



Report Date:	January 29, 2015
Name:	Liqui Moly Oil Additives Service
Objective:	Before and After Dyno and Data Monitoring Test Results
Test Vehicle:	2002 Mercedes-Benz C320 3.2L V6 Wagon Mileage: 139,606 KMS Transmission: Automatic
Test Dates:	January 21, 2015

Customer Requests:

Customer was looking for preventative maintenance service guidance due to the age and mileage of the car. We recommended and proceeded with the following preventative maintenance services:

1. Engine Flush before Oil Change with Liqui Moly *Pro-Line Engine Flush*.
2. Lube, Oil and Filter Service with Liqui Moly *Leichtlauf High Tech 5W40* Full Synthetic Motor Oil.
3. Engine Treatment with Liqui Moly *Cera Tec* and Liqui Moly *Motor Oil Saver*.
4. Cooling System Flush with *Pentosin NF* anti-freeze coolant.
5. Automatic Transmission Fluid and Filter Change with Liqui Moly *Top Tec ATF 1600*.
6. Replace gear oil with Liqui Moly *Fully Synthetic Gear Oil SAE 75W90*.
7. Brake Fluid Exchange with *Pentosin Super DOT4*.

As a procedure the car was put on our AWD chassis dyno for a baseline performance test including two drive cycle tests with city and highway simulation (*Attachment 1*).

After the services were completed, the car was put back on our AWD Chassis Dyno and repeated the performance test and drive cycle simulation for comparison (*Attachment 2*).

Test Results:

1. Maximum Engine HP and Torque has increased over the full RPM range between 5% and 17% (*Attachment 3*).
2. HP and Torque increase is confirmed as the **Air flow g/s** has clearly increased by the same load/throttle position. HP increase in Partial Load is between 4.4% and 10.2% (*Attachment 4*)

**Attachment 1**

Incoming Performance Test including Drive Train Losses Before Service.

Attachment 2

Repeated Incoming Performance Test After Service.

Attachment 3

Performance Test Comparison. Before and After Service.

Red – Before

Black – After

Attachment 4

Air Flow Grams/Second (g/s) Measurement Comparison Before and After Service.

Orange – Before

Green - After



Corrected Brake Power vs. RPM

RSP-Motorsports Inc

2002-MB-C320-2F173465-Income-1-before treatment,

ATTACHMENT 1

2002-MB-C320-2F173465-Income-1-before treatment



Vehicle: 2002 Mercedes-Benz C320 3.2L Wagon

VIN: known_to_LIQUI_MOLY

Transmission :Automatic

Chassis:W203

Milage: 142,445 KM

Notice: Measured in 3rd gear ratio 1.49:1

Tire Pressure: 2.0 bar front, 2.2 bar rear

ATTACHMENT 1

INCOME BEFORE ENGINE TREATMENT

EngSpd RPM	CEngPw CHp	SAEPwr CHp	EsDTLs Hp	CEngTq Clb-ft	WhlTqr Clb-ft
2600	77.4	65.8	11.8	156.4	133
2700	89.6	76.9	12.9	174.3	149.6
2800	98.7	85.1	13.9	185.2	159.6
2900	104.8	90.5	14.7	189.9	163.8
3000	110.1	95	15.4	192.7	166.4
3100	115.6	99.8	16.1	195.8	169.1
3200	113.2	97.2	16.3	185.7	159.6
3300	108.4	92.4	16.3	172.5	147.1
3400	111.3	94.8	16.8	172	146.5
3500	113.4	96.4	17.3	170.2	144.6
3600	115.7	98.1	17.9	168.8	143.2
3700	121.2	103	18.6	172.1	146.1
3800	126.8	107.8	19.4	175.2	149
3900	130.7	111.1	20	176.1	149.6
4000	134.4	114.1	20.6	176.4	149.8
4100	139.3	118.3	21.4	178.4	151.5
4200	145.2	123.4	22.2	181.5	154.3
4300	148.6	126.2	22.8	181.5	154.1
4400	149.1	126.2	23.3	177.9	150.7
4500	149.5	126.3	23.7	174.5	147.4
4600	148	124.4	24	168.9	142
4700	145.3	121.5	24.2	162.4	135.7
4800	144.5	120.2	24.6	158.1	131.6
4900	148	123.1	25.3	158.7	132
5000	150.5	125	25.9	158.1	131.3
5100	155.6	129.3	26.7	160.3	133.2
5200	158.6	131.7	27.4	160.2	133
5300	163.7	136	28.2	162.2	134.8
5400	167.4	138.9	28.9	162.8	135.1
5500	170.2	141	29.6	162.5	134.7
5600	170.9	141.2	30.1	160.3	132.5
5700	169.6	139.5	30.5	156.2	128.5
5800	165.2	134.9	30.7	149.6	122.2
5900	142.1	112.9	29.6	126.5	100.5

