Tabel. Data identitas sampel oli bekas

No	Jenis Motor	Tahun Motor	Jenis Oli	Odometer Sebelumnya	Odometer Sekarang	Plat Nomor	Nama Pemilik/Pemakai	Alamat Pemilik / Pemakai	Keterangan
1	Beat 110 CC	2010	MPX2	55450	57431	BD 2697 XX	Mr. X	Bengkulu	Oli Bekas 1
2	Beat 110 CC	2009	MPX2	28300	30329	AA 2734 XX	Mr. X	Temanggung	Oli Bekas 2
3	Beat 110 CC	2009	MPX2	2692	64350	Z 2692 XX	Mrs. X	Sumedang	Oli Bekas 3
4	Beat 110 CC	2011	MPX2	20700	24393.8	AA 2590 XX	Mr. X	Magelang	Oli Bekas 4
5	Beat 110 CC	2009	MPX2	66053	72835.4	DR 5414 XX	Mrs. X	Lombok Tengah	Oli Bekas 5

Tabel. Data pengujian viskositas

No.	Fluida	Rotor	Speed (rpm)	Percent (%)	Tempera-tur	Viskositas (mPas)	Rata – rata Viskositas
1	Oli Bekas 1 Temp. Kamar	1	60	74.2	29.3	74.2	35.132
		1	12	14.7	29.4	73.5	
		1	30	36.6	29.4	73.2	
		1	3	4	29.5	80	
		1	6	7.8	29.5	78	
2	Oli Bekas 1 Temp. +- 43	1	12	7.9	43.3	39.5	
		1	60	39.1	43.3	39.1	
		1	30	19.4	43.4	38.8	
		1	3	2.4	43.7	48	
		1	6	3.9	43.9	39	
3	Oli Bekas 1 Temp. +- 53	1	6	2.1	53.5	21	
		1	60	25.9	53.8	25.9	
		1	6	2.8	53.9	28	
		1	30	12.7	53.9	25.4	
		1	3	1.4	54.1	28	
4	Oli Bekas 1 Temp. +- 63	1	12	5.1	54.1	25.5	
		1	60	19	62.7	19	
		1	30	9.2	62.9	18.4	
		1	12	3.6	63.2	18	
			3	0.9	63.7	18	
5	Oli Bekas 1 Temp. +- 73	1	60	14.1	72.6	14.1	
		1	12	2.7	72.7	13.5	
		1	30	6.6	73.3	13.2	
		1	6	1.5	73.4	15	
		1	3	0.6	73.9	12	

No.	Fluida	Rotor	Speed (rpm)	Percent (%)	Tempera-tur	Viskositas (mPas)	Rata – rata Viskositas
1	Oli Bekas 2 Temp. Kamar	1	3	3.6	29.8	72	32.46
		1	6	7.1	29.9	71	
		1	12	13.2	30	66	
		1	30	32.9	30	65.8	
		1	60	66.9	30	66.9	
2	Oli Bekas 2 Temp. +- 43	1	60	37.5	43	37.5	
		1	30	18.2	43.2	36.4	
		1	12	7.4	43.5	37	
		1	6	3.6	43.8	36	
		1	3	1.9	44.3	38	
3	Oli Bekas 2 Temp. +- 53	1	60	25.1	53.1	25.1	
		1	30	12.1	53.3	24.2	
		1	12	4.9	53.8	24.5	
		1	6	2.7	54	27	
		1	3	1.4	54.4	28	
4	Oli Bekas 2 Temp. +- 63	1	60	17.9	63.2	17.9	
		1	30	8.6	63.3	17.2	
		1	3	0.9	63.5	18	
		1	6	2	63.6	20	
		1	12	3.4	63.6	17	
5	Oli Bekas 2 Temp. +- 73	1	30	6.5	73	13	
		1	3	0.7	73.4	14	
		1	12	2.5	73.5	12.5	
		1	6	1.4	73.8	14	
		1	60	12.5	74.1	12.5	

No.	Fluida	Rotor	Speed (rpm)	Percent (%)	Temperatur	Viskositas (mPas)	Rata – rata Viskositas
1	Oli Bekas 3 Temp. Kamar	1	3	4	30.5	80	36.6
		1	6	8.1	30.6	81	
		1	12	15.1	30.8	75.5	
		1	30	37.2	30.8	74.4	
		1	60	75.4	30.9	75.4	
2	Oli Bekas 3 Temp. +- 43	1	60	42.9	43.1	42.9	
		1	30	20.8	43.4	41.6	
		1	12	8.1	43.5	40.5	
		1	6	4.1	43.8	41	
		1	3	2.2	44.1	44	
3	Oli Bekas 3 Temp. +- 53	1	60	29	53	29	
		1	30	14	53.2	28	
		1	6	2.9	53.9	29	
		1	12	5.6	53.9	28	
		1	3	1.5	54.3	30	
4	Oli Bekas 3 Temp. +- 63	1	60	20	63.1	20	
		1	3	1.1	63.3	22	
		1	6	2.1	63.3	21	
		1	12	3.8	63.3	19	
		1	30	9.6	63.3	19.2	
5	Oli Bekas 3 Temp. +- 73	1	6	1.7	72.9	17	
		1	3	0.7	73.1	14	
		1	12	2.8	73.1	14	
		1	30	7.1	73.1	14.2	
		1	60	14.3	73.3	14.3	

No.	Fluida	Rotor	Speed (rpm)	Percent (%)	Temperatur	Viskositas (mPas)	Rata – rata Viskositas
1	Oli Bekas 4 Temp. Kamar	1	3	6.3	30.3	126	53.396
		1	6	12.3	30.4	123	
		1	12	24.6	30.4	123	
		1	30	61.8	30.4	123.6	
		1	60	99.9	30.4	99.9	
2	Oli Bekas 4 Temp. +- 43	1	6	6.6	43.2	66	
		1	12	12.3	43.3	61.5	
		1	3	3.3	43.4	66	
		1	30	28.4	43.5	57.4	
		1	60	56.4	43.6	56.4	
3	Oli Bekas 4 Temp. +- 53	1	3	2.4	53	48	
		1	6	3.8	53.2	38	
		1	12	7.4	53.8	37	
		1	60	39.7	54.4	39.7	
		1	30	19	54.6	38	
4	Oli Bekas 4 Temp. +- 63	1	6	2.6	63.1	26	
		1	30	13.1	63.4	26.2	
		1	3	1.4	63.5	28	
		1	60	27.5	63.5	27.5	
		1	12	5.1	63.9	25.5	
5	Oli Bekas 4 Temp. +- 73	1	60	20.6	72.9	20.6	
		1	30	9.8	73.2	19.6	
		1	6	1.9	73.3	19	
		1	12	3.8	73.3	19	
		1	3	1	73.4	20	

