

Engine Type : MaK 9 M 32 C

Order No. : 261392-2

Engine Serial No.: 38082

Atmospheric conditions during test run:

Ambient temperature: 28 °C

Atmospheric pressure: 1015 mbar

Relative humidity : 80 %

Altitude : 10 m

We used for the test run:

Luboil type : SAE 40

Test bed : 50 / 6

Heat value like actual Fuel oil analysis : 43010 kJ/kg

Hydraulic brake : 14 U 2 N 110

Engine data: Four-stroke/direct injection/port engine/clockwise

rotation (viewed from the drive end)

Rated power : 4320 kW

Rated speed : 600 rpm

Firing order: 1-2-4-6-8-9-7-5-3

Bore : 320 mm

Stroke : 480 mm

Turbocharger type : Napier 357 C

Serial No. : 701159

Specification : 4GS 118B 193K

Max. speed : 23600 rpm

t max : 650 °C

Test : COV 0222213

Fuel injection pump: L'Orange PEO-60 58 A

Plunger diameter : 28.0 mm

Idle stroke 'X' : 6.0 mm

Fuel injector : MaK E 2/1

Opening pressure : 450 bar

Specification :

Crankshaft :

Drawing No.: 1.99.7-25.10.01-03

Number : 9261

Generator  
Type  
Manufacturer

Emission data :  
Application : Constant Speed Main Propulsion  
Cycle : E2  
Test result of parent engine NOx: 10.5 g/kwh

Timing data  
to drawing No.

Bank	Cylinder									
	1	2	3	4	5	6	7	8	9	
Inlet opens before T.D.C.	45	A								
		B								
Inlet closes after B.D.C.	5	A								
		B								
Exhaust opens before B.D.C.	40	A								
		B								
Exhaust closes after T.D.C.	45	A								
		B								

Flywheel diameter : 1439 mm

1° = 12.55 mm

Flywheel weight : 1405 kg

Settings

Bank	Cylinder										
	1	2	3	4	5	6	7	8	9		
Distance from liner top edge to piston top edge in T.D.C. [mm]	A	20.5	20.6	20.3	20.7	20.5	21.2	20.6	20.7	20.5	
	B										
Commencement of injection pump in degrees crank angel before T.D.C.	A	6.5									
	B										
Fuel injection pump thickness from the Steel Plate in [mm]	A	2.7	2.7	2.7	2.7	2.7	2.7	2.9	2.7	2.9	
	B										
Fuel injection pump rack position when control handle on 'stop' [mm]	A	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	B										
Fuel injection pump rack position [mm]	At		A	48.0	47.5	47.5	47.5	47.5	47.5	47.5	47.0
	rated power		B								
Fuel inj. pump A/B no.: 6 blocked at 47.5 mm	At		A	12.5	12.0	12.0	12.0	12.0	12.0	12.0	11.5
	no load		B								

Governor speed setting n = 600 rpm  
Maximum speed no load n = 600 rpm  
Minimum speed no load n = 450 rpm  
Minimum speed with load n = rpm

Air consumption for starting and reversing : (n = 3)  
Bottle capacity : 0.5 m³  
Initial pressure : 18.0 bar  
Starting: last time at 10.0 bar  
Remaining pressure in bottle : 9.0 bar

No. 1 cylinder on flywheel end of engine

Bank A = left viewed from drive end  
Bank B = right viewed from drive end

Acceptance:

LRS  
Lloyds KeL 0201082  
8 HC 02

FM41

Engineer

Approved Surveyor

Date

23.08.2002

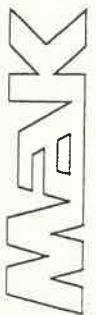
06.09.2002

06.09.02

Sign.

Schetsche

Pastwa



# DIESEL - ENGINE

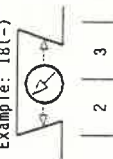
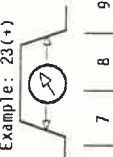
## Acceptance Test Record

Sheet 2 of 2

Order No: 261392-2

Engine Serial No. 38082

Run hour	Fuel rack	Output			Mean eff. pme bar	Fuel consumption		Cooling water			Charge air cooler °C			Exhaust gas temperature °C									Turbocharger		Speed rpm	Exh. gas temp. bef. turbine °C												
		Pe kW	rpm	kWh		Run-time s	Quant kg	Consumption g/kWh	In °C	Out °C	Press bar	Temp °C	HT	Water	In	Out	In	Out	In	Out	1	2	3	4			5	6	7	8	9	Charge bef. turb. bar	air press. after cool. bar	Diff. press. mbar	Cooling temp. after °C			
A	20.0	1080	18.0	25	6.2	213.9	231.0	3.0	84	86	86/86	38/39	54	43	361	349	363	366	366	363	371	366	386	393	0.240	0.226	13	9372	428	426	4							
B	60																																					
A	30.0	2160	36.0	50	12.4	194.0	419.0	2.9	82	85	85/87	39/41	113	45	389	371	385	383	377	385	383	387	411	404	0.945	0.925	20	14472	486	494	4							
B	30																																					
A	41.5	3672	61.2	85	21.1	187.9	690.0	2.9	75	79	79/87	37/41	186	48	383	372	386	391	384	394	397	401	431	350	2.392	2.363	29	19927	500	497	4							
B	60																																					
A	47.5	4320	72.0	100	24.9	189.4	818.0	2.9	72	77	77/88	39/43	210	51	398	389	409	412	405	415	420	427	453	346	2.946	2.913	32	21622	518	518	5							
B	60																																					
A	52.0	4752	79.2	110	27.4	191.9	912.0	3.1	74	79	79/93	38/43	226	52	420	410	434	435	425	438	440	452	471	352	3.306	3.271	35	22690	540	540	5							
B	60																																					
A																																						
B																																						
P Needle stop	A																																					
R	B																																					
S	A	183	184	183	185	183	182	182	181	182																												
S	B																																					
Indicator: LEHMANN & MICHELS		Exhaust gas back pressure at full load: 30 mbar																																				
Type: LEMAG PREMET LS		Oil pressure at 450 rpm and t - 55 °C. p - 5.0 bar																																				
Notes:		<p>Measured on test bed and coupled to hydraulic brake.</p> <p>Measured with overhung flywheel.</p> <p>Follow MAK instructions for installation.</p> <p>3) Measured at main bearing on flywheel end</p> <p>4) Measured at last camshaft bearing</p> <p>ISO) Calculated to ISO 3046</p>																																				
Specific fuel consumption including 1 lubricating oil pump and 1 cooling water pump.		Acceptance: LRS Lloyds Kel. 0201082 8 HC 02																																				
* Measured at control panel		Approved																																				
Engine elastically mounted		Schetsche / 23.08.2002 Pastwa / 06.09.2002																																				



