

# Ventilation for furnaces and ovens totally enclosed three-phase asynchronous motors

## General information



### Totally enclosed three-phase asynchronous motors

• Single speed: power 0.18 to 15 kW, frame size 80 to 160 mm, 2, 4, 6 and 8 poles; 230/400 V or 400 V  $\Delta$ , 50 Hz.

### Protection

IP 55 protection index.

### Operation

These motors are designed to be mounted directly on the surface of the furnace or the oven in order to drive the fan. The motor shaft is exposed to a temperature that may reach 750°C.

The motor housing may be exposed to an ambient temperature between 40°C to 85°C.

### Mains supply

• Standard according to IEC 60038:  
- 230/400 V +10% -10% at 50 Hz.  
Standard construction suitable for the following mains supplies:

- 220/380 V +5% -5% at 50 Hz,
- 230/400 V +10% -10% at 50 Hz,
- 240/415 V +5% -5% at 50 Hz,
- 265/460 V +5% -5% at 60 Hz.

Voltages for the powers equal or greater than 3 kW:

- 380 V  $\Delta$  +5% -5% at 50 Hz,
- 400 V  $\Delta$  +10% -10% at 50 Hz,
- 415 V  $\Delta$  +5% -5% at 50 Hz,
- 460 V  $\Delta$  +5% -5% t 60 Hz.

Construction suitable for Y/ $\Delta$  starting.



## Description of the aluminium three-phase motors for furnaces and ovens ventilation

Component	Materials	Remarks
Finned housing	Aluminium alloy	- with bolt-on or cast foot, or without foot - pressure die casting for frame size $\leq$ 180 - gravity casting for frame size $\geq$ 200 <ul style="list-style-type: none"> <li>• 4 or 6 mounting holes for the foot housings</li> <li>• lifting rings for frame size <math>\geq</math> 132 M, option in 132 S and 112</li> </ul> - optional earth terminal
Stator	Insulated low carbon magnetic steel laminations Electrolytic copper	- the low carbon content guarantees long term stability of the characteristics - assembled lamination pack - semi-enclosed slots
Rotor	Insulated low carbon magnetic steel laminations Aluminium	- inclined slots - squirrel cage pressure die cast in aluminium (or alloy for special applications) - mounted on the shaft heat shrinking - dynamically balanced rotor class A - 1/2 key
Shaft	Steel or refractory stainless steel	- for frame size < 132: <ul style="list-style-type: none"> <li>• shaft extension fitted with screw and washer</li> <li>• closed keyway</li> </ul> - for frame size $\geq$ 132: <ul style="list-style-type: none"> <li>• tapped centre hole</li> <li>• open key</li> </ul>
End shields	Cast iron	
Flange adapter	Cast iron	- mounting by spacer on the front bearing housing of motor
Bearings and lubrication		- ball bearings - ZZ types lubricated for life from LS 80 to LS 160 inclusive - specific according to the temperature - preloaded rear bearings
Labyrinth Lipseals	Technopolymer or steel Synthetic rubber	- front lipseals or jet deflector for all flange motors
Fan	Aluminium alloy	- 2 directions of rotation: straight blades
Fan cover	Steel sheet metal	- on request, fitted with a drip cover for operation in vertical position, shaft facing down
Terminal box	Aluminium alloy	- rotatable, mounted opposite the foot position - includes as standard a board with 6 steel terminals (brass as an optional extra) - delivered fitted with cable glands (optionally without cable glands) - 1 earth terminal in all terminal boxes

# Ventilation for furnaces and ovens totally enclosed three-phase asynchronous motors

## Adaptation possibilities

Leroy-Somer offers, for use with the LS totally enclosed three-phase asynchronous motors, many options which meet specific needs.

