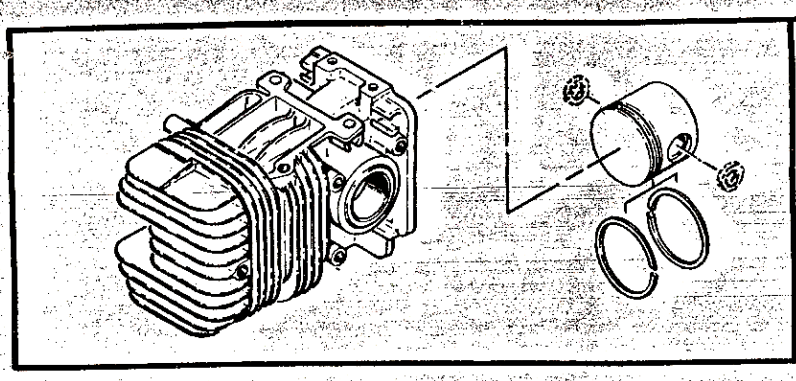

PARTS LIST

Cylinders, Piston Assemblies and Ring Sets used in McCULLOCH Chain Saw & Kart Engines

■ *foreword*

This parts list covers the Cylinders, Piston Assemblies and Ring Sets available, to date of publication, as service replacements for McCulloch Chain Saw and Kart Engines. This list gives the model and part number to be used when ordering one of these service replacements. The manufacturing dimensions of the cylinders and piston assemblies are included in the list.

■ *models*

D-30
33
33B
S-33
35
MAC-35
MAC-35A
D-36
39
D-44
S-44
S-44A
47
49
55
S-55
S-55A
73
77
99
3-25
4-30
4-30A
5-49
7-55
1-40
1-50
1-60
1-70
1-80
1-41
1-51
1-61
1-71
1-81
1-81HD
1-42
1-52
1-62
1-72
1-82
1-92
1-43
1-45
1-46
250
1-53
1-63
1-75
1-76
1-85
1-86
1-93
BP-1
MAC-15
W-1
MC-1
MC-2
MC-5
MC-6
MC-7
MC-8
MC-10
MC-20
MC-30
MC-40
MC-70

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McCULLOCH CORPORATION
6101 West Century Boulevard, Los Angeles 45, California

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Many of the McCulloch chain saws and kart engines, having given long and satisfactory service, are now being rebored, honed and fitted with an oversize piston and rings. This is especially true concerning the earlier chain saw and kart engine models. Installation of oversize piston and rings in a rebored cylinder will restore much of the engine's original power, provide a longer working life and in many cases eliminate other costly repairs.

Principal conditions which should govern the decision to rebore and re-ring are ...

- . . . If taper or out of round condition exceeds 0.005 inch.
- . . . if cylinder is scored, scratched, pitted or scuffed.
- . . . if ports are pounded.
- . . . if new rings won't seal and engine lacks power (even though taper is less than 0.005").
- . . . if piston-to-cylinder clearance exceeds the high limit by 0.005 inch (0.007-inch in kart engines).

When reboring cylinders, the oversize dimensions should be measured in even steps of 0.010 inch (0.010, 0.020, 0.030 inch) over the standard bore diameter of new engines. If the correct oversize dimension is not held, possible interference or a tight fit will exist between the piston and the cylinder wall. In chain saw engines the piston-to-cylinder clearance is 0.0025 to 0.005 inch. In kart engines, because of higher temperatures resulting from high speed running, it is desirable to have the greater piston-to-cylinder clearance of 0.005 to 0.007 inch. This is particularly true when thin ring pistons are used.

When reboring and/or honing requires the removal of more than 0.010 inch of metal (but less than 0.020 inch) from the cylinder to remove scuff or other marks, it will be necessary to continue the boring and honing operation until the 0.020-inch oversize is reached. Having done this, 0.020-inch oversize pistons and rings must be used. In a like manner, if more than 0.020 inch of metal is removed to clean up the cylinder marks, the cylinder will have to be bored and honed for 0.030-inch oversize piston and rings. If the cylinder is bored to an in-between size, the correct piston-to-cylinder wall clearance cannot be obtained with a stock oversize piston.

Maximum taper or out-of-round permitted after reboring or rehoning is 0.0007 inch. (Engines can be operated until taper has increased to 0.005 inch before reboring or rehoning will be necessary.)

Dimensional tolerance factor for the cylinders is 0.001-inch and is incorporated in the chart data.