No.	Fluida	Rotor	Speed (rpm)	Percent (%)	Temperatur	Viskositas (mPas)	Rata – rata Viskositas
1	Oli Bekas 5 Temp. Kamar	1	30	34.7	30.4	69.4	32.056
		1	60	69.5	30.4	69.5	
		1	3	3.7	30.5	74	
		1	6	7.1	30.5	71	
		1	12	13.7	30.5	68.5	
2	Oli Bekas 5 Temp. +- 43	1	6	3.5	35	31.4	
		1	12	7.1	35.5	36	
		1	30	17.9	35.8	36	
		1	60	36.9	36.9	31	
		1	3	2.1	42	34.5	
3	Oli Bekas 5 Temp. +- 53	1	30	12.7	53.1	25.4	
		1	3	1.4	53.2	28	
		1	12	5	53.7	25	
		1	60	24	53.7	24	
		1	6	2.3	53.8	23	
4	Oli Bekas 5 Temp. +- 63	1	30	8.9	63.3	17.8	
		1	3	0.9	63.4	18	
		1	6	1.8	63.6	18	
		1	12	3.5	63.6	17.5	
		1	60	17.5	63.8	17.5	
5	Oli Bekas 5 Temp. +- 73	1	60	14.1	72.4	14.1	
		1	30	6.4	73.5	12.8	
		1	6	1.5	73.6	15	
		1	3	0.6	73.8	12	
		1	12	2.4	74.2	12	

No.	Fluida	Rotor	Speed (rpm)	Percent (%)	Temperatur	Viskositas (mPas)	Rata – rata Viskositas
1	Oli Baru Temp. Kamar	1.5	1	2.9	28.4	116	51.34
		3	1	5.5	28.4	110	
		6	1	11	28.4	110	
		12	1	21.7	28.4	108.5	
		30	1	54.3	28.4	108.8	
		60	1	100	28.4	100	
2	Oli Baru Temp. +- 43	12	1	10.2	43.1	51	
		3	1	3.2	43.4	64	
		6	1	5.8	43.4	58	
		30	1	26.3	43.4	52.6	
		1.5	1	1.8	43.5	72	
		60	1	51.5	43.7	51.5	
3	Oli Baru Temp. +- 53	60	1	35.7	53	35.7	
		30	1	17.3	53.1	34.6	
		12	1	6.9	53.8	34.5	
		1.5	1	1.1	53.9	44	
		3	1	2.1	53.9	42	
		6	1	3.4	53.9	34	
4	Oli Baru Temp. +- 63	1.5	1	0.7	59.4	28	
		3	1	1.7	61.1	34	
		6	1	2.4	61.5	24	
		60	1	25.7	62.2	25.7	
		12	1	5.2	62.4	26	
		30	1	12.6	62.4	25.2	
5	Oli Baru Temp. +- 73	6	1	2.1	68.2	21	
		3	1	1.1	68.6	22	
		12	1	3.9	71.5	19.5	
		60	1	18.7	71.8	18.7	
		30	1	8.9	72	17.8	

Tabel. Data pengujian konduktivitas termal

Jenis Fluida	T1 (℃)	T2 (℃)	Tegangan Heater ($Volt$)	Arus Heater (A)	Daya, Qe, ($Watt$)	(T1-T2) (℃)	Qi ($Watt$)	Qc ($Watt$)	Tebal Spesimen (m)	Luas Permukaan (m^2)	K-Eksperimen	TemperaturRata2 Spesimen (℃)
Oli bekas 1	28.4	27	63	0.124	7.812	1.4	0.39	7.422	0.00034	0.0133	0.135525	27.7
	33.1	28.5	114	0.225	25.65	4.6	0.8	24.85	0.00034	0.0133	0.138101	30.8
	37.2	29.8	147	0.281	41.307	7.4	1.2	40.107	0.00034	0.0133	0.138553	33.5
	46.6	32.5	203	0.36	73.08	14.1	2.25	70.83	0.00034	0.0133	0.128418	39.55
	49.4	33.1	218	0.369	80.442	16.3	2.42	78.022	0.00034	0.0133	0.122365	41.25
Oli bekas 2	28.8	27.5	60	0.117	7.02	1.3	0.3	6.72	0.00034	0.0133	0.132146	28.15
	33.2	28.7	112	0.222	24.864	4.5	0.77	24.094	0.00034	0.0133	0.136875	30.95
	38.9	30.2	157	0.297	46.629	8.7	1.38	45.249	0.00034	0.0133	0.132959	34.55
	46.6	32.3	202	0.359	72.518	14.3	2.27	70.248	0.00034	0.0133	0.125581	39.45
	49.4	33.1	217	0.366	79.422	16.3	2.42	77.002	0.00034	0.0133	0.120765	41.25
Oli Bekas 3	29	27.7	59	0.114	6.726	1.3	0.3	6.426	0.00034	0.0133	0.126364	28.35
	33.5	28.9	111	0.219	24.309	4.6	0.8	23.509	0.00034	0.0133	0.130648	31.2
	34.1	33.4	42	0.074	3.108	0.7	0.11	2.998	0.00034	0.0133	0.109487	33.75
	38.6	30.5	150	0.285	42.75	8.1	1.27	41.48	0.00034	0.0133	0.130912	34.55
	46.1	32.5	196	0.348	68.208	13.6	2.1	66.108	0.00034	0.0133	0.124263	39.3
	49.4	33.4	213	0.36	76.68	16	2.37	74.31	0.00034	0.0133	0.118728	41.4
	50.4	37.3	187	0.338	63.206	13.1	1.96	61.246	0.00034	0.0133	0.119518	43.85
Oli Bekas	31.7	30.8	53	0.099	5.247	0.9	0.13	5.117	0.00034	0.0133	0.145345	31.25