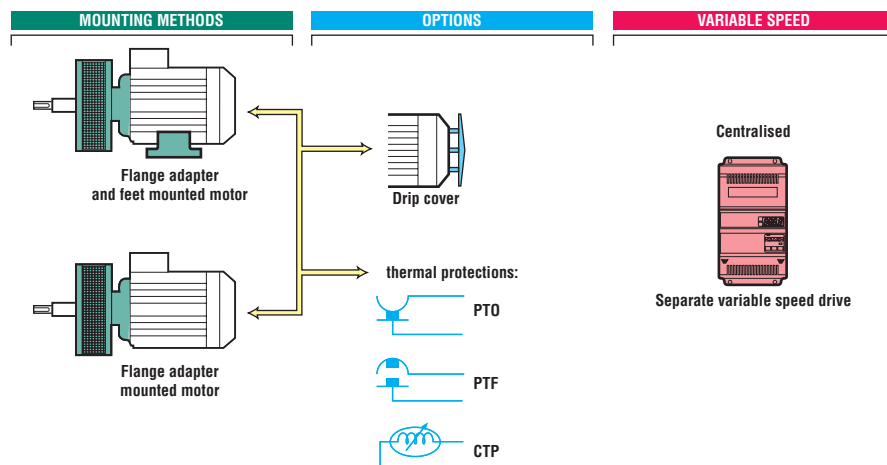
For other variants or any special adaptation, consult the technical specialists at Leroy-Somer.



The LS motors may be associated to the electronic variable speed drive

The options:

- drip cover
- anti-blocking cover
- thermal protections

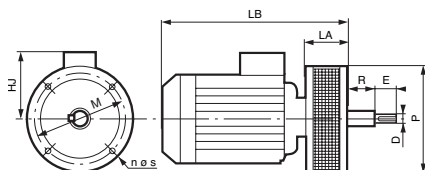


## Selection

Frame size <sup>1</sup> mm	Power <sup>1</sup> kW	Polarity <sup>1</sup>
80 to 160	1.1 to 15	2 p
80 to 160	0.55 to 15	4 p
80 to 160	0.25 to 5.5	6 p
80 to 132	0.18 to 3	8 p

1. See the selection tables power/polarity chapter A2.

## Dimensions



Type	Dimensions (in mm)									
	M	P	n ø	s	LA	LB	HJ	E'	D'	R
LS 80 L	165	200	4	12	80	295	127	40	19 j6	
LS 80 LU	165	200	4	12	80	347	127	40	19 j6	
LS 90 S	165	200	4	12	80	303	137	50	24 j6	
LS 90 L/SL	165	200	4	12	80	330	137	50	24 j6	
LS 90 LU	165	200	4	12	80	350	137	50	24 j6	
LS 100 L	215	250	4	15	82	372	142	60	28 j6	
LS 112 M	215	250	4	15	82	372	142	60	28 j6	
LS 112 MG	215	250	4	15	82	397	151	60	28 j6	
LS 132 S	265	300	4	15	84	434	151	80	38 k6	
LS 132 SM/M	265	300	4	15	84	471	175	80	38 k6	
LS 132 MU	265	300	4	15	84	494	175	80	38 k6	
LS 160 MP	300	350	4	19	85	553	208	110	42 k6	
LS 160 LR	300	350	4	19	85	580	208	110	42 k6	

On customer specifications

1. Other dimensions on request

# (F)LS 85° - 135° - 150° Ventilation for dryers

## totally enclosed three-phase asynchronous motors

### General information



#### Totally enclosed three-phase asynchronous motors

- Single speed: power 0.18 to 45 kW, frame size 90 to 250 mm, 4 and 6 poles, 230/400 V or 400 V Δ, 50 Hz.

For higher powers of different polarities: consult us.

- Two speed: 4/8 poles frame size 100 to 160 mm.

#### Protection

IP 55 reinforced standard version ensures good sealing against projected liquid and dust.

#### Construction

Foot mounted motors, other mounting methods on request.

#### Operation

These motors are designed for operation

inside the dryers in S1 duty.

Motors set in the air flow.

Ambient temperature allowable up to 150°C and relative humidity of 100 %.

#### Mains supply

- Standard according to IEC 60038:

- 230/400 V +10% -10% at 50 Hz.

Standard construction suitable for the following mains supplies:

- 220/380 V +5% -5% at 50 Hz,

- 230/400 V +10% -10% at 50 Hz,

- 240/415 V +5% -5% at 50 Hz,

- 265/460 V +5% -5% at 60 Hz.

Voltages for the powers equal or greater than 3kW:

- 380 V Δ +5% -5% at 50 Hz,

- 400 V Δ +10% -10% at 50 Hz,

- 415 V Δ +5% -5% at 50 Hz,

- 460 V Δ +5% -5% at 60 Hz.