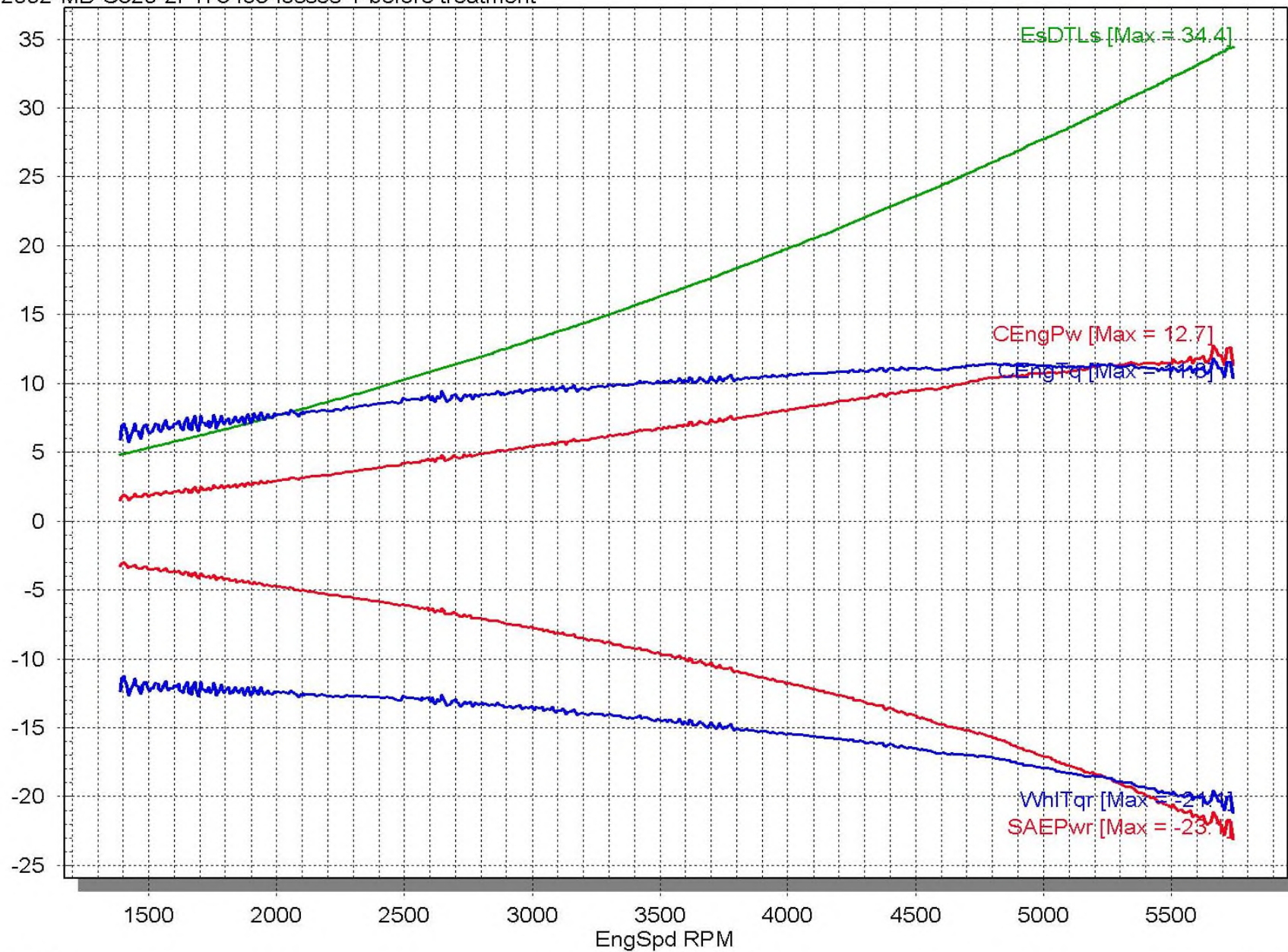
Corrected Brake Power vs. RPM

RSP-Motorsports Inc

2002-MB-C320-2F173465-losses-1-before treatment,

ATTACHMENT 1

2002-MB-C320-2F173465-losses-1-before treatment

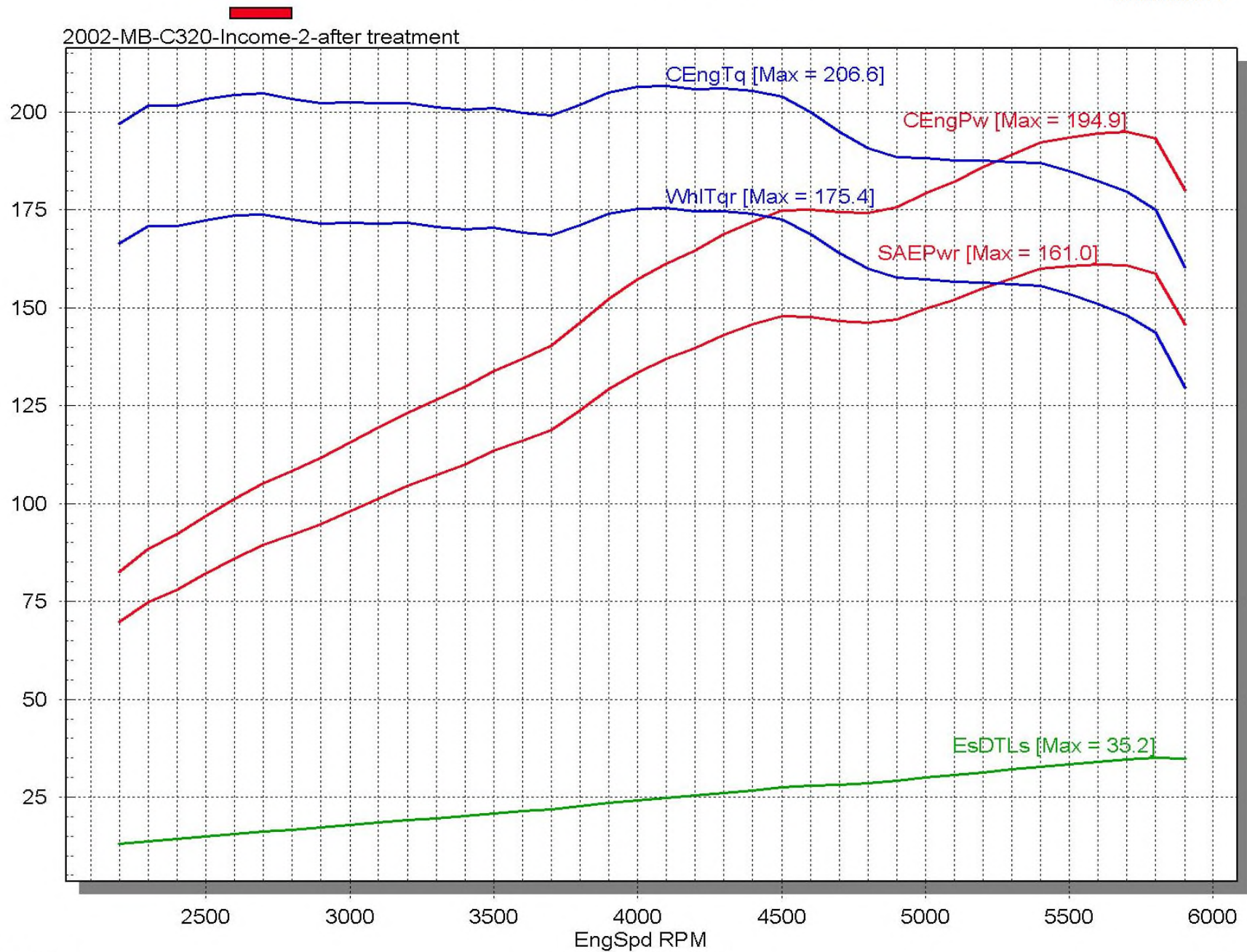


Corrected Brake Power vs. RPM

RSP-Motorsports Inc

2002-MB-C320-Income-2-after treatment,

ATTACHMENT 2



Vehicle: 2002 Mercedes-Benz C320 3.2L Wagon

VIN: known_to_LIQUI_MOLY

Transmission: Automatic

Chassis: W203

Mileage: 142,445 KM

