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	A PISTON ENGINE PERFORMANCE	B 11 Janu	C	D UTO UNIO	E N 1934-193	F	G
2	ENGINE IDENTITY				1004-100		
3	PEP Serial No.						
	Data Source Ref.		4,30,276,	4,30,276,	4,30,276,	4,30,276,	4,30,276,
	File DASO	4,468		382	381,382	382,711	382,711
5	YEAR Make	1934 MERC.	1934 A UNION	1935 A UNION	1935.5 A UNION	1936 A UNION	1937 A UNION
7	Model	M25A	A	B	B/C	C	R
8	Swept Volume Litres	3.4	4.4	4.9	5.6	6	6.3
	Induction System	PC/Press	PC	PC	PC	PC	PC
	Class	RR	RR	RR	RR	RR	RR
	GEOMETRY Configuration	IL8	45V16	45V16	45V16	45) /4 6	45)/40
	No. of Cylinders CN	8	45016	16	45016	45V16 16	45V16 16
	No.Cyls/Intake CNI	8	16	16	16	16	16
	In. & Ex. Configuration	RSC/CF	RSC/CF	RSC/CF	RSC/CF	RSC/CF	RSC/CF
_	Comb. Ch'b'r/Piston Config'n	PR/LH	H/F	H/MH	H/MH	H/MH	H/MH
	Compression Ratio R	7.5	7	8.95		9.2	9.2
_	BORE B mm STROKE S "	78	68 75	72.5	72.5	75	77 85
	Valve Opening/Return System	DOHC		SOHC/PR			
	Valve No./CylIn. VNI	2	1	1	1	1	1
22	" " -Ex. VNE	2	1	1	1	1	1
	Valve Incl. Angle VIA Deg	60	90	90	90	90	90
	Inlet Valve Dia. IVD mm	34	39	39	39	39	39
	Inlet Valve Lift IVL " Inlet Tract Length LIN "	8.5	10	10	10	10	10
20	Timing-In. Open IVO Deg	25					
28	" " Close IVC "	45					
29	" Ex Open EVO "	50					
30	" " Close EVC "	20					
	In. Open Duration IOD "	250	260	260	260	260	260
32	EX. EUD	250	40	40	40	40	40
	InEx. Overlap OL " Main Journal Dia. MJ mm	45	62	62	70	70	70
	Crank Pin Dia. CP "	53	58	58	68	68	68
	Gudgeon Pin Dia. GP "	22	22	22	22	22	22
	Con. Rod Length CRL "	161	164	164	168	168	168
38	Piston Height PH "	94					
39	Piston Skirt Length PSL "	74					
		74					
	INFLOW CONDITIONS Fuel Type	A/WW	P/B?	?	?	A	•
	Fuel Adj. to Petrol AA	A/VVVV	<u>Р/В?</u> 1	<u>r</u>	۲ 1	A 1	A 1
	Press. @ In. Valve IVP ATA	1.66	1.6	1.75		1.95	1.94
45	Manifold Density Ratio = MDR	1.66	1.36	1.63		1.7	1.7
46	CODE						
	Induction Code	В	В	В	В	B	B
	PERFORMANCE						-
_							
	Peak (Rated) Power PP HP	349	295	375		520	545
	Crank RPM @ PP NP	349 5800	4500	4800		5000	545 5000
51	Crank RPM @ PP NP Peak Torque TP LbFt					5000 627	545
51 52	Crank RPM @ PP NP Peak Torque TP LbFt Crank RPM @ TP NT		4500	4800		5000	545 5000
51 52	Crank RPM @ PP NP Peak Torque TP LbFt		4500	4800	0.853	5000 627	545 5000
51 52 53 54 55	Crank RPM @ PP NP Peak Torque TP LbFt Crank RPM @ TP NT <u>GEOMETRIC ANALYSIS</u> B/S PA SqCm	5800 0.886 382.27	4500 380 0.907 581.07	4800 477 0.967 660.52	660.52	5000 627 2500 , 0.882 706.86	545 5000 650 0.906 745.06
51 52 53 54 55 56	Crank RPM @ PP NP Peak Torque TP LbFt Crank RPM @ TP NT GEOMETRIC ANALYSIS B/S PA SqCm V/CN cc per cylinder	5800 0.886 382.27 420.5	4500 380 0.907 581.07 272.4	4800 477 0.967 660.52 309.6	660.52 350.9	5000 627 2500 , 0.882 706.86 375.5	545 5000 650 0.906 745.06 395.8
51 52 53 54 55 56 57	Crank RPM @ PP NP Peak Torque TP LbFt Crank RPM @ TP NT GEOMETRIC ANALYSIS B/S PA SqCm V/CN cc per cylinder V cc	0.886 382.27 420.5 3364.0	4500 380 0.907 581.07 272.4 4358.0	4800 477 0.967 660.52 309.6 4953.9	660.52 350.9 5614.4	5000 627 2500 , 0.882 706.86 375.5 6008.3	545 5000 650 0.906 745.06 395.8 6333.0
51 52 53 54 55 56 57 58	Crank RPM @ PP NP Peak Torque TP LbFt Crank RPM @ TP NT GEOMETRIC ANALYSIS B/S PA SqCm V/CN cc per cylinder V cc IVA SqCm	5800 0.886 382.27 420.5 3364.0 145.3	4500 380 0.907 581.07 272.4 4358.0 191.1	4800 477 660.52 309.6 4953.9 191.1	660.52 350.9 5614.4 191.1	5000 627 2500 , 0.882 706.86 375.5 6008.3 191.1	545 5000 650 0.906 745.06 395.8 6333.0 191.1
