McCULLOCH

SERVICE BULLETIN # 1054

SUBJECT OVERSIZE PISTONS AND RINGS

MODEL ALL

DATE 4/23/59

NOTE: This bulletin replaces bulletin #1021A.

Many of the earlier McCulloch chain saw engines, after having given long and satisfactory service, are now being bored and honed whenever necessary. The installation of oversize rings and pistons in a rebored cylinder brings back to the engine much of its original cutting power, provides for a longer chain saw life and often eliminates other costly repairs for the chain saw user.

Some of the principal conditions which should govern your decision to re-ring and re-bore are as follows:

If taper or out-of-round condition exceeds .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 may be less than .005 of an inch).
If piston to cylinder wall clearance exceeds the high limit by .005 inch.

When boring and honing cylinders, the oversize dimensions should be measured in even steps of .010 inch (.010, .020, .030) over the standard bore diameter of a new engine. If the full dimension is not held, possible interference, or a tight fit will exist between piston and cylinder wall. Allowing a .0005 inch tolerance factor, the clearance between piston and cylinder is .0025 inch/.0030 inch at the piston skirt and .0045 inch/.0050 at the piston top.

If the cylinder is rebored, and the removal of more than .010 inch, but not as much as .020 inch, will eliminate scuff marks, it will be necessary to continue boring until .020 inch oversize is reached. Having done this, the .020 inch oversize piston and piston rings must be used. If the .010 inch oversize piston and rings are used in a cylinder bored to the in-between oversize, piston to cylinder wall clearance will be too great to maintain adequate compression.

As a guide, a chart of dimensions, sizes and part numbers has been compiled for all engines (see page two).

see # 1127

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Model	Size and Oversize	Piston Assembly Number	Piston Top Dimension	Piston Skirt Dimension	Cylinder Assembly Number	Cylinder Interior Dimension	Unplated Ring Set	Chrome Ring Set
3-25, 47	Standard	19931A	1.9912/1.9907	1.9953/1.9948	19021	1.9970/1.9980		51747
	.010 O.S.	19910C	2.0012/2.0007	2.0053/2.0048				51748
	.020 O.S.	19920C	2.0112/2.0107	2.0153/2.0148				51749
	.030 O.S.	19907B	2.0212/2.0207	2.0253/2.0248				51750
33, 33B Mac 35, 35A	Standard	52379	1.7475/1.7470	1.7495/1.7490	36465A	1.7535/1.7525	52371	
	.010 O.S.	52380	1.7575/1.7570	1.7595/1.7590			52372	
	.020 O.S.	52382	1.7675/1.7670	1.7695/1.7690			52373	
	.030 O.S.	52384	1.7775/1.7770	1.7795/1.7790			52374	
S33	Standard	36616C	1.7475/1.7470	1.7495/1.7490	36617A	1.7535/1.7525		52046
	.010 O.S.	36663C	1.7575/1.7570	1.7595/1.7590				52047
	.020 O.S.	36664C	1.7675/1.7670	1.7695/1.7690				52048
	.030 O.S.	36665C	1.7775/1.7770	1.7795/1.7790				52049
4-30 4-30A 49	Standard	28353A	2.1220/2.1215	2.1240/2.1235	28260	2.1285/2.1275		28886
	.010 O.S.	28244C	2.1320/2.1315	2.1340/2.1335				28887
	.020 O.S.	28247C	2.1420/2.1415	2.1440/2.1435				28888
	.030 O.S.	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
	.010 O.S.	52051	1.7575/1.7570	1.7595/1.7590				52047
	.020 O.S.	52052	1.7675/1.7670	1.7695/1.7690				52048
	.030 O.S.	52053	1.7775/1.7770	1.7795/1.7790				52049
D-44	Standard	51210A	1.9955/1.9950	1.9975/1.9970	55099	2.001/2.000	51467	51747
	.010 O.S.	51451A	2.0055/2.0050	2.0075/2.0070			51489	51748
	.020 O.S.	51452A	2.0155/2.0150	2.0175/2.0170			51501	51749
	.030 O.S.	51453A	2.0255/2.0250	2.0275/2.0270			51502	51750
S44,S55	Standard	55007	2.1200/2.1195	2.1220/2.1215	55001	2.126/2.125		55123
	.010 O.S.	55057	2.1300/2.1295	2.1320/2.1315				55124
	.020 O.S.	55058	2.1490/2.1395	2.1420/2.1415				55125
	.030 O.S.	55059	2.1500/2.1495	2.1520/2.1515				55126
S44A, S55A	Standard	55310	2.1200/2.1195	2.1220/2.1215	55301	2.126/2.125		55123
	.010 O.S.	55322	2.1300/2.1295	2.1320/2.1315				55124
	.020 O.S.	55323	2.1400/2.1395	2.1420/2.1415				55125
	.030 O.S.	55324	2.1500/2.1495	2.1520/2.1515				55126

