

LPF SERIES**ELECTRONIC
EXPANSION VALVE**

LPF series Electronic Expansion Valves are especially designed for use in refrigeration systems. Thanks to the soft-sealing seat design, it can be as tight as a solenoid valve once it is completely shut off thus to prevent liquid refrigerant migrate to evaporator or compressor.

**FEATURES**

- EXTREMELY HIGH INTERNAL TIGHTNESS, WHICH IS AS GOOD AS WITH SOLENOID VALVES (<1ML/MIN)
- EQUAL PERCENTAGE FLOW DESIGN FOR BETTER FLOW REGULATION
- SNAP-ON COIL FOR EASIER INSTALLATION
- COIL WITH IP67 WORKS SAFELY IN EXTREMELY ENVIRONMENT
- APPLICABLE FOR OIL-FREE SYSTEM (NOT INCLUDE LPF45-62)
- BUILT-IN STRAINER AT INLET
- FLOW DIRECTION: UNI-FLOW
- LPF...T : 90 BAR DESIGN FOR R744 REFRIGERANT

GENERAL SPECIFICATION

- Applicable for all common HCFC, HFC and HFO refrigerants (such as: R134a, R404A, R407A/F, R407C, R410A, R448A, R449A, R450A, R452A, R513A, R507A and also for flammable refrigerants like R290, R1234ze, R454C, R455A, R1234yf and R744 (CO₂))
- 500 steps (full stroke); 32±20 (LPF 03~32); 42±30 (LPF45~62) opening steps
- Temperature:

| LPF Model | Medium temperature Min/Max | Ambient temperature Min/Max |
|--------------|----------------------------|-----------------------------|
| LPF03 ~ 32 | -40°C / +70°C (1) | -40°C / +60°C (1) |
| LPF45 ~ 62 | -40°C / +70°C (2) | -30°C / +60°C (2) |
| LPF03T ~ 32T | -40°C / +70°C (1) | -40°C / +60°C (1) |

⁽¹⁾duty cycle rate below 40% / ⁽²⁾duty cycle rate below 50%

- Relative humidity: 0 to 95% RH
- Pressures:

| LPF Model | MPW | MOPD |
|--------------|--------|--------|
| LPF03 ~ 32 | 42 bar | 35 bar |
| LPF45 ~ 62 | 49 bar | 35 bar |
| LPF03T ~ 24T | 90 bar | 50 bar |
| LPF30T ~ 32T | 90 bar | 35 bar |

- Declaration according to LVD and PED (on going for LPF-T range)
- Suitable with the EN 60335-2-24 / 2-40 / 2-89 (on going for LPF-T range)

ELECTRONIC EXPANSION VALVE



ELECTRICAL PARAMETERS

- Rated voltage: 12V DC(± 10%), rectangular wave
- Excitation mode: 1 - 2 phase excitation, uni-polar actuation

| LPF Model | Excitation rate | Full stroke time |
|--------------|-----------------|------------------|
| LPF03 ~ 32 | 30 - 90pps | 6s@ 90pps |
| LPF45 ~ 62 | 30 - 40pps | 13s@40pps |
| LPF03T ~ 32T | 30 - 90pps | 6s@ 90pps |

- Coil current: 260mA/phase (20°C)
- Coil resistance: 46 ± 3.7 Ω/phase (20°C)
- Insulation class of coil: E
- Protection class: IP 67
- Compatible with Sanhua controller SEC series

GENERAL CHARACTERISTICS

Condition 1: $T_c/T_e/S_c/S_H$: 45oC/-10oC/2K/6K (0 °C/-20 °C/2K/6K for R744)