51 52 53 54 55 56 57 58 59	Crank RPM @ PP NP Peak Torque TP LbFt Crank RPM @ TP NT GEOMETRIC ANALYSIS B/S PA SqCm V/CN cc per cylinder V cc	5800 0.886 382.27 420.5 3364.0 145.3 0.380	4500 380 0.907 581.07 272.4 4358.0 191.1 0.329	4800 477 0.967 660.52 309.6 4953.9	660.52 350.9 5614.4 191.1 0.289	5000 627 2500 0.882 706.86 375.5 6008.3 191.1 0.270	545 5000 650 0.906 745.06 395.8 6333.0 191.1 0.257
51 52 53 54 55 56 57 58 59	Crank RPM @ PP NP Peak Torque TP LbFt Crank RPM @ TP NT GEOMETRIC ANALYSIS B/S PA SqCm V/CN cc per cylinder V cc IVA SqCm IVA SqCm	5800 0.886 382.27 420.5 3364.0 145.3	4500 380 0.907 581.07 272.4 4358.0 191.1	4800 477 660.52 309.6 4953.9 191.1 0.289	660.52 350.9 5614.4 191.1	5000 627 2500 , 0.882 706.86 375.5 6008.3 191.1	545 5000 650 0.906 745.06 395.8 6333.0 191.1
51 52 53 54 55 56 57 58 59 60 61 62	Crank RPM @ PP NP Peak Torque TP LbFt Crank RPM @ TP NT GEOMETRIC ANALYSIS B/S PA SqCm V/CN cc per cylinder V cc IVA SqCm IVA SqCm IVA/PA INL/IVD ISA SqCm	5800 0.886 382.27 420.5 3364.0 145.3 0.380 0.25 145.3 0.380	4500 380 0.907 581.07 272.4 4358.0 191.1 0.329 0.256 196.0 0.337	4800 477 660.52 309.6 4953.9 191.1 0.289 0.256 196.0 0.297	660.52 350.9 5614.4 191.1 0.289 0.256 196.0 0.297	5000 627 2500	545 5000 650 0.906 745.06 395.8 6333.0 191.1 0.257 0.256 196.0 0.263
51 52 53 54 55 56 57 58 59 60 61 62 63	Crank RPM @ PP NP Peak Torque TP LbFt Crank RPM @ TP NT GEOMETRIC ANALYSIS B/S PA SqCm V/CN cc per cylinder V cc IVA SqCm IVA/PA NL/IVD ISA SqCm ISA/PA MJ/S MJ/S %	5800 0.886 382.27 420.5 3364.0 145.3 0.380 0.25 145.3 0.380 71.6	4500 380 0.907 581.07 272.4 4358.0 191.1 0.329 0.256 196.0 0.337 82.7	4800 477 0.967 660.52 309.6 4953.9 191.1 0.289 0.256 196.0 0.297 82.7	660.52 350.9 5614.4 191.1 0.289 0.256 196.0 0.297 82.4	5000 627 2500	545 5000 650 745.06 395.8 6333.0 191.1 0.257 0.256 196.0 0.263 82.4
51 52 53 54 55 56 57 58 59 60 61 62 63 64	Crank RPM @ PP NP Peak Torque TP LbFt Crank RPM @ TP NT GEOMETRIC ANALYSIS B/S B/S PA SqCm V/CN cc per cylinder V cc IVA SqCm IVA/PA IVL/IVD ISA SqCm ISA/PA % CP/S %	5800 0.886 382.27 420.5 3364.0 145.3 0.380 0.25 145.3 0.380 71.6 60.2	4500 380 0.907 581.07 272.4 4358.0 191.1 0.329 0.256 196.0 0.337 82.7 77.3	4800 477 660.52 309.6 4953.9 191.1 0.289 0.256 196.0 0.297 82.7 77.3	660.52 350.9 5614.4 191.1 0.289 0.256 196.0 0.297 82.4 80.0	5000 627 2500	545 5000 650 745.06 395.8 6333.0 191.1 0.257 0.256 196.0 0.263 82.4 80.0
51 52 53 54 55 56 57 58 59 60 61 62 63 64 65	Crank RPM @ PP NP Peak Torque TP LbFt Crank RPM @ TP NT GEOMETRIC ANALYSIS B/S PA SqCm V/CN cc per cylinder V cc IVA SqCm IVA SqCm IVA/PA NU/IVD ISA SqCm ISA/PA % CP/S % GP/S %	5800 0.886 382.27 420.5 3364.0 0.380 0.25 145.3 0.380 71.6 60.2 25.0	4500 380 0.907 581.07 272.4 4358.0 191.0 0.256 196.0 0.337 82.7 77.3 29.3	4800 477 660.52 309.6 4953.9 191.1 0.289 0.256 196.0 0.297 82.7 77.3 29.3	660.52 350.9 5614.4 191.1 0.289 0.256 196.0 0.297 82.4 80.0 25.9	5000 627 2500	545 5000 650 745.06 395.8 6333.0 191.1 0.257 0.256 196.0 0.263 82.4 80.0 25.9
$\begin{array}{c} 51 \\ 52 \\ 53 \\ 54 \\ 55 \\ 56 \\ 57 \\ 58 \\ 59 \\ 60 \\ 61 \\ 62 \\ 63 \\ 64 \\ 65 \\ 66 \\ 66 \\ \end{array}$	Crank RPM @ PP NP Peak Torque TP LbFt Crank RPM @ TP NT GEOMETRIC ANALYSIS B/S PA SqCm V/CN cc per cylinder V V/CN cc per cylinder V/CN V/A SqCm IVA/PA IVA/PA SqCm ISA/PA MJ/S % CP/S GP/S % CP/S CRL/S S CRL/S	5800 0.886 382.27 420.5 3364.0 145.3 0.380 0.25 145.3 0.380 71.6 60.2 25.0 25.0 1.83	4500 380 0.907 581.07 272.4 4358.0 191.1 0.329 0.256 196.0 0.337 82.7 77.3	4800 477 660.52 309.6 4953.9 191.1 0.289 0.256 196.0 0.297 82.7 77.3	660.52 350.9 5614.4 191.1 0.289 0.256 196.0 0.297 82.4 80.0	5000 627 2500	545 5000 650 745.06 395.8 6333.0 191.1 0.257 0.256 196.0 0.263 82.4 80.0
