Fan Motor Instruction (without factory fitted motor control system) SILVER C

1. General

Supplied fan motors are of the EC-type, 0.8 - 10 kW. Motor control system is provided, installed and connected by the customer.

Forbidden to start operations

It is absolutely forbidden to start operations until the entire air handling unit has been declared to conform to relevant regulations in Machinery Directive 2006/42/EC and to existing national legislation, if applicable.

2. Technical data

Identify the motor

Each size of SILVER C is available in two capacity variants. The lower specified capacity on the respective size in the table below applies to capacity variant 1 and the higher capacity applies to capacity variant 2.

For sizes 14/20 and 25/30 fans can be combined freely within each physical size. The air handling unit's rating plate shows the combinations of fan sizes and capacity variants.

Sizes 05-50 have one fan per airflow direction, sizes 60-100 have two fans per airflow direction and the size 120 has three fans per airflow direction.

Fan A, size/ capacity variant	**Motor shaft power (kW)**	**Speed range SILVER C (rpm)**	**Frequency range SILVER C (Hz)**	**Part no.** ***See the motor rating plate***
05-1	0.8	500 - 3380	41,7 - 281,7	747.3.101-401
05-2	1.15	500 - 3700	41,7 - 308,3	747.3.101-401
07-1	0.8	500 - 3380	41,7 - 281,7	747.3.101-401
07-2	1.15	500 - 3700	41,7 - 308,3	747.3.101-401
08-1	1.15	400 - 2780	33,3 - 231,7	747.3.302-401
08-2	1.6	400 - 3050	33,3 - 254,2	747.3.301-401
11-1	1,15	400 - 2780	33,3 - 231,7	747.3.302-401
11-2	1,6	400 - 3050	33,3 - 254,2	747.3.301-401
12-1	1,6	300 - 2250	40 - 300	751.3.201-401
12-2	2,4	300 - 2500	40 - 333,3	751.3.201-401
14-1	1,6	300 - 2250	40 - 300	751.3.201-401
14-2	2,4	300 - 2500	40 - 333,3	751.3.201-401
20-1	2,4	280 - 1890	37,3 - 252	751.3.301-401
20-2	3,4	280 - 2100	37,3 - 280	751.3.501-401
25-1	2.4	280 - 1890	37,3 - 252	751.3.301-401
25-2	3.4	280 - 2100	37,3 - 280	751.3.501-401
30-1	4.0	250 - 1635	33,3 - 218	752.3.401-401
30-2	5.0	250 - 1740	33,3 - 232	752.3.602-401
35-1	4.0	250 - 1635	33,3 - 218	752.3.401-401
35-2	5.0	250 - 1740	33,3 - 232	752.3.602-401
40-1	6.5	200 - 1380	33,3 - 230	753.3.401-401
40-2	10.0	200 - 1560	33,3 - 260	753.3.601-401
50-1	6.5	200 - 1380	33,3 - 230	753.3.401-401
50-2	10.0	200 - 1560	33,3 - 260	753.3.601-401
60-1	2 x 4.0	250 - 1635	33,3 - 218	752.3.401-401
60-2	2 x 6.5	250 - 1900	33,3 - 253,3	752.3.602-401
70-1	2 x 4.0	250 - 1635	33,3 - 218	752.3.401-401
70-2	2 x 6.5	250 - 1900	33,3 - 253,3	752.3.602-401
80-1	2 x 6.5	200 - 1380	33,3 - 230	753.3.401-401
80-2	2 x10.0	200 - 1560	33,3 - 260	753.3.601-401
100-1	2 x 6.5	200 - 1380	33,3 - 230	753.3.401-401
100-2	2 x10.0	200 - 1560	33,3 - 260	753.3.601-401
120-1	3 x 6.5	200 - 1380	33,3 - 230	753.3.401-401
120-2	3 x10.0	200 - 1560	33,3 - 260	753.3.601-401

Motor data

Part number 747.3.101-401 Size/capacity variant: 05-1 and 07-1		
Supply voltage (V)	3 x 270	
Nominal current (A)	**2.6**	***warm motor***
Nominal torque (Nm)	2.3	
Nominal speed (rpm)	3380	
Nominal shaft power (kW)	0.8	
Poles	10	
Back EMF (V)	63	*RMS value at 1000 rpm, rad to rad*
Back EMF constant Vs/rad)	0.099	*Per phase top back EMF voltage per electrical rad/s*
Resistance Rs (Ohm)	0.98	*Phase resistance at 20°C*
Inductance Ld (mH)	7.9	*Phase inductance at d-axis*
Inductance Lq (mH)	9.5	*Phase inductance at q-axis*
Torque, constant (Nm/A)	1.05	
Torque, inertia	0.005	*Calculated*

