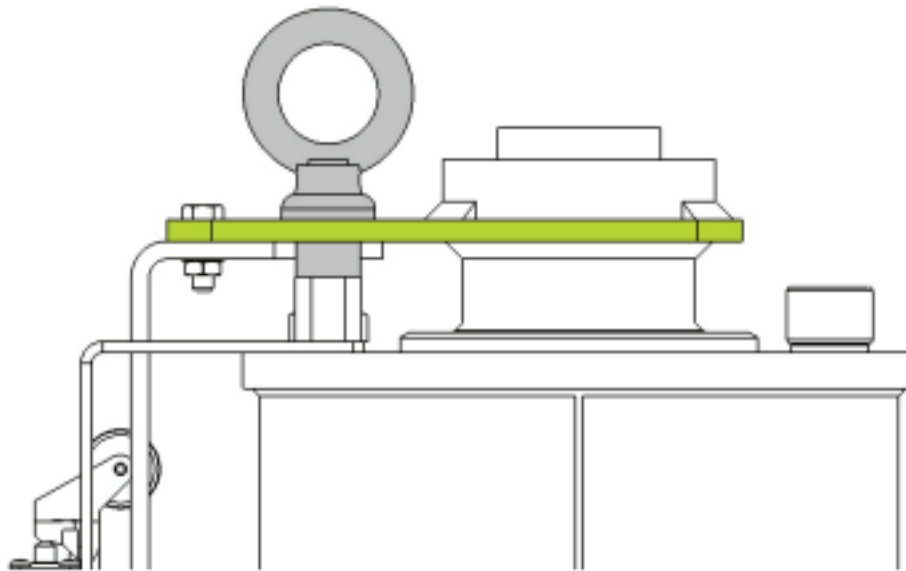


Figure 4

Oil Specification

The oil must conform to the specification on the buffer data plate - ISOVG68 : SG.88/90 at 15 °C : hydraulic.

Pour Point : 18 °C or lower. Viscosity index 75 or higher.

CAUTION

Take care when handling the oils.
Observe the oil manufactures recommendations.

The oil volume guide can be found in the table below:

Buffer Model	LB 16	LB 18	LB 20	LB 23	LB 25	LB 32	LB 35	LB 40
Approximate Oil Volume								
Litres	4.62	5.58	6.64	8.45	10.0	20.0	24.5	31.5
US Gallons	1.22	1.47	1.75	2.23	2.64	5.28	6.47	8.32

Minimum & Maximum

The oil level needs to be between the Minimum and Maximum marks indicated on the dipstick as shown in Figure 5 for LB16 - LB25 or Figure 6 for LB32 - LB40.

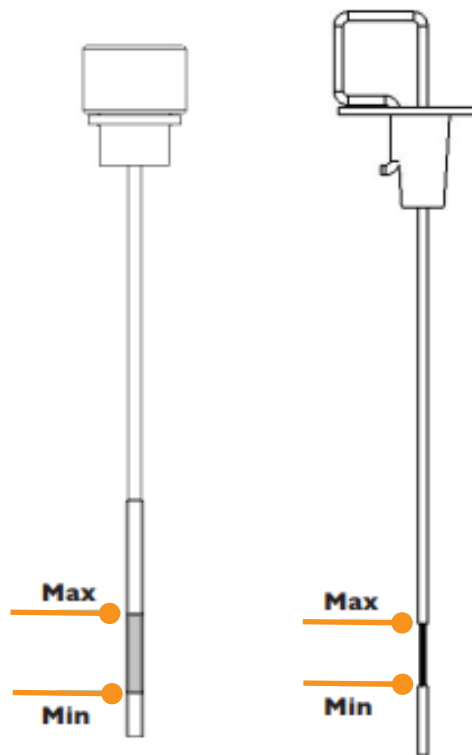


Figure 5
LB16 - LB25 Dipstick

Figure 6
LB32 - LB40 Dipstick

Oil Filling Procedure: LB16 - LB25

NOTICE

The buffer must be vertical and fully extended before filling with oil.

CAUTION

Take care when handling the oils.
Observe the oil manufactures recommendations.