51 52 53 54 55 56 57 58 59 60 61 62 63 64 65	Crank RPM @ PP NP Peak Torque TP LbFt Crank RPM @ TP NT GEOMETRIC ANALYSIS B/S PA SqCm V/CN cc per cylinder V cc IVA SqCm IVA SqCm IVA/PA NU/IVD ISA SqCm ISA/PA % CP/S % GP/S %	5800 0.886 382.27 420.5 3364.0 0.380 0.25 145.3 0.380 71.6 60.2 25.0	4500 380 0.907 581.07 272.4 4358.0 191.0 0.256 196.0 0.337 82.7 77.3 29.3	4800 477 660.52 309.6 4953.9 191.1 0.289 0.256 196.0 0.297 82.7 77.3 29.3	660.52 350.9 5614.4 191.1 0.289 0.256 196.0 0.297 82.4 80.0 25.9	5000 627 2500	545 5000 650 745.06 395.8 6333.0 191.1 0.257 0.256 196.0 0.263 82.4 80.0 25.9
51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69	Crank RPM @ PP NP Peak Torque TP LbFt Crank RPM @ TP NT GEOMETRIC ANALYSIS B/S PA SqCm V/CN cc per cylinder V cc IVA SqCm IVA SqCm IVA SqCm ISA SqCm ISA/PA % CP/S % CP/S % CPL/S % IOU/Smm R*VIA	5800 0.886 382.27 420.5 3364.0 145.3 0.380 0.25 145.3 0.380 71.6 60.2 25.0 1.83 0.83	4500 380 0.907 581.07 272.4 4358.0 191.1 0.329 0.256 196.0 0.337 82.7 77.3 29.3 2.19	4800 477 660.52 309.6 4953.9 191.1 0.289 0.256 196.0 0.297 82.7 77.3 29.3 2.19	660.52 350.9 5614.4 191.1 0.289 0.256 196.0 0.297 82.4 80.0 25.9 1.98	5000 627 2500	545 5000 650 745.06 395.8 6333.0 191.1 0.257 0.256 196.0 0.263 82.4 80.0 25.9 1.98
$\begin{array}{c} 51\\52\\53\\54\\55\\56\\57\\58\\59\\60\\61\\62\\63\\64\\65\\66\\67\\68\\69\\70\\\end{array}$	Crank RPM @ PP NP Peak Torque TP LbFt Crank RPM @ TP NT GEOMETRIC ANALYSIS B/S PA SqCm V/CN cc per cylinder V cc IVA SqCm IVA SqCm IVA SqCm ISA SqCm ISA/PA MJ/S MJ/S % CP/S % CP/S % CRL/S % B/PH 100/Smm R*VIA PERFORMANCE ANALYSIS	5800 0.886 382.27 420.5 3364.0 145.3 0.380 0.25 145.3 0.380 71.6 60.2 25.0 1.83 0.83 1.136 450.0	4500 380 0.907 581.07 272.4 4358.0 191.1 0.329 0.256 196.0 0.337 77.3 2.0 32.19 1.333 630.0	4800 477 660.52 309.6 4953.9 191.1 0.289 0.256 196.0 0.0297 77.3 2.029 7.7.3 2.19 1.333 805.5	660.52 350.9 5614.4 191.1 0.289 0.256 196.0 0.297 82.4 80.0 25.9 1.98	5000 627 2500	545 5000 650 745.06 395.8 6333.0 191.1 0.257 0.256 196.0 0.263 82.4 80.0 0.25.9 1.98 1.176 828.0
$\begin{array}{c} 51\\52\\53\\54\\55\\56\\57\\58\\9\\0\\61\\62\\63\\64\\65\\66\\67\\68\\69\\70\\71\\\end{array}$	Crank RPM @ PP NP Peak Torque TP LbFt Crank RPM @ TP NT GEOMETRIC ANALYSIS B/S PA SqCm V/CN cc per cylinder V cc IVA SqCm V/APA NU/IVD ISA SqCm IVA/PA SqCm ISA/PA MJ/S GP/S % CP/S % GP/S % CRL/S B/PH 100/Smm R*VIA PERFORMANCE ANALYSIS PP/V=SP HP/Litre	5800 0.886 382.27 420.5 3364.0 0.25 145.3 0.380 0.25 145.3 0.380 71.6 60.2 25.0 1.83 0.83 1.136	4500 380 0.907 581.07 272.4 4358.0 191.1 0.329 0.256 196.0 0.337 77.3 29.3 2.19 1.333	4800 477 660.52 309.6 4953.9 191.1 0.289 0.256 196.0 0.297 77.3 29.3 2.19 1.333	660.52 350.9 5614.4 191.1 0.289 0.256 196.0 0.297 82.4 80.0 25.9 1.98	5000 627 2500	545 5000 650 745.06 395.8 6333.0 191.1 0.257 0.256 196.0 0.263 82.4 80.0 25.9 1.98 1.176
$\begin{array}{c} 51\\52\\53\\54\\55\\56\\57\\58\\59\\60\\61\\23\\64\\65\\66\\67\\68\\69\\70\\71\\72\end{array}$	Crank RPM @ PP NP Peak Torque TP LbFt Crank RPM @ TP NT GEOMETRIC ANALYSIS B/S PA SqCm V/CN cc per cylinder V cc IVA SqCm IVA SqCm IVAPA N/L/VD ISA SqCm ISA/PA % CP/S % GP/S % CRL/S % B/PH 100/Smm R*VIA PERFORMANCE ANALYSIS PP/V=SP HP/Litre F= (NP-NT)/NP %	5800 0.886 382.27 420.5 3364.0 145.3 0.380 0.25 145.3 0.380 0.25 0.380 71.6 60.2 25.0 1.83 0.83 0.83 1.136 450.0	4500 380 0.907 581.07 272.4 4358.0 191.1 0.329 0.256 196.0 0.337 77.3 29.3 2.19 1.333 630.0 67.7	4800 477 660.52 309.6 4953.9 191.1 0.289 0.256 196.0 0.297 82.7 77.3 29.3 2.19 1.333 805.5 75.7	660.52 350.9 5614.4 191.1 0.289 0.256 196.0 0.297 82.4 80.0 25.9 1.98	5000 627 2500	545 5000 650 745.06 395.8 6333.0 191.1 0.257 0.256 196.0 0.263 82.4 80.0 25.9 1.98 1.176 828.0 86.1