| Valve Model | Seat Φ (mm) | Kv (m ³ /h) | Maximal Cooling Capacity [kW] | | | | | | | |
|--------------|------------------|------------------------|-------------------------------|-------|-------|-------|-------|-------|-------|-------|
| | | | R134a | R404A | R407F | R448A | R449A | R450A | R452A | R513A |
| LPF03/LPF03T | 0.3 | 0.009 | 0.90 | 0.80 | 1.28 | 1.14 | 1.12 | 0.79 | 0.84 | 0.74 |
| LPF05/LPF05T | 0.5 | 0.014 | 1.39 | 1.23 | 1.97 | 1.75 | 1.72 | 1.21 | 1.29 | 1.15 |
| LPF08/LPF08T | 0.8 | 0.025 | 2.3 | 2.0 | 3.2 | 2.8 | 2.8 | 2.0 | 2.1 | 1.84 |
| LPF10/LPF10T | 1.0 | 0.04 | 3.6 | 3.2 | 5.1 | 4.6 | 4.5 | 3.2 | 3.4 | 3.0 |
| LPF14/LPF14T | 1.4 | 0.08 | 6.9 | 6.1 | 9.7 | 8.7 | 8.5 | 6.0 | 6.4 | 5.7 |
| LPF18/LPF18T | 1.8 | 0.12 | 9.5 | 8.4 | 13.5 | 12.0 | 11.8 | 8.3 | 8.8 | 7.9 |
| LPF24/LPF24T | 2.4 | 0.20 | 13.0 | 11.5 | 18.4 | 16.4 | 16.1 | 11.3 | 12.1 | 10.8 |
| LPF30/LPF30T | 3.0 | 0.27 | 18.4 | 16.2 | 26.0 | 23.3 | 22.7 | 16.0 | 17.1 | 15.2 |
| LPF32/LPF32T | 3.2 | 0.30 | 20.2 | 17.8 | 28.5 | 25.5 | 24.9 | 17.6 | 18.7 | 16.6 |
| LPF45 | 4.5 | 0.5 | 45.3 | 39.9 | 64.0 | 57.1 | 55.9 | 39.5 | 41.9 | 37.3 |
| LPF52 | 5.2 | 0.7 | 60.6 | 53.4 | 85.6 | 76.3 | 74.8 | 52.8 | 56.0 | 49.9 |
| LPF55 | 5.5 | 0.9 | 70.2 | 61.8 | 99.1 | 88.4 | 86.6 | 61.1 | 64.8 | 57.7 |
| LPF62 | 6.2 | 1.1 | 85.3 | 75.2 | 102.5 | 107.5 | 105.3 | 74.4 | 78.9 | 70.2 |

| Valve Model | Seat Φ (mm) | Kv (m ³ /h) | Maximal Cooling Capacity [kW] | | | | | | | |
|--------------|------------------|------------------------|-------------------------------|-------|-------|---------|---------|-------|-------|------|
| | | | R454B | R454C | R455A | R1234yf | R1234ze | R290 | R410A | R744 |
| LPF03/LPF03T | 0.3 | 0.009 | 1.62 | 0.98 | 1.06 | 0.63 | 0.70 | 1.21 | 1.39 | 1.89 |
| LPF05/LPF05T | 0.5 | 0.014 | 2.49 | 1.51 | 1.64 | 0.98 | 1.08 | 1.86 | 2.14 | 2.91 |
| LPF08/LPF08T | 0.8 | 0.025 | 4.0 | 2.4 | 2.6 | 1.6 | 1.7 | 3.0 | 3.4 | 4.7 |
| LPF10/LPF10T | 1.0 | 0.04 | 6.5 | 3.9 | 4.3 | 2.6 | 2.8 | 4.9 | 5.6 | 7.6 |
| LPF14/LPF14T | 1.4 | 0.08 | 12.4 | 7.5 | 8.1 | 4.8 | 5.3 | 9.2 | 10.6 | 14.4 |
| LPF18/LPF18T | 1.8 | 0.12 | 17.1 | 10.3 | 11.2 | 6.7 | 7.4 | 12.8 | 14.6 | 19.9 |
| LPF24/LPF24T | 2.4 | 0.2 | 23.4 | 14.1 | 15.3 | 9.2 | 10.1 | 17.5 | 20.0 | 27.2 |
| LPF30/LPF30T | 3.0 | 0.27 | 33.0 | 19.9 | 21.7 | 12.9 | 14.2 | 24.7 | 28.3 | 38.5 |
| LPF32/LPF32T | 3.2 | 0.30 | 36.2 | 21.8 | 23.7 | 14.2 | 15.6 | 27.0 | 31.0 | 42.1 |
| LPF45 | 4.5 | 0.5 | 81.1 | 49.0 | 53.3 | 31.7 | 35.0 | 60.6 | 69.5 | - |
| LPF52 | 5.2 | 0.7 | 108.5 | 65.5 | 71.2 | 42.5 | 46.8 | 81.1 | 93.0 | - |
| LPF55 | 5.5 | 0.9 | 125.5 | 75.8 | 82.5 | 49.2 | 54.2 | 93.9 | 107.6 | - |
| LPF62 | 6.2 | 1.1 | 152.7 | 92.3 | 100.3 | 59.8 | 65.9 | 114.2 | 130.9 | - |

