



TLT-Turbo GmbH

# Erection- and Maintenance Manual

of

## Cooler Fan Type 15874 Z/1756

TLT-Job No.: 71260-4

					Customer: <b>Polysius AG</b>	Job: <b>IRSAB</b>	
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## 2. Description

### 2.1 Rating Data / Technical Data

Kind of Fan: Cooler Fan  
Type of fan: 15874 Z/1756  
Job No.: 71260-4  
Built in: 2005  
Factory No.: 723006980  
Sense of rotation: L (VDMA) acc. VDMA 24165

Characteristic of the fan:	<b>Volumetric flow rate:</b>	216,7	m <sup>3</sup> /s
	<b>Gas temperature:</b>	323	°C
	<b>Temperature</b> <small>max. mech.:</small>	400	°C
	<b>Spec. Energy</b>	2747	J/kg
	<b>Density at fan inlet</b>	0,583	kg/m <sup>3</sup>
	<b>Total pressure rise:</b>	1611	Pa
	<b>Fan speed:</b>	595	rpm
	<b>Fan speed</b> <small>max.:</small>	625	rpm
	<b>Power required at shaft:</b>	442	kW
	<b>Mass inertia moment</b> (J = 0,25 x GD <sup>2</sup> ):	3800	kgm <sup>2</sup>
	<b>Motor power:</b>	508	kW
	<b>Motor speed:</b>	198 - 595	1/min

Kind of installation: concrete foundation  
Kind of control: variable speed control  
Kind of coupling: flex. compression sleeve coupling  
Kind of bearing: oil lubricated roller bearing  
Weight of machinery (without motor and insulation): app: 23800 kg  
General drawing No.: H6002316

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### 2.1.1 Parts of delivery

Driver: ( by Customer )

Motor-Fabricate / Type: ELIN / MKG 550 L10	Rated output: 508 kW
Size: IM B3	Rated speed: 198-595 1/min
Frequency: 50 Hz	Rated voltage: 690 V
Weight: 6100 kg	Protection: IP 55

Coupling:

Manufacture: Flender	Type: RWN 450
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Bearing:

Manufacture: SNR	Type: SNOE 226
Lubricant: Oil	ISO VG 100
Set points of bearing temperature: ( measured at outside bearing ring ) Alarm: 95°C Disconnection: 105 °C	Set points of vibration monitoring: ( measured at outside bearing ring ) Alarm: 8,8 mm/s Disconnection: 11 mm/s

Thermo couple:

manufacturer: Dittmer	Type: Pt100 3 Wire connection
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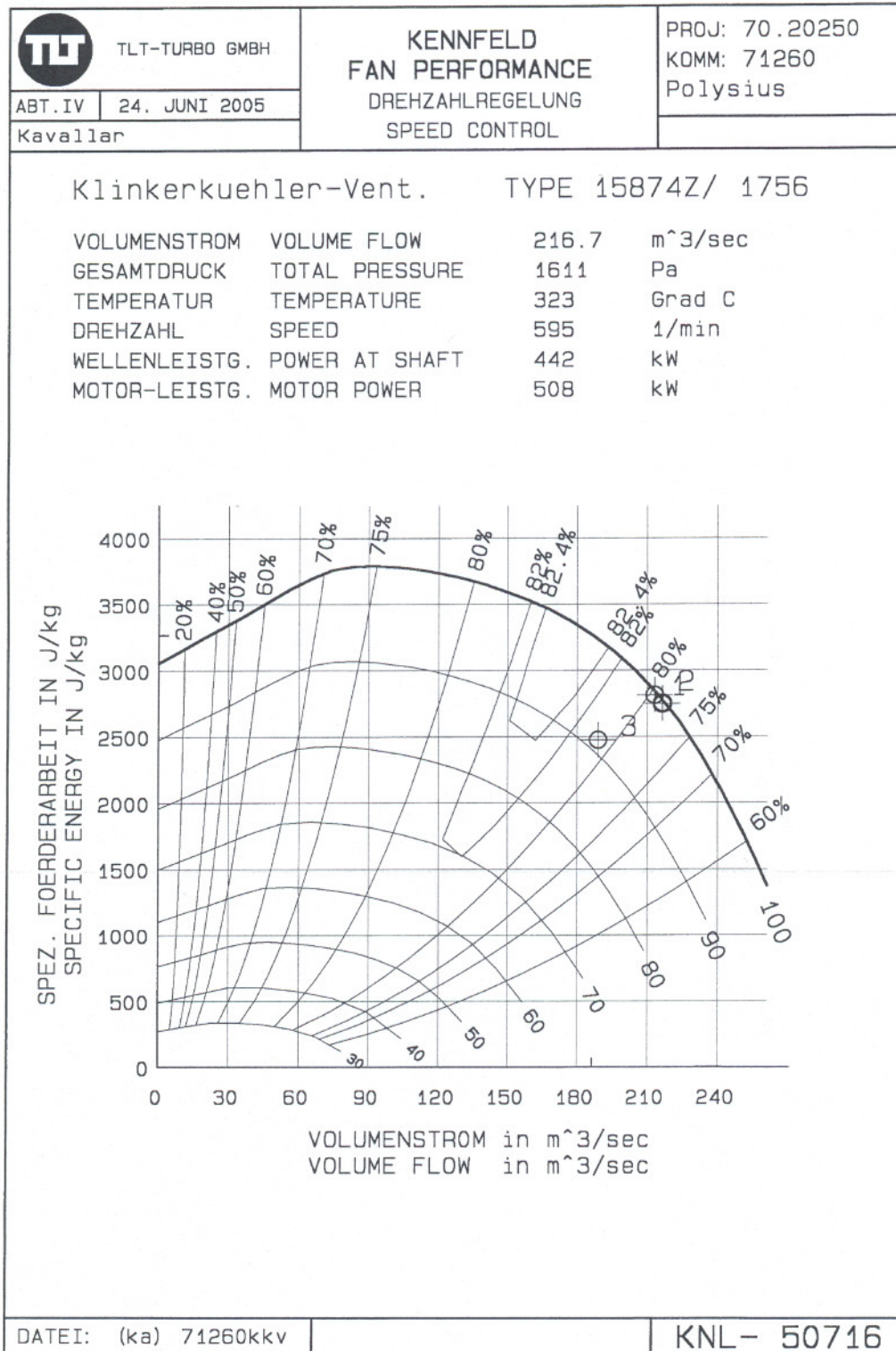
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## 2.1.2 Characteristic curve



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### 2.1.3 Table

TLT-Turbo GmbH		Table to the Klinkerkuehler-Vent. Type 15874Z/ 1756			Com.-No. 71260 Cust. Polysius	
Dpt IV	24.06.2005				TAB-No. 50716	
Name : Kavallar		Control by Speed			Sheet 1 of 1	
Impeller diameter		2782 mm	Cross sec. suc. box		IN	9.87 m <sup>2</sup>
Recomm. motor power		508 kW	Cross sec. housing		IN	m <sup>2</sup>
Motor speed		595 1/min	Cross sec. housing		OUT	6.64 m <sup>2</sup>
Barometric pressure		1007 mbar	Cross sec. diffuser		OUT	10.8 m <sup>2</sup>
Load		BP 1	BP 2	BP 3		
Point		1	2	3	4	5
Mass flow kg/s		126.4	121.0	121.0		
Volume flow Sm <sup>3</sup> /h		349913	335000	335000		
Volume flow Am <sup>3</sup> /s		216.7	213.4	189.0		
Temperature ss deg C		323	340	270		
pl inquiry Pa		1500	1500	1500		
pl suc. box Pa		59	56	49		
pl shaft Pa		26	25	22		
pl diffuser Pa		26	25	22		
Total press. Pa		1611	1606	1593		
pa absolute Pa		99220	99220	99220		
Density (std) kg/m <sup>3</sup>		1.300	1.300	1.300		
Density (act) kg/m <sup>3</sup>		0.583	0.567	0.640		
Compress-fact. -		0.994	0.994	0.994		
Density (aver) kg/m <sup>3</sup>		0.586	0.570	0.644		
Spec. energy J/kg		2747	2816	2475		
Efficiency %		78.5	79.7	80.9		
Power at shaft kw		442	427	370		
Speed rpm		595	593	544		
Temperature ds deg C		327	344	273		
Datei : ka71260kkv						