51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73	Crank RPM @ PP NP Peak Torque TP LbFt Crank RPM @ TP NT GEOMETRIC ANALYSIS B/S PA SqCm V/CN cc per cylinder V cc IVA SqCm IVA/PA NL/IVD ISA SqCm ISA/PA % CP/S % CP/S % CRL/S % B/PH 100/Smm R*VIA PP/V=SP PP/V=SP HP/Litre F= (NP-NT)/NP % MPSP = 2*S*NP m/s	5800 0.886 382.27 420.5 3364.0 145.3 0.380 0.25 145.3 0.380 71.6 60.2 25.0 1.83 0.83 1.136 450.0 103.7 17.01	4500 380 0.907 581.07 272.4 4558.0 191.1 0.329 0.256 196.0 0.337 82.7 77.3 2.19 1.333 630.0 67.7 11.25	4800 477 0.967 309.6 4953.9 191.1 0.289 0.256 196.0 0.297 82.7 77.3 2.9.3 2.19 1.333 805.5 75.7 72.7	660.52 350.9 5614.4 191.1 0.289 0.256 196.0 0.297 82.4 80.0 25.9 1.98	5000 627 2500 0.882 706.86 375.5 6008.3 191.1 0.270 0.256 196.0 0.277 82.4 80.0 0.277 82.4 80.0 0.259 1.98 1.176 828.0 886.5	545 5000 650 745.06 395.8 6333.0 191.1 0.257 0.256 196.0 0.263 82.4 80.0 25.9 1.98 1.176 828.0 86.1 86.1
$\begin{array}{c} 51\\52\\53\\54\\55\\56\\57\\58\\59\\60\\61\\23\\64\\65\\66\\67\\68\\69\\70\\71\\72\end{array}$	Crank RPM @ PP NP Peak Torque TP LbFt Crank RPM @ TP NT GEOMETRIC ANALYSIS B/S PA SqCm V/CN cc per cylinder V cc IVA SqCm IVA SqCm IVA SqCm IVA/PA NUL/IVD ISA SqCm ISA/PA % CP/S % CP/S % CP/S % CRL/S % B/PH 100/Smm R*VIA PERFORMANCE ANALYSIS PP/V=SP HP/Litre F= (NP-NT)/NP % BMPP Bar	5800 0.886 382.27 420.5 3364.0 145.3 0.380 0.25 145.3 0.380 0.25 0.380 71.6 60.2 25.0 1.83 0.83 0.83 1.136 450.0	4500 380 0.907 581.07 272.4 4358.0 191.1 0.329 0.256 196.0 0.337 77.3 29.3 2.19 1.333 630.0 67.7	4800 477 660.52 309.6 4953.9 191.1 0.289 0.256 196.0 0.297 82.7 77.3 29.3 2.19 1.333 805.5 75.7	660.52 350.9 5614.4 191.1 0.289 0.256 196.0 0.297 82.4 80.0 25.9 1.98	5000 627 2500	545 5000 650 745.06 395.8 6333.0 191.1 0.257 0.256 196.0 0.263 82.4 80.0 25.9 1.98 1.176 828.0 86.1
51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74	Crank RPM @ PP NP Peak Torque TP LbFt Crank RPM @ TP NT GEOMETRIC ANALYSIS B/S PA SqCm V/CN cc per cylinder V cc IVA SqCm IVA SqCm IVA SqCm ISA SqCm ISA/PA MJ/S MJ/S % CP/S % GP/S % CRL/S % B/PH 100/Smm R*VIA PERFORMANCE ANALYSIS PP/V=SP HP/Litre F= (NP-NT)/NP % BMPP Bar	5800 0.886 382.27 420.5 3364.0 145.3 0.380 0.25 145.3 0.380 71.6 60.2 25.0 1.83 0.83 1.136 450.0 103.7 17.01	4500 380 0.907 581.07 272.4 4558.0 191.1 0.329 0.256 196.0 0.337 82.7 77.3 2.19 1.333 630.0 67.7 11.25	4800 477 0.967 309.6 4953.9 191.1 0.289 0.256 196.0 0.297 82.7 77.3 2.9.3 2.19 1.333 805.5 75.7 72.7	660.52 350.9 5614.4 191.1 0.289 0.256 196.0 0.297 82.4 80.0 25.9 1.98	5000 627 2500 0.882 706.86 375.5 6008.3 191.1 0.270 0.256 196.0 0.277 82.4 80.0 0.277 82.4 80.0 0.259 1.98 1.176 828.0 886.5	545 5000 650 745.06 395.8 6333.0 191.1 0.257 0.256 196.0 0.263 82.4 80.0 25.9 1.98 1.176 828.0 86.1 86.1