4	35.2	31.5	102	0.201	20.502	3.7	0.6	19.902	0.00034	0.0133	0.137506	33.35
	39.9	32.5	144	0.274	39.456	7.4	1.2	38.256	0.00034	0.0133	0.132159	36.2
	47.2	34.4	191	0.344	65.704	12.8	1.9	63.804	0.00034	0.0133	0.127428	40.8
	51.4	35.3	215	0.363	78.045	16.1	2.4	75.645	0.00034	0.0133	0.120111	43.35
Oli Bekas 5	30	28.7	58	0.109	6.322	1.3	0.3	6.022	0.00034	0.0133	0.11842	29.35
	34	29.9	109	0.216	23.544	4.1	0.7	22.844	0.00034	0.0133	0.142435	31.95
	39.5	31.3	154	0.29	44.66	8.2	1.3	43.36	0.00034	0.0133	0.135177	35.4
	46.4	33.1	197	0.349	68.753	13.3	2	66.753	0.00034	0.0133	0.128306	39.75
	48.7	33.6	211	0.356	75.116	15.1	2.3	72.816	0.00034	0.0133	0.123276	41.15
Oli baru	28.4	27.6	48	0.087	4.176	0.8	0.15	4.026	0.00034	0.0133	0.12865	28
	29.2	28.2	51	0.096	4.896	1	0.2	4.696	0.00034	0.0133	0.120048	28.7
	30.8	28.1	84	0.17	14.28	2.7	0.4	13.88	0.00034	0.0133	0.131417	29.45
	30.9	30.4	39	0.069	2.691	0.5	0.1	2.591	0.00034	0.0133	0.132472	30.65
	32.2	31.1	56	0.106	5.936	1.1	0.22	5.716	0.00034	0.0133	0.132839	31.65
	35.4	29.3	130	0.252	32.76	6.1	0.9	31.86	0.00034	0.0133	0.133519	32.35
	35.7	31.9	100	0.196	19.6	3.8	0.5	19.1	0.00034	0.0133	0.128492	33.8
	39.6	31	157	0.296	46.472	8.6	1.3	45.172	0.00034	0.0133	0.134276	35.3
	39	33	128	0.247	31.616	6	0.85	30.766	0.00034	0.0133	0.131083	36
	41.5	31.1	171	0.319	54.549	10.4	1.5	53.049	0.00034	0.0133	0.130398	36.3
	43	33.3	162	0.303	49.086	9.7	1.4	47.686	0.00034	0.0133	0.125674	38.15
	44.3	32.2	188	0.337	63.356	12.1	1.75	61.606	0.00034	0.0133	0.130156	38.25

	44.9	32.4	189	0.338	63.882	12.5	1.8	62.082	0.00034	0.0133	0.126965	38.65
	45.7	32.8	195	0.345	67.275	12.9	1.9	65.375	0.00034	0.0133	0.129554	39.25
	46.9	32.6	201	0.352	70.752	14.3	2.1	68.652	0.00034	0.0133	0.122728	39.75
	46.5	33.7	192	0.341	65.472	12.8	1.85	63.622	0.00034	0.0133	0.127065	40.1
	46.8	34.4	191	0.339	64.749	12.4	1.8	62.949	0.00034	0.0133	0.129776	40.6
	47.2	34.2	191	0.343	65.513	13	1.9	63.613	0.00034	0.0133	0.125092	40.7
	47.8	34.3	188	0.34	63.92	13.5	2	61.92	0.00034	0.0133	0.117253	41.05
	49	33.3	212	0.358	75.896	15.7	2.3	73.596	0.00034	0.0133	0.119834	41.15
	50.5	34.9	211	0.356	75.116	15.6	2.3	72.816	0.00034	0.0133	0.119324	42.7

Tabel. Data pengujian konsumsi bahan bakar

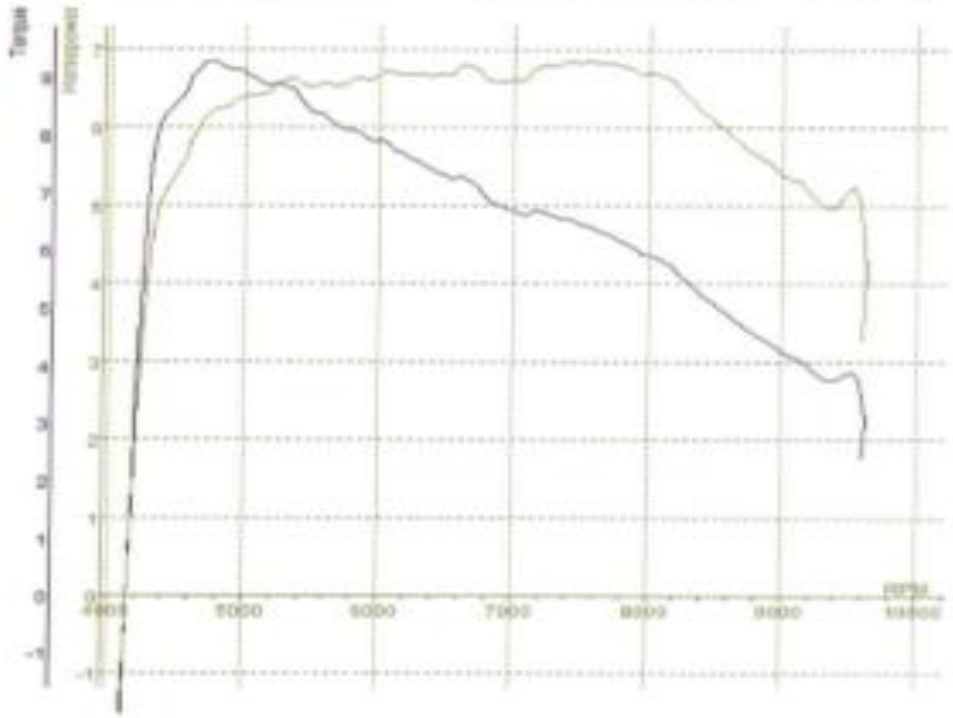
Sampel Oli	Odometer Awal	Odometer Akir	Waktu (Detik)	BBM yang Dikonsumsi(Liter)	Jarak Tempuh Pada Odometer
oli baru	81373.5	81378.5	547	0.1	5
	81507.1	81512.1	567	0.104	5
bekas 1	81393.7	81398.7	534	0.096	5
	81497.1	81502.1	559	0.117	5
bekas 2	81398.7	81403.8	535	0.092	5.1
	81502.1	81507.1	564	0.089	5
bekas 3	81388.6	81393.7	550	0.119	5.1
	81492	81497	570	0.084	5
bekas 4	81383.6	81388.6	550	0.145	5
	81487	81492	605	0.104	5
bekas 5	81378.5	81383.6	550	0.092	5.1
	81481.9	81487	610	0.115	5.1