Correct end-gap for piston rings in chain saw engines is 0.004 to 0.012 inch. In kart engines using the thin rings, this end gap is 0.004 to 0.050 inch. End gap may be checked by pushing a ring halfway down in a new or rebored cylinder and using a feeler gauge to measure the gap between the ring ends.

To improve piston balance and reduce vibration, service replacement pistons with extended piston pin bosses are available for the late model chain saw engines. The use of an extended boss piston eliminates the need for thrust washers between the piston pin bosses and the connecting rod. Some of the extended boss pistons can also be used for service replacement in early model chain saw engines. On some models it will be necessary to replace the connecting rod with one having a different width at its pin end when an extended boss piston is installed. A different length piston pin will be required in these cases.

As a guide, a chart of dimensions, sizes, and part numbers of pistons and piston rings for McCulloch engines has been compiled with a separate column in the chart listing the extended boss pistons by engine model and the piston assembly they replace. This chart will be found in the following pages.

NOTE

TO CHANGE THE DIMENSIONS GIVEN IN THIS BULLETIN AND CHART TO THEIR METRIC EQUIVALENTS, MULTIPLY THE DIMENSIONS GIVEN BY THE FACTOR OF 25.4 TO OBTAIN MILLIMETERS; TO CHANGE THEM TO CENTIMETERS USE THE FACTOR OF 2.54.

Model	Size and Oversize	Piston Assembly (thrust washers used)	Piston Assembly (thrust washers not used)	Piston Top Dimension	Piston Skirt Dimension	Cylinder Assembly Number	Cylinder Dimension	Ring Set
3-25	Standard	19931A		1.9912/1.9907	1.9953/1.9948	19021	2.000/2.001	51747
47	0.010	19910C		2.0012/2.0007	2.0053/2.0048			51748
	0.020	19920C		2.0112/2.0107	2.0153/2.0148			51749
	0.030	19907B		2.0212/2.0207	2.0253/2.0248			51750
3-25	Standard				3-Ring Sets - for use with early type pistons			47253
47	0.010							47254
	0.020							47255
	0.030							47256
33	Standard	52379		1.7475/1.7470	1.7495/1.7490	52224	1.7535/1.7525	52046
33B	0.010	52380		1.7575/1.7570	1.7595/1.7590			52047
35	0.020	52382		1.7675/1.7670	1.7695/1.7690			52048
MAC35	0.030	52384		1.7775/1.7770	1.7795/1.7790			52049
MAC35A								
S-33	Standard	36616C		1.7475/1.7470	1.7495/1.7490	52328	1.7535/1.7525	52046
	0.010	36663C		1.7575/1.7570	1.7595/1.7590			52047
	0.020	36664C		1.7675/1.7670	1.7695/1.7690			52048
	0.030	36665C		1.7775/1.7770	1.7795/1.7790			52049
4-30	Standard	28353A		2.1220/2.1215	2.1240/2.1235	28260	2.1285/2.1275	28886
4-30A	0.010	28244C		2.1320/2.1315	2.1340/2.1335			28887
49	0.020	28247C		2.1420/2.1415	2.1440/2.1435			28888
	0.030	28250C		2.1520/2.1515	2.1540/2.1535			28889
39	Standard	52045		1.7475/1.7470	1.7495/1.7490	52328	1.7535/1.7525	52046
	0.010	52051		1.7575/1.7570	1.7595/1.7590			52047
	0.020	52052		1.7675/1.7670	1.7695/1.7690			52048
	0.030	52053		1.7775/1.7770	1.7795/1.7790			52049
D-44	Standard	51210B		1.9955/1.9950	1.9975/1.9970	55443	2.0010/2.0000	51747
55	0.010	51451B		2.0055/2.0050	2.0075/2.0070			51748
	0.020	51452B		2.0155/2.0150	2.0175/2.0170			51749
	0.030	51453B		2.0255/2.0250	2.0275/2.0270			51750