1. Unscrew the airscrew, remove from the buffer and keep safe (GREEN in Figure 7).
2. Unscrew the dipstick, remove from the buffer and keep safe. (GREY in Figure 7)
3. Gradually fill the buffer with oil until the oil level is visible between the minimum and maximum levels on the dipstick (indicated on Figure 5)
4. Allow the buffer to stand for a minimum of 30 minutes.
5. Re-insert the dipstick DO NOT screw down.
6. Remove dipstick and inspect level. The oil level needs to be between the minimum and maximum marks indicated on the dipstick as shown in Figure 5.
7. Once oil level is correct, replace dipstick and securely fasten.

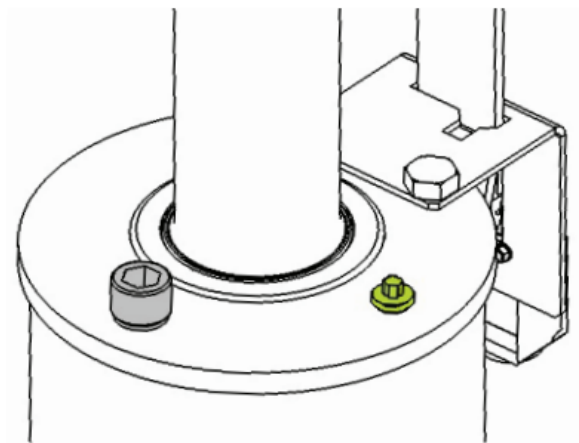


Figure 7

The oil must be within the correct operating range for the buffer to perform correctly.

If further oil is required after checking, repeat steps 1-8.

WARNING

DO NOT overfill past the maximum dipstick mark.

If this occurs, then oil must be removed from the buffer.

Oil Filling Procedure: LB32 - LB40

NOTICE

The buffer must be vertical and fully extended before filling with oil.

CAUTION

Take care when handling the oils. Observe the oil manufactures recommendations.

1. Unscrew the air plug. remove from the buffer and keep safe (GREEN in Figure 8).
2. Remove the dipstick, from the buffer and keep safe. (GREY in Figure 7)
3. Remove the rubber plug, shown in Figure 9 from the dipstick and discard.
4. Gradually fill the buffer with oil until the oil level is visible between the minimum and maximum levels on the dipstick (indicated on Figure 6)
5. Allow the buffer to stand for a minimum of 30 minutes.
6. Re-insert the dipstick and clip down (indicated in Figure 10)
7. Remove dipstick and inspect level. The oil level needs to be between the minimum and maximum marks indicated on the dipstick as shown in Figure 6.
8. Once oil level is correct, replace air plug and securely fasten.
9. Once oil level is correct, replace dipstick and securely fasten. (indicated in Figure 10)

The oil must be within the correct operating range for the buffer to perform correctly. If further oil is required after checking, repeat steps 1-9.

WARNING

DO NOT overfill past the maximum dipstick mark. If this occurs, then oil must be removed from the buffer.

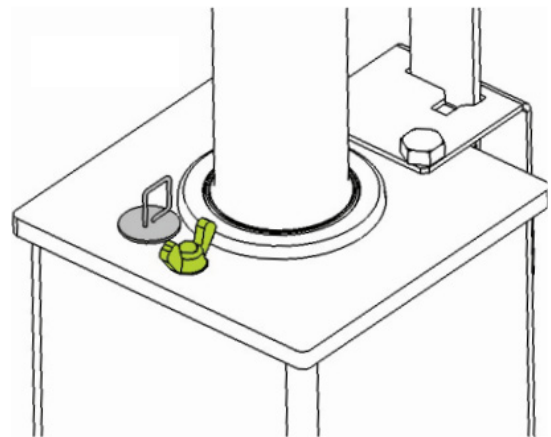


Figure 8

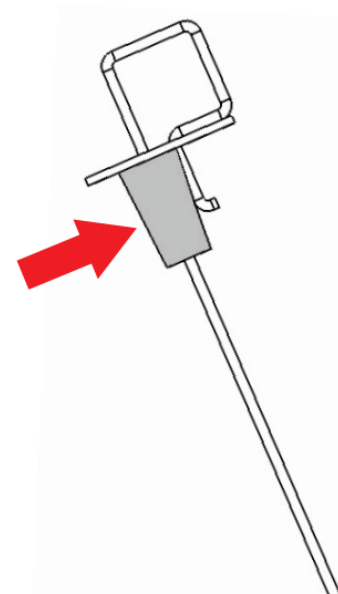


Figure 9

Oil Checking Procedure: LB16 - LB25

The oil level must be correct and needs to be checked using the following procedures:

1. Unscrew the dipstick and remove from the buffer. (GREY in Figure 7).
2. Wipe dipstick clean.
3. Re-insert the dipstick DO NOT screw down.
4. Remove dipstick and inspect level. The oil level needs to be between the maximum and minimum marks indicated on the dipstick as shown in Figure 5.
5. Once oil level is correct, replace dipstick and securely fasten.