20 is basic val. for crankweb deflection 1/100 mm

Cylinder

B.D.C.

Exhaust side

T.D.C.

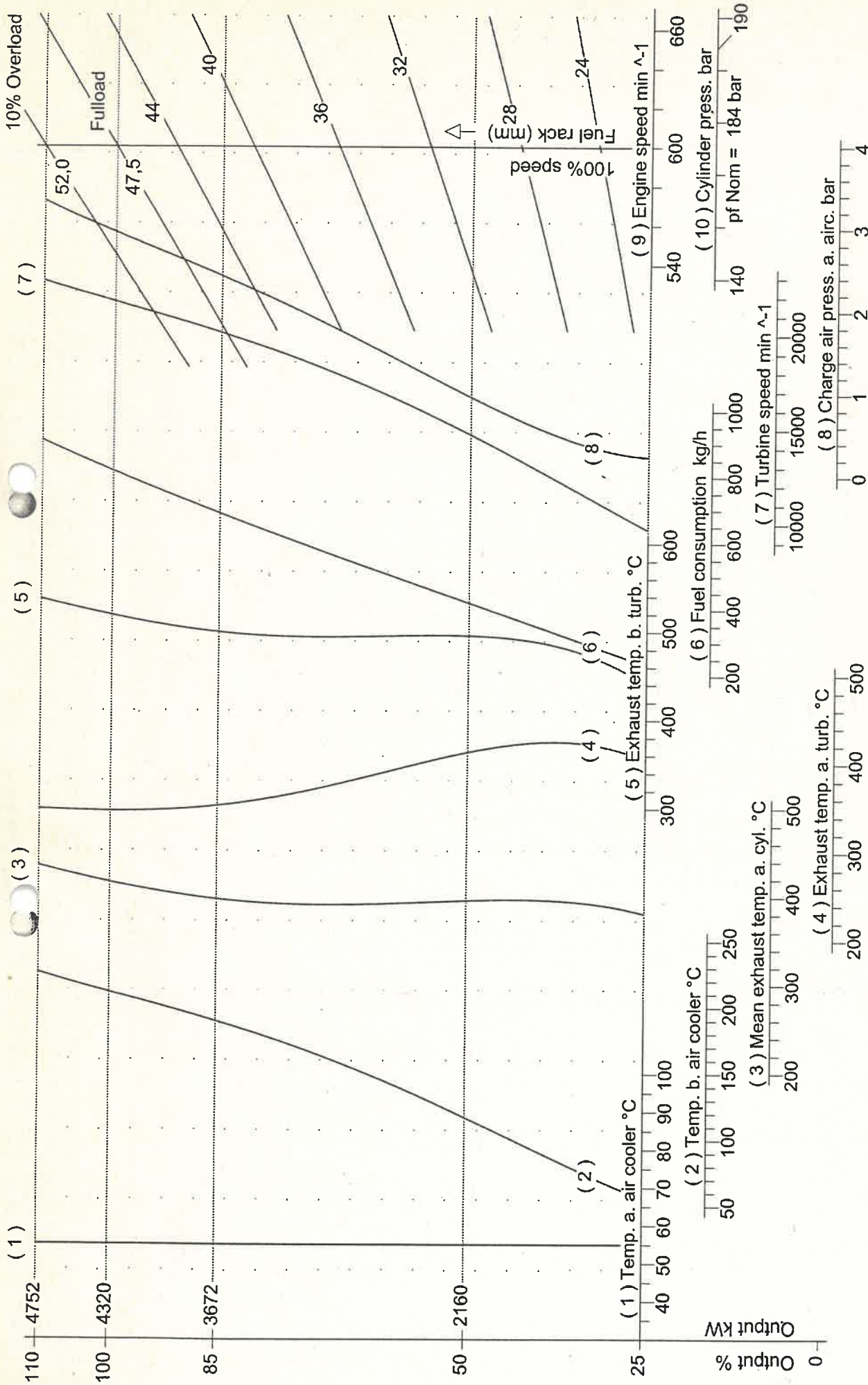
Camshaft side

Engineer: Schetsche / 23.08.2002

Accepted: LRS Lloyds Kel. 0201082 8 HC 02

Approved: Schetsche / 06.09.2002

Signature: *Schetsche* 06.09.02



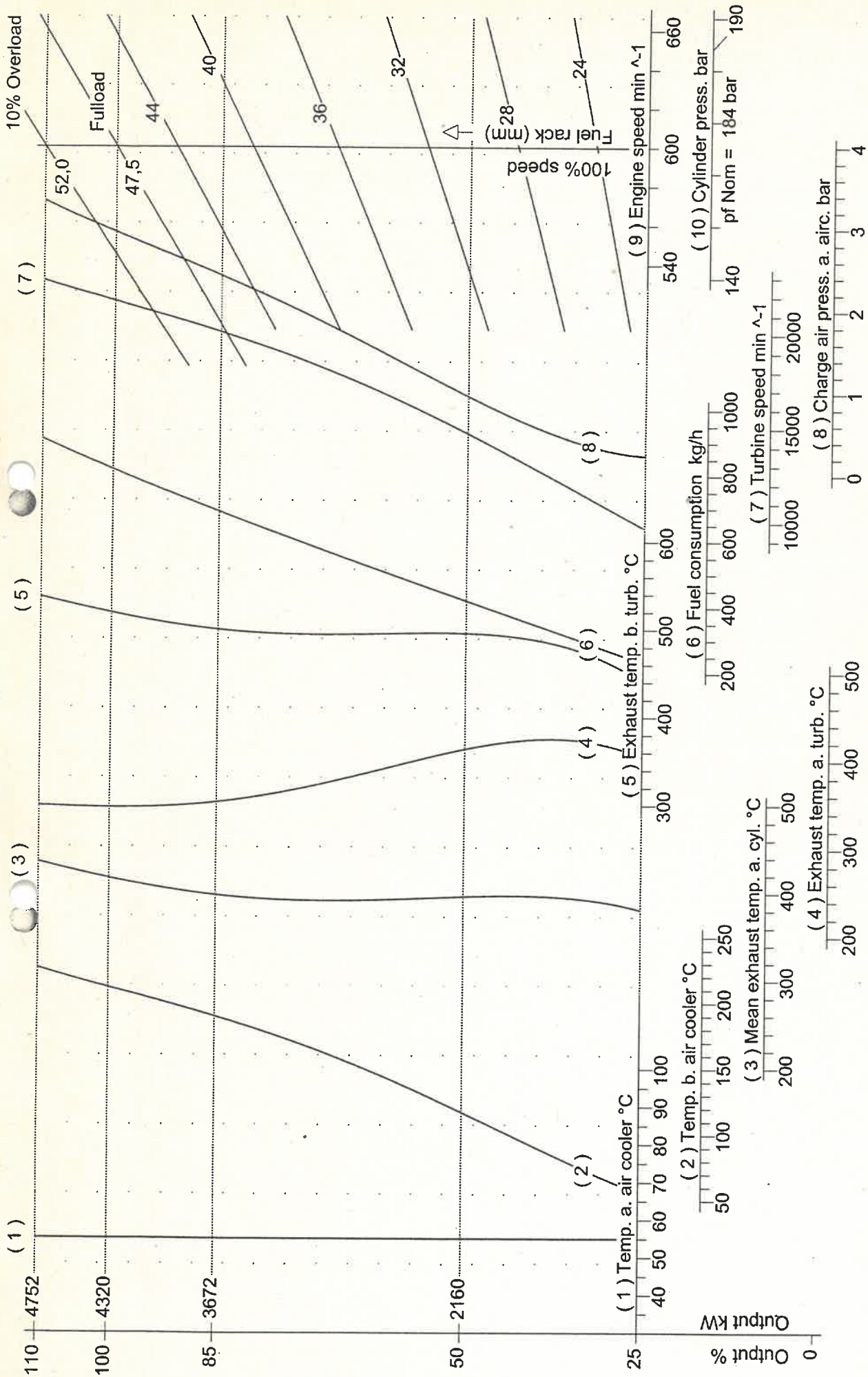
Constant speed plant



**DICARE Basic curves**

Engine MAK 9 M 32 C Nr. 38082

Basic data from: 23.08.2002 ref. to: P0 = 1,000 bar T0 = 27 °C TLnLLK = 55 °C PAnT = 0,030 bar MDO 0,83 kg / l