Part number 747.3.101-401 Size/capacity variant: 05-2 and 07-2		
Supply voltage (V)	3 x 270	
Nominal current (A)	**3.2**	***warm motor***
Nominal torque (Nm)	2.8	
Nominal speed (rpm)	3700	
Nominal shaft power (kW)	1.1	
Poles	10	
Back EMF (V)	63	*RMS value at 1000 rpm, rad to rad*
Back EMF constant Vs/rad)	0.099	*Per phase top back EMF voltage per electrical rad/s*
Resistance Rs (Ohm)	0.98	*Phase resistance at 20°C*
Inductance Ld (mH)	7.9	*Phase inductance at d-axis*
Inductance Lq (mH)	9.5	*Phase inductance at q-axis*
Torque, constant (Nm/A)	1.05	
Torque, inertia	0.005	*Calculated*

Part number 747.3.302-401 Size/capacity variant: 08-1 and 11-1		
Supply voltage (V)	3 x 270	
Nominal current (A)	**3.1**	***warm motor***
Nominal torque (Nm)	4.0	
Nominal speed (rpm)	2780	
Nominal shaft power (kW)	1.2	
Poles	10	
Back EMF (V)	87	*RMS value at 1000 rpm, rad to rad*
Back EMF constant Vs/rad)	0.135	*Per phase top back EMF voltage per electrical rad/s*
Resistance Rs (Ohm)	1.10	*Phase resistance at 20°C*
Inductance Ld (mH)	9.1	*Phase inductance at d-axis*
Inductance Lq (mH)	10.5	*Phase inductance at q-axis*
Torque, constant (Nm/A)	1.43	
Torque, inertia	0.0076	*Calculated*

Part number 747.3.301-401 Size/capacity variant: 08-2 and 11-2		
Supply voltage (V)	3 x 400	
Nominal current (A)	**3.0**	***warm motor***
Nominal torque (Nm)	4.8	
Nominal speed (rpm)	3050	
Nominal shaft power (kW)	1.5	
Poles	10	
Back EMF (V)	107	*RMS value at 1000 rpm, rad to rad*
Back EMF constant Vs/rad)	0.167	*Per phase top back EMF voltage per electrical rad/s*
Resistance Rs (Ohm)	1.47	*Phase resistance at 20°C*
Inductance Ld (mH)	13.7	*Phase inductance at d-axis*
Inductance Lq (mH)	15.7	*Phase inductance at q-axis*
Torque, constant (Nm/A)	1.77	
Torque, inertia	0.0076	*Calculated*

Part number 751.3.201-401 **Size/capacity variant: 12-1 and 14-1**		
Supply voltage (V)	3 x 400	
Nominal current (A)	**3,4**	***warm motor***
Nominal torque (Nm)	6,8	
Nominal speed (rpm)	2250	
Nominal shaft power (kW)	1,6	
Poles	16	
Back EMF (V)	132	*RMS value at 1000 rpm, rad to rad*
Back EMF constant Vs/rad)	0,129	*Per phase top back EMF voltage per electrical rad/s*
Resistance Rs (Ohm)	0,95	*Phase resistance at 20°C*
Inductance Ld (mH)	8,0	*Phase inductance at d-axis*
Inductance Lq (mH)	8,9	*Phase inductance at q-axis*
Torque, constant (Nm/A)	2,18	
Torque, inertia	0,03	*Calculated*

Part number 751.3.201-401 **Size/capacity variant: 12-2 and 14-2**		
Supply voltage (V)	3 x 400	
Nominal current (A)	**4,2**	***warm motor***
Nominal torque (Nm)	8,3	
Nominal speed (rpm)	2500	
Nominal shaft power (kW)	2,2	
Poles	16	
Back EMF (V)	132	*RMS value at 1000 rpm, rad to rad*
Back EMF constant Vs/rad)	0,129	*Per phase top back EMF voltage per electrical rad/s*
Resistance Rs (Ohm)	0,95	*Phase resistance at 20°C*
Inductance Ld (mH)	8,0	*Phase inductance at d-axis*
Inductance Lq (mH)	8,9	*Phase inductance at q-axis*
Torque, constant (Nm/A)	2,18	
Torque, inertia	0,03	*Calculated*

Part number 751.3.301-401 **Size/capacity variant: 20-1 and 25-1**		
Supply voltage (V)	3 x 400	
Nominal current (A)	**5,2**	***warm motor***
Nominal torque (Nm)	12	
Nominal speed (rpm)	1890	
Nominal shaft power (kW)	2,4	
Poles	16	
Back EMF (V)	154	*RMS value at 1000 rpm, rad to rad*
Back EMF constant Vs/rad)	0,150	*Per phase top back EMF voltage per electrical rad/s*
Resistance Rs (Ohm)	0,93	*Phase resistance at 20°C*
Inductance Ld (mH)	8,3	*Phase inductance at d-axis*
Inductance Lq (mH)	9,2	*Phase inductance at q-axis*
Torque, constant (Nm/A)	2,55	
Torque, inertia	0,04	*Calculated*

