

Section 16 – Electrical Equipment - Sales Item 16010112

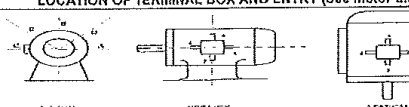
24 –off LOHER Electric 2 Pole Motors, Brand New, 415v, 50hz, 3 Phase.
11kw, 15kw, 18.5kw and 30kw.

DETAILS AS FOLLOWS:



Photograph Taken September 2011.

SR No.	Tag No.	Quantity	Unit	LOHER Motor data					
				Rating, kW	Frame	Pole	Mounting	Voltage and Frequency	Enclosure
1	14-01-P-1101, 02	2	CDS	30	200L	2	V1	415 V, 50 Hz	EExn T3
2	14-01-P-6701, 02	2	CDS	18.5	180M	2	V1	415 V, 50 Hz	EExn T3
	14-01-P-6703, 04	2	CDS	18.5	180M	2	V1	415 V, 50 Hz	EExn T3
	14-01-P-6705, 06, 07, 08	4	CDS	18.5	180M	2	V1	415 V, 50 Hz	EExn T3
3	14-01-P-6709,10	2	CDS	11	160M	2	V1	415 V, 50 Hz	EExn T3
	14-01-P-6711,12	2	CDS	11	160M	2	V1	415 V, 50 Hz	EExn T3
4	14-11-P-6705,06	2	RDS-1	15	160L	2	V1	415 V, 50 Hz	EExn T3
	14-12-P-6705,06	2	RDS-2		160L	2	V1	415 V, 50 Hz	EExn T3
	14-13-P-6705,06	2	RDS-3		160L	2	V1	415 V, 50 Hz	EExn T3
	14-14-P-6705,06	2	RDS-4		160L	2	V1	415 V, 50 Hz	EExn T3
	14-15-P-6705,06	2	RDS-5		160L	2	V1	415 V, 50 Hz	EExn T3
	<u>Total</u>	<u>24</u>							

MOTOR INFORMATION		REV
Tag Number:-	14-01-PME-6709/6710/6711/6712	
Service Description:-	TUNDISH DRAIN SUMP PUMP	
Refer to Specification:-	14.99.53.1602 + Shell DEP 33.66.05.31 + ADDO Amendments 33.66.05.31A	
Manufacturer:-	Leher GmbH	
REQUIREMENTS AND CONDITIONS		
QUANTITY	No Off	4
SITE CONDITIONS		
Ambient Temperature: MAX / MIN / DESIGN- °C 58 / 4 / 55		
Humidity: Max 95% at 43°C		
Altitude: < 1000 metres		
Area Classification:- (see note-6) ☐ N/A ☒ ZONE 2 ☐ ZONE 1		
Temperature Class:- (Note-10) ☐ N/A ☒ T3 ☐ Other T		
Gas Group:- ☐ N/A ☒ IIB ☐ Other II		
Type of Protection:- ☐ N/A ☒ EExN ☐ Exd (for Zone 1)		
BASIC DATA		
Supply System ☐ 400 V ☒ 415 V : ± 10% / 3 Ph. / 50 Hz ± 2%		
Neutral: ☐ Unearthed ☐ Resistance Earthed (400A)		
☒ Solidly Earthed		
Prospective System Fault Current:- 80 KA (At ESWS-1404-Swgr) 63 KA (All other Switchgear)		
Cooling method: TEFC		
Degree of Enclosure Protection:- IP 55		
Continuous Rating:- 11 kW (Note 2)		
Duty Type S1 Service factor 1		
Synchronous Speed:- 3000 RPM		
Insulation Class F Class B Temp. Rise		
Max. Permitted Temp Rise: 85 °C above 55°C ambient		
Direction of Rotation:- ☐ CW ☐ CCW ☒ Bi-Dir.		
(viewed from non-drive end)		
Method of Starting:- DIRECT ON LINE ☐ Other		
Max LRC/FLC ratio % (Note 7) ☒ 600 ☐ Other		
Winding Connection:- (Note-5) ☐ Star ☒ Delta		
Noise Level ≤ 77 dB (A) at full load at 1 meter distance.		
Paint Shade RAL 7035		
Mounting: ☐ Horizontal ☒ Vertical		
Slide Rails Required ☐ Yes ☒ No		
Heater Required: ☒ Yes ☐ No		
Heater Voltage:- 240 V 1 ph AC, 50 Hz		
Drain Required: ☐ Yes ☒ No		
Breather Required: ☐ Yes ☒ No		
Terminal Box Type:- ☐ N/A ☒ Exe ☐ Exd (Note-6)		
LOCATION OF TERMINAL BOX AND ENTRY (See Motor List)		
		