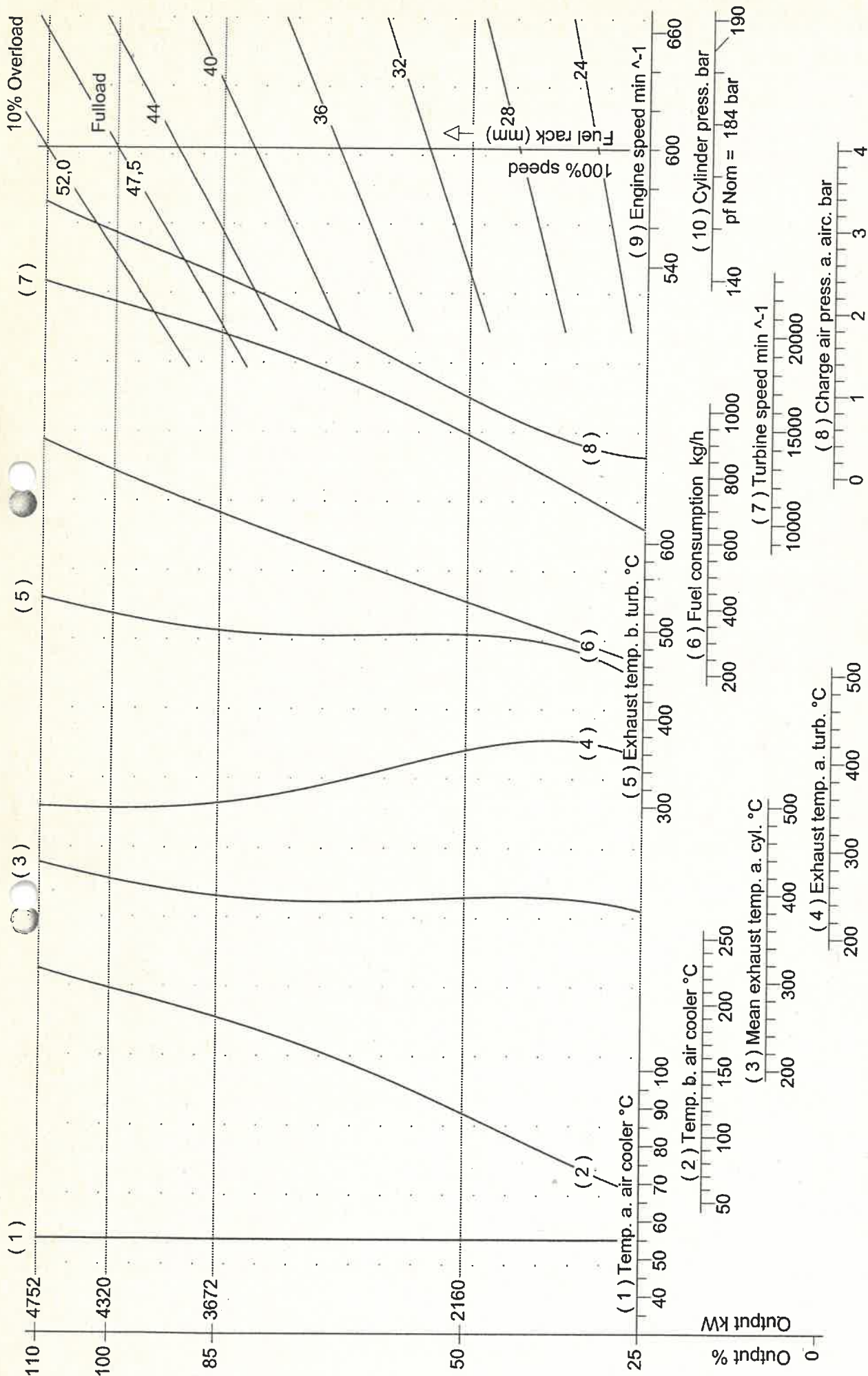
Constant speed plant

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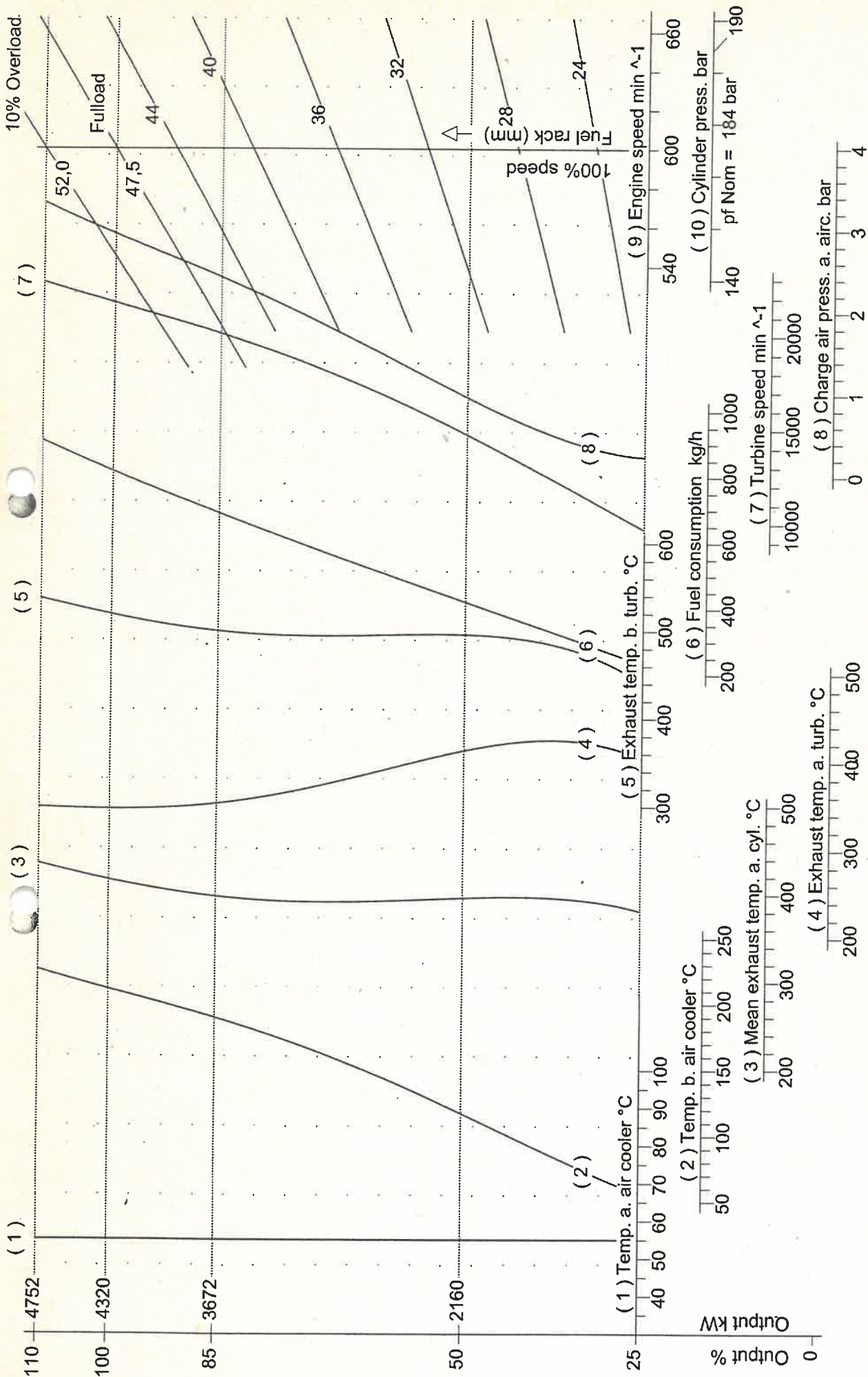