Model	Size and Oversize	Piston Assembly Number	Piston Top Dimension	Piston Skirt Dimension	Cylinder Assembly Number	Cylinder Interior Dimension	Unplated Ring Set	Chrome Ring Set
55	Standard	51210A	1.9955/1.9950	1.9975/1.9970	51935A	2.001/2.000	51467	51747
	.010 O.S.	51451A	2.0055/2.0050	2.0075/2.0070			51489	51748
	.020 O.S.	51452A	2.0155/2.0150	2.0175/2.0170			51501	51749
	.030 O.S.	51453A	2.0255/2.0250	2.0275/2.0270			51502	51750
5-49	Standard	38037	2.2425/2.2415	2.2455/2.2445	18405A	2.244/2.245	38043	
	.010 O.S.	38038	2.2525/2.2515	2.2555/2.2545			38044	
	.020 O.S.	38039	2.2625/2.2615	2.2655/2.2645			38045	
	.030 O.S.	38040	2.2725/2.2715	2.2755/2.2745			38046	
7-55	Standard	24775	2.4925/2.4920	2.4970/2.4965	24023A	2.5035/2.5025		28809
	.010 O.S.	24776	2.5025/2.5020	2.5070/2.5065				28810
	.020 O.S.	24777	2.5125/2.5120	2.5170/2.5165				28811
	.030 O.S.	24778	2.5225/2.5220	2.5270/2.5265				28812
73	Standard	47580	2.4950/2.4945	2.4975/2.4970	28779	2.5035/2.5025		28809
	.010 O.S.	47589	2.5050/2.5045	2.5075/2.5070				28810
	.020 O.S.	47590	2.5150/2.5145	2.5175/2.5170				28811
	.030 O.S.	47591	2.5250/2.5245	2.5275/2.5270				28812
77	Standard	47580	2.4950/2.4945	2.4975/2.4970	28779	2.5035/2.5025		28809
	.010 O.S.	47589	2.5050/2.5045	2.5075/2.5070				28810
	.020 O.S.	47590	2.5150/2.5145	2.5175/2.5170				28811
	.030 O.S.	47591	2.5250/2.5245	2.5275/2.5270				28812
99	Standard	24754A	2.4924/2.4919	2.4970/2.4965	24621	2.5035/2.5025		28809
	.010 O.S.	24681A	2.5024/2.5019	2.5070/2.5065				28810
	.020 O.S.	24684B	2.5124/2.5119	2.5170/2.5165				28811
	.030 O.S.	24687B	2.5224/2.5219	2.5270/2.5265				28812

NOTE:

Maximum permissable taper at the completion of reboring or rehoning operation is .0007 inch. In operation taper can increase to .005 inch before reboring and rehoning will be necessary. The maximum permissable out-of-round at the completion of a reboring or rehoning operation is .0007 inch.

The dimensions tolerance factor in cylinders is .001 inch and is incorporated in the chart data.

The correct end gap for piston rings is .004 inch/.012 inch. This may be checked by pushing a ring half way down a rebored cylinder and using a feeler gauge in the gap between the ring ends.