$\begin{array}{c} 51 \\ 52 \\ 53 \\ 54 \\ 55 \\ 55 \\ 55 \\ 55 \\ 55 \\ 58 \\ 59 \\ 60 \\ 61 \\ 62 \\ 63 \\ 64 \\ 65 \\ 66 \\ 67 \\ 68 \\ 69 \\ 70 \\ 71 \\ 72 \\ 73 \\ 74 \\ 75 \end{array}$	Crank RPM @ PP NP Peak Torque TP LbFt Crank RPM @ TP NT GEOMETRIC ANALYSIS B/S PA SqCm V/CN cc per cylinder V cc IVA SqCm IVA SqCm IVA SqCm IVA/PA NUL/IVD ISA SqCm ISA/PA % GP/S % GP/S % GP/S % CRL/S % B/PH 100/Smm R*VIA PERFORMANCE ANALYSIS PERFORMANCE ANALYSIS MPSP PENTJ/NP % MMPP Bar MPST m/s BMTP Bar RA = 0.63/(1-1/R^0.4) Titelean	5800 0.886 382.27 420.5 3364.0 145.3 0.380 0.25 145.3 0.380 71.6 60.2 25.0 1.83 0.83 1.136 450.0 103.7 17.01	4500 380 0.907 581.07 272.4 4558.0 196.0 0.337 82.7 77.3 29.3 2.19 1.333 630.0 67.7 11.25 13.46	4800 477 660.52 309.6 4953.9 191.1 0.289 0.256 196.0 0.297 82.7 77.3 29.3 2.19 1.333 805.5 75.7 75.7 12.00	660.52 350.9 5614.4 191.1 0.289 0.256 196.0 0.297 82.4 80.0 25.9 1.98	5000 627 2500	545 5000 650 745.06 395.8 6333.0 191.1 0.257 0.256 196.0 0.263 82.4 80.0 25.9 1.98 1.176 828.0 86.1 14.17 15.40
51 52 53 54 55 56 57 88 90 60 61 62 63 64 56 66 67 88 90 70 71 72 73 74 55 67 77 78	Crank RPM @ PP NP Peak Torque TP LbFt Crank RPM @ TP NT GEOMETRIC ANALYSIS B/S PA SqCm V/CN cc per cylinder V cc IVA SqCm IVA SqCm IVA SqCm IVA/PA NUL/IVD ISA SqCm ISA/PA % CP/S % CP/S % CP/S % CRL/S % B/PH 100/Smm R*VIA PERFORMANCE ANALYSIS PP/N=SP HP/Litre F= (NP-NT)/NP % BMPP Bar MPST m/s BMTP Bar RA=0.63/(1-1/R^Q.4) HP	5800 0.886 382.27 420.5 3364.0 145.3 0.380 0.25 145.3 0.380 71.6 60.2 25.0 1.83 0.83 1.136 450.0 103.7 17.01 16.01 1.138 397.3	4500 380 0.907 581.07 272.4 4588.0 191.1 0.329 0.256 196.0 0.337 77.3 2.19 1.333 630.0 67.7 11.25 13.46 1.165 343.6	4800 4777 660.52 309.6 4953.9 191.1 0.289 0.256 196.0 0.297 77.3 2.19 1.333 805.5 75.7 75.7 75.7 12.00 14.11 1.079 404.6	660.52 350.9 5614.4 191.1 0.289 0.256 196.0 0.297 82.4 80.0 25.9 1.98	5000 627 2500 0.882 706.86 375.5 6008.3 191.1 0.270 0.256 196.0 0.277 82.4 80.0 0.277 82.4 80.0 0.277 82.4 80.0 25.9 1.98 1.176 828.0 86.5 14.17 15.49 7.08 1.778 1.071 15.56.7	545 5000 650 745.06 395.8 6333.0 191.1 0.257 0.256 196.0 0.263 82.4 80.0 25.9 1.98 1.176 828.0 86.1 14.17 15.40 17.49 1.071 583.4
51 52 53 54 55 56 57 58 90 66 62 63 64 55 66 67 77 77 77 77 77 77 79 79	Crank RPM @ PP NP Peak Torque TP LbFt Crank RPM @ TP NT GEOMETRIC ANALYSIS B/S PA SqCm V/CN cc per cylinder V cc IVA SqCm V/A SqCm IVA SqCm IVA/PA NL/IVD ISA SqCm BAPA M/S PP/V=SP HP/Litre F= (NP-NT)/NP	5800 0.886 382.27 420.5 3364.0 145.3 0.380 0.25 145.3 0.380 71.6 60.2 25.0 1.83 0.83 1.136 450.0 103.7 17.01 16.01 1.138 397.3 18.22	4500 380 0.907 581.07 272.4 4558.0 191.1 0.329 0.256 196.0 0.337 82.7 77.3 29.3 2.19 1.333 630.0 67.7 11.25 13.46 14.86 1.165 343.6 15.68	4800 4777 660.52 309.6 4953.9 191.1 0.289 0.256 196.0 0.297 82.7 77.3 29.3 2.19 1.333 805.5 75.7 75.7 12.00 14.11 16.41 1.079 404.6 15.23	660.52 350.9 5614.4 191.1 0.289 0.256 196.0 0.297 82.4 80.0 25.9 1.98	5000 627 2500	545 5000 650 745.06 395.8 6333.0 191.1 0.257 0.256 196.0 0.263 82.4 80.0 25.9 1.98 1.176 828.0 86.1 14.17 15.40 17.49 1.071 583.4 16.49
51 52 53 55 55 56 57 88 59 80 61 62 63 64 65 66 67 88 69 70 71 72 77 74 75 76 77 78 98 80	Crank RPM @ PP NP Peak Torque TP LbFt Crank RPM @ TP NT GEOMETRIC ANALYSIS B/S PA SqCm V/CN cc per cylinder V cc IVA SqCm V/A SqCm V/A SqCm IVA/PA NL/IVD ISA SqCm ISA/PA MJ/S MJ/S % CP/S % GP/S % CRL/S B/PH 100/Smm R*VIA PERFORMANCE ANALYSIS PP/V=SP HP/Litre F= (NP-NT)/NP % MPST <m star<="" td=""> m/s BMPP Bar MPST<m star<="" td=""> M/s BMTP Bar RA=0.63/(1-1/R^O.4) PP PPA = PP*RA/AA HP BMA = BMPP*RA/AA Bar BMPA Adj.Bar</m></m>	5800 0.886 382.27 420.5 3364.0 145.3 0.380 0.25 145.3 0.380 71.6 60.2 25.0 1.83 0.83 1.136 450.0 103.7 17.01 16.01 1.138 397.3	4500 380 0.907 581.07 272.4 43580 0.256 196.0 0.337 82.7 77.3 29.3 2.19 1.333 630.0 67.7 11.25 13.46 1.165 343.6 1.53	4800 4777 0.967 660.52 309.6 4953.9 191.1 0.289 0.256 196.0 0.297 82.7 77.3 29.3 2.19 1.333 805.5 75.7 75.7 12.00 14.11 1.079 404.6 15.23 9.34	660.52 350.9 5614.4 191.1 0.289 0.256 196.0 0.297 82.4 80.0 25.9 1.98	5000 627 2500 376.5 6008.3 191.1 0.270 0.256 196.0 0.277 82.4 80.0 25.9 1.98 1.176 828.0 25.9 1.176 828.0 14.17 15.49 7.08 87.7 86.5 14.17 15.56.7 16.58 9.75	545 5000 650 745.06 395.8 6333.0 191.1 0.257 0.256 196.0 0.263 82.4 80.0 25.9 1.98 1.176 828.0 86.1 14.17 15.40 10.71 583.4 16.49 9.70
