



World-class turf maintenance equipment

OPERATING INSTRUCTIONS

ROTORAKE 450

MACHINE REFERENCE	RR/450
SERIAL NUMBER
CN CODE	8432 29 10



SISIS, Ashbourne Road, Kirk Langley, Derbyshire, DE6 4NJ, England
Tel: +44 (0) 1332 824 777 | Fax: +44 (0) 1332 824 525 | Email: info@sisis.com | www.sisis.com

A division of Howardson Ltd - a proudly British company
Company reg no 641526 - Vat No GB 345 9918 12

EC DECLARATION OF CONFORMITY

We the undersigned
SISIS EQUIPMENT (Macclesfield) LIMITED

Certify that the Rotorake

Make SISIS

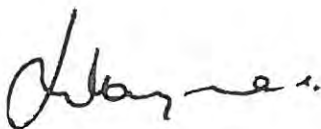
Type 450

Series 1

Conforms to EC Directives
and amendments 2006/42/EC

Standard BS7370

*This certificate applies only to NEW equipment supplied
by SISIS or our authorised dealer.*



J.W. Hargreaves
Director

Certificate Number
CEFS1130

We want you to obtain the best performance from this machine. If, after reading the following operating instructions, you have any problems, please contact your local SISIS Territory Manager or SISIS direct on 01625 503030.

Your SISIS Rotorake 450, used correctly, will give precise, controlled operation in the management of fine turf areas.

It is supplied fitted with the thatch removal reel, reference ST/TRR, which is designed for cutting out accumulations of thatch which build up in fine turf areas and create spongy, soft surfaces.

OPERATING PRINCIPLE

The drive to the tine reel is transmitted from the engine by roller chain through a centrifugal clutch.

The drive to the wheels is transmitted from the engine through a vee belt with a spring loaded jockey tensioner.

Depth of cut is easily variable by the micro adjuster which is located on the left hand side of the handles.

CONTROLS



The lever on the right hand side of the handles, when pulled will drive the machine forward.

The lever on the left hand side of the handles, when pulled will increase the engine revs which in turn will operate the centrifugal clutch which will cause the tine shaft to rotate.

The micro adjuster wheel located on the left hand side of the handles when turned clockwise will

raise the tines away from the ground and when turned anticlockwise will lower the tines into the ground.

The red isolator switch on the handles must be in the ON position before the engine will start and must always be in the OFF position before the operator leaves the machine.

OPERATING

SAFETY WARNING



WHEN WORKING WITHOUT THE GRASSBOX LOWER THE FRONT DEFLECTOR TO AVOID STONES/DEBRIS BEING THROWN FORWARD

BEFORE STARING

Read the instructions carefully and also the separate instruction details on the engine.

Ensure that the engine is filled with oil (SAE30) to the correct level. Before filling make sure the machine is on level ground

Always ensure that the tines are well clear of the ground.

Ensure that the isolator switch is in the ON position and the choke is in the ON position. Gently pull the recoil pull start until resistance can be felt then pull the starter sharply.

When the engine is running smoothly adjust the micro adjuster to select the desired depth of cut. Do not allow the blades to cut into the soil as this will cause undue wear on the blades.

Move forward whilst pulling the right and left hand levers and inspect the depth of cut. Re-adjust if necessary.

Always operate in line, never turn with the tines in the surface. Never cut across at right angles or surface may become unstable.

When turning at the end of a run, release the left hand lever to stop the tines turning and push down on the handles to raise the tines clear of the ground and line the machine up ready for the next run. Lower the machine gently whilst pulling the left and right levers.

NEVER LEAVE THE MACHINE UNATTENDED WITH THE ENGINE RUNNING.

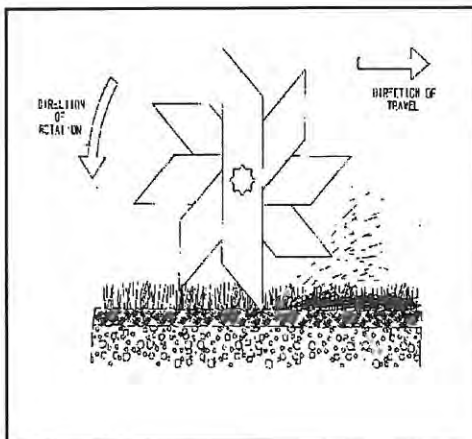
NEVER OPERATE WHEN OTHERS ARE IN THE PROXIMITY

WHEN LETTING GO OF THE HANDLES ALWAYS TURN THE ENGINE OFF WITH THE ISOLATOR SWITCH.

When the area has been fully treated with the Rotorake the micro-adjuster should be used to raise the tines completely clear of the ground. The machine is then ready to transport to a new location or after cleaning, put into store.