SportDevices

SPORTDYNO V3.3
DYNAMOMETER: HSMC - 8293
ROLLER INERTIA: 1.33

Displacement Correction
Correction Factor: ISO 1585
NOTE: Load Cell Included

TEST NAME	MAX POWER	MAX TORQUE	Temp. °C	Humidity %	Pressure	S.SHR	Date/Time
M.ARIF NUGROHO TEST OLI 10601		9.28 (4.300) - 4750	31.4 °C	64 %	1000.0 mbar	98.9	23/06/2018 10:57:38



DATA FOR TEST: M.ARIF NUGROHO TEST OLI 10601

Comments
MP92 OLI

RPM	HP	TORQUE (N*M)	T
4300	5.7	8.63	1.28
4739	6.2	9.28	1.48
4750	6.2	9.28	1.59
5000	6.4	9.08	1.74
5250	6.6	8.84	2.02
5500	6.5	8.39	2.28
5750	6.6	8.09	2.56
6000	6.7	7.98	2.86
6250	6.7	7.77	3.16
6500	6.7	7.27	3.48
6750	6.7	7.11	3.80
7000	6.6	6.68	4.14
7250	6.8	6.63	4.48
7500	6.8	6.44	4.84
7550	6.9	6.42	4.90
7750	6.8	6.23	5.20
8000	6.7	5.92	5.60
8250	6.4	5.52	6.02
8500	6.1	5.05	6.48
8750	5.7	4.66	6.98
9000	5.4	4.22	7.54
9250	5.1	3.86	8.12
9500	5.2	3.88	8.72

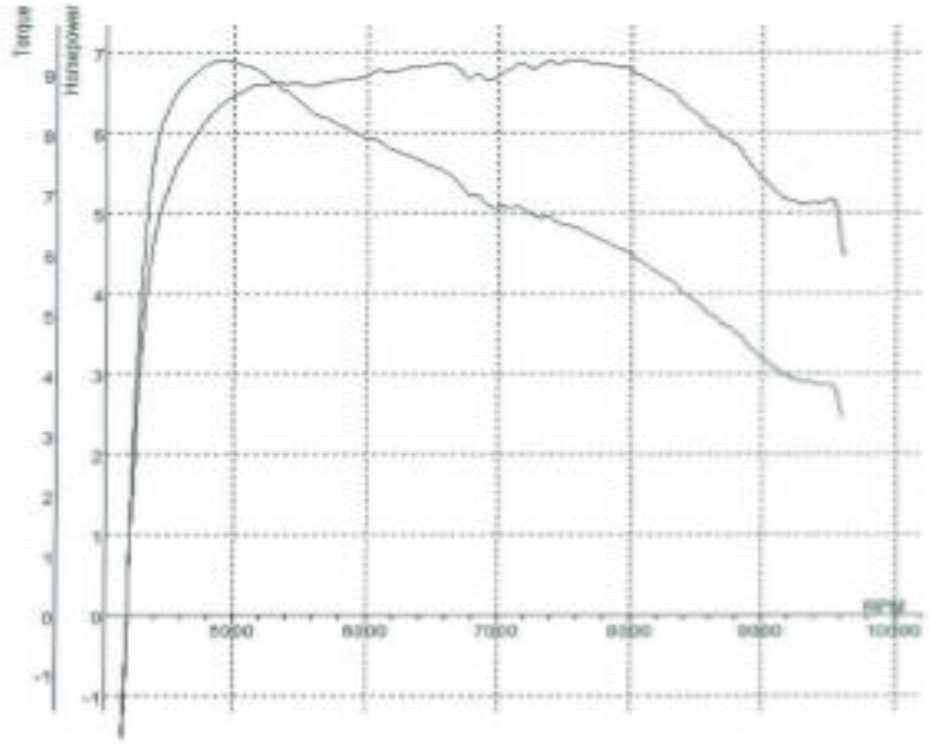
LOSSES: -0.4 HP -0.75(*M*N)
TOTAL ENGINE: 7.3 HP 10.5(N*M*N)

SportDevices

SPORTDYNO V3.3
DYNAMOMETER: DynoSC - RPD
ROLLER INERTIA: 1.55

Displacement Correction
Correction Factor: ISO 1585
NOTE: Load Cell Included.

TEST NAME	MAX POWER	MAX TORQUE	Temp. °C	Humidity %	Pressure	KMH	Date/Time
MARIF NUGROHO TEST OL2 T006	[illegible]	[illegible]	31.4 °C	64 %	[illegible]	98.9	23/06/2016 11:02:27



DATA FOR TEST: MARIF NUGROHO TEST OL2 T006

Comments
MPNO OLE

RPM	HP [illegible]	[illegible]	T
4705	5.4	8.44	1.20
4750	6.1	9.10	1.66
4986	6.4	9.22	1.69
5000	6.5	9.17	1.70
5250	6.6	8.82	1.96
5500	6.6	8.49	2.24
5750	6.6	8.17	2.52
6000	6.7	7.91	2.80
6250	6.8	7.66	3.10
6500	6.8	7.44	3.42
6750	6.7	7.09	3.71
7000	6.7	6.78	4.08
7250	6.8	6.62	4.42
7500	6.9	6.49	4.78
7659	6.9	6.40	4.99
7750	6.9	6.23	5.14
8000	6.8	5.98	5.54
8250	6.5	5.59	5.98
8500	6.2	5.16	6.40
8750	5.9	4.76	6.88
9000	5.6	4.24	7.44
9250	5.1	3.62	8.02
9500	5.2	3.85	8.62