Construction suitable for Y/Δ starting.

### Description of the (F)LS 85° - 135° - 150° three-phase motors

Component	Materials	Remarks
Finned housing	Aluminium alloy for ranges 85°C and 135°C Cast iron for range 150°C	- with bolt-on or cast foot, or without foot - pressure die casting for frame size ≤ 180 - gravity casting for frame size ≥ 200 <ul style="list-style-type: none"> <li>• 4 or 6 mounting holes for the foot housings</li> <li>• lifting rings for frame size ≥ 132 M, option in 132 S and 112</li> </ul> - optional earth terminal
Stator	Insulated low carbon magnetic steel laminations Electrolytic copper	- the low carbon content guarantees in time the stability of the characteristics - assembled lamination pack - semi-enclosed slots - insulation class H
Rotor	Insulated low carbon magnetic steel laminations Aluminium	- inclined slots - squirrel cage pressure die cast in aluminium (or alloy for special applications) - mounted on the shaft by heat shrinking - dynamically balanced rotor class A - 1/2 key - specific internal protection
Shaft		- for frame size < 132: <ul style="list-style-type: none"> <li>• shaft end fitted with screw and washer</li> <li>• closed keyway</li> </ul> - for frame size ≥ 132: <ul style="list-style-type: none"> <li>• tapped centre hole</li> <li>• open key</li> </ul>
End shields	Cast iron	- anti-corrosion treatment - 85°C range: regreasable bearings from frame size 225 MG and above - 135°C range: regreasable bearings from frame size 90 to 280 mm - 150°C range: regreasable bearings on request
Bearings and lubrication		- LS 85°C range: <ul style="list-style-type: none"> <li>• high temperature grease</li> <li>• lubricated for life from LS 90 S to LS 225 SR then regreasable bearings thereafter</li> </ul> - LS 135°C range: <ul style="list-style-type: none"> <li>• high temperature grease</li> <li>• regreasable bearings from LS 90 S to LS 280 SC</li> </ul> - FLS 150°C range: <ul style="list-style-type: none"> <li>• high temperature grease</li> <li>• bearings lubricated for life - decreasing bearings on request</li> </ul>
Labyrinth seals	Technopolymer or steel	
Fan	Aluminium alloy	- 2 directions of rotation: straight blades
Fan cover	Sheet steel	- on request, fitted with a drip cover for operation in vertical position, shaft facing down
Terminal box	Aluminium alloy	- rotatable, mounted opposite to foot position - delivered fitted with cable glands - 1 earth terminal in all terminal boxes
Screw	Stainless steel	


# (F)LS 85° - 135° - 150° Ventilation for dryers totally enclosed three-phase asynchronous motors

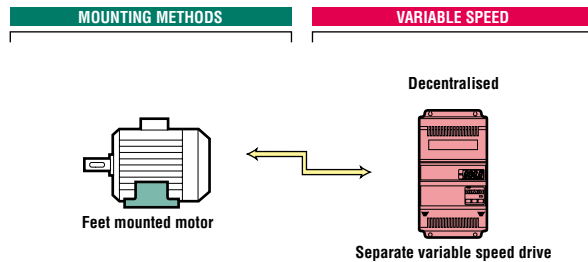
## Adaptation possibilities

Leroy-Somer offers, for use with the (F)LS 85°-135°-150°C three-phase asynchronous motors, many options which meet specific needs.

For other variants or any special adaptation, consult the technical specialists at Leroy-Somer.



 The (F)LS 85°-135°-150°C three-phase motors may be associated to an electronic variable speed drive.



## Selection

Range	Frame size mm	Power kW	Polarity
LS 85°C S1 duty	90 to 250	0.75 to 45	4 p
	100 to 280	1.5 to 37	6 p
	100 to 160	2.2/0.37 to 7.5/1.1	4/8 p
LS 135°C S1 duty	90 to 250	0.75 to 37	4 p
	100 to 280	1.5 to 30	6 p
	100 to 160	2.2/0.37 to 7.5/1.1	4/8 p
FLS 150°C S1 duty	90 to 132	1.1 to 7.5	2 p
	90 to 132	0.55 to 5.5	4 p
	132	1.5 to 3	6 p

## Dimensions

See the technical brochure of the ventilation motors for the LS-FLS series dryers.