ELECTRONIC EXPANSION VALVE



Condition 2: $T_c/T_e/S_c/S_H$: 45°C/-35°C/2K/6K (-10°C/-40°C/2K/6K for R744)

| Valve Model | Seat Φ (mm) | Kv (m ³ /h) | Maximal Cooling Capacity [kW] | | | | | | | |
|--------------|------------------|------------------------|-------------------------------|-------|-------|-------|-------|-------|-------|-------|
| | | | R134a | R404A | R407F | R448A | R449A | R450A | R452A | R513A |
| LPF03/LPF03T | 0.3 | 0.009 | 0.85 | 0.73 | 1.23 | 1.08 | 1.06 | 0.72 | 0.76 | 0.68 |
| LPF05/LPF05T | 0.5 | 0.014 | 1.31 | 1.13 | 1.90 | 1.67 | 1.63 | 1.11 | 1.18 | 1.05 |
| LPF08/LPF08T | 0.8 | 0.025 | 2.1 | 1.8 | 3.1 | 2.7 | 2.6 | 1.8 | 1.9 | 1.7 |
| LPF10/LPF10T | 1.0 | 0.04 | 3.4 | 3.0 | 5.0 | 4.4 | 4.3 | 2.9 | 3.1 | 2.7 |
| LPF14/LPF14T | 1.4 | 0.08 | 6.5 | 5.6 | 9.4 | 8.3 | 8.1 | 5.5 | 5.8 | 5.2 |
| LPF18/LPF18T | 1.8 | 0.12 | 9.0 | 7.7 | 13.0 | 11.4 | 11.2 | 7.6 | 8.0 | 7.2 |
| LPF24/LPF24T | 2.4 | 0.2 | 12.3 | 10.6 | 17.8 | 15.6 | 15.3 | 10.5 | 11.0 | 9.9 |
| LPF30/LPF30T | 3.0 | 0.27 | 17.4 | 15.0 | 25.1 | 22.1 | 21.6 | 14.8 | 15.6 | 13.9 |
| LPF32/LPF32T | 3.2 | 0.30 | 19.0 | 16.4 | 27.5 | 24.2 | 23.7 | 16.2 | 17.0 | 15.3 |
| LPF45 | 4.5 | 0.5 | 42.6 | 36.8 | 61.7 | 54.3 | 53.1 | 36.3 | 38.3 | 34.2 |
| LPF52 | 5.2 | 0.7 | 57.0 | 49.2 | 82.6 | 72.7 | 71.7 | 48.5 | 51.2 | 45.8 |
| LPF55 | 5.5 | 0.9 | 66.0 | 57.0 | 95.6 | 84.1 | 82.2 | 56.2 | 59.2 | 53.0 |
| LPF62 | 6.2 | 1.1 | 80.3 | 69.3 | 116.3 | 102.3 | 100.0 | 68.3 | 72.1 | 64.5 |