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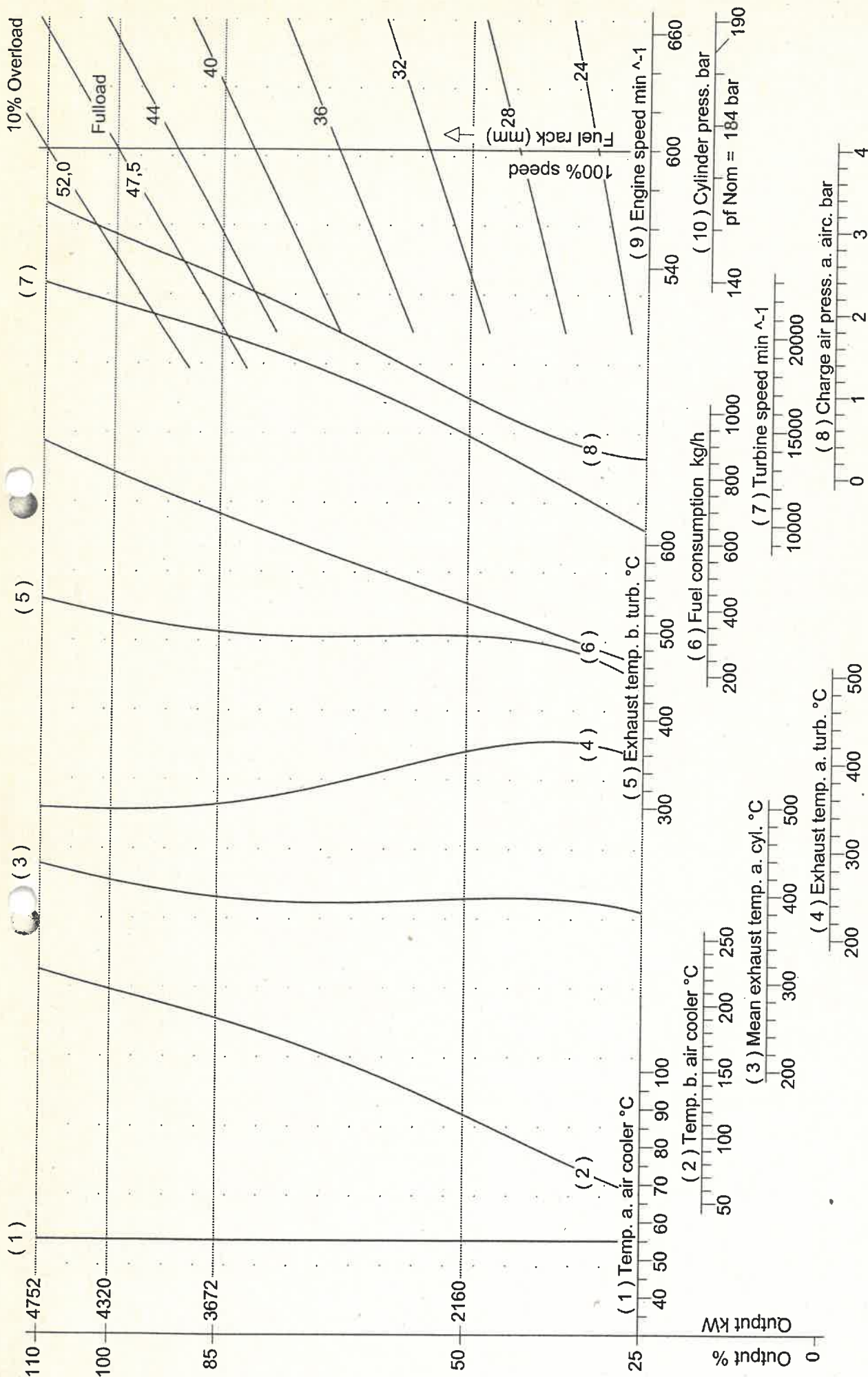
Constant speed plant