TESTING REQUIREMENT (Section 13 of DEP 33.66.05.31-Gen)		
(i) Production test: Witness ☐ Review of certificates ☐ Not required ☒		
(ii) Performance test: Witness ☐ Review of certificates ☒ Not required ☐		
Remarks: Required on each identical motor supplied		
(iii) Routine test: Witness ☒ and / or Review of certificates ☒ Not required ☐		
(iv) Type test: Witness ☐ Review of certificates ☒ Not required ☐		
(v) Sample Coil test: Witness ☐ Review of certificates ☒ Not required ☐		
ABBREVIATIONS		
EEx(N) Non Sparking EEx(d) Flameproof		
TEFC - Totally Enclosed Fan Cooled		
NOTES		
Refer to Notes Page 4		
TBA - To be advised -s) by supplier, -p) by purchaser		

	DOCUMENT TITLE:	Project No: P14333	
	DATA SHEET FOR LOW VOLTAGE INDUCTION MOTORS (FOR TUNDISH DRAIN SUMP PUMP)	ADCO Doc No: 14.01.54.9697	
		Rev. D	15/02/2011
		Page 3 of 4	

MOTOR INFORMATION				REV
Tag Number:-		14-01-PM-6709/6710/6711/6712		
Service Description:-		TUNDISH DRAIN SUMP PUMP		
Refer to Specification:-		14.99.53.1602 + Shell DEP 33.66.05.31 + ADOCO Amendments 33.66.05.31A		
Manufacturer:-		Loher GmbH		
DATA TO BE COMPLETED BY SUPPLIER				
Standard: ☐ BS ☒ IEC ☐ NEMA ☐ VDE ☒ Other: DEP				
ELECTRICAL DETAILS		MECHANICAL DETAILS		
Frame Ref. No.:-		Construction V1		
Model/Cat. No.:-		No Of Poles 2		
Outline Dimension Dwg. No.:-		No of Stator Slots 6		
Speed at Full Load:-		Rotation (NDE) ☐ CW ☐ CCW ☒ BI		
Full Load Current (FLC):-		Bearing Type: ☒ Ball ☐ Roller ☐ Sleeve		
Starting Current:- (locked rotor) 100%/80% rated volts		Make & Ref No. (DE): FAG / SKF 6310 C3		
Efficiency (100/75/50):-		Make & Ref No. (NDE): FAG / SKF 6310 C3		
Power Factor (100/75/50):-		Lubrication: ☐ Oil (self containing) ☒ Grease		
Power Factor (Starting):-		Cooling System:- IC 411		
Full Load Torque (FLT):-		Rotor End Float:- N.A. mm; mm		
Starting Torque:- (locked rotor) 100%/80% rated volts		Rotor End Play:- N.A. mm		
Minimum Accel. Torque (Motor & Load):-		Rotor Air Gap:- 0.7 mm		
Pull-Out Torque:-		Moment of Inertia J (Motor & Load):- 0.045 kgm ²		
Locked Rotor Withstand Time:		H Factor:- N.A. MW-s/MVA		
Run-Up Time (Motor & Load)		Weight of Motor:- approx. 131 kg		
Insulation Class & Temp Rise above Design Ambient:-		Noise Level:- <77 dB(A)@ 1 m @ Full Load		
COOLING				
Max. No. of Starts in 1 hour 5 equally spaced				
Maximum No. of Successive Starts:- 2 from hot 3 from cold				
Starting time 100% / 80 % Volt :- 3.1 /				
Locked Rotor Impedance @ 20 °C :- = 2.36 ohms N/A % tolerance				
Locked Rotor Reactance @ 20 °C :- = 1.28 ohms N/A % tolerance				
Rotor Resistance @ 20 °C :- = 0.05 ohms N/A % tolerance				
Stator Resistance @ 20 °C :- = 1.45 ohms N/A % tolerance				
Steady State Reactance:- X = N/A % +/- N/A % tolerance				
Transient Reactance:- X' = N/A % +/- N/A % tolerance				
Sub-Transient Reactance:- X'' = N/A % +/- N/A % tolerance				
Zero sequence reactance = N/A % +/- N/A % tolerance				
X/R Ratio: N/A = N/A				
Open Circuit Transient Time Constant:- N/A = N/A s				
Heating Time Constant:- = 30 min				
Cooling Time Constant:- = 100 min				
Safe Stall time 100% V:- Hot:- 11 s Cold:- 21 s				
80% V:- Hot:- 18 s Cold:- 32 s				
HAZARDOUS AREA CERTIFICATION				
Certifying Authority:- DEKRA EXAM				
Certificate No.:- 09ATEX E 167				
Protection type EExd EExp EExN Safe				
Zone 2 Group II Temp T3				
Purging System Data ☐ Yes ☒ No				
Air Pressure required N/A Bar				
Air flow required Pre-start N/A m ³ Running N/A m ³				
Aux power requirements N/A				
TESTING REQUIREMENTS:				
(i) Production test: Not Applicable				
(ii) Performance test: Provided / Not Provided (Review of similar certificate)				
Remark: Required on each identical motor supplied				
(iii) Routine test: Provided / Not Provided (Witnessed)				
(iv) Type test: Provided / Not Provided (Review of similar certificate)				
(v) Sample Coil test: Not Applicable				
REV. 0: 15.07.2010 / PMCD50				
NOTES				
1) All cable glands shall be of the compression type, provided by others				
2) Derated motor rating with respect to design ambient temperature and voltage tolerance (site rating)				
3) Manufacturer to provide TEFC motor if in his standard range of production, otherwise IC84A1A1 motor shall be provided. DELETED				
4) Will be furnished LATER / To be confirmed during detail engineering. DELETED				
5) Motors > 1.5kW shall be delta wound. DELETED				
6) EExN terminal box is not acceptable for EEx(p) or EEx(d) motors. Motors installed in non-hazardous area within process installation shall also be EExN type suitable for IIB, T3 classification. DELETED				
7) The starting current specified shall be inclusive of IEC tolerance for machine reactance and project specification tolerance for supply voltage. Specific restrictions for higher rating LV motors may apply which shall be decided during detail engineering. DELETED				
8) Vendor shall furnish Torque-Speed curves at 100% and 80% Vn superimposed on driven equipment torque-speed characteristic curve (loaded/unloaded). Starting current-time characteristic curve (hot/cold) at 100% and 80% Vn. Motor thermal withstand characteristic curve (hot/cold) at 100% and 80% Vn. DELETED				
9) All LV motors shall be subjected to routine test which shall be either witnessed and / or test certificates reviewed by purchaser or purchaser representative. DELETED				
10) The Tc (Ignition Temperature) rating certified for 10°C or any other lower temperature, shall be derated to a lower T-rating for use at an ambient temperature of 55°C or as certified by the concerned authorities as applicable. DELETED				
11) Applicable only for Motors above or equal to 160kW. DELETED				
12) s/n: PM-6709/6710 - 3400542-543, PM-6711/6712 - 3395649-650				