51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 98 81	Crank RPM @ PP NP Peak Torque TP LbFt Crank RPM @ TP NT GEOMETRIC ANALYSIS B/S PA SqCm V/CN cc per cylinder V cc IVA SqCm IVA SqCm IVA SqCm IVA/PA NU/IVD ISA SqCm ISA/PA MJ/S MJ/S % CP/S % GP/S % CRL/S % B/PH 100/Smm R*VIA PERFORMANCE ANALYSIS PPN=SP HP/Litre F= (NP-NT)/NP % MPSP Bar MPST <m s<="" td=""> m/s BMTP Bar RA = 0.63/(1-1/R^0.0.4) PPA = PP*RA/AA PPA = PP*RA/AA HP BMPA=BMPP*RA/AA Bar BMPA/MDR ^Adj,Bar TPA = TP*RA/AA Lb.Ft </m>	5800 0.886 382.27 420.5 3364.0 145.3 0.380 0.25 145.3 0.380 71.6 60.2 25.0 1.83 0.83 1.136 450.0 103.7 17.01 16.01 1.138 397.3 18.22	4500 380 0.907 581.07 272.4 4558.0 191.1 0.329 0.256 196.0 0.337 82.7 77.3 2.19 1.333 630.0 67.7 11.25 13.46 14.86 1.165 343.6 15.68 11.53 442.6	4800 477 0.967 660.52 309.6 4953.9 191.1 0.289 0.256 196.0 0.297 82.7 77.3 2.9.3 2.19 1.333 805.5 75.7 12.00 14.11 1.079 404.6 15.23 9.34 514.6	660.52 350.9 5614.4 191.1 0.289 0.256 196.0 0.297 82.4 80.0 25.9 1.98	5000 627 2500 0.882 706.86 375.5 6008.3 191.1 0.270 0.256 196.0 0.277 82.4 80.0 0.277 82.4 80.0 0.277 82.4 80.0 0.259 1.98 1.176 828.0 1.176 828.0 1.176 828.0 1.176 826.5 1.176 826.7 1.176 826.7 1.176 8.1776 8.1776 8.1776 8.1776 8.17777 1.1776 8.17777 1.1776 8.17777 1.1776 8.17777 1.1776 8.17777 1.1776 1.1777 1.1777 1.1776 1.1777 1.1776 1.1777 1.1776 1.1777 1.1776 1.17777 1.17777 1.17777 1.17777 1.17777 1.17777 1.17777 1.177777 1.177777 1.177777 1.177777 1.177777777	545 5000 650 745.06 395.8 6333.0 191.1 0.257 0.256 196.0 0.263 82.4 80.0 25.9 1.98 1.176 828.0 86.1 14.17 15.40 17.49 1.071 583.4 16.49 9.70 695.9
51 52 53 55 55 56 57 58 59 60 61 22 63 64 65 66 67 68 69 70 71 72 73 74 55 76 77 78 90 81 82	Crank RPM @ PP NP Peak Torque TP LbFt Crank RPM @ TP NT GEOMETRIC ANALYSIS B/S PA SqCm V/CN cc per cylinder V cc IVA SqCm IVA SqCm IVA SqCm IVA/PA NUL/IVD ISA SqCm ISA/PA % CP/S % CP/S % CP/S % CRL/S % B/PH 100/Smm R*VIA PERFORMANCE ANALYSIS PPV=SP HP/Litre F= (NP-NT)/NP % MPSP = 2*s*NP m/s BMPP Bar MPST m/s BMTP Bar MPA= PP*RA/AA HP BMPA= BMPP*RA/AA Bar BMPA= BMPP*RA/AA Lb.Ft BMTA = BMTP*RA/AA Bar	5800 0.886 382.27 420.5 3364.0 145.3 0.380 0.25 145.3 0.380 71.6 60.2 25.0 1.83 0.83 1.136 450.0 103.7 17.01 16.01 1.138 397.3 18.22 10.98	4500 380 0.907 581.07 272.4 4588.0 191.1 0.329 0.256 196.0 0.337 77.3 2.19 1.333 630.0 67.7 11.25 13.46 1.486 1.165 343.6 1.53 442.6 1.53	4800 4777 0.967 660.52 309.6 4953.9 191.1 0.289 0.256 196.0 0.297 82.7 77.3 2.19 2.3 2.19 75.7 75.7 75.7 12.00 14.11 1.079 404.6 15.23 9.34 15.23 9.34 15.23 9.34 17.70	660.52 350.9 5614.4 191.1 0.289 0.256 196.0 0.297 82.4 80.0 25.9 1.98	5000 627 2500 0.882 706.86 375.5 6008.3 191.1 0.270 0.256 196.0 0.277 82.4 80.0 0.277 82.4 80.0 0.277 82.4 80.0 0.277 82.4 80.0 0.259 1.98 1.176 828.0 8.65 1.177 82.6 1.176 828.0 7.5 556.7 1.549 7.08 1.071 1.556.7 1.658 9.75 567.12 1.903	545 5000 650 745.06 395.8 6333.0 191.1 0.256 196.0 0.263 82.4 80.0 25.9 1.98 1.176 828.0 86.1 14.17 15.40 17.49 1.071 583.4 16.49 9.70 695.9 18.72