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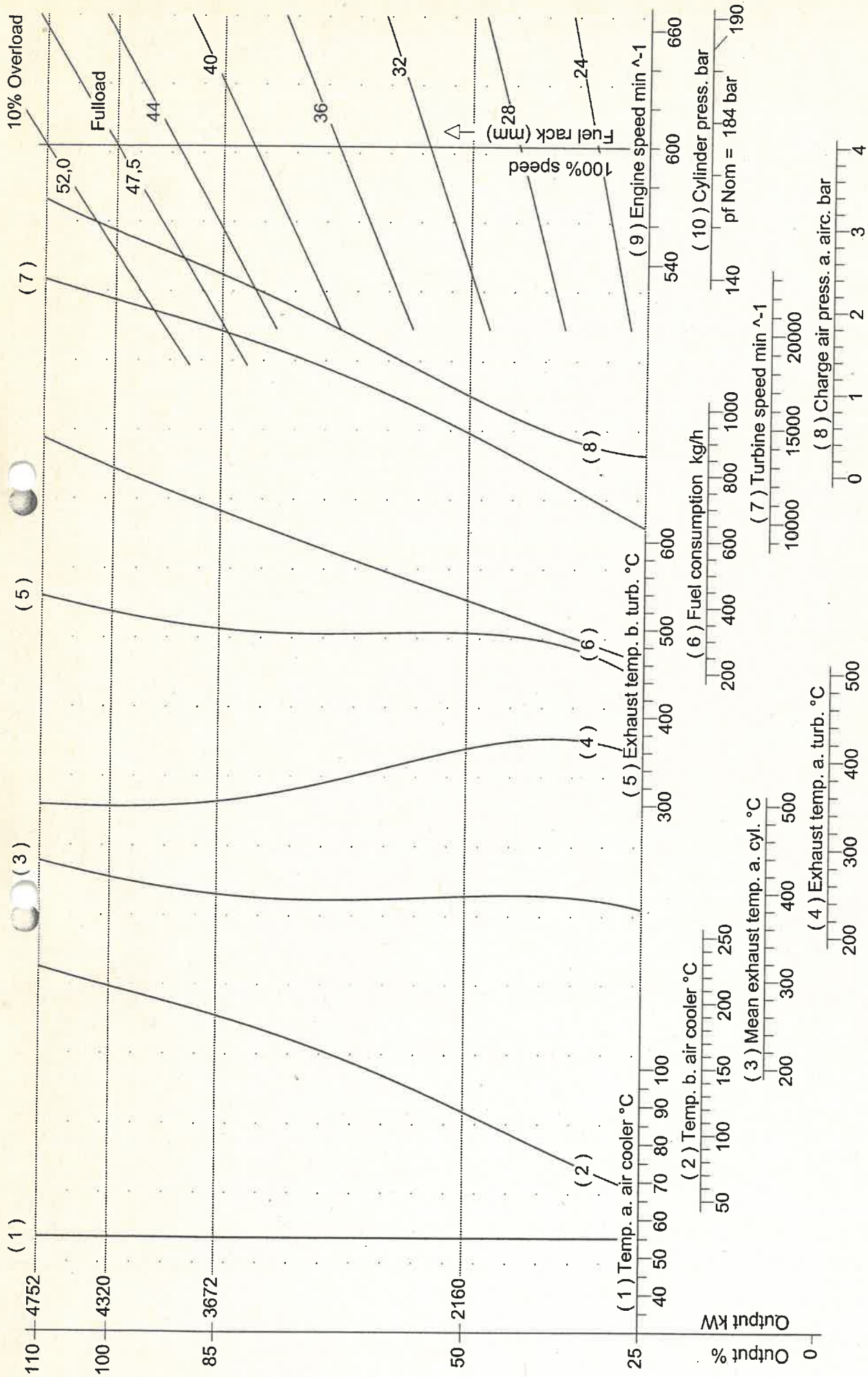
Constant speed plant