	DOCUMENT TITLE:		Project No: P14333	
	DATA SHEET FOR LOW VOLTAGE INDUCTION MOTORS (FOR TUNDISH DRAIN SUMP PUMP)		ADCO Doc No: 14.01.54.9697	
			Rev. 0	15/02/2011
			Page 4 of 4	

MOTOR INFORMATION				REV
Tag Number:- 14-11/12/13/14/15-PM-6705/6706				B
Service Description:- (CLOSED DRAIN DRUM PUMP)				
Refer to Specification:- 14.99.53.1602 + Shell DEP 33.66.05.31 + ADCO Amendments 33.66.05.31A				
Manufacturer:- Loher GmbH				
DATA TO BE COMPLETED BY SUPPLIER				
Standard: ☐ BS ☒ IEC ☐ NEMA ☐ VDE ☐ Other:- DEP				
ELECTRICAL DETAILS		MECHANICAL DETAILS		
Frame Ref. No.:-	160L s/n: 3395591-600	Construction	V1	
Model/Cat. No.:-	AMGK-160LB-02M	No Of Poles	2	
Outline Dimension Dwg. No.:-	MLA16-0024BL05	No of Stator Slots	6	
Speed at Full Load:-	2920 rpm	Rotation (NDE)	☐ CW ☐ CCW ☒ BI	
Full Load Current (FLC):-	25.5 A	Bearing Type:-	☒ Ball ☐ Roller ☐ Sleeve	
Starting Current:- (locked rotor) 100%/80% rated volts	540 / 432 % FLC	Make & Ref No. (DE):	FAG / SKF 6310 C3	
Efficiency (100/75/50):-	90.9 / 91.8 / 91.4 %	Make & Ref No. (NDE):	FAG / SKF 6310 C3	
Power Factor (100/75/50):-	0.9 / 0.89 / 0.87 %	Lubrication:-	☐ Oil (self containing) ☒ Grease	
Power Factor (Starting):-	0.44	Cooling System:-	IC 411	
Full Load Torque (FLT):-	49	Rotor End float:-	N.A. mm: mm	
Starting Torque:- (locked rotor) 100%/80% rated volts	167 / 101 % FLT	Rotor End-Play:-	N.A. mm	
Minimum Accel. Torque (Motor & Load):-	120 / 70 % FLT	Rotor Air Gap:-	0.8 mm	
Pull-Out Torque:-	240 / 146 % FLT	Moment of Inertia J (Motor & Load):-	0.0574 kgm²	
Locked Rotor Withstand Time:	100% V:- Hot:- 11 s Cold:- 23 s	H Factor:-	N.A. MW-s/MVA	
	80% V:- Hot:- 18 s Cold:- 35 s	Weight of Motor:-	approx. 130 kg	
Run-Up Time (Motor & Load)	100% V:- Hot:- 1.1 s Cold:- 1.1 s	Noise Level:-	≤77 dB(A)@ 1 m @Full Load	
	80% V:- Hot:- 1.6 s Cold:- 1.6 s			
Insulation Class & Temp Rise above Design Ambient:- 165(CL-F) / 65(CL-B)				
COOLING				
Max. No. of Starts in . 1 .hour	5 equally spaced			
Maximum No. of Successive Starts:-	2 ..from hot 3 from cold			
Starting time 100% / 80 % Volt :	1.1 s / 1.6 s			
Locked Rotor Impedance @ 20 %:-	= 2.19 ohms N/A % tolerance			
Locked Rotor Reactance @ 20 %:-	= 0.80 ohms N/A % tolerance			
Rotor Resistance @ 20 %:-	= 0.05 ohms N/A % tolerance			
Stator Resistance @ 20 %:-	= 1.02 ohms N/A % tolerance			
Steady State Reactance:-	X = N/A % +/- N/A % tolerance			
Transient Reactance:-	X' = N/A % +/- N/A % tolerance			
Sub-Transient Reactance:-	X'' = N/A % +/- N/A % tolerance			
Zero Sequence reactance	= N/A % +/- N/A % tolerance			
X/R Ratio:-	N/A = N/A			
Open Circuit Transient Time Constant:-	N/A = N/A s			
Heating Time Constant:-	= 30 min			
Cooling Time Constant:-	= 100 min			
Safe Stall time	100% V:- Hot:- 11 s Cold:- 23 s			
	80% V:- Hot:- 18 s Cold:- 35 s			
HAZARDOUS AREA CERTIFICATION				
Certifying Authority:- DEKRA EXAM				
Certificate No.:- 09ATEX E 167				
Protection type	EEExd	EEExp	EEExN	Safe
Zone	2	Group II	Temp T3	
Purging System Data	☐ Yes ☒ No			
Air Pressure required	N/A Bar			
Air flow required Pre-start	N/A m³ Running N/A m³			
Aux power requirements	N/A			
TESTING REQUIREMENTS:				
(i) Production test: Not Applicable				
(ii) Performance test: Provided / Not Provided (Review of s/m/r certificate)				
Remark: Required on each identical motor supplied				
(iii) Routine test: Provided / Not Provided (Witnessed)				
(iv) Type test: Provided / Not Provided (Review of s/m/r certificate)				
(v) Sample Coil test: Not Applicable				
REV. 0: 22.01.2010 / PMOD50				
REV. 1: 15.07.2010 / PMOD50				
NOTES				
1) All cable glands shall be of the compression type, provided by others				
2) Derated motor rating with respect to design ambient temperature and voltage tolerance (site rating)				
3) Manufacturer to provide TEFC motor if in his standard range of production, otherwise IC6A1A1 motor shall be provided. DELETED				
4) Will be furnished LATER / To be confirmed during detail engineering. DELETED				
5) Motors > 1.6kW shall be delta wound. DELETED				
6) EEExN terminal box is not acceptable for EEx(p) or EEx(d) motors. Motors installed in non-hazardous area within process installation shall also be EEExN type suitable for IIB, T3 classification. DELETED				
7) The starting current specified shall be inclusive of IEC tolerance for machine reactance and project specification tolerance for supply voltage. Specific restrictions for higher rating LV motors may apply which shall be decided during detail engineering. DELETED				
8) Vendor shall furnish Torque-Speed curves at 100% and 80% Vn superimposed on driven equipment torque-speed characteristic curve (loaded/unloaded). Starting current-Time characteristic curve (hot/cold) at 100% and 80% Vn. Motor thermal withstand characteristic curve (hot/cold) at 100% and 80% Vn. DELETED				
9) All LV motors shall be subjected to routine test which shall be either witnessed and / or test certificates reviewed by purchaser or purchaser representative. DELETED				
10) The T _x (Ignition Temperature) rating certified for 40°C or any other lower temperature, shall be derated to a lower T-rating for use at an ambient temperature of 55°C or re-certified by the concerned authorities as applicable. DELETED				
11) Applicable only for Motors above or equal to 160kW. DELETED				