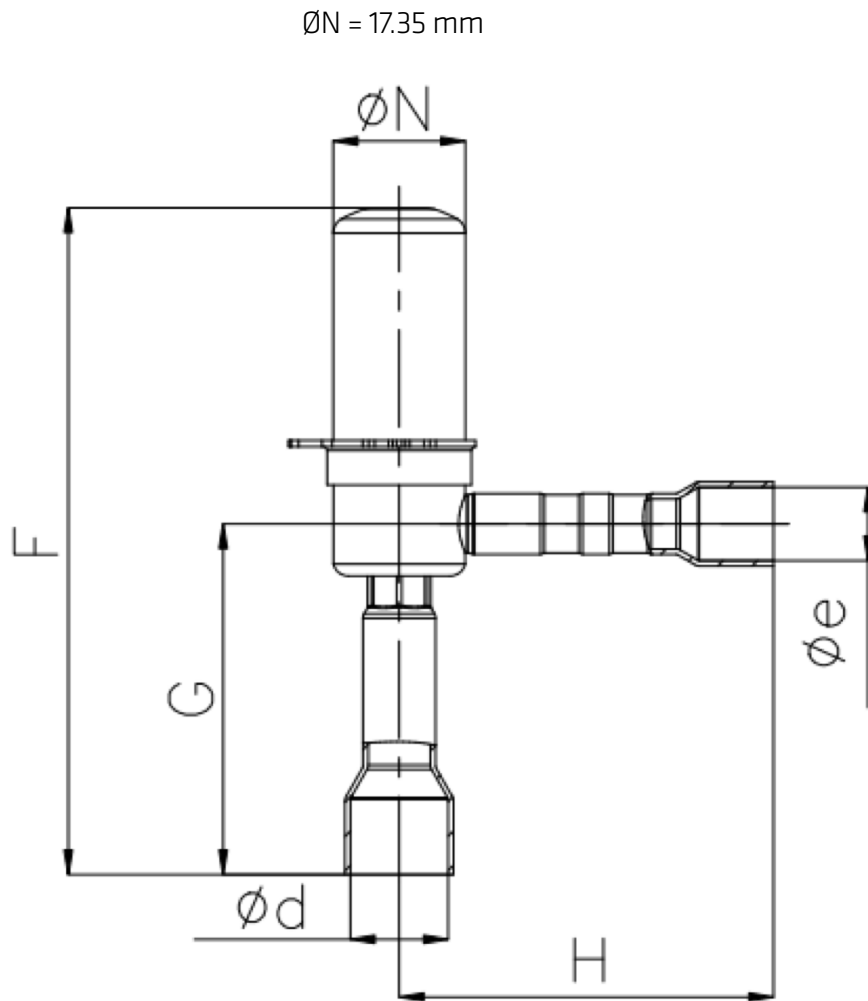
| Valve Model | Seat Φ (mm) | Kv (m ³ /h) | Maximal Cooling Capacity [kW] | | | | | | | |
|--------------|------------------|------------------------|-------------------------------|-------|-------|---------|---------|-------|-------|------|
| | | | R454B | R454C | R455A | R1234yf | R1234ze | R290 | R410A | R744 |
| LPF03/LPF03T | 0.3 | 0.009 | 1.63 | 0.90 | 0.98 | 0.56 | 0.63 | 1.16 | 1.39 | 2.18 |
| LPF05/LPF05T | 0.5 | 0.014 | 2.51 | 1.39 | 1.51 | 0.87 | 0.98 | 1.79 | 2.14 | 3.36 |
| LPF08/LPF08T | 0.8 | 0.025 | 4.0 | 2.2 | 2.4 | 1.4 | 1.6 | 2.9 | 3.5 | 5.4 |
| LPF10/LPF10T | 1.0 | 0.04 | 6.6 | 3.6 | 4.0 | 2.3 | 2.6 | 4.7 | 5.6 | 8.8 |
| LPF14/LPF14T | 1.4 | 0.08 | 12.5 | 6.9 | 7.5 | 4.3 | 4.8 | 8.8 | 10.6 | 16.6 |
| LPF18/LPF18T | 1.8 | 0.12 | 17.2 | 9.5 | 10.4 | 6.0 | 6.7 | 12.2 | 14.6 | 23.0 |
| LPF24/LPF24T | 2.4 | 0.2 | 23.5 | 13.0 | 14.2 | 8.2 | 9.2 | 16.7 | 20.0 | 31.5 |
| LPF30/LPF30T | 3.0 | 0.27 | 33.3 | 18.4 | 20.0 | 11.6 | 12.9 | 23.6 | 28.3 | 44.5 |
| LPF32/LPF32T | 3.2 | 0.30 | 36.4 | 20.2 | 21.9 | 12.7 | 14.2 | 25.9 | 30.9 | 48.7 |
| LPF45 | 4.5 | 0.5 | 81.7 | 45.2 | 49.1 | 28.3 | 31.8 | 58.1 | 69.4 | - |
| LPF52 | 5.2 | 0.7 | 109.3 | 60.5 | 65.8 | 37.9 | 42.5 | 77.7 | 92.9 | - |
| LPF55 | 5.5 | 0.9 | 126.6 | 70.1 | 76.1 | 43.8 | 49.2 | 89.9 | 107.5 | - |
| LPF62 | 6.2 | 1.1 | 153.9 | 85.2 | 92.6 | 53.3 | 59.9 | 109.4 | 130.8 | - |

Note: The Max capacity is given for full opened position
 LPF... is standard series, LPF...T is designed for CO₂ application



DIMENSIONS

(Unit is mm)