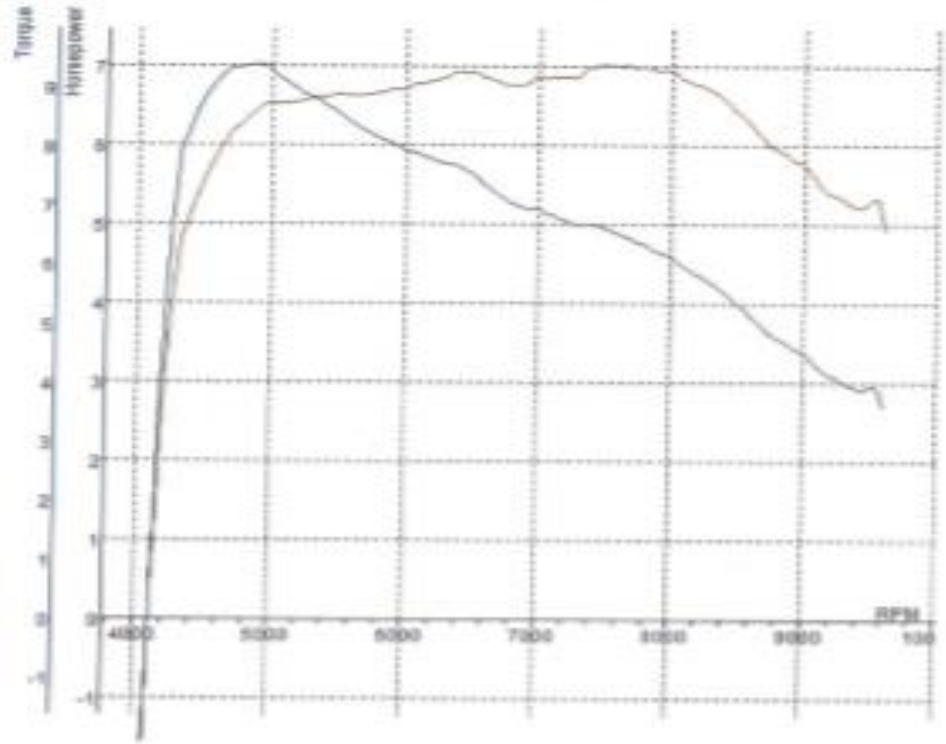
LOSSES: -8.3 HP [illegible]
TOTAL ENGINE: 7.4 HP [illegible]

SportDevices

SPORTDYNO V3.3
DYNAMOMETER: DSMC - 02D
ROLLER INERTIA: 1.53

Displacement Correction
Correction Factor: ISO 1585
NOTE: Load Cell Included

TEST NAME	MAX POWER	MAX TORQUE	Temp. °C	Humidity %	Pressure	KMH	Date/Time
MARIP NUGROHO TEST OLI Trim	[illegible]	[illegible]	31.5 °C	64 %	1010.2 mbar	98.8	23/06/2016 11:08:12



DATA FOR TEST: MARIP NUGROHO TEST OLI Trim

Comments
MP52 OLD

RPM	HP (HP*EQ) (N*M*M)	T
4500	7.0	8.88	1.32
4750	6.5	9.35	1.58
4900	6.5	9.39	1.72
5000	6.5	9.25	1.82
5250	6.6	8.87	2.08
5500	6.6	8.54	2.36
5750	6.7	8.18	2.64
6000	6.7	7.92	2.92
6250	6.8	7.73	3.22
6500	6.9	7.53	3.52
6750	6.8	7.08	3.84
7000	6.9	6.92	4.18
7250	6.9	6.69	4.52
7500	7.0	6.61	4.86
7652	7.0	6.49	5.08
7750	7.0	6.36	5.24
8000	6.9	6.12	5.69
8250	6.7	5.76	6.02
8500	6.4	5.33	6.46
8750	6.0	4.83	6.96
9000	5.7	4.49	7.46
9250	5.4	4.09	8.02
9500	5.3	3.94	8.60

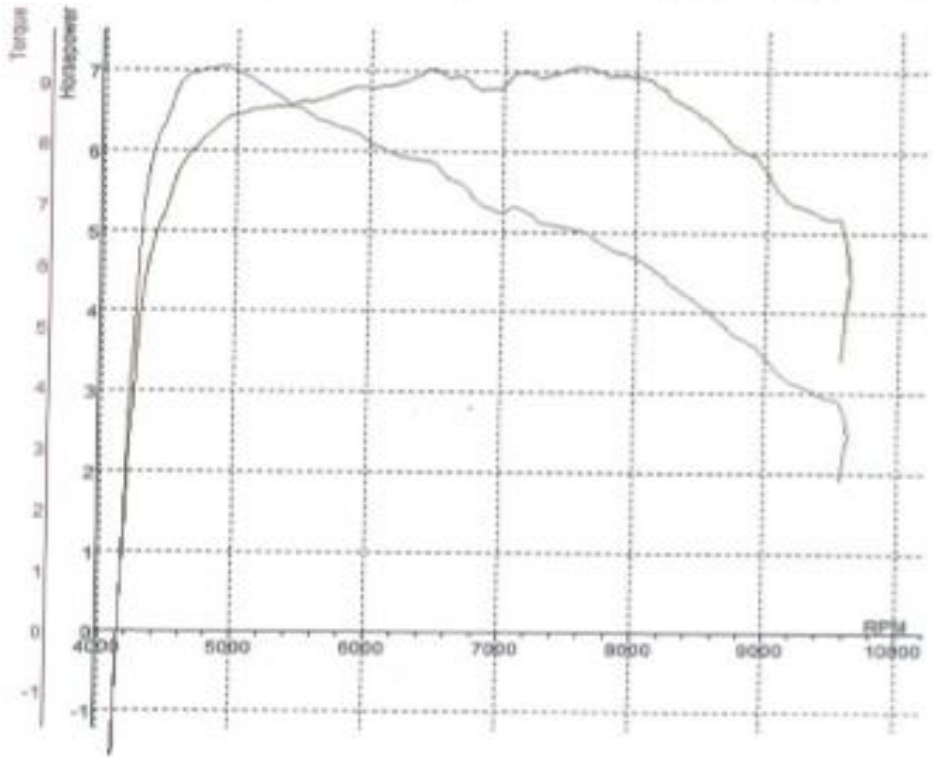
LOSSES:	-0.4 HP	-0.625*M*M
TOTAL ENGINE:	7.4 HP	10.425*M*M

SportDevices

SPORTDYNO V3.3
DYNAMOMETER: HMSIC - RPD
ROLLER INERTIA: 1.53

Displacement Correction
Correction Factor: ISO 1585
NOTE: Load Cell Included.