Model	Size and Oversize	Piston Assembly (thrust washers used)	Piston Assembly (thrust washers not used)	Piston Top Dimension	Piston Skirt Dimension	Cylinder Assembly Number	Cylinder Dimension	Ring Set
S-44	Standard	55007A	53936	2.1190/2.1184	2.1220/2.1213	55441	2.1260/2.1250	55123
S-55	0.010	55057A	53937	2.1290/2.1284	2.1320/2.1313			55124
	0.020	55058A	53938	2.1390/2.1384	2.1420/2.1413			55125
	0.030	55059A	53939	2.1490/2.1484	2.1520/2.1513			55126
5-49	Standard	38037		2.2424/2.2415	2.2455/2.2445	18405A	2.2495/2.2485	38043
	0.010	Obsolete						Obsolete
	0.020	38039		2.2625/2.2615	2.2655/2.2645			38045
	0.030	38040		2.2725/2.2715	2.2755/2.2745			38046
7-55	Standard	24775A		2.4925/2.4920	2.4970/2.4965	24023A	2.5035/2.5025	28809
	0.010	24776A		2.5025/2.5020	2.5070/2.5065			28810
	0.020	24777A		2.5125/2.5120	2.5170/2.5165			28811
	0.030	24778A		2.5225/2.5220	2.5270/2.5265			28812
S-44A	Standard	55310A	53941	2.1190/2.1184	2.1220/2.1213	55438A	2.1260/2.1250	55123
S-55A	0.010	55322A	53942	2.1290/2.1284	2.1320/2.1313			55124
1-70	0.020	55323A	53943	2.1390/2.1384	2.1420/2.1413			55125
1-80	0.030	55324A	53944	2.1490/2.1484	2.1520/2.1513			55126
1-40	Standard	50206		2.1190/2.1185	2.1220/2.1215	50737	2.1260/2.1250	55123
D-30								55124
	0.020	50134		2.1390/2.1385	2.1420/2.1415			55125
								55126
1-50	Standard	55007A	53936	2.1190/2.1184	2.1220/2.1213	50737	2.1260/2.1250	55123
1-60	0.010	55057A	53937	2.1290/2.1284	2.1320/2.1313			55124
D-36	0.020	55058A	53938	2.1390/2.1384	2.1420/2.1413			55125
	0.030	55059A	53939	2.1490/2.1484	2.1520/2.1513			55126
73	Standard	47580		2.4950/2.4945	2.4975/2.4970	28779	2.5035/2.5025	28809
77	0.010	47589		2.5050/2.5045	2.5075/2.5070			28810
	0.020	47590		2.5150/2.5145	2.5175/2.5170			28811
	0.030	47591		2.5250/2.5245	2.5275/2.5270			28812

Model	Size and Oversize	Piston Assembly (thrust washers used)	Piston Assembly (thrust washers not used)	Piston Top Dimension	Piston Skirt Dimension	Cylinder Assembly Number	Cylinder Dimension	Ring Set
1-92	Standard	58356	58666	2.2115/2.2109	2.2145/2.2139	58162A	2.2190/2.2180	58353
	0.010	58390	58668	2.2215/2.2209	2.2245/2.2239			58394
	0.020	58355	58667	2.2315/2.2309	2.2345/2.2339			58354
	0.030	58391	58669	2.2415/2.2409	2.2445/2.2439			58395
1-45	Standard	48695	53927	2.1190/2.1184	2.1220/2.1214	58971	2.1260/2.1250	48691
1-46	0.010	48684	53924	2.1290/2.1284	2.1320/2.1314			48692
250	0.020	48685	53925	2.1390/2.1384	2.1420/2.1414			48693
	0.030	48686	53926	2.1490/2.1484	2.1520/2.1514			48694
1-75	Standard	48904A		2.1170/2.1164	2.1200/2.1194	57962	2.1240/2.1230	48691
1-85	0.010	48927		2.1270/2.1264	2.1300/2.1294			48692
	0.020	48928		2.1370/2.1364	2.1400/2.1394			48693
	0.030	48929		2.1470/2.1464	2.1500/2.1494			48694
1-76	Standard	59582	53726	2.1570/2.1564	2.1600/2.1594	59564	2.1640/2.1630	48978
1-86	0.010	59583	53727	2.1670/2.1664	2.1700/2.1694			48934
	0.020	59584	53728	2.1770/2.1764	2.1800/2.1794			59587
	0.030	59585	53729	2.1870/2.1864	2.1900/2.1894			59586
1-76	Standard	58878	0.062 inch Wide Ring Grooves				0.062 inch Wide Rings	58881
1-86	0.010	58882						58885
	0.020	58886						58889
	0.030	58890						58893
1-93	Standard	58356	58666	2.2115/2.2109	2.2145/2.2139	58551	2.2190/2.2180	58353
	0.010	58390	58668	2.2215/2.2209	2.2245/2.2239			58394
	0.020	58355	58667	2.2315/2.2309	2.2345/2.2339			58354
	0.030	58391	58669	2.2415/2.2409	2.2445/2.2439			58395
BP-1 (Power Piston) Early	Standard	59705		1.7440/1.7435	1.7470/1.7465	59608 (Two Parts)	1.7510/1.7500	59294
	0.010	59706		1.7540/1.7535	1.7570/1.7565			59295
	0.020	59707		1.7640/1.7635	1.7670/1.7665			59296
	0.030	59708		1.7740/1.7735	1.7770/1.7765			59297