ELECTRONIC EXPANSION VALVE



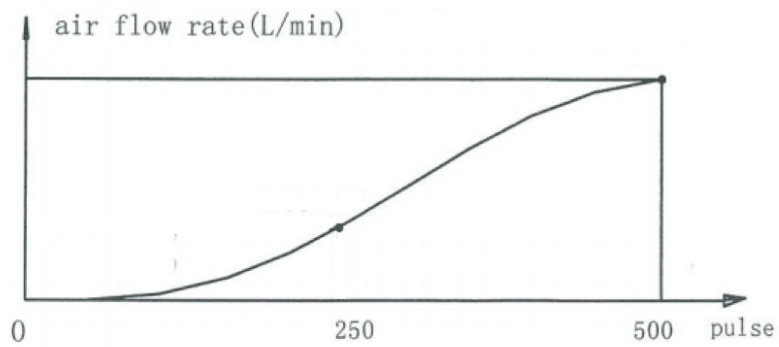
| Valve Model | U11 Code Multi-Pack | Dimensions | | | | | Weight (g) | | | |
|-------------|---------------------|------------|------|----|----------|-----------|------------|-----|-----|-------|
| | | F | G | H | Øe Inlet | Ød Outlet | | | | |
| LPF03-001 | 10136007902 | 87 | 45.8 | 49 | 3/8 | 1/2 | 51.8 | | | |
| LPF03-002 | 10136010802 | | | | 1/4 | 1/4 | 44.2 | | | |
| LPF05-001 | 10136008102 | | | | 3/8 | 1/2 | 51.8 | | | |
| LPF05-002 | 10136010902 | | | | 1/4 | 1/4 | 44.2 | | | |
| LPF08-001 | 10136003202 | | | | 3/8 | 1/2 | 51.8 | | | |
| LPF08-002 | 10136003302 | | | | 1/4 | 1/4 | 44.2 | | | |
| LPF08-003 | 10136004302 | | | | 10mm | 12mm | 51 | | | |
| LPF10-002 | 10136000502 | | | | 3/8 | 1/2 | 51.8 | | | |
| LPF10-003 | 10136000602 | | | | 1/4 | 3/8 | 47.7 | | | |
| LPF10-004 | 10136000702 | | | | 10mm | 12mm | 51 | | | |
| LPF10-005 | 10136000802 | | | | 6mm | 10mm | 49.4 | | | |
| LPF14-002 | 10136000902 | | | | 3/8 | 1/2 | 51.8 | | | |
| LPF14-003 | 10136001002 | | | | 1/4 | 3/8 | 47.7 | | | |
| LPF14-004 | 10136001102 | | | | 10mm | 12mm | 50.9 | | | |
| LPF14-005 | 10136001202 | | | | 6mm | 10mm | 49.3 | | | |
| LPF18-002 | 10136001302 | | | | 3/8 | 1/2 | 51.8 | | | |
| LPF18-003 | 10136001402 | | | | 10mm | 12mm | 50.9 | | | |
| LPF24-002 | 10136001502 | | | | 3/8 | 1/2 | 51.7 | | | |
| LPF24-003 | 10136001602 | | | | 10mm | 12mm | 50.8 | | | |
| LPF30-001 | 10136003902 | | | | 3/8 | 1/2 | 52.6 | | | |
| LPF30-002 | 10136004602 | | | | 10mm | 12mm | 51.7 | | | |
| LPF32-001 | 10136003402 | | | | 3/8 | 1/2 | 52.6 | | | |
| LPF32-002 | 10136004002 | | | | 1/4 | 3/8 | 48.4 | | | |
| LPF32-003 | 10136004502 | | | | 10mm | 12mm | 51.7 | | | |
| LPF45-001 | 10136007302 | | | | 116 | 62.5 | 57.2 | 5/8 | 5/8 | 104.6 |
| LPF52-001 | 10136007402 | | | | | | | | | 104.3 |
| LPF55-001 | 10136007502 | | | | | | | | | 104.0 |
| LPF62-001 | 10136007602 | | | | | | | | | 103.6 |