	DOCUMENT TITLE:		Project No: P14333	
	DATA SHEET FOR LOW VOLTAGE INDUCTION MOTORS (CLOSED DRAIN DRUM PUMP)		ADCO Doc No: 14.99.54.9605	
	DATA SHEET		Rev. B	04/11/2010
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MOTOR INFORMATION				REV												
Tag Number:-		14-01-PM-1101/1102														
Service Description:-		OIL RETURN PUMP														
Refer to Specification:-		14.99.53.1602 + Shell DEP 33.66.05.31 + ADCO Amendments 33.66.05.31A														
Manufacturer:-		Lobert GmbH														
REQUIREMENTS AND CONDITIONS																
QUANTITY		No Off 2														
SITE CONDITIONS																
Ambient Temperature:		MAX / MIN / DESIGN- °C 58 / 4 / 55														
Humidity		Max 95% at 43°C														
Altitude		< 1000 metres														
Area Classification:- (see note 6)		☐ N/A ☒ ZONE 2 ☐ ZONE 1														
Temperature Class:- (Note 10)		☐ N/A ☒ T3 ☐ Other T														
Gas Group:-		☐ N/A ☒ IIB ☐ Other II														
Type of Protection:-		☐ N/A ☒ EExN ☐ Exd (per Zone 1)														
BASIC DATA																
Supply System		☐ 400 V ☒ 415 V : ± 10% / 3 Ph. / 50 Hz ± 2%														
Neutral:		☐ Unearthed ☐ Resistance Earthed (400A)														
☒ Solidly Earthed																
Prospective System Fault Current:-		63 KA (All other Switchgear.)														
Cooling method:		TEFC														
Degree of Enclosure Protection:-		IP 55														
Continuous Rating:-		30 kW														
Duty Type		S1 Service factor 1														
Synchronous Speed:-		3000 RPM														
Insulation Class		165(F) / TEMP. RISE 65 K (CLASS B)														
Max. Permitted Temp Rise:-		65 K over an ambient temp. of 55°C														
Direction of Rotation:-		☐ CW ☐ CCW ☒ Bi-Dir.														
(viewed from non-drive end)																
Method of Starting:-		DIRECT ON LINE ☐ Other														
Max LRC/FLC ratio %		(Note 7) ☒ 600 ☐ Other														
Winding Connection:		(Note 5) ☐ Star ☒ Delta														
Noise Level		≤ 77 dB (A) at full load at 1 meter distance.														
Paint Shade		RAL 7035														
Mounting:		☐ Horizontal ☒ Vertical														
Slide Rails Required		☐ Yes ☒ No														
Heater Required:		☒ Yes ☐ No														
Heater Voltage:-		240 V 1 ph AC, 50 Hz														
Drain Required:		☐ Yes ☒ No														
Breather Required:		☐ Yes ☒ No														
Terminal Box Type :-		☐ N/A ☒ Exe ☐ Exd (Note 6)														
LOCATION OF TERMINAL BOX AND ENTRY (See Motor List)																
TESTING REQUIREMENT (Section 13 of DEP 33.66.05.31-Gen)																
(i) Production test: Witness ☐ Review of certificate: ☐ Not required ☒ (ii) Performance test: Witness ☐ Review of certificate: ☒ Not required ☐ Remarks: Required on each identical motor supplied (iii) Routine test: Witness ☒ and / or Review of certificate: ☒ Not required ☐ (iv) Type test: Witness ☐ Review of certificate: ☐ Not required ☒ (v) Sample Coil test: Witness ☐ Review of certificate: ☐ Not required ☒																
ABBREVIATIONS																
EEx(N) Non Sparking EEx(d) Flameproof																
TEFC - Totally Enclosed Fan Cooled																
TBA - To be advised -s) by supplier, -p) by purchaser																
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Heater	C/Y	1xM20x1,5	3C - 4 mm²													
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DOCUMENT TITLE: DATA SHEET FOR LOW VOLTAGE INDUCTION MOTORS (OIL RETURN PUMPS) TAG NO: 14-01-PM-1101 / 1102 Project No: P14333 ADCO DOC No. : 14.01.54.9896 Rev. D Page 3 of 4																
14/08/2011																