Model	Size and Oversize	Piston Assembly (thrust washers used)	Piston Assembly (thrust washers not used)	Piston Top Dimension	Piston Skirt Dimension	Cylinder Assembly Number	Cylinder Dimension	Ring Set
99	Standard	24754A		2.4924/2.4919	2.4970/2.4965	24621	2.5035/2.5025	28809
	0.010	24681B		2.5024/2.5019	2.5070/2.5065			28810
	0.020	24684B		2.5124/2.5119	2.5170/2.5165			28811
	0.030	24687B		2.5224/2.5219	2.5270/2.5265			28812
1-41	Standard	50206		2.1190/2.1185	2.1220/2.1215	58971	2.1260/2.1250	55123
1-42	0.010							
1-43	0.020	50134		2.1390/2.1385	2.1420/2.1415			55125
	0.030							
1-51	Standard	55007A	53936	2.1190/2.1184	2.1220/2.1213	53528	2.1260/2.1250	55123
1-61	0.010	55057A	53937	2.1290/2.1284	2.1320/2.1313			55124
1-62	0.020	55058A	53938	2.1390/2.1384	2.1420/2.1413			55125
1-63	0.030	55059A	53939	2.1490/2.1484	2.1520/2.1513			55126
1-71	Standard	55310A	53941	2.1190/2.1184	2.1220/2.1213	55557	2.1260/2.1250	55123
1-81	0.010	55322A	53942	2.1290/2.1284	2.1320/2.1313			55124
	0.020	55323A	53943	2.1390/2.1384	2.1420/2.1413			55125
	0.030	55324A	53944	2.1490/2.1484	2.1520/2.1513			55126
1-81HD (Thin Rings)	Standard	48695	53927	2.1190/2.1184	2.1220/2.1214	55557	2.1260/2.1250	48691
	0.010	48684	53924	2.1290/2.1284	2.1320/2.1314			48692
	0.020	48685	53925	2.1390/2.1384	2.1420/2.1414			48693
	0.030	48686	53926	2.1490/2.1484	2.1520/2.1514			48694
1-52	Standard	55310A	53941	2.1190/2.1184	2.1220/2.1213	57965	2.1260/2.1250	55123
1-53	0.010	55322A	53942	2.1290/2.1284	2.1320/2.1313	53563		55124
	0.020	55323A	53943	2.1390/2.1384	2.1420/2.1413			55125
	0.030	55324A	53944	2.1490/2.1484	2.1520/2.1513			55126
1-72	Standard	48695	53927	2.1190/2.1184	2.1220/2.1214	57894	2.1260/2.1250	48691
1-82	0.010	48684	53924	2.1290/2.1284	2.1320/2.1314			48692
	0.020	48685	53925	2.1390/2.1384	2.1420/2.1414			48693
	0.030	48686	53926	2.1490/2.1484	2.1520/2.1514			48694