SISIS CONTRA-ROTATION PRINCIPLE

The Rotorake principle incorporates a series of blades rotating at high speed in the opposite direction to that of the conventional cylinder mower. The blades therefore cut upwards, continuously taking grass fibre away from the surface rather than pushing it into the surface of the turf. This also ensures that the machine is held to the ground and a regular working depth maintained.



REELS

THATCH CONTROL REEL reference ST/TCR

Has the cutting points spaced at 1/4in (6mm) intervals. It is not designed to remove an accumulation of thatch.



By severing horizontal surface growth, whether of weeds or broad leaved grasses it does assist in preventing a build up of thatch and therefore its use will control the problem.

BRUSH REEL reference ARR/BR

Is purely a high speed rotating brush which, when used in conjunction with the grass box, ensures that all fine residue in the grass sward is removed.



When used before a final cut on bowling greens an increase in speed can result. The introduction of the brush reel appears to need a word of warning to users, both existing and potential. The brush was not introduced to brush in top dressing sand using the machine for this (particularly during very dry spells) results in a complete breakdown of the materials into a cloud of airborne particles - mostly abrasive.

All Rotorake brush users must be aware of the possible danger to the engine from fine abrasive sand particles accumulating in the air cleaner which could result in eventual engine seizure. Use in such adverse conditions is not recommended even when the grassbox or a deflector of some sort is used to reduce the volume of flying particles.

Particular care would be needed to clean the filter every hour and extra special care taken to ensure correct sealing of the cleaned filter element when refitting.

THATCH REMOVAL REEL reference ST/TRR

For the removal of an existing build up of excess fibre. Comprises 24 hardened and tempered steel blades mounted on to the shaft 19mm (3/4in) apart. Soft rubber washers are fitted between the blades to permit flexing and reduce danger of breakage.



Replace the tine blades, ensuring you follow the original spiral pattern.

VERTICUTTING REEL reference ARR/RRT

Reel comprising close pitched, straight, triangular blades for light scarification during the growing season. Regular use removes thatch as it accumulates.



When all the blades and spacers are fitted, use the tine compression tool to re-compress the tines until the split pin hole is visible.

Replace the split pin and remove the compression tool.

Tine Reel Compression tool, FS966 available as an optional extra.

CHANGING THE REEL

To remove the tine reel, first raise the blades completely clear of the ground by use of the micro adjuster.

Remove the nuts securing the bearing to the side plate and slide the reel out of the socket on the stub shaft. (It is advisable to wear gloves whilst removing or fitting the tine shaft as the blades are sharp).

Lower the reel to the ground, then push down on the handles to lift the machine away from the tine reel.

Reverse the procedure to fit alternative reels.

REPLACING BLADES

Remove the reel as described above and place on a work bench. Observe the spiral pattern of the reel and the direction of rotation.

Remove the washer and split pin at the end of the reel (opposite end to which the bearing is fitted) and strip off the blades and rubber spacers.

MAINTENANCE AND LUBRICATION

**ALL MAINTENANCE MUST BE CARRIED OUT
WITH THE ENGINE ISOLATOR
IN THE
OFF POSITION**

**BEFORE ANY MAINTENANCE ON THE
MACHINE ALWAYS ENSURE THAT THE
ENGINE ISOLATOR IS IN THE OFF POSITION**

DAILY

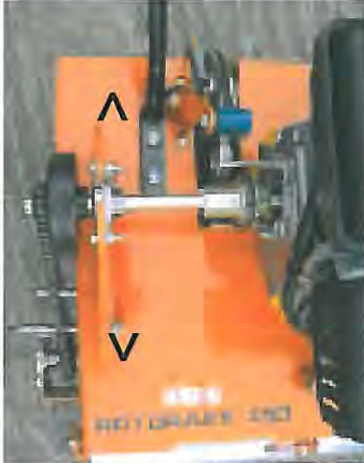
During periods of use the engine oil level must be checked regularly and topped up as necessary.

WEEKLY

All nuts, bolts/fasteners to be checked for tightness.

PERIODICALLY

Check the chain drive adjustment and adjust the tension if necessary. This is adjusted by moving the engine and shaft extension bracket.



An adjustment pivot nut is fitted on one side of the front roller pivot frame. This is factory set and should not need further adjustment.

If, at any time, this does need adjustment, place the machine on a level, flat surface and wind the tines down with the micro adjuster until the tips of the tines touch the surface across the width of the machine. With a feeler gauge or similar, check that the front roller is touching the surface across its width.

If not, undo the cam bolt and rotate the cam until the roller and tines are both touching the surface across the width of the machine and re-tighten the cam bolt.

**SAFETY HINTS**

Read the operating instructions carefully and understand the controls **BEFORE** commencing work.

Make sure all safety guards are in position and securely fastened.

Visually check the machine for signs of damage or wear to working parts such as blades etc.

Keep hands and feet clear of all moving parts and remember that blades can continue to rotate for a few seconds even after the power is turned off.