TEST NAME	MAX POWER	MAX TORQUE	Temp. °C	Humidity %	Pressure	KMH	Date/Time
M.ARIF NUGROHO TEST OLI T013	[illegible]	[illegible]	31.3 °C	63 %	1000.0 mbar	98.0	23/06/2016 11:12:42



DATA FOR TEST: M.ARIF NUGROHO TEST OLI T013

Comments
MP'X2 OLI4

RPM	HP (HP*0.2)	(N*M*0.74)	T
4500	5.3	8.67	1.28
4750	6.2	9.23	1.54
4987	6.4	9.26	1.68
5000	6.5	9.15	1.79
5250	6.5	8.83	2.04
5500	6.6	8.51	2.32
5750	6.7	8.26	2.60
6000	6.8	7.99	2.88
6250	6.9	7.77	3.18
6500	7.0	7.61	3.48
6750	6.8	7.17	3.80
7000	6.8	6.86	4.12
7250	6.9	6.77	4.46
7500	7.0	6.62	4.82
7643	7.1	6.55	4.96
7750	7.0	6.34	5.18
8000	6.9	6.12	5.54
8250	6.7	5.75	5.96
8500	6.4	5.34	6.40
8750	6.1	4.89	6.86
9000	5.7	4.48	7.38
9250	5.3	4.05	7.96
9500	5.2	3.83	8.56

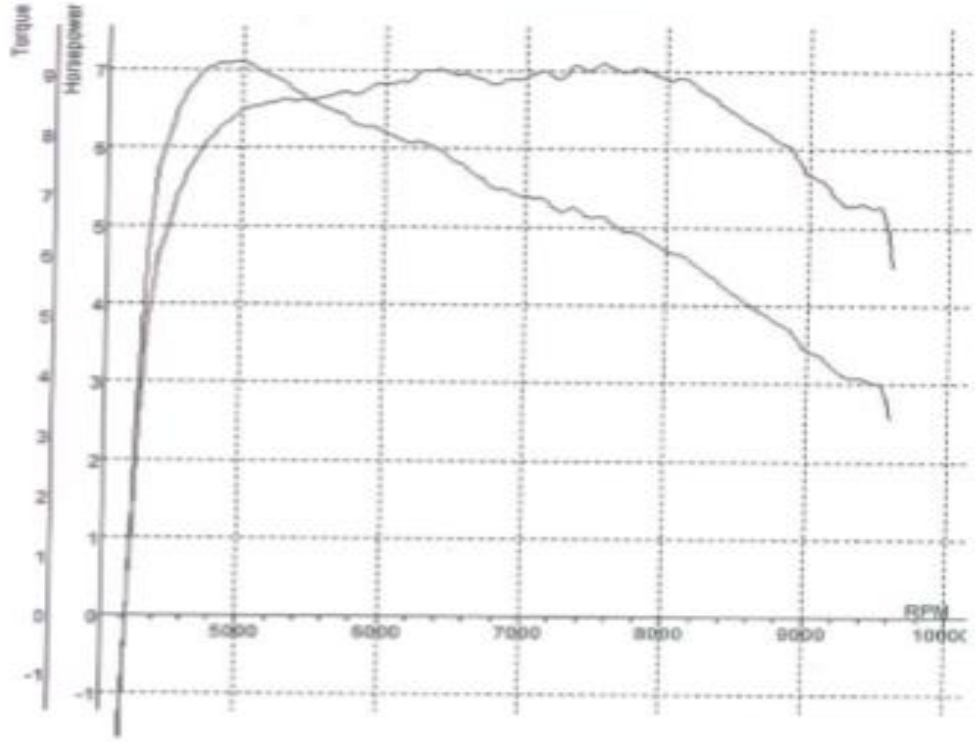
LOSSES:	-0.3 HP	-0.40/*%0*M
TOTAL ENGINE:	7.3HP	9.70N*M*M

SportDevices

SPORTDYNO V3.3
DYNAMOMETER: HMMC - RPD
ROLLER INERTIA: 1.33

Displacement Correction
Correction Factor: ISO 1585
NOTE: Load Cell Included.

TEST NAME	MAX POWER	MAX TORQUE	Temp. °C	Humidity %	Pressure	KMH	Date/Time
M.ARIF NUGROHO TEST OLI TB16	7.5 (7.5) / 7536	9.22 (9.82) / 4968	31.5 °C	63 %	1000.0 mbar	98.7	23/06/2016 11:17:46



DATA FOR TEST: M.ARIF NUGROHO TEST OLI TB16

Comments
MPX2 OLI5

RPM	HP (HP EQ)	(N*M*M)	T
4500	5.2	8.21	1.20
4750	6.3	9.12	1.66
4968	6.5	9.22	1.66
5000	6.5	9.21	1.70
5250	6.6	8.92	1.96
5500	6.6	8.54	2.22
5750	6.7	8.26	2.50
6000	6.8	8.04	2.80
6250	7.0	7.90	3.08
6500	6.9	7.55	3.40
6750	6.8	7.15	3.70
7000	6.9	6.99	4.04
7250	6.9	6.74	4.38
7500	7.1	6.66	4.72
7536	7.1	6.66	4.76
7750	7.0	6.39	5.08
8000	6.9	6.07	5.40
8250	6.7	5.76	5.86
8500	6.4	5.53	6.30
8750	6.1	4.94	6.76
9000	5.7	4.45	7.28
9250	5.3	4.03	7.86
9500	5.3	3.91	8.46

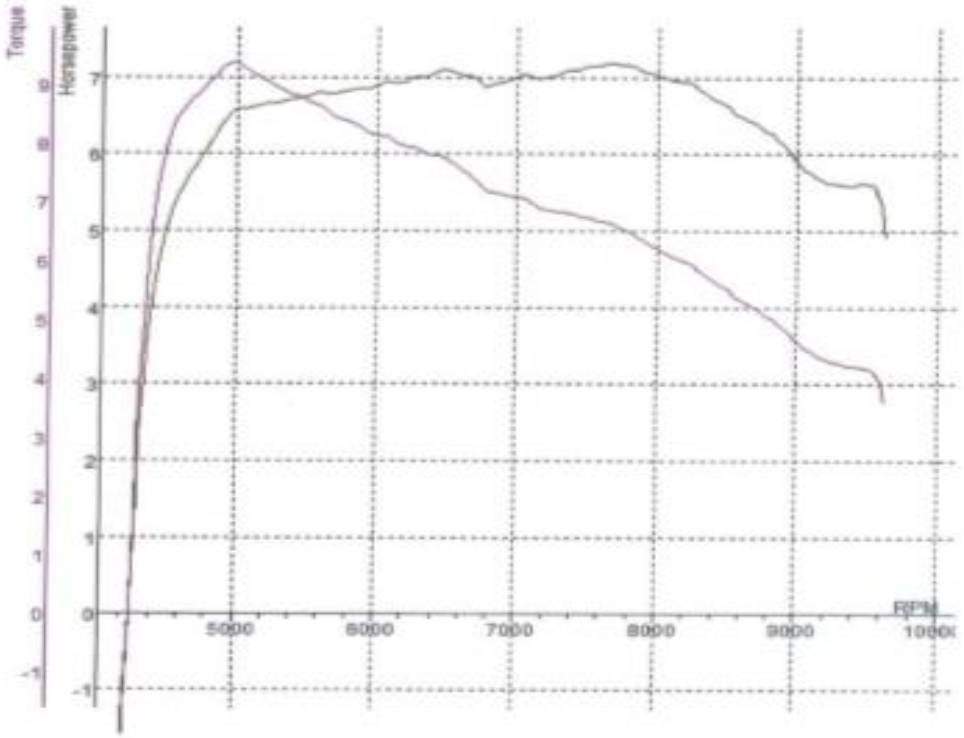
LOSSES:	-0.4 HP	-0.63*M*M
TOTAL ENGINE:	7.510P	9.825*M*M