Notice: Measured in 3rd gear ratio 1.49:1

Tire Pressure 2.0 bar front 2.2 bar rear

ATTACHMENT 2

INCOME AFTER ENGINE TREATMENT

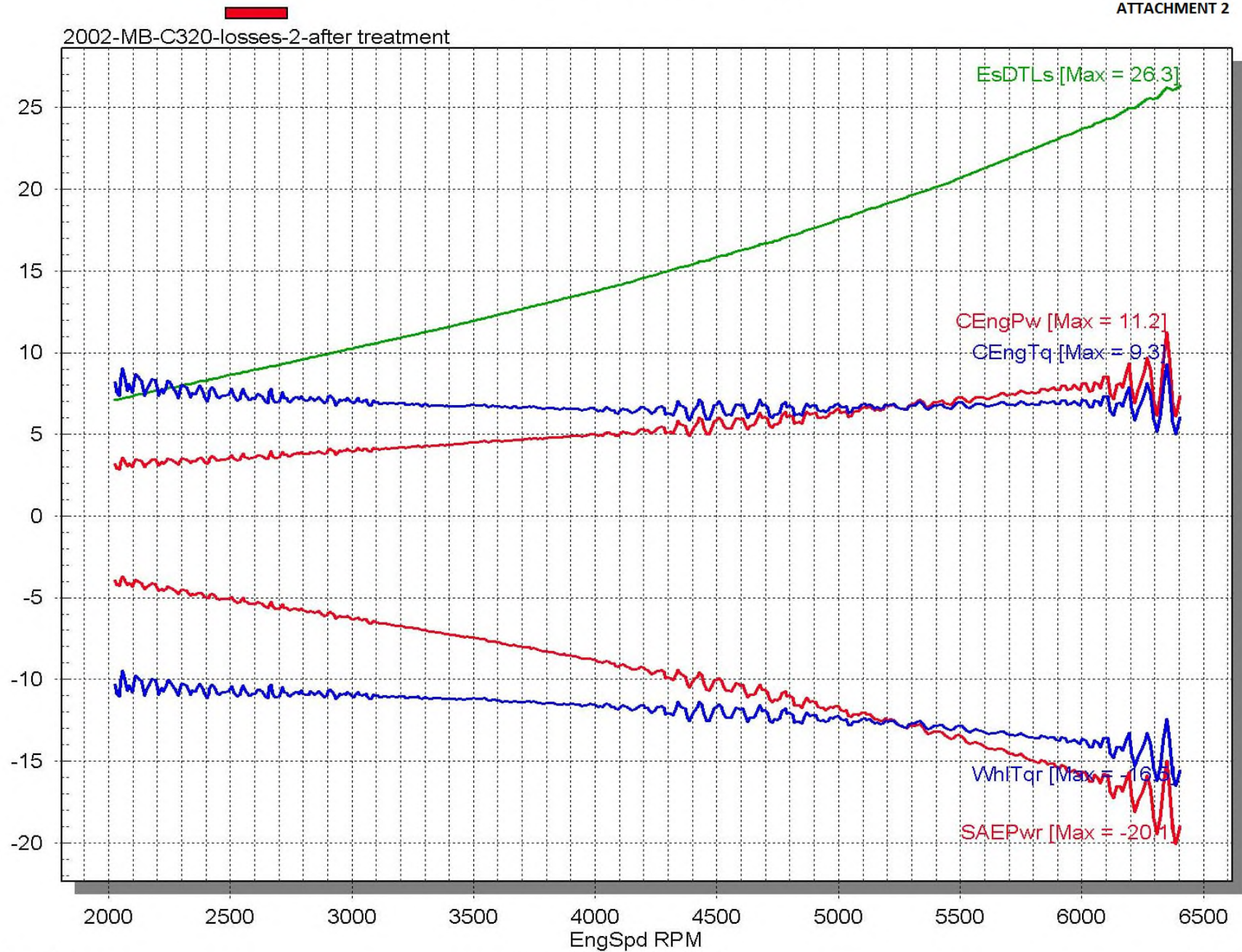
EngSpd RPM	CEngPw CHp	SAEPwr CHp	EsDTLs Hp	CEngTq Clb-ft	WhlTqr Clb-ft
2200	82.6	69.7	13.1	197.1	166.5
2300	88.3	74.8	13.8	201.7	170.8
2400	92.2	78.1	14.4	201.7	170.8
2500	96.8	82.1	15	203.3	172.4
2600	101.2	85.9	15.6	204.5	173.5
2700	105.3	89.4	16.2	204.8	173.9
2800	108.4	92	16.7	203.3	172.6
2900	111.7	94.8	17.3	202.3	171.6