Model	Size and Oversize	Piston Assembly (thrust washers used)	Piston Assembly (thrust washers not used)	Piston Top Dimension	Piston Skirt Dimension	Cylinder Assembly Number	Cylinder Dimension	Ring Set
BP-1 (Pinned Rings)	Standard	59501A		1.7440/1.7435	1.7470/1.7465	59676 (Two Parts)	1.7510/1.7500	59643
	0.010	59086A		1.7540/1.7535	1.7570/1.7565			59644
	0.020	59087A		1.7640/1.7635	1.7670/1.7665			59645
	0.030	59088A		1.7740/1.7735	1.7770/1.7765			59646
BP-1 (Balance Piston)	No oversize	59043		1.1435/1.1430	Same	59677 (Removable Sleeve)	1.1460/1.1450	No Rings
MAC 15	Standard	50206		2.1190/2.1185	2.1220/2.1215	52886	2.1260/2.1250	55123
	0.020	50134		2.1390/2.1385	2.1420/2.1415			55125
W-1 (Welder Engine)	Standard	58748		2.2115/2.2109	2.2145/2.2139	58486	2.2200/2.2190	58699A
	0.010	58832		2.2215/2.2209	2.2245/2.2239			58831 (Pinned Rings)
MC-1	Standard	48980		2.1190/2.1185	2.1220/2.1215	48946A	2.1260/2.1250	48691
MC-2	Standard	48518	53726	2.1570/2.1564	2.1600/2.1594	47661	2.1640/2.1630	48978
	0.010	48931	53727	2.1670/2.1664	2.1700/2.1694			48934
MC-5 (Wide Rings)	Standard	55007A	53936	2.1190/2.1184	2.1220/2.1213	48701	2.1260/2.1250	55123
	0.010	55057A	53937	2.1290/2.1284	2.1320/2.1313			55124
	0.020	55058A	53938	2.1390/2.1384	2.1420/2.1413			55125
	0.030	55059A	53939	2.1490/2.1484	2.1520/2.1513			55126
MC-5 MC-6 (Thin Rings)	Standard	48844		2.1170/2.1165	2.1200/2.1195	48701	2.1260/2.1250	48691
	0.010	48845		2.1270/2.1265	2.1300/2.1295			48692
	0.020	48846		2.1370/2.1365	2.1400/2.1395			48693
	0.030	48847		2.1470/2.1465	2.1500/2.1495			48694
MC-7	Standard	48518	53726	2.1570/2.1564	2.1600/2.1594	48993A	2.1660/2.1650	48978
	0.010	48931	53727	2.1670/2.1664	2.1700/2.1694			48934
MC-10 (Wide Ring)	Standard	55310A	53941	2.1190/2.1184	2.1220/2.1213	48612A	2.1260/2.1250	55123
	0.010	55322A	53942	2.1290/2.1284	2.1320/2.1313			55124
	0.020	55323A	53943	2.1390/2.1384	2.1420/2.1413			55125
	0.030	55324A	53944	2.1490/2.1484	2.1520/2.1513			55126

Model	Size and Oversize	Piston Assembly (thrust washers used)	Piston Assembly (thrust washers not used)	Piston Top Dimension	Piston Skirt Dimension	Cylinder Assembly Number	Cylinder Dimension	Ring Set
MC-10 (Thin Ring)	Standard	48844		2.1170/2.1165	2.1200/2.1195	48612A	2.1260/2.1250	48691
	0.010	48845		2.1270/2.1265	2.1300/2.1295			48692
	0.020	48846		2.1370/2.1365	2.1400/2.1395			48693
	0.030	48847		2.1470/2.1465	2.1500/2.1495			48694
MC-10 (Power Kit)	Standard	48832		2.1170/2.1165	2.1200/2.1195	48612A	2.1260/2.1250	48691
	0.010	48833		2.1270/2.1265	2.1300/2.1295			48692
	0.020	48834		2.1370/2.1365	2.1400/2.1395			48693
	0.030	48835		2.1470/2.1465	2.1500/2.1495			48694
MC-20	Standard	48695	53927	2.1170/2.1164	2.1200/2.1194	48871	2.1260/2.1250	48691
	0.010	48684	53924	2.1270/2.1264	2.1300/2.1294			48692
	0.020	48685	53925	2.1370/2.1364	2.1400/2.1394			48693
	0.030	48686	53926	2.1470/2.1464	2.1500/2.1494			48694
	0.040	48518	53726	2.1570/2.1564	2.1600/2.1594			48978
	0.050	48931	53727	2.1670/2.1664	2.1700/2.1694			48934
MC-30	Standard	48518	53726	2.1570/2.1564	2.1600/2.1594	48992	2.1660/2.1650	48978
	0.010	48931	53727	2.1670/2.1664	2.1700/2.1694			48934
MC-8	Standard		53726	2.1570/2.1564	2.1600/2.1594	48993A	2.1660/2.1650	48978
	0.010		53727	2.1670/2.1664	2.1700/2.1694			48934
MC-40	Standard		47765	2.1570/2.1564	2.1600/2.1594	47749	2.1660/2.1650	47767
	0.010		47766	2.1670/2.1664	2.1700/2.1694			47768
MC-70	Standard		47813	2.2115/2.2109	2.2145/2.2139	47795	2.2200/2.2190	58699A
	0.010		47814	2.2215/2.2209	2.2245/2.2239			58831
	0.020		47829	2.2315/2.2309	2.2345/2.2339			47825
	0.030		47830	2.2415/2.2409	2.2445/2.2439			47826