Part number 751.3.501-401 **Size/capacity variant: 20-2 and 25-2**		
Supply voltage (V)	3 x 400	
Nominal current (A)	**6,4**	***warm motor***
Nominal torque (Nm)	15	
Nominal speed (rpm)	2100	
Nominal shaft power (kW)	3,3	
Poles	16	
Back EMF (V)	156	*RMS value at 1000 rpm, rad to rad*
Back EMF constant Vs/rad)	0,152	*Per phase top back EMF voltage per electrical rad/s*
Resistance Rs (Ohm)	0,64	*Phase resistance at 20°C*
Inductance Ld (mH)	5,7	*Phase inductance at d-axis*
Inductance Lq (mH)	6,3	*Phase inductance at q-axis*
Torque, constant (Nm/A)	2,58	
Torque, inertia	0,05	*Calculated*

Part number 752.3.401-401 **Size/capacity variant 30-1, 35-1, 60-1 and 70-1**		
Supply voltage (V)	3 x 400	
Nominal current (A)	**8.1**	***warm motor***
Nominal torque (Nm)	23.4	
Nominal speed (rpm)	1635	
Nominal shaft power (kW)	4.0	
Poles	16	
Back EMF (V)	198	*RMS value at 1000 rpm, rad to rad*
Back EMF constant Vs/rad)	0.193	*Per phase top back EMF voltage per electrical rad/s*
Resistance Rs (Ohm)	0.48	*Phase resistance at 20°C*
Inductance Ld (mH)	7.0	*Phase inductance at d-axis*
Inductance Lq (mH)	7.6	*Phase inductance at q-axis*
Torque, constant (Nm/A)	3.27	
Torque, inertia	0.07	*Calculated*

Part number 752.3.602-401 **Size/capacity variant 30-2 and 35-2**		
Supply voltage (V)	3 x 400	
Nominal current (A)	**12.1**	***warm motor***
Nominal torque (Nm)	25.5	
Nominal speed (rpm)	1740	
Nominal shaft power (kW)	4.6	
Poles	16	
Back EMF (V)	153	*RMS value at 1000 rpm, rad to rad*
Back EMF constant Vs/rad)	0.149	*Per phase top back EMF voltage per electrical rad/s*
Resistance Rs (Ohm)	0.21	*Phase resistance at 20°C*
Inductance Ld (mH)	3.1	*Phase inductance at d-axis*
Inductance Lq (mH)	3.3	*Phase inductance at q-axis*
Torque, constant (Nm/A)	2.53	
Torque, inertia	0.085	*Calculated*

Part number 752.3.602-401 **Size/capacity variant 60-2 and 70-2**		
Supply voltage (V)	3 x 400	
Nominal current (A)	**13.7**	***warm motor***
Nominal torque (Nm)	31	
Nominal speed (rpm)	1900	
Nominal shaft power (kW)	6.2	
Poles	16	
Back EMF (V)	153	*RMS value at 1000 rpm, rad to rad*
Back EMF constant Vs/rad)	0.149	*Per phase top back EMF voltage per electrical rad/s*
Resistance Rs (Ohm)	0.21	*Phase resistance at 20°C*
Inductance Ld (mH)	3.1	*Phase inductance at d-axis*
Inductance Lq (mH)	3.3	*Phase inductance at q-axis*
Torque, constant (Nm/A)	2.53	
Torque, inertia	0.085	*Calculated*

Part number 753.3.401-401 **Size/capacity variant 40-1, 50-1, 80-1, 100-1 and 120-1**		
Supply voltage (V)	3 x 400	
Nominal current (A)	**13.0**	***warm motor***
Nominal torque (Nm)	41.5	
Nominal speed (rpm)	1380	
Nominal shaft power (kW)	6.0	
Poles	20	
Back EMF (V)	219	*RMS value at 1000 rpm, rad to rad*
Back EMF constant Vs/rad)	0.171	*Per phase top back EMF voltage per electrical rad/s*
Resistance Rs (Ohm)	0.34	*Phase resistance at 20°C*
Inductance Ld (mH)	3.9	*Phase inductance at d-axis*
Inductance Lq (mH)	4.7	*Phase inductance at q-axis*
Torque, constant (Nm/A)	3.62	
Torque, inertia	0.108	*Calculated*

Part number 753.3.601-401 **Size/capacity variant 40-2, 50-2, 80-2, 100-2 and 120-2**		
Supply voltage (V)	3 x 400	
Nominal current (A)	**17.7**	***warm motor***
Nominal torque (Nm)	52	
Nominal speed (rpm)	1560	
Nominal shaft power (kW)	8.5	
Poles	20	
Back EMF (V)	205	*RMS value at 1000 rpm, rad to rad*
Back EMF constant Vs/rad)	0.160	*Per phase top back EMF voltage per electrical rad/s*
Resistance Rs (Ohm)	0.24	*Phase resistance at 20°C*
Inductance Ld (mH)	2.5	*Phase inductance at d-axis*
Inductance Lq (mH)	2.9	*Phase inductance at q-axis*
Torque, constant (Nm/A)	3.39	
Torque, inertia	0.138	*Calculated*

4. Electrical connections

Electrical connections must be carried out by a qualified electrician.

The fan motor is fitted with a cable (length 0.3 - 0.5 metres).

The motor cable is spliced in an appropriate enclosure mounted in a suitable position on the fan insert.

Motor control system must be connected. An appropriate motor control system is provided, installed and connected by the customer.

Shielded cable must be used.