3000	115.6	98.1	17.9	202.4	171.7
3100	119.4	101.3	18.4	202.2	171.6
3200	123.3	104.6	19	202.4	171.7
3300	126.4	107.2	19.6	201.2	170.6
3400	129.9	110.1	20.2	200.6	170
3500	134	113.6	20.8	201	170.4
3600	137	116	21.4	199.8	169.2
3700	140.3	118.8	21.9	199.2	168.6
3800	146.1	123.8	22.7	201.9	171.1
3900	152.2	129.2	23.5	205	174
4000	157.2	133.5	24.2	206.4	175.3
4100	161.3	136.9	24.8	206.6	175.4
4200	164.6	139.6	25.5	205.9	174.6
4300	168.7	143.1	26.2	206.1	174.7
4400	172.1	145.7	26.8	205.4	174
4500	174.8	147.9	27.4	204.1	172.7
4600	175.1	147.8	27.8	199.9	168.7
4700	174.4	146.7	28.2	194.9	164
4800	174.3	146.2	28.6	190.8	160
4900	175.8	147.1	29.2	188.4	157.7
5000	179.2	149.8	30	188.2	157.3
5100	182.3	152.2	30.6	187.7	156.7
5200	185.9	155	31.4	187.7	156.6
5300	189	157.5	32.1	187.3	156.1
5400	192.2	159.9	32.8	186.9	155.6
5500	193.6	160.7	33.4	184.9	153.5
5600	194.6	161	34.1	182.5	151
5700	194.9	160.8	34.7	179.6	148.1
5800	193.4	158.8	35.2	175.1	143.8
5900	180.2	145.8	34.8	160.4	129.8