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Constant speed plant

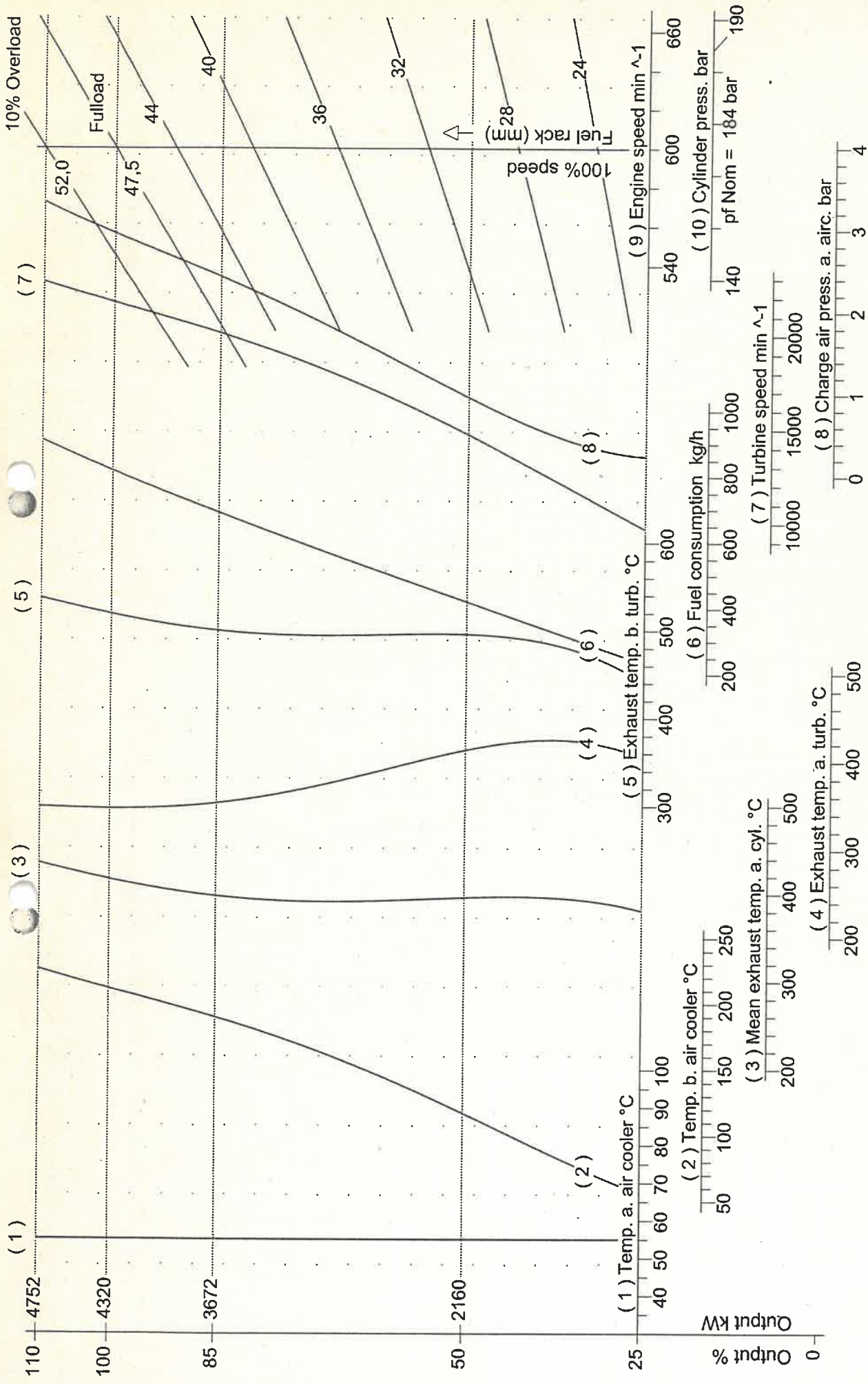


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