MOTOR INFORMATION				REV
Tag Number:-		14-01-PM-1101/1102		
Service Description:-		OIL RETURN PUMP		
Refer to Specification:-		14.99.53.1602 + Shell DEP 33.66.05.31 + ADCO Amendments 33.66.05.31A		
Manufacturer:-		Leber GmbH		
DATA TO BE COMPLETED BY SUPPLIER				
Standard: ☐ BS ☒ IEC ☐ NEMA ☐ VDE ☐ Other:- DEP				
ELECTRICAL DETAILS			MECHANICAL DETAILS	
Frame Ref. No.:-		200L s/n: 3395647-648	Construction IM V1	
Model/Cat. No.:-		AMGK-200LJ-02M	No Of Poles 2	
Outline Dimension Dwg. No.:-		MLA20-0024AL	No of Stator Slots see section "OTHER DETAILS"	
Speed at Full Load:-		2965 rpm	Rotation (NDE) ☐ CW ☐ CCW ☒ BI	
Full Load Current (FLC):-		50 A	Bearing Type: ☒ Ball ☐ Roller ☐ Sleeve	
Starting Current:- (locked rotor) 100%/80% rated volts		540 / 432 % FLC	Make & Ref No (DE): FAG / SKF 6212 C3	
Efficiency (100/75/50%):-		93 / 92.6 / 90.8 %	Make & Ref No (NDE): FAG / SKF 6212 C3	
Power Factor (100/75/50%):-		0.9 / 0.89 / 0.84	Lubrication: ☐ Oil (self containing) ☒ Grease	
Power Factor (Starting):-		0.25	Cooling System:- IC 411	
Full Load Torque (FLT):-		98.6 Nm	Rotor End float:- N.A. mm	
Starting Torque:- (locked rotor) 100%/80% rated volts		90 / 54 % FLT	Rotor End Play:- N.A. mm	
Minimum Accel. Torque (Motor & Load):- 100%/80% V		50 / 25 % FLT	Rotor Air Gap:- 0.8 mm	
Pull Out Torque:-		165 / 112 % FLT	Moment of Inertia J (Motor & Load):- 0.2 kgm ²	
Locked Rotor Withstand Time:- 100% V:- Hot:- 11 s Cold:- 22 s			H Factor:- N.A. MW-s/MVA	
80% V:- Hot:- 18 s Cold:- 34 s			Weight of Motor:- approx. 280 kg	
Run-Up Time (Motor & Load) 100% V:- Hot:- 2.1 s Cold:- 2.1 s			Noise Level:- <77 dB(A)@ 1 m	
80% V:- Hot:- 3.8 s Cold:- 3.8 s				
Insulation Class & Temp Rise above Design Ambient:- 155(F) / TEMP. RISE 65 K (CLASS B)				
/By resistance				
Max. No. of Starts in 1 hour 5 equally spaced			COOLING	
Maximum No. of Successive Starts:- 2 from hot 3 from cold			Cooling Method ☒ TEFC ☐ IC6A4A4 ☐ Other	
Starting time 100% / 80 % Volt :- 2.1 / 3.8 s			Motor Air Cooler Rating N/A kW rating	
Locked Rotor Impedance @ 20 °C :- = 1.08 ohms +/- 10 % tolerance			Air Cooler Fans N/A No. off kW rating	
Locked Rotor Reactance @ 20 °C :- = 1.04 ohms +/- 10 % tolerance			Cooling Medium N/A quantity of medium litres	
Rotor Resistance @ 20 °C :- = 0.16 ohms +/- 10 % tolerance			Filters / no off / type N/A	
Stator Resistance @ 20 °C :- = 0.22 ohms +/- 10 % tolerance			OTHER DETAILS	
Steady State Reactance:- X = N/A % +/- N/A % tolerance			Heater Rating:- 48 W 240V +/-5% 1ph ac	
Transient Reactance:- X' = N/A % +/- N/A % tolerance			Lubrication heater details N/A W 240V 1ph / 415V 3ph ac	
Sub-Transient Reactance:- X'' = N/A % +/- N/A % tolerance			Thermostat N/A Provided/Not Provided	
Zero Sequence reactance = N/A % +/- N/A % tolerance			Surge Absorber & capacitor N/A Required/Not Required	
X/R Ratio:- N/A = N/A			Bearing Temp Detectors N/A No. Type:	
Open Circuit Transient Time Constant:- N/A = N/A s			Winding Temp Detectors N/A No. Type:	
Heating Time Constant:- = 35 min			Quantity of stator slots: 36	
Cooling Time Constant:- = 120 min			Quantity of rotor bars: 28	
Safe Stand time 100% V:- Hot:- 11 s Cold:- 22 s				
80% V:- Hot:- 18 s Cold:- 34 s				
HAZARDOUS AREA CERTIFICATION				
Certifying Authority:- DEKRA EXAM				
Certificate No.:- 09ATEX E 158				
Protection type ☒ Exd ☒ Exp ☒ Exn ☐ Safe				
Zone 2 Group II Temp T3				
Purging System Data ☐ Yes ☒ No				
Air Pressure required N/A Bar				
Air flow required Pre-start N/A m ³ Running N/A m ³				
Aux power requirements N/A				
TESTING REQUIREMENTS:				
(i) Production test: Not Applicable				
(ii) Performance test: Not Provided				
Remark: Required on each identical motor supplied				
(iii) Routine test: Provided				
(iv) Type test: Provided				
(v) Sample Coil test: Not Applicable				
NOTES				
1) deleted				
2) Derated motor rating with respect to design ambient temperature and voltage tolerance (site rating)				
3) deleted				
4) deleted				
5) deleted				
6) deleted				
7) The starting current specified is inclusive of IEC tolerance for machine reactance and project specification tolerance for supply voltage. Specific restrictions for higher rating LV motors may apply which shall be decided during detail engineering.				
8) deleted				
9) deleted				
10) The Tx (Ignition Temperature) rating certified for 40°C or any other lower temperature, shall be derated to a lower T-rating for use at an ambient temperature of 55°C or re-certified by the concerned authorities as applicable.				
11) deleted				
		DOCUMENT TITLE: DATA SHEET FOR LOW VOLTAGE INDUCTION MOTORS (OIL RETURN PUMPS) TAG NO: 14-01-PM-1101 / 1102		
		Project No: P14333 ADCO DOC No. : 14.01.54.9696 Rev. D 14/06/2011 Page 4 of 4		