Corrected Brake Power vs. RPM

RSP-Motorsports Inc

2002-MB-C320-losses-2-after treatment,

ATTACHMENT 2

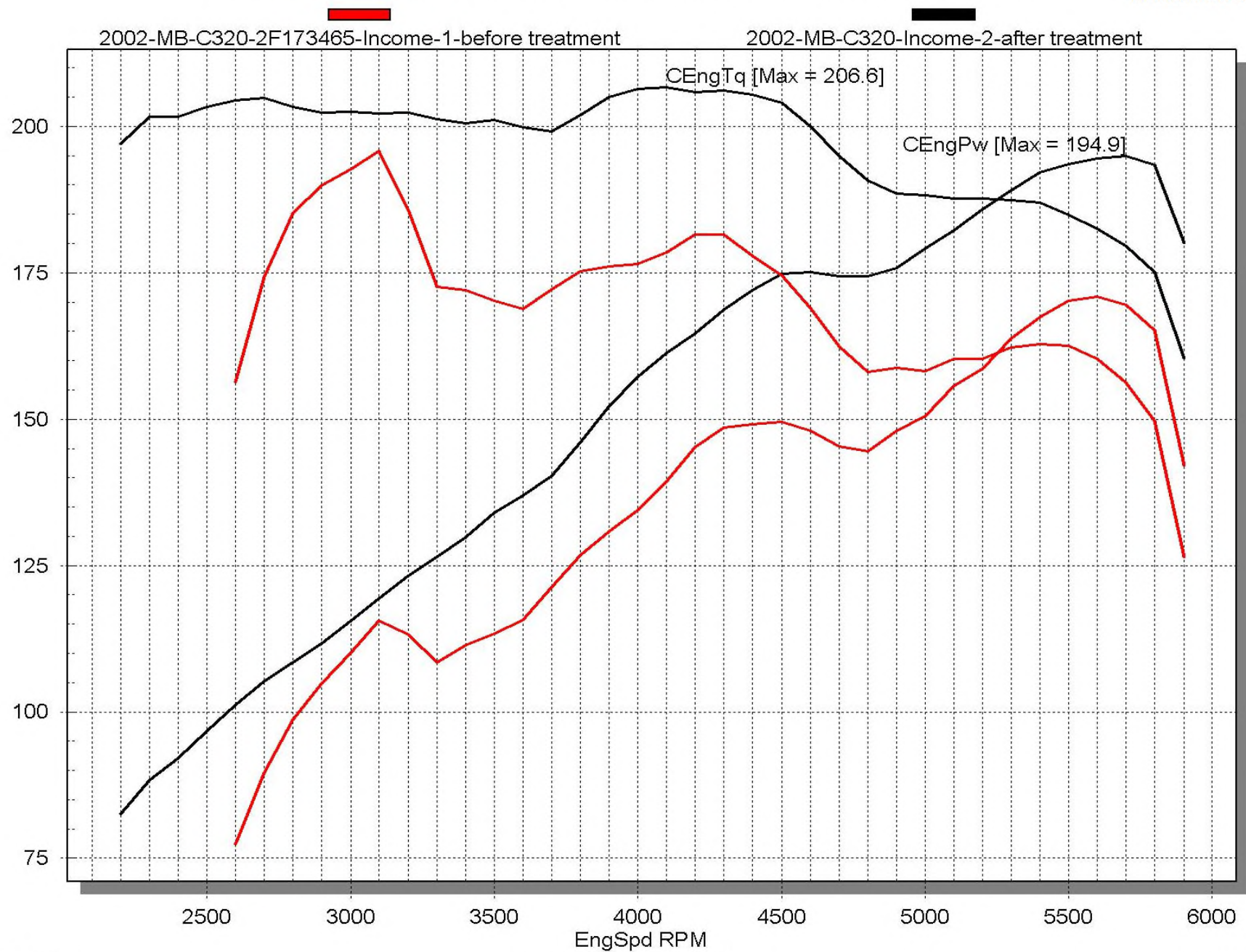


Corrected Brake Power vs. RPM

RSP-Motorsports Inc

2002-MB-C320-2F173465-Income-1-before treatment, 2002-MB-C320-Income-2-after treatment,

ATTACHMENT 3



Engine Treatment with Liqui Moly

ATTACHMENT 4

Vehicle: 2002 Mercedes C320 Wagon

VIN: known_to_LIQUI_MOLY

Chassis:W203

Condition: Operating Temperature

Measured in 3rd gear

Mileage: 142,445 KM

RPM	Throttle %	km/h	Airflow g/s	Dyno HP	Gain HP %
2000	15.00	40	27.80	29.50	
2000	15.00	40	29.50	32.50	10.2%
2500	17.60	56	37.50	44.20	
2500	17.60	56	38.50	46.50	5.2%
3000	20.00	70	45.86	52.00	
3000	20.00	70	0.00	55.00	5.7%
4000	36.00	94	102.69	125.00	
4000	36.00	94	104.5	130.50	4.4%

	before treatment
	after treatment