SportDevices

SPORTDYNO V3.3
DYNAMOMETER: HMMC - RPD
ROLLER INERTIA: 1.53

Displacement Correction
Correction Factor: ISO 1585
NOTE: Load Cell Included.

TEST NAME	MAX POWER	MAX TORQUE	Temp. °C	Humidity %	Pressure	KMB	Date/Time
M ARIF NUGROHO TEST OLI T019	7.2 (7.3) / 7679	9.36 (9.96) / 4971	31.3 °C	63 %	1000.0 mbar	99.0	23/06/2016 11:23:09



DATA FOR TEST: M ARIF NUGROHO TEST OLI T019

Comments
MPX2 OL36 BARU

RPM	HP (HP*Q)	TQ (N*M*M)	T
4500	5.1	8.03	1.18
4750	6.0	8.94	1.44
4971	6.6	9.36	1.64
5000	6.6	9.34	1.68
5250	6.7	8.97	1.94
5500	6.8	8.70	2.20
5750	6.8	8.38	2.48
6000	6.9	8.13	2.76
6250	7.0	7.92	3.04
6500	7.1	7.72	3.34
6750	6.9	7.21	3.66
7000	7.0	7.08	3.98
7250	7.0	6.84	4.32
7500	7.2	6.74	4.66
7679	7.3	6.62	4.90
7750	7.2	6.52	5.02
8000	7.0	6.21	5.38
8250	6.9	5.92	5.78
8500	6.6	5.69	6.20
8750	6.3	5.08	6.68
9000	5.9	4.61	7.18
9250	5.6	4.29	7.70
9500	5.6	4.17	8.26