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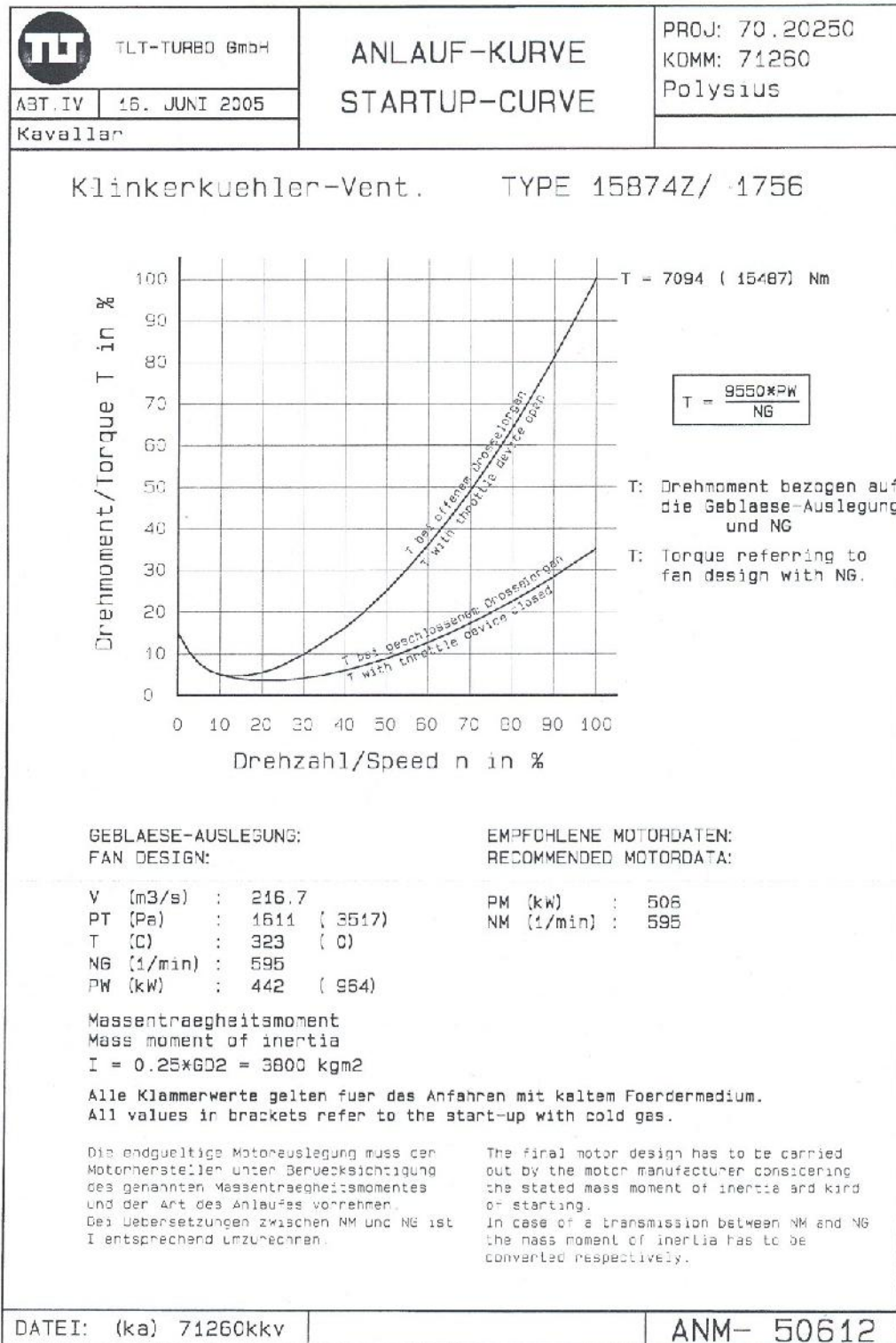
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## 2.1.4 Startup-curve



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## 2.1.5 Octave Band Analysis