MOTOR INFORMATION				REV																							
Tag Number:-		14-01-PM-6701/6702/6703/6704/6705/6706/6707/6708																									
Service Description:-		FOR CLOSED DRAIN DRUM PUMP																									
Refer to Specification:-		14.99.53.1602 + Shell DEP 33.68.05.31 + ADCO Amendments 33.68.05.31A																									
Manufacturer:-		Lohrer GmbH																									
REQUIREMENTS AND CONDITIONS																											
QUANTITY		No. Of 8																									
SITE CONDITIONS																											
Ambient Temperature:-		50 / 4 / 55																									
MAX / MIN / DESIGN °C		Max 95% at 43°C																									
Humidity		< 1000 m/s																									
Altitude		N/A																									
Area Classification:- (see note-6)		N/A																									
Temperature Class:- (Note-10)		T3																									
Gas Group:-		IIB																									
Type of Protection:-		Exd (for Zone 1)																									
BASIC DATA																											
Supply System		400 V / 415 V ± 10% / 3 Ph / 50 Hz ± 2%																									
Neutral:		Unearthed																									
Resistance Earthed (400A)		Solidly Earthed																									
Prospective System Fault Current:-		80 KA (At ESWS-4404 Swgr.) 63 KA (All other Switchgear)																									
Cooling method:-		TEFC																									
Degree of Enclosure Protection:-		IP 55																									
Continuous Rating:-		18.5 kW (Note 2)																									
Duty Type		S1																									
Synchronous Speed:-		3000 RPM																									
Insulation Class		F																									
Max. Permitted Temp Rise:-		65 °C (above 55°C ambient)																									
Direction of Rotation:-		CW / CCW / BI-Dir.																									
(Moved from non-drive end)		DIRECT ON LINE / Other																									
Method of Starting:-		Star / Delta																									
Max LRC/FLC ratio %		600																									
Winding Connection:-		Star / Delta																									
Noise Level		≤ 77 dB (A) at full load at 1 meter distance.																									
Paint Shade		RAL 7035																									
Mounting:		Horizontal / Vertical																									
Slide Rails Required		Yes / No																									
Heater Required:		Yes / No																									
Heater Voltage:-		240 V 1 ph AC, 50 Hz																									
Drain Required:		Yes / No																									
Breather Required:		Yes / No																									
Terminal Box Type :-		N/A / Exe / Exd (Note-6)																									
LOCATION OF TERMINAL BOX AND ENTRY (See Motor List)																											
TESTING REQUIREMENT (Section 13 of DEP 33.68.05.31-Gan)																											
(i) Production test:	Witness	Review of certificate	Not required																								
(ii) Performance test:	Witness	Review of certificate	Not required																								
Remark: Required on each identical motor supplied																											
(iii) Routine test:	Witness	Review of certificate	Not required																								
(iv) Type test:	Witness	Review of certificate	Not required																								
(v) Sany's Coltest:	Witness	Review of certificate	Not required																								
ABBREVIATIONS																											
EE(N) Non Sparking		EE(o) Flameproof																									
TEFC - Totally Enclosed Fan Cooled																											
TBA - To be advised -s) by supplier, -p) by purchaser																											
NOTES																											
Refer to Notes Page 4																											
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DOCUMENT TITLE:
DATA SHEET FOR
LOW VOLTAGE INDUCTION MOTORS
(CLOSED DRAIN DRUM PUMP)