51 52 53 54 55 56 75 85 90 61 62 63 64 55 66 67 88 97 71 72 73 74 75 76 77 89 80 81 82 83	Crank RPM @ PP NP Peak Torque TP LbFt Crank RPM @ TP NT GEOMETRIC ANALYSIS B/S PA SqCm V/CN cc per cylinder V/LN SqCm ISA SqCm IO/S % CP/S	5800 0.886 382.27 420.5 3364.0 0.25 145.3 0.380 71.6 60.2 25.0 1.83 0.83 1.136 450.0 103.7 17.01 16.01 103.7 17.01 16.01 1.138 397.3 18.22 10.98	4500 380 0.907 581.07 272.4 4558.0 191.1 0.329 0.256 196.0 0.337 82.7 77.3 29.3 2.19 1.333 630.0 67.7 11.25 13.46 14.86 11.65 343.6 15.68 11.53 442.6 17.30 0.59	4800 4777 660.52 309.6 4953.9 191.1 0.289 0.256 196.0 0.297 82.7 77.3 29.3 2.9.3 2.9.3 2.9.3 2.9.3 1.333 805.5 75.7 75.7 75.7 12.00 14.11 16.41 1.079 404.6 15.23 9.34 514.8 17.70 0.681	660.52 350.9 5614.4 191.1 0.289 0.256 196.0 0.297 82.4 80.0 25.9 1.98	5000 627 2500	545 5000 650 745.06 395.8 6333.0 191.1 0.257 0.256 196.0 0.263 82.4 80.0 25.9 1.98 1.176 828.0 25.9 1.98 1.176 828.0 25.9 1.98 1.176 828.0 25.9 1.98 1.176 828.0 25.9 1.98 1.176 828.0 25.9 1.98 1.176 828.0 25.9 1.98 1.176 828.0 25.9 1.98 1.176 828.0 1.176 828.0 1.976 8.00 1.977 1.98 1.176 8.00 1.977 1.98 1.977 1.977 1.977 1.977 1.977 1.977 1.977 1.977 1.977 1.977 1.977 1.977 1.077 1.9777 1.077 1.077 1.077 1.07777 1.0777 1.0777 1.0777 1.07777 1.07777 1.07777 1.07777 1.077777 1.077777 1.07777777777
51 52 53 54 55 56 57 58 59 60 61 62 83 64 55 66 77 71 72 73 74 75 76 77 78 98 88 88 84	Crank RPM @ PP NP Peak Torque TP LbFt Crank RPM @ TP NT GEOMETRIC ANALYSIS B/S PA SqCm V/CN cc per cylinder V cc IVA SqCm V/A Cp cr IVA SqCm IVA/PA NL/IVD ISA SqCm ISA/PA MJ/S MJ/S % CP/S % GP/S % CRL/S B/PH 100/Smm R*VIA PERFORMANCE ANALYSIS PP/V=SP HP/Litre F= (NP-NT)/NP % MPST <m s<="" td=""> m/s BMPP Bar MPST<m s<="" td=""> Ms BMPP Bar MPST<m s<="" td=""> Bar BMPP Bar Bar BMPP Bar BMPP Bar BMPP Bar BMPP Aj,Bar</m></m></m>	5800 0.886 382.27 420.5 3364.0 0.25 145.3 0.380 71.6 60.2 25.0 1.83 0.83 1.136 450.0 103.7 17.01 16.01 103.7 17.01 16.01 1.138 397.3 18.22 10.98	4500 380 0.907 581.07 272.4 458.0 196.1 0.329 0.256 196.0 0.337 82.7 77.3 29.3 2.19 1.333 630.0 67.7 11.25 13.46 1.165 343.6 1.165 344.6 1.165 344.6 1.53 442.6 1.730 0.599 0.43	4800 4777 0.967 660.52 309.6 4953.9 191.1 0.289 0.256 196.0 0.297 82.7 77.3 29.3 2.19 1.333 805.5 75.7 12.00 14.11 1.079 404.6 15.23 9.34 514.6 17.70 0.611 0.38	660.52 350.9 5614.4 191.1 0.289 0.256 196.0 0.297 82.4 80.0 25.9 1.98	5000 627 2500 3705.8 6008.3 191.1 0.270 0.256 196.0 0.277 82.4 80.0 25.9 1.98 1.176 828.0 25.9 1.176 828.0 14.17 15.49 7.08 86.5 14.17 15.56.7 16.58 9.75 671.2 19.03 0.79 0.46	545 5000 650 745.06 395.8 6333.0 191.1 0.257 0.256 196.0 0.263 82.4 80.0 25.9 1.98 1.176 828.0 25.9 1.98 1.176 828.0 86.1 14.17 15.40 10.71 583.4 16.49 9.70 695.9 18.72 0.78 0.46
51 52 53 54 55 56 75 85 90 61 62 63 64 55 66 67 88 97 71 72 73 74 75 76 77 89 80 81 82 83	Crank RPM @ PP NP Peak Torque TP LbFt Crank RPM @ TP NT GEOMETRIC ANALYSIS B/S PA SqCm V/CN cc per cylinder V cc IVA SqCm IVA SqCm IVA SqCm IVA/PA NU/IVD ISA SqCm ISA/PA MJ/S MJ/S % CP/S % GP/S % CRL/S B/PH 100/Smm R*VIA PERFORMANCE ANALYSIS PPN-SP HP/LItre F= (NP-NT)/NP % MPSP = 2*S*NP m/s BMPP Bar MPST m/s BMTP Bar RA = 0.63/(1-1/R^O.4) PPA = PP*RA/AA PPA = PP*RA/AA HP BMPA= BMPP*RA/AA Bar BMPA/PA HP/SqCm CPA/PA/MA HP/SqCm CPA/	5800 0.886 382.27 420.5 3364.0 0.25 145.3 0.380 71.6 60.2 25.0 1.83 0.83 1.136 450.0 103.7 17.01 16.01 103.7 17.01 16.01 1.138 397.3 18.22 10.98	4500 380 0.907 581.07 272.4 4558.0 191.1 0.329 0.256 196.0 0.337 82.7 77.3 29.3 2.19 1.333 630.0 67.7 11.25 13.46 14.86 11.65 343.6 15.68 11.53 442.6 17.30 0.59	4800 4777 660.52 309.6 4953.9 191.1 0.289 0.256 196.0 0.297 82.7 77.3 29.3 2.9.3 2.9.3 2.9.3 2.9.3 1.333 805.5 