TLT-Turbo GmbH		Octave Band Analysis to Klinkerkuehler-Vent. Type 15874Z/ 1756		Project-no 70.20250 Cust. Polysius	
Dpt IV	24.06.2005			OAN-no 50717	
Name : Kavallar				Sheet 1 of 1	
Design data :					
Volume flow		216.70 m3/s	Diameter of impeller		2782 mm
Temperature		323 °C	Tip speed		87 m/s
Total pressure		1611 Pa	Number of blades		12 -
Density suc. side		0.583 kg/m3	Blade passing frequency		119/238 Hz
Speed		595 rpm			
Frequency		Measuring surface sound press.level at a distance of 1m from the fan casing Hz	Sound power level in the gas flow suction side		Sound power level in the gas flow discharge side
		re 2·10E-5 N/m²	re 10E-12 W		re 10E-12 W
		dB	dB(A)	dB	dB(A)
31		86	47	113	73
63		84	58	116	89
125		88	72	119	103
250		85	76	118	109
500		75	71	116	112
1000		64	64	112	112
2000		60	61	106	107
4000		56	57	100	101
8000		52	50	91	89
Total level		92	79	124	117
Measuring area [Ls=10·lg(S/So)]		24 dB			
Tolerances :					
		Total level : ±4 dB Octave band : ±6 dB			
All data according to DIN 45635				Datei : ka71260kkv	

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## 7.7 Maintenance intervals

The time intervals specified are based on continuous operation of the fan. Because of varying operating conditions, it is impossible to determine beforehand the exact intervals for inspections, or wear and maintenance checks. A routine maintenance schedule must be drawn up on the basis of the operating conditions prevailing at your installation.

Operating hours	Check item/Maintenance item
Every year	Inspect the impeller for impurities and clean
Every year	Examine the impeller as to wear
Every year	Complete check of fastening-bolts
Every year	Check the coupling as to its functioning
Every 2000 h	Lubricant exchange of fan bearing
After 500 + 1000 h ( only once)	Lubricant exchange
Every week	Check the temperature and oil tightness of the bearings
Every week	Quit running of the fan

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## 8. Lubricant instruction

### 8.1 Fan Bearing

For lubrication of the fan bearings, we recommend Hydraulic oils acc. DIN 51524 part 1+2 of the viscosity class VG-100.

Lubrication point	Lubricant		Filling / lubricating point		Lubricant interval h	Remarks
	Grease	Oil	gr.	l		
Located bearing SNOE 226 BF		ISO VG 100		2,3	1. : 500 2. : 1000 further : 2000	Oil level: 55-75 mm height
Bearing seal	Grease with dripping point of 190°C		29,6			After request
non located bearing SNOE 226 AL		ISO VG 100		2,3	1. : 500 2. : 1000 further : 2000	Oil level: 55-75mm height
Bearing seal	Grease with dripping point of 190°C		29,6			After request

### Lubricant selection for fan bearing

hydraulic oil	Sealing grease Grease with dripping point of 190°C
Shell Tellus C100	Mobilux 3
Mobil DTE 27	

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## 9. Spare parts

Spare parts and replacement parts that cannot be delivered quickly should be kept in stock. Production down time is generally more expensive than the cost of the part in question.

We wish to point out explicitly that we do not test and issue spare parts or replacement parts not supplied by us. Any and all responsibility by the manufacturer is explicitly excluded for damage arising from the use of non-original parts and accessories.

Our Serviceadresse for Spare parts:

TLT-Turbo GmbH  
Havensteinstr. 46  
46045 Oberhausen  
Tel.: 0049 (208) 8592 451 / Fax 0049 (208) 8592 250

Please mention the Ventilator-Data given below:

Kind of Fan: Cooler Fan  
Type of fan: 15874 Z/1756  
Job No.: 71260-4  
Dimension sheet H6002316  
Factory No.: 723006980  
Sense of rotation: L (VDMA) acc. VDMA 24165

Pos	Piece	Denomination	Weight	Wear
1	1	fan wheel Ø 2820 x 1436	3000	X
2	1	shaft Ø 390 x 5723 long	4500	X
3	1	bearing housing type SNOE 226 AL	93	
4	1	bearing system type 22226EAB33J30	11	X
5	1	bearing housing type SNOE 226 BF	93	
6	1	bearing system type 22226EAB33J30	11	X
7	1	coupling type Rupex RWN 450	178	
8	Set	Elastic buffers	11	X
9	2	shaft seal type Ø 680 / Ø 195 x 10	6	X

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