Project No: P14333

ADCO Doc No: 14.01.54.9698

Rev. C

18/02/2011

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MOTOR INFORMATION				REV
Tag Number:-	H-01-PM-6701/6702/6703/6704/6705/6706/6707/6708			
Service Description:-	FOR CLOSED DRAIN DRUM PUMP			
Refer to Specification:-	14.99.53.1602 + Shell DEP 33.66.05.31 + ADCO Amendments 33.66.05.31A			
Manufacturer:-	Lohr GmbH			
DATA TO BE COMPLETED BY SUPPLIER				
Standard:	☐ BS ☒ IEC ☐ NEMA ☐ VDE ☐ Other:- DEP			
ELECTRICAL DETAILS		MECHANICAL DETAILS		
Frame Ref. No.:-	180M s/n: (See Note 12)	Construction	V1	
Model/Cat. No.:-	AMGK-180MB-02M	No Of Poles	2	
Outline Dimension Dwg. No.:-	MLA18-0024AM	No of Stator Slots	6	
Speed at Full Load:-	2940 rpm	Rotation (NDE):	☐ CW ☐ CCW ☒ BI	
Full Load Current (FLC):-	32.5 A	Bearing Type:-	☒ Ball ☐ Roller ☐ Sleeve	
Starting Current:- (locked rotor) 100%/80% rated volts	550 / 440 % FLC	Make & Ref No. (DE):	FAG / SKF 6311 C3	
Efficiency (100/75/50%):-	91.4 / 91.5 / 90 %	Make & Ref No. (NDE):	FAG / SKF 6311 C3	
Power Factor (100/75/50%):-	0.88 / 0.89 / 0.88 %	Lubrication:-	☐ Oil (self containing) ☒ Grease	
Power Factor (Starting):-	0.4	Cooling System:-	IC 411	
Full Load Torque (FLT):-	60	Rotor End float:-	N.A. mm; mm	
Starting Torque:- (locked rotor) 100%/80% rated volts	145 / 88 % FLT	Rotor End Play:-	N.A. mm	
Minimum Accel. Torque (Motor & Load):-	100%/80% V 90 / 30 % FLT	Rotor Air Gap:-	0.7 mm	
Pull-Out Torque:-	200 / 122 % FLT	Moment of Inertia J (Motor & Load):-	0.094 kgm²	
Locked Rotor Withstand Time:	100% V:- Hot:- 17 s Cold:- 34 s	H Factor:-	N.A. MW.s/MVA	
	80% V:- Hot:- 26 s Cold:- 53 s	Weight of Motor:-	approx. 171 & 174 kg	
Run-Up Time (Motor & Load)	100% V:- Hot:- 1.4 s Cold:- 1.4 s	Noise Level:-	<77 dB(A)@ 1 m @ Full Load	
	80% V:- Hot:- 2.3 s Cold:- 2.3 s			
Insulation Class & Temp Rise above Design Ambient:-	155/130 (F/B) /By resistance			
Max. No. of Starts in 1 hour	5 equally spaced	COOLING		
Maximum No. of Successive Starts:-	2 from hot 3 from cold	Cooling Method	☒ TEFC ☐ IC6A1A1 ☐ Other	
Starting time 100% / 80 % Volt:-	2.2 /	Motor Air Cooler Rating	N/A kW rating	
Locked Rotor Impedance @ 20 °C :-	= 2.04 ohms N/A % tolerance	Air Cooler Fans	N/A No off kW rating	
Locked Rotor Reactance @ 20 °C :-	= 0.51 ohms N/A % tolerance	Cooling Medium	N/A quantity of medium litres	
Rotor Resistance @ 20 °C :-	= 0.05 ohms N/A % tolerance	Filters / no off / type	N/A	
Stator Resistance @ 20 °C :-	= 0.04 ohms N/A % tolerance	OTHER DETAILS		
Steady State Reactance:-	X = N/A % +/- N/A % tolerance	Heater Rating:-	48 W 240V +/-5% 1ph ac	
Transient Reactance:-	X' = N/A % +/- N/A % tolerance	Lubrication heater details	N/A W 240V 1ph / 415V 3ph ac	
Sub-Transient Reactance:-	X'' = N/A % +/- N/A % tolerance	Thermostat	N/A Provided/Not Provided	
Zero Sequence reactance	= N/A % +/- N/A % tolerance	Surge Absorber & capacitor	N/A Required/Not Required	
X/R Ratio:-	N/A = N/A	Bearing Temp Detectors	N/A No: Type:	
Open Circuit Transient Time Constant:-	N/A = N/A s	Winding Temp Detectors	N/A No: Type:	
Heating Time Constant:-	= 35 min			
Cooling Time Constant:-	= 120 min			