Switch off power at the isolator switch **BEFORE** carrying out any adjustments.

Keep a clear area around and in front of the machine when operating.

Never allow an untrained, unauthorised person to operate the machine at any time.

Allow the engine to cool down before refilling with petrol. Never smoke or use naked light when refuelling.

In dusty and dry conditions it is advisable to wear eye protection to protect your eyes from air borne debris.

Ensure tyre pressures are correct or loss of drive may occur.

BE SAFETY CONSCIOUS ALWAYS

SPECIFICATION

Width - working	450mm	Length	1050mm
Width - overall	720mm	Weight	69 kilos
Engine (21797)	4hp (KW3) Briggs & Stratton Vanguard		
Engine oil	SAE30		
Wheels (20310)	260 x 85 3.00 - 4		
Tyre Pressure	25psi	Bar	1.78

SISIS CONTACT NUMBERS

Sales Department	01625 503030
Email all departments	info@sisis.com
Website	www.sisis.com

sisis

PARTS LIST & DRAWINGS

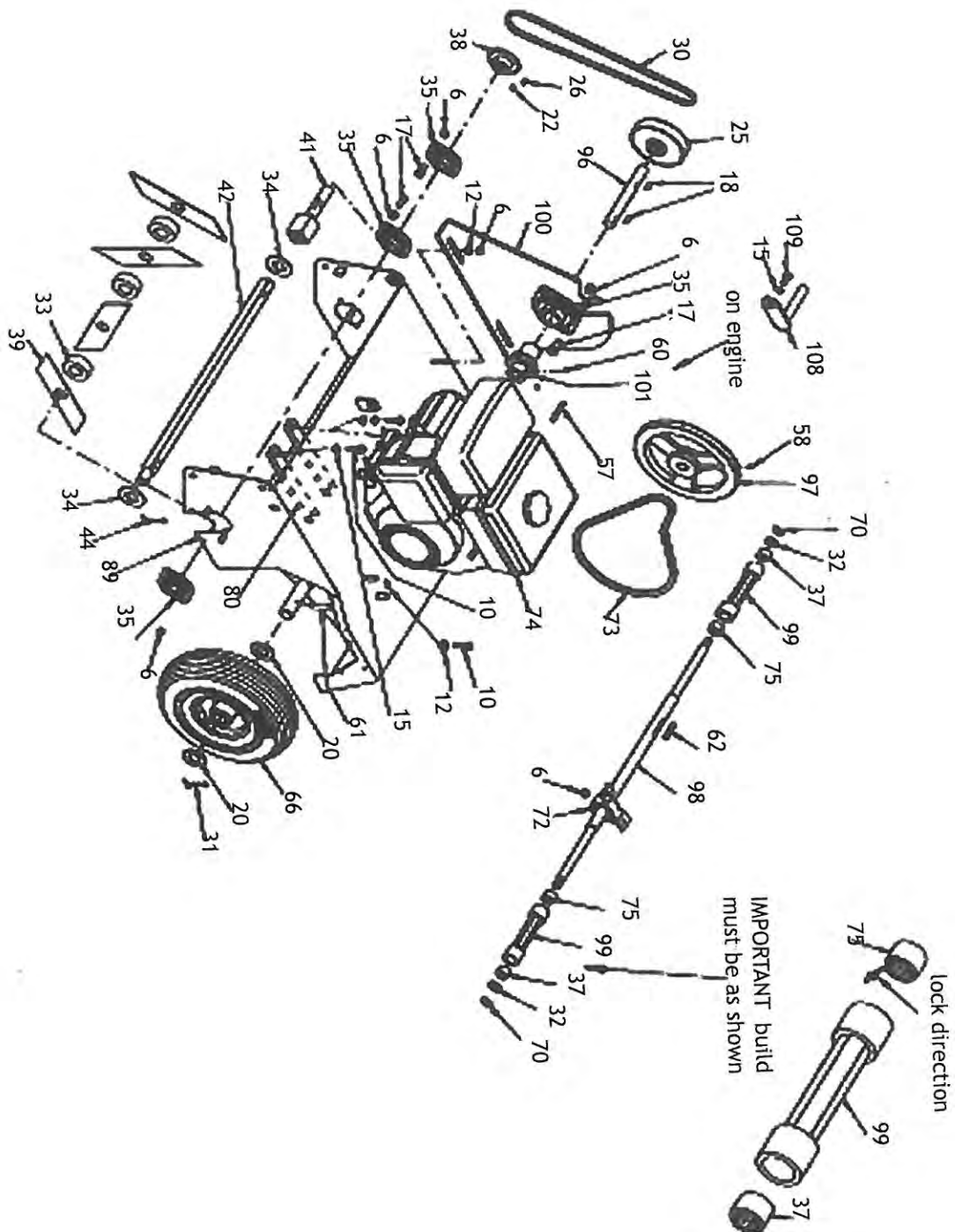
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