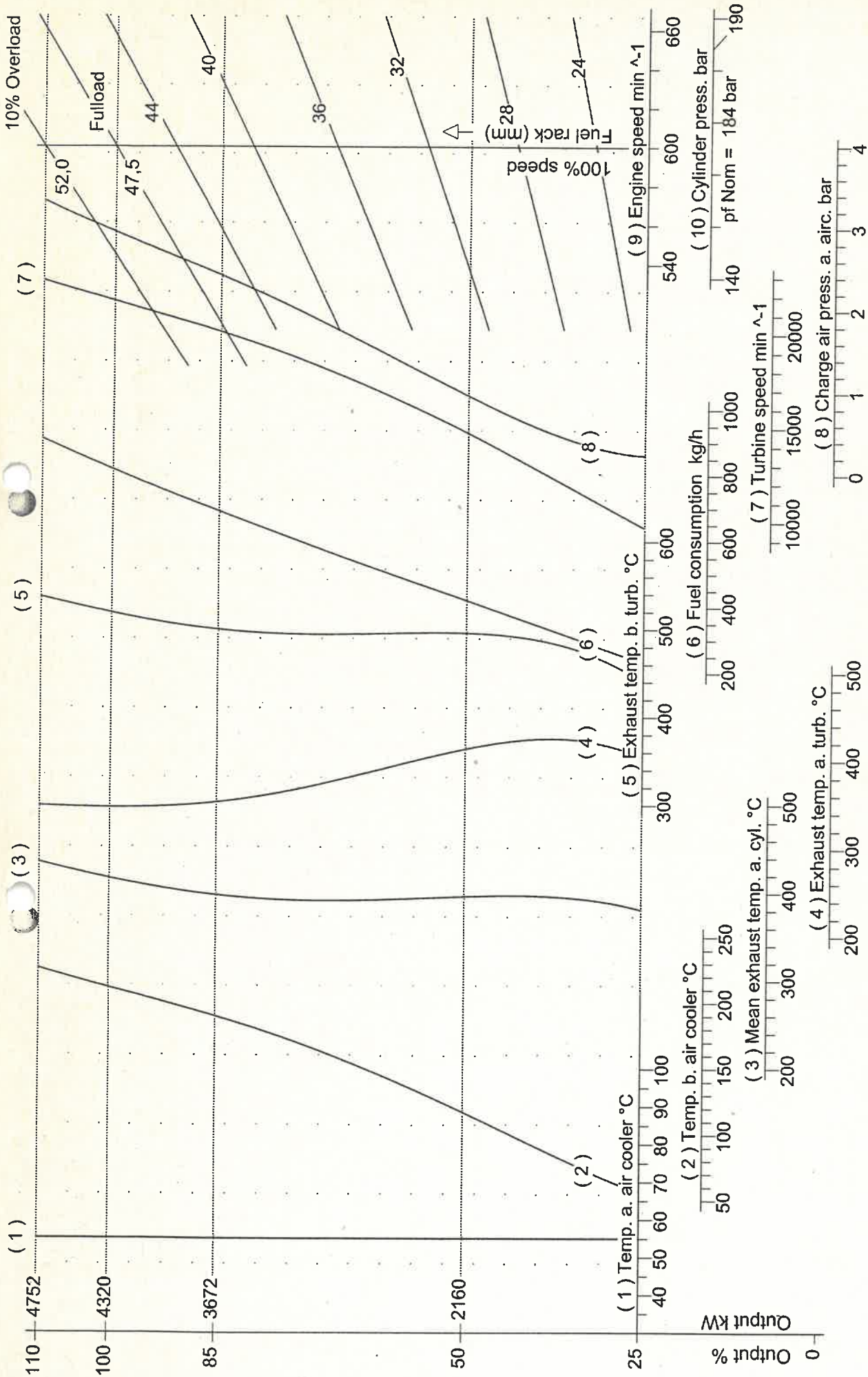
Constant speed plant

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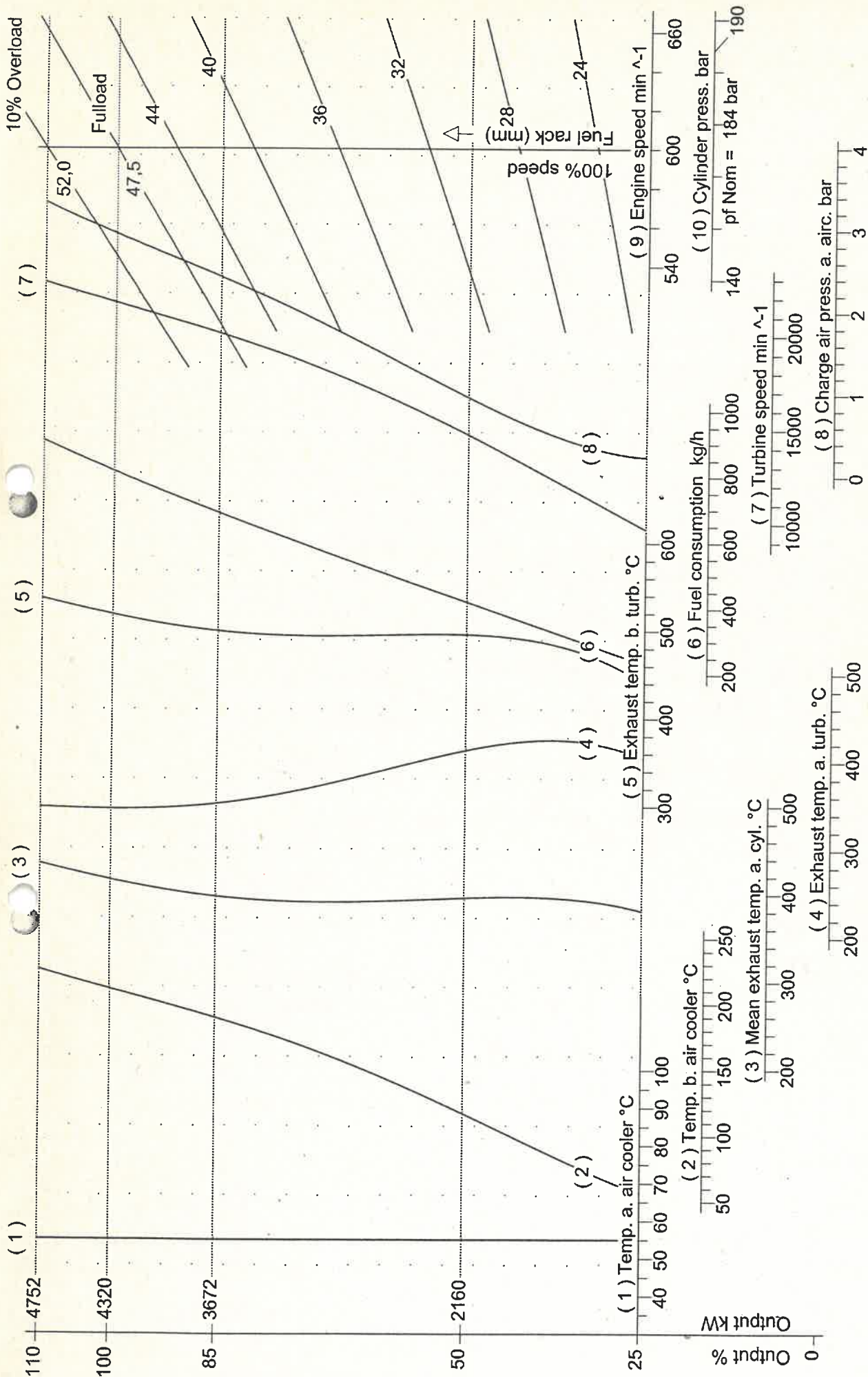