The oil must be within the correct operating range for the buffer to perform correctly.

If further oil is required after checking, refer to Oil Filling Procedure on Page 18.



Figure 5
LB16 - LB25 Dipstick

WARNING

DO NOT overfill past the maximum dipstick mark.

If this occurs, then oil must be removed from the buffer.

Oil Checking Procedure: LB32 - LB40

The oil level must be correct and needs to be checked using the following procedures:

1. Unscrew the dipstick and remove from the buffer.
2. Wipe dipstick clean. (GREY in Figure 8)
3. Re-insert the dipstick and clip down.
4. Remove dipstick and inspect level. The oil level needs to be between the maximum and minimum marks indicated on the dipstick as shown in Figure 6.
5. Once oil level is correct, replace dipstick and clip down. (indicated in Figure 10)

The oil must be within the correct operating range for the buffer to perform correctly.

If further oil is required after checking, refer to Oil Filling Procedure on Page 19.

WARNING

DO NOT overfill past the maximum dipstick mark.

If this occurs, then oil must be removed from the buffer.



Figure 6
LB32 - LB40 Dipstick

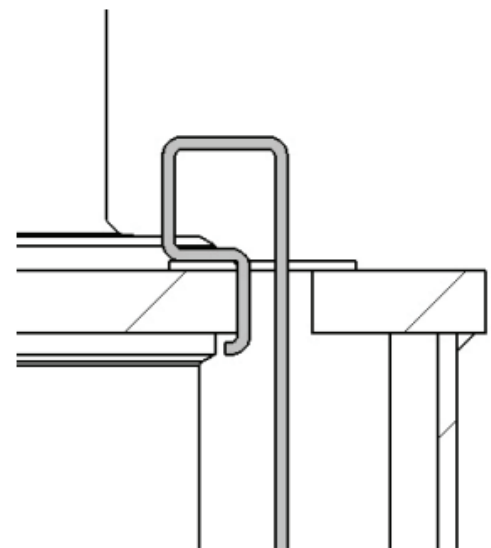


Figure 10

Final Commissioning

Oleo recommends the final 7 step process is followed prior to commissioning:

1. Ensure oil level is correct.
2. Ensure striker is vertically aligned to $\pm 0.5\text{mm}$.
3. Complete electrical connections to the limit switch.
4. Compress the buffer at slow speed across the full working stroke then allow to recoil.
5. Allow the oil to settle for 30 minutes then recheck oil level - see oil checking procedures.
6. Finally, impact the buffer at the full rated speed of the elevator.
7. Complete final checks of oil level and the buffer is at correct working height.

WARNING

As a safety critical component, buffers should not be installed without a switch.

NOTICE

CHECK: The maximum overall height against table below $+0/-9\text{mm}$ of the figure stated.

NOTICE

If the buffer has not returned to the fully extended position (determined by measuring overall height) contact Oleo International.