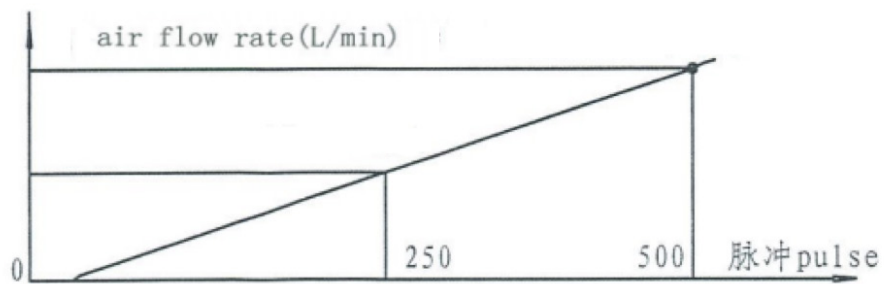
| Valve Model | U11 Code Multi-Pack | Dimensions | | | | | Weight (g) | |
|-------------|---------------------|------------|------|----|----------|-----------|------------|------|
| | | F | G | H | Øe Inlet | Ød Outlet | | |
| LPF03T-001 | 10136007702 | 88.5 | 45.8 | 49 | 3/8 | 1/2 | 60 | |
| LPF03T-002 | 10136010302 | | | | 6mm | 10mm | 49.2 | |
| LPF05T-001 | 10136007802 | | | | 3/8 | 1/2 | 60 | |
| LPF05T-002 | 10136010502 | | | | 6mm | 10mm | 49.2 | |
| LPF08T-001 | 10136005402 | 84.5 | 41.8 | 45 | 3/8 | 1/2 | 60 | |
| LPF08T-002 | 10136006402 | | | | 1/4 | 1/4 | 45.5 | |
| LPF08T-003 | 10136008202 | | | | 10mm | 12mm | 59.8 | |
| LPF08T-004 | 10136010402 | | | | 6mm | 10mm | 49.2 | |
| LPF10T-002 | 10136005502 | 88.5 | 45.8 | 49 | 3/8 | 1/2 | 60 | |
| LPF10T-003 | 10136005602 | | | | 45 | 3/8 | 49.2 | |
| LPF10T-004 | 10136006502 | | | | 49 | 10mm | 12mm | 59.9 |
| LPF10T-005 | 10136006602 | | | | 45 | 6mm | 10mm | 49.2 |
| LPF14T-002 | 10136005702 | | | | 49 | 3/8 | 1/2 | 60 |
| LPF14T-003 | 10136005802 | | | | 45 | 1/4 | 3/8 | 49.2 |
| LPF14T-004 | 10136006702 | | | | 49 | 10mm | 12mm | 59.9 |
| LPF14T-005 | 10136006802 | | | | 45 | 6mm | 10mm | 49.2 |
| LPF18T-002 | 10136005902 | | | | 49 | 3/8 | 1/2 | 59.9 |
| LPF18T-003 | 10136006902 | | | | 49 | 10mm | 12mm | 59.8 |
| LPF24T-002 | 10136006002 | 49 | 49 | 49 | 3/8 | 1/2 | 59.9 | |
| LPF24T-003 | 10136007002 | | | | 10mm | 12mm | 59.8 | |
| LPF30T-001 | 10136006102 | | | | 3/8 | 1/2 | 59.8 | |
| LPF30T-002 | 10136007102 | | | | 10mm | 12mm | 59.7 | |
| LPF32T-001 | 10136006202 | | | | 3/8 | 1/2 | 59.8 | |
| LPF32T-002 | 10136006302 | | | | 45 | 1/4 | 3/8 | 49 |
| LPF32T-003 | 10136007202 | | | | 49 | 10mm | 12mm | 59.7 |



FLOW CHARACTERISTIC (EQUAL PERCENTAGE)



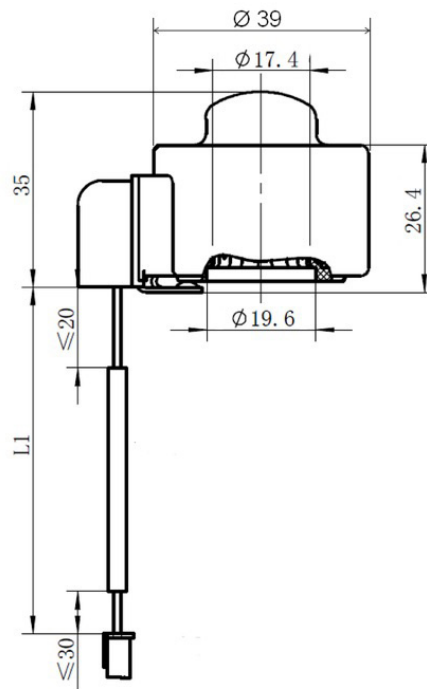
LPF and LPF-T (03-32)



LPF 45-62



The coil is separated
(Unit is mm)



| Coil Model | Coil Code number | Coil Dimensions [mm] | | Weight (g) |
|------------------|------------------|----------------------|--|------------|
| | | L1 | | |
| PQ-M24012-000007 | 10810127602 | 1500 | | 140,2 |
| PQ-M24012-000008 | 10810129502 | 3000 | | |
| PQ-M24012-000009 | 10810129602 | 6000 | | |
| PQ-M24012-000010 | 10810129702 | 9000 | | |