75.7 75.7 75.7 12.00 14.11 16.41 1.079 404.6 15.23 9.34 514.8 17.70 0.681	660.52 350.9 5614.4 191.1 0.289 0.256 196.0 0.297 82.4 80.0 25.9 1.98	5000 627 2500 0.882 706.86 375.5 6008.3 191.1 0.270 0.256 196.0 0.277 82.4 80.0 0.277 82.4 80.0 0.25.9 1.98 1.176 828.0 7.08 1.176 828.0 14.17 15.49 7.08 17.78 1.071 1556.7 16.58 9.75 671.2 19.03 0.79 0.466 0.409	545 5000 650 745.06 395.8 6333.0 191.1 0.257 0.256 196.0 0.263 82.4 80.0 25.9 1.98 1.176 828.0 25.9 1.98 1.176 828.0 86.1 14.17 15.40 17.49 1.071 583.4 16.49 9.70 695.9 18.72 0.78 0.78 0.78 0.78 0.76 0.78 0.78 0.78 0.78 0.78 0.78 0.78 0.78
51 52 53 54 55 56 57 88 59 60 61 62 63 64 65 66 67 88 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85	Crank RPM @ PP NP Peak Torque TP LbFt Crank RPM @ TP NT GEOMETRIC ANALYSIS B/S PA SqCm V/CN cc per cylinder V cc IVA SqCm IVA SqCm IVA SqCm IVA/PA NU/IVD ISA SqCm ISA/PA MJ/S MJ/S % CP/S % GP/S % CRL/S B/PH 100/Smm R*VIA PERFORMANCE ANALYSIS PPN-SP HP/LItre F= (NP-NT)/NP % MPSP = 2*S*NP m/s BMPP Bar MPST m/s BMTP Bar RA = 0.63/(1-1/R^O.4) PPA = PP*RA/AA PPA = PP*RA/AA HP BMPA= BMPP*RA/AA Bar BMPA/PA HP/SqCm CPA/PA/MA HP/SqCm CPA/	5800 0.886 382.27 420.5 3364.0 145.3 0.380 0.25 145.3 0.380 71.6 60.2 25.0 1.83 0.83 1.136 450.0 103.7 17.01 16.01 1.138 397.3 18.22 10.98 1.0.98 0.555	4500 380 0.907 581.07 272.4 4558.0 191.1 0.329 0.256 196.0 0.337 82.7 77.3 2.19 1.333 630.0 67.7 11.25 13.46 14.86 1.165 343.6 1.165 343.6 1.165 343.6 1.17.30 0.59 0.433 0.394	4800 4777 0.967 660.52 309.6 4953.9 191.1 0.289 0.256 196.0 0.297 82.7 77.3 2.9.3 2.19 1.333 805.5 75.7 12.00 14.11 1.079 404.6 15.23 9.34 4514.6 17.70 0.61 0.383 0.363	660.52 350.9 5614.4 191.1 0.289 0.256 196.0 0.297 82.4 80.0 25.9 1.98	5000 627 2500 3705.8 6008.3 191.1 0.270 0.256 196.0 0.277 82.4 80.0 25.9 1.98 1.176 828.0 25.9 1.176 828.0 14.17 15.49 7.08 86.5 14.17 15.56.7 16.58 9.75 671.2 19.03 0.79 0.46	545 5000 650 745.06 395.8 6333.0 191.1 0.257 0.256 196.0 0.263 82.4 80.0 25.9 1.98 1.176 828.0 25.9 1.98 1.176 828.0 86.1 14.177 15.40 10.71 583.4 16.49 9.70 695.9 18.72 0.78 0.78 0.78 0.78

	A	В	С	D	E	F	G
5	YEAR	1934	1934	1935	1935.5	1936	1937
6	Make	MERC.	A UNION				
7	Model	M25A	A	В	B/C	С	R
89							
90	PPA/ISA " "	2.73	1.75	2.06		2.84	2.98
91	MGVP = MPSP*PA/IVA m/s	44.77	34.20	41.47		52.39	55.22
92	MSVP = MPSP*PA/ISA "	44.77	33.35	40.43		51.08	53.84
93	BNP = B*NP "	7.54	5.10	5.80		6.25	6.42
94	MVS = IVL*NP/(83.333*10D) "	2.37	2.08	2.22		2.31	2.31
95	MPD @ nom'l (CRL/S)=2 g	2068.2	1061.0	1207.2		1484.6	1484.6
96	MPD @ actual CRL g						
97	MOD. MPSP (MMPSP) m/s						
98	(NPx(MPSP)^2)/10^5	16.79	5.70	6.91		10.03	10.03
99	KF1 for FPMEP	0.75	0.75	0.75	0.75	0.75	0.75
100	KF2 for FPMEP*10^7	9	9	9	9	9	9
101	EIMPA Bar	20.79	17.15	16.71		18.35	18.26
102	Estd. Mech. Effy. EEM %	87.6	91.4	91.1		90.4	90.3
103	EIMPA/MDR Bar	12.53	12.61	10.25		10.80	10.74
104	EIMPA/(MDR*(MPSP)^0.5)= SPPA	3.04	3.76	2.96		2.87	2.85
105							
106	SPPB	2.54	3.29	2.65		2.58	2.57
107		2.58	3.05	2.40		2.49	2.48
108	Delta from 3*(B/PH)^1/3 %	-8.4					
109							
110		19.06	16.57	16.13		17.44	17.35
111	Delta EBMTA Act from Est %						
112							
113						J	
114		159.89	159.29	164.24		152.71	148.42
	NP Repeat - RPM	5800	4500	4800		5000	5000
116	GS = Actual NP/SCF	36.3	28.3	29.2		32.7	33.7
117	KS = 47.4 or 38.6	38.6		38.6	38.6	38.6	38.6
118	Delta Actual from KSxSCF %	-6.0%	-26.8%	-24.3%		-15.2%	-12.7%
119							
120	The second s						
121		203				245	
122	, in the second s	1.72				2.12	
	RFW - Litres adj.	5.37	7.63	8.13	10.45	10.81	11.10
124							
125							