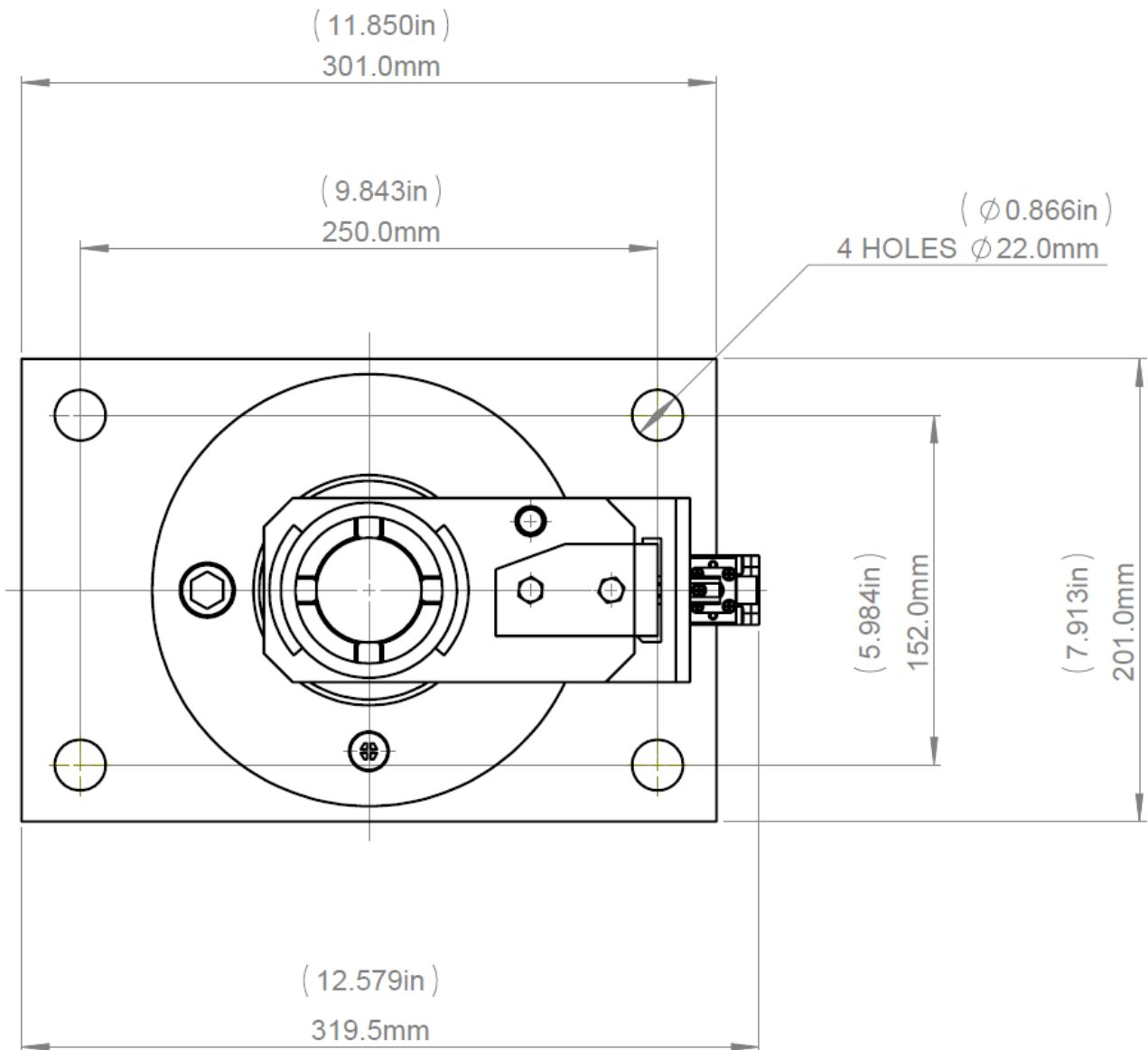
Buffer Model	LB 16	LB 18	LB 20	LB 23	LB 25	LB 32	LB 35	LB 40
Extended Height								
m	0.6166	0.7229	0.8389	1.0379	1.2109	1.7059	2.1079	2.6929
in	24.276	28.461	33.028	40.862	47.673	67.161	82.988	106.020

Final Commissioning

Oleo recommends the following be carried out every 12 months from installation:

1. Clean away debris and dirt from around the plunger and switch.
2. Check the oil level is correct.
3. Compress the buffer across its full working stroke.
4. After the compression, ensure the buffer has returned to its correct working height and visually check for any damage. See correct working height in table on page 22.

Ensure regional jurisdictions and laws for maintenance are adhered to.



LB BASE DIMENSIONS

PRODUCT LINE



In Stock, Non-Proprietary, Proven & Competitive

Product Line:

- D-MRL Package
- Governors
- Roller Guide Assemblies
- Oleo Oil Buffers
- Shackles
- Safety Barricades
- Cartop and Run Stations
- Limit Switches
- Door Detectors
- Door Closers
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- **Value for Money:** In a highly competitive marketplace, Delco provides the best quality elevator equipment at the lowest possible prices.
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