Safe Stall time	100% V:- Hot:- 17 s Cold:- 34 s			
	80% V:- Hot:- 26 s Cold:- 53 s			
HAZARDOUS AREA CERTIFICATION				
Certifying Authority:-	DEKRA EXAM			
Certificate No.:-	10ATEX E 033			
Protection type	EEExd	EEExp	EEExn	Safe
Zone	2	Group II	Temp T3	
Purging System Data	☐ Yes ☒ No			
Air Pressure required	N/A Bar			
Air flow required Pre-start	N/A m³ Running N/A m³			
Aux power requirements	N/A			
TESTING REQUIREMENTS:				
(i) Production test Not Applicable				
(ii) Performance test Provided / Not Provided (Review of similar certificate)				
Remarks: Required on each identical motor supplied				
(iii) Routine test Provided / Not Provided (witnessed)				
(iv) Type test Provided / Not Provided (Review of similar certificate)				
(v) Sample Cell test Not Applicable				
REV. 0: 22.01.2010 / PM05D50				
REV. 1: 15.07.2010 / PM05D50				
NOTES				
1) All cable glands shall be of the compression type, provided by others				
2) Rated motor rating with respect to design ambient temperature and voltage tolerance (cable rating)				
3) Manufacturer to provide TEFC motor if in the standard range of production, otherwise IC6A1A1 motor shall be provided. DELETED				
4) Will be furnished LATER / To be confirmed during detail engineering. DELETED				
5) Motors > 1.5kW shall be delta wound. DELETED				
6) EEExn terminal box is not acceptable for Ex(p) or Ex(d) motors. Motors installed in non-hazardous area within process installation shall also be EEExn type suitable for IIb, T3 classification. DELETED				
7) The starting current specified shall be inclusive of IEC tolerance for machine resistance and project specification tolerance for supply voltage. Specific restrictions for higher rating LV motors may apply which shall be decided during detail engineering. DELETED				
8) Vendor shall furnish Torque-Speed curves at 100% and 80% Vn superimposed on driven equipment torque-speed characteristic curve (loaded/unloaded); Starting current-Time characteristic curve (hot/cold) at 100% and 80% Vn; Motor thermal withstand characteristic curve (hot/cold) at 100% and 80% Vn. DELETED				
9) All LV motors shall be subjected to routine test which shall be either witnessed and for test certificates reviewed by purchaser or purchaser representative. DELETED				
10) The Tc (Tgation Temperature) rating certified for 40°C or any other lower temperature, shall be derated to a lower T-rating for use at an ambient temperature of 55°C or more certified by the concerned authorities as applicable. DELETED				
11) Applicable only for Motors above or equal to 160kW. DELETED				
12) s/n: PM-6701/6702 - 3395657-858, PM-6703/6704/6705/6706/6707/6708 - 3400549-554				

	DOCUMENT TITLE:	Project No: P14333	
	DATA SHEET FOR LOW VOLTAGE INDUCTION MOTORS (CLOSED DRAIN DRUM PUMP)	ADCO Doc No: 14.01.54.9698	
		Rev. C	16/02/2011
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Notes:

- Purchase can be made in full or part.
- All items subject to prior sale.
- Located in United Kingdom.
- Full Documentation Packages are available upon request.
- Price by offer and acceptance by owner
- Inspection by prior appointment