# L3S \& L3SK LINEAR MOTORS 

Air-cooled (L3S) and liquid-cooled (L3SK) flat linear motors


The Moog air-cooled L3S and liquid-cooled L3SK flat linear motors are designed for highly dynamic applications. L3S and L3SK motors are three-phase, synchronous, linear iron core motors, which are supplied in the form of active parts (built-in motors). Their primary part is formed by a ferromagnetic stack, composed of laminations and a three-phase winding inserted into its slots. This primary part is excited by permanent magnets in the secondary part, which are placed in a standard, static arrangement and used as a magnet way.

Both the L3S motor series and its liquid-cooled variant, the L3SK, offer some of the largest power ranges in the industry, with standard models delivering continuous rated force values ranging from 150 to $7,500 \mathrm{~N}$ for the L3S series and 300 to $12,000 \mathrm{~N}$ for the L3SK series, when using water as a cooling agent. Additionally, the air-cooled L3S series can be loaded with forces and currents substantially higher than those produced at nominal speeds. In comparison, the liquid-cooled L3SK series has almost double the force and output power of its air-cooled counterpart (L3S), although the dimensions remain the same. Yet another advantage of the L3SK series is its ability to operate at higher ambient temperatures.

The modular design of both linear motor series supports a variety of options. In addition, Moog can provide completely customized solutions. We offer custom winding systems designed for different force constants (from about 40 to 1,000 N/A) and high speed applications. Moog can also provide winding systems and special insulation options for different intermediate circuit voltages ( $140 \mathrm{~V}, 330 \mathrm{~V}, 560 \mathrm{~V}, 700 \mathrm{~V} \mathrm{DC}$ ). Our linear motors can be engineered with increased IP ratings (our air-cooled linear motor with increased IP rating is the L7S model; its liquid-cooled counterpart is the L7SK). The position of outlet cables can be modified to fit specific application requirements as well*.
*Note: changing position of outlet cables may cause
outer dimensions of motors to differ from those in the catalog

## SPECIFICATIONS

|  | Measuring Unit | L3S-Series | L3SK-Series |
| :--- | :---: | :---: | :---: |
| Peak Force $\mathrm{F}_{\text {max }}$ | N | $400-15,750$ | $400-15,750$ |
| Rated Speed $\mathrm{v}_{\mathrm{NC}}$ | $\mathrm{m} / \mathrm{s}$ | $0-8$ | $0-8$ |
| Continuous Force $\mathrm{F}_{\text {NC }}$ (IC410) | N | $150-7,500$ | - |
| Continuous Force $\mathrm{F}_{\text {WC }}$ (ICW37) | N | - | $300-12,000$ |
| Temperature Monitoring | - | PTC, PT1000, <br> Thermoswitch | PTC, PT1000, <br> Thermoswitch |
| Rated Bus Voltage V DC | V | $140,330,560,700$ | $140,330,560,700$ |
| Certificate / Marks | - | CE | CE |
| Cooling | - | Air | Water** |

**The standard cooling agent for L3SK linear motors is water. However, different types of coolants (e.g. oils, antifreeze mixtures, etc.) with varying temperature ranges are available upon request.

## FEATURES

- Designed for highly dynamic applications
- High force overload capacity (L3S)
- High values of continuous force (L3SK)
- High quality production
- High precision assembly
- Long life and high operational reliability


## BENEFITS

- Great positioning precision
- Highly customizable
- High force density
- Different winding options available


## TYPICAL APPLICATIONS

- Industrial automation
- CNC machines
- Production and assembly lines
- Test and simulation
- Optical devices
- Packaging