LOSSES:	-0.4 HP	-0.6N*M*M
TOTAL ENGINE:	7.3HP	9.96N*M*M

Grafik 1 Kalibrasi Q

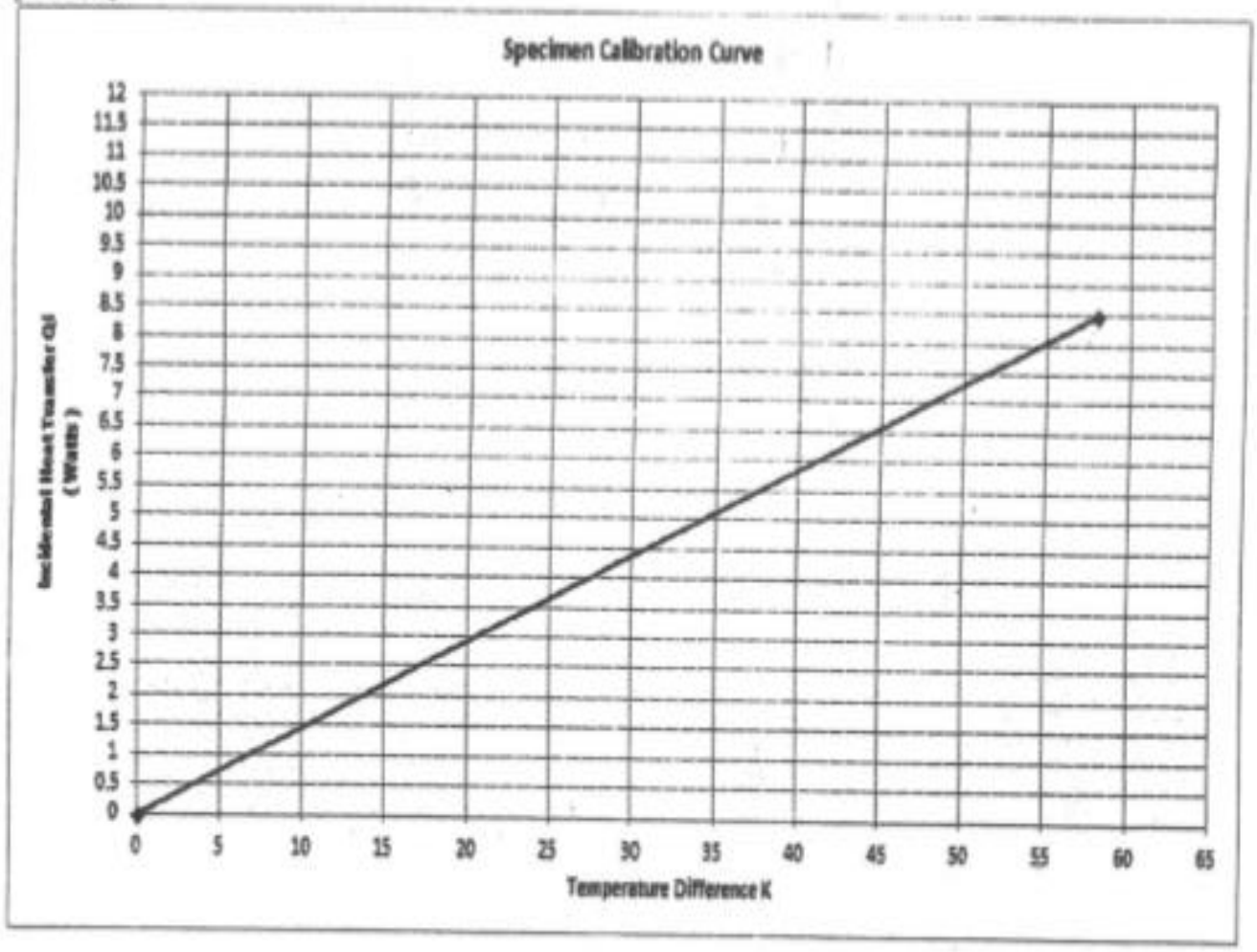


TABLE A-12

Properties of liquids

Temp. T, °C	Density ρ, kg/m³	Specific Heat c_p, J/kg·K	Thermal Conductivity k, W/m·K	Thermal Diffusivity α, m²/s	Dynamic Viscosity μ, kg/m·s	Kinematic Viscosity ν, m²/s	Prandtl Number Pr	Volume Expansion Coeff. β, 1/K
				Methane (CH_4)				
−160	420.2	3492	0.1863	1.270×10^{-7}	1.138×10^{-4}	2.699×10^{-7}	2.126	0.00882
−150	405.0	3580	0.1708	1.174×10^{-7}	9.169×10^{-5}	2.264×10^{-7}	1.927	0.00991
−140	388.8	3700	0.1550	1.077×10^{-7}	7.561×10^{-5}	1.942×10^{-7}	1.803	0.00444
−130	371.1	3878	0.1402	9.749×10^{-8}	6.288×10^{-5}	1.694×10^{-7}	1.738	0.00520
−120	351.4	4146	0.1256	8.634×10^{-8}	5.357×10^{-5}	1.486×10^{-7}	1.722	0.00637
−110	328.8	4611	0.1115	7.356×10^{-8}	4.377×10^{-5}	1.331×10^{-7}	1.810	0.00841
−100	301.0	5578	0.0967	5.761×10^{-8}	3.577×10^{-5}	1.188×10^{-7}	2.063	0.01282
−90	261.7	8902	0.0797	3.433×10^{-8}	2.761×10^{-5}	1.056×10^{-7}	3.082	0.02922
				Methanol (CH_3OH)				
20	788.4	2515	0.1987	1.002×10^{-7}	5.857×10^{-4}	7.429×10^{-7}	7.414	0.00118
30	779.1	2577	0.1980	9.862×10^{-8}	5.088×10^{-4}	6.531×10^{-7}	6.622	0.00120
40	769.8	2644	0.1972	9.690×10^{-8}	4.460×10^{-4}	5.795×10^{-7}	5.980	0.00123
50	760.1	2718	0.1965	9.509×10^{-8}	3.942×10^{-4}	5.185×10^{-7}	5.455	0.00127
60	750.4	2798	0.1957	9.320×10^{-8}	3.510×10^{-4}	4.677×10^{-7}	5.018	0.00133
70	740.4	2885	0.1950	9.128×10^{-8}	3.146×10^{-4}	4.250×10^{-7}	4.655	0.00137
				Isobutane ($R600a$)				
−100	683.8	1881	0.1969	1.076×10^{-7}	9.305×10^{-4}	1.360×10^{-6}	12.65	0.00142
−75	658.3	1970	0.1957	1.044×10^{-7}	8.624×10^{-4}	8.691×10^{-7}	8.167	0.00150
−50	634.3	2069	0.1285	9.773×10^{-8}	3.769×10^{-4}	5.942×10^{-7}	6.079	0.00161
−25	608.2	2180	0.1181	8.906×10^{-8}	2.688×10^{-4}	4.420×10^{-7}	4.963	0.00177
0	580.6	2306	0.1068	7.974×10^{-8}	1.993×10^{-4}	3.432×10^{-7}	4.304	0.00199
25	550.7	2455	0.0956	7.069×10^{-8}	1.510×10^{-4}	2.743×10^{-7}	3.880	0.00232
50	517.9	2640	0.0851	6.233×10^{-8}	1.195×10^{-4}	2.233×10^{-7}	3.582	0.00286
75	478.5	2896	0.0757	5.460×10^{-8}	8.785×10^{-5}	1.836×10^{-7}	3.363	0.00385
100	429.6	3361	0.0668	4.634×10^{-8}	6.483×10^{-5}	1.509×10^{-7}	3.256	0.00628
				Glycerin				
0	1276	2262	0.2820	9.778×10^{-8}	10.49	8.219×10^{-3}	84,101	
5	1270	2288	0.2835	9.782×10^{-8}	6.790	5.287×10^{-3}	54,327	
10	1270	2320	0.2846	9.662×10^{-8}	4.241	3.339×10^{-3}	34,561	
15	1267	2354	0.2856	9.576×10^{-8}	2.496	1.970×10^{-3}	20,570	
20	1264	2386	0.2860	9.484×10^{-8}	1.519	1.201×10^{-3}	12,671	
25	1261	2416	0.2860	9.388×10^{-8}	0.9934	7.878×10^{-4}	8,392	
30	1258	2447	0.2860	9.291×10^{-8}	0.6582	5.232×10^{-4}	5,631	
35	1255	2478	0.2860	9.195×10^{-8}	0.4347	3.464×10^{-4}	3,767	
40	1252	2513	0.2863	9.101×10^{-8}	0.3073	2.455×10^{-4}	2,697	
				Engine Oil (unused)				
0	899.0	1797	0.1469	9.097×10^{-8}	3.814	4.242×10^{-3}	46,636	0.00070
20	888.1	1881	0.1450	8.680×10^{-8}	0.8374	9.429×10^{-4}	10,863	0.00070
40	876.0	1964	0.1444	8.391×10^{-8}	0.2177	2.485×10^{-4}	2,962	0.00070
60	863.9	2048	0.1404	7.934×10^{-8}	0.07399	8.565×10^{-5}	1,080	0.00070
80	852.0	2132	0.1380	7.599×10^{-8}	0.03232	3.794×10^{-5}	499.3	0.00070
100	840.0	2220	0.1357	7.330×10^{-8}	0.01718	2.046×10^{-5}	279.1	0.00070
120	828.9	2308	0.1347	7.042×10^{-8}	0.01029	1.241×10^{-5}	176.3	0.00070
140	816.3	2395	0.1330	6.798×10^{-8}	0.006568	8.029×10^{-6}	118.1	0.00070
150	810.3	3441	0.1327	6.708×10^{-8}	0.005344	6.595×10^{-6}	98.31	0.00070

Source: Data generated from the EES software developed by S. A. Klein and F. L. Alvarado. Originally based on various sources.