Constant speed plant

**DICARE Basic curves**  
 Engine MAK 9 M 32 C Nr. 38082

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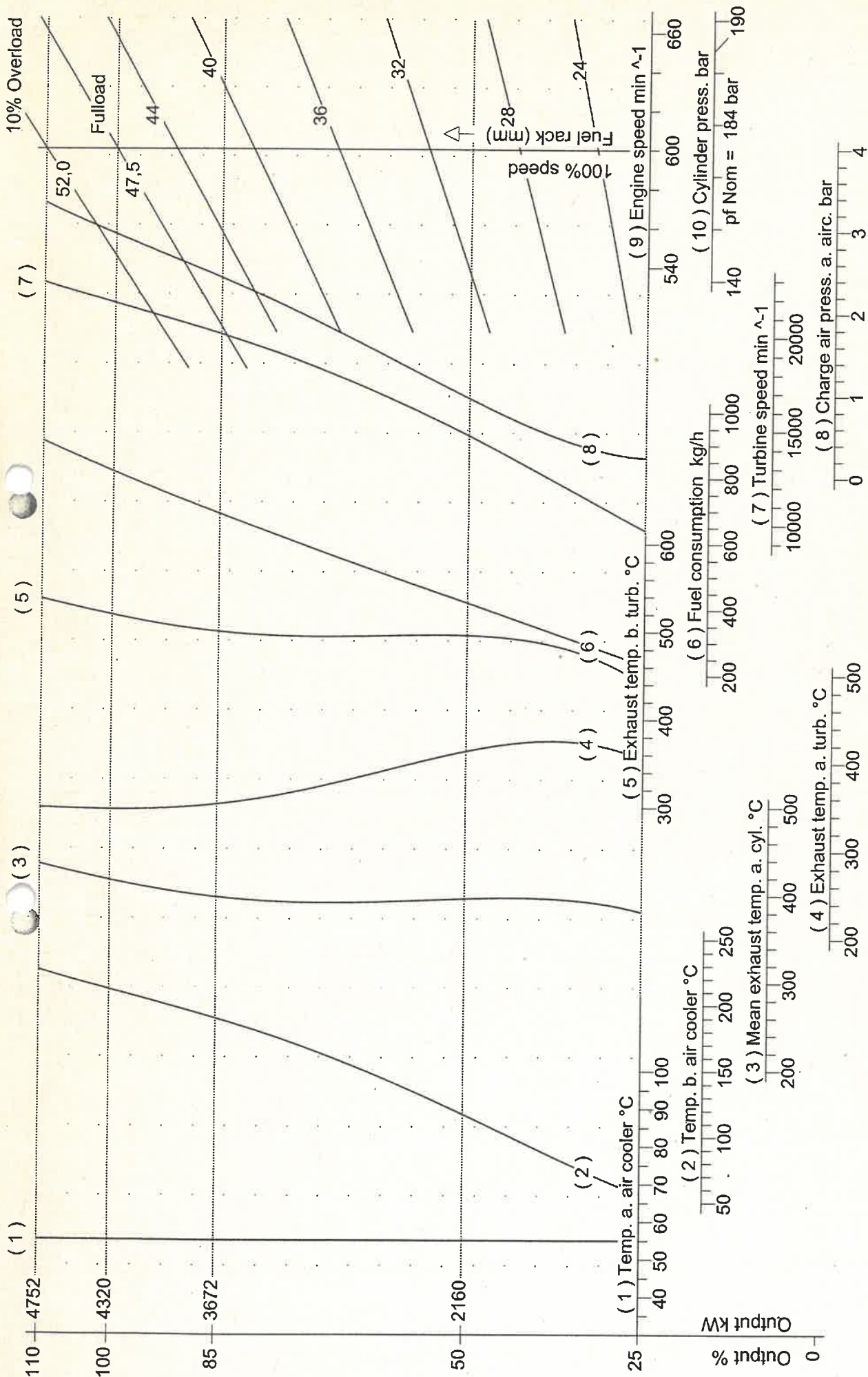
Constant speed plant



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Constant speed plant

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