## PRIMARY PART

| TYPE | $\mathrm{F}_{\text {peak }}$ | B | L Lp | V | D | m |
| :--- | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | N | mm |  |  |  | k |
| L3S(K)030P-1215 | 400 | 30 | 192 | 43.9 | 64 | 2.5 |
| L3S(K)030P-2415 | 800 | 30 | 368 | 43.9 | 64 | 4.8 |
| L3S(K)030P-3615 | 1,200 | 30 | 544 | 43.9 | 64 | 7.3 |
| L3S(K)05OP-1215 | 650 | 50 | 192 | 43.9 | 84 | 3.6 |
| L3S(K)050P-2415 | 1,300 | 50 | 368 | 43.9 | 84 | 6.9 |
| L3S(K)050P-3615 | 1950 | 50 | 544 | 43.9 | 84 | 10.4 |
| L3S(K)050P-4815 | 2,600 | 50 | 720 | 43.9 | 84 | 13.9 |
| L3S(K)075P-1215 | 1,000 | 75 | 192 | 43.9 | 109 | 5 |
| L3S(K)075P-2415 | 2,000 | 75 | 368 | 43.9 | 109 | 9.6 |
| L3S(K)075P-3615 | 3,000 | 75 | 544 | 43.9 | 109 | 14.4 |
| L3S(K)075P-4815 | 4,000 | 75 | 720 | 43.9 | 109 | 19.2 |
| L3S(K)075P-6015 | 5,000 | 75 | 896 | 43.9 | 109 | 23.9 |
| L3S(K)100P-1215 | 1,325 | 100 | 192 | 43.9 | 134 | 6.5 |
| L3S(K)100P-2415 | 2,650 | 100 | 368 | 43.9 | 134 | 12.5 |
| L3S(K)100P-3615 | 3,970 | 100 | 544 | 43.9 | 134 | 18.9 |
| L3S(K)100P-4815 | 5,300 | 100 | 720 | 43.9 | 134 | 25 |
| L3S(K)100P-6015 | 6,600 | 100 | 896 | 43.9 | 134 | 31.2 |
| L3S(K)150P-1215 | 2,000 | 150 | 192 | 45.9 | 184 | 9.5 |
| L3S(K)150P-2415 | 3,900 | 150 | 368 | 45.9 | 184 | 18 |
| L3S(K)150P-3615 | 5,800 | 150 | 544 | 45.9 | 184 | 27 |
| L3S(K)150P-4815 | 7,700 | 150 | 720 | 45.9 | 184 | 36 |
| L3S(K)150P-6015 | 9,600 | 150 | 896 | 45.9 | 184 | 45 |
| L3S(K)200P-1215 | 2,700 | 200 | 192 | 45.9 | 234 | 12 |
| L3S(K)200P-2415 | 5,250 | 200 | 368 | 45.9 | 234 | 23.5 |
| L3S(K)200P-3615 | 7,800 | 200 | 544 | 45.9 | 234 | 35 |
| L3S(K)200P-4815 | 10,350 | 200 | 720 | 45.9 | 234 | 47 |
| L3S(K)200P-6015 | 12,900 | 200 | 896 | 45.9 | 234 | 58 |
| L3S(K)250P-1215 | 3,170 | 250 | 192 | 45.9 | 284 | 15 |
| L3S(K)250P-2415 | 6,300 | 250 | 368 | 45.9 | 284 | 29 |
| L3S(K)250P-3615 | 9,450 | 250 | 544 | 45.9 | 284 | 43 |
| L3S(K)250P-4815 | 12,600 | 250 | 720 | 45.9 | 284 | 48 |
| L3S(K)250P-6015 | 15,750 | 250 | 896 | 45.9 | 284 | 72 |
|  |  |  |  |  |  |  |

## SECONDARY PART

| TYPE | B | Ls | P | E | m |
| :--- | :---: | :---: | :---: | :---: | :---: | :---: |
|  | mm |  |  |  | kg |
| L3S030S-0416 | 30 | 64 | 14 | 60 | 0.34 |
| L3S030S-0816 | 30 | 128 | 14 | 60 | 0.68 |
| L3S030S-1616 | 30 | 256 | 14 | 60 | 1.36 |
| L3S030S-3216 | 30 | 512 | 14 | 60 | 2.72 |
| L3S030S-6416 | 30 | 1,024 | 14 | 60 | 5.43 |
| L3S050S-0416 | 50 | 64 | 14 | 80 | 0.47 |
| L3S050S-0816 | 50 | 128 | 14 | 80 | 0.95 |
| L3S050S-1616 | 50 | 256 | 14 | 80 | 1.89 |
| L3S050S-3216 | 50 | 512 | 14 | 80 | 3.8 |
| L3S050S-6416 | 50 | 1,024 | 14 | 80 | 7.58 |
| L3S075S-0416 | 75 | 64 | 14 | 105 | 0.64 |
| L3S075S-0816 | 75 | 128 | 14 | 105 | 1.28 |
| L3S075S-1616 | 75 | 256 | 14 | 105 | 2.56 |
| L3S075S-3216 | 75 | 512 | 14 | 105 | 5.12 |
| L3S075S-6416 | 75 | 1,024 | 14 | 105 | 10.24 |
| L3S100S-0416 | 100 | 64 | 14 | 130 | 0.8 |
| L3S100S-0816 | 100 | 128 | 14 | 130 | 1.6 |
| L3S100S-1616 | 100 | 256 | 14 | 130 | 3.2 |
| L3S100S-3216 | 100 | 512 | 14 | 130 | 6.4 |
| L3S100S-6416 | 100 | 1,024 | 14 | 130 | 12.8 |
| L3S150S-0416 | 150 | 64 | 14 | 180 | 1.31 |
| L3S150S-0816 | 150 | 128 | 14 | 180 | 2.62 |
| L3S150S-1616 | 150 | 256 | 14 | 180 | 5.25 |
| L3S150S-3216 | 150 | 512 | 14 | 180 | 10.5 |
| L3S150S-6416 | 150 | 1,024 | 14 | 180 | 21 |
| L3S200S-0416 | 200 | 64 | 14 | 230 | 1.7 |
| L3S200S-0816 | 200 | 128 | 14 | 230 | 3.4 |
| L3S200S-1616 | 200 | 256 | 14 | 230 | 6.81 |
| L3S200S-3216 | 200 | 512 | 14 | 230 | 13.62 |
| L3S200S-6416 | 200 | 1,024 | 14 | 230 | 27.24 |
| L3S250S-0416 | 250 | 64 | 19 | 285 | 2.11 |
| L3S250S-0816 | 250 | 128 | 19 | 285 | 4.22 |
| L3S250S-1616 | 250 | 256 | 19 | 285 | 8.45 |
| L3S250S-3216 | 250 | 512 | 19 | 285 | 16.9 |
|  |  |  |  |  |  |
|  |  |  | 19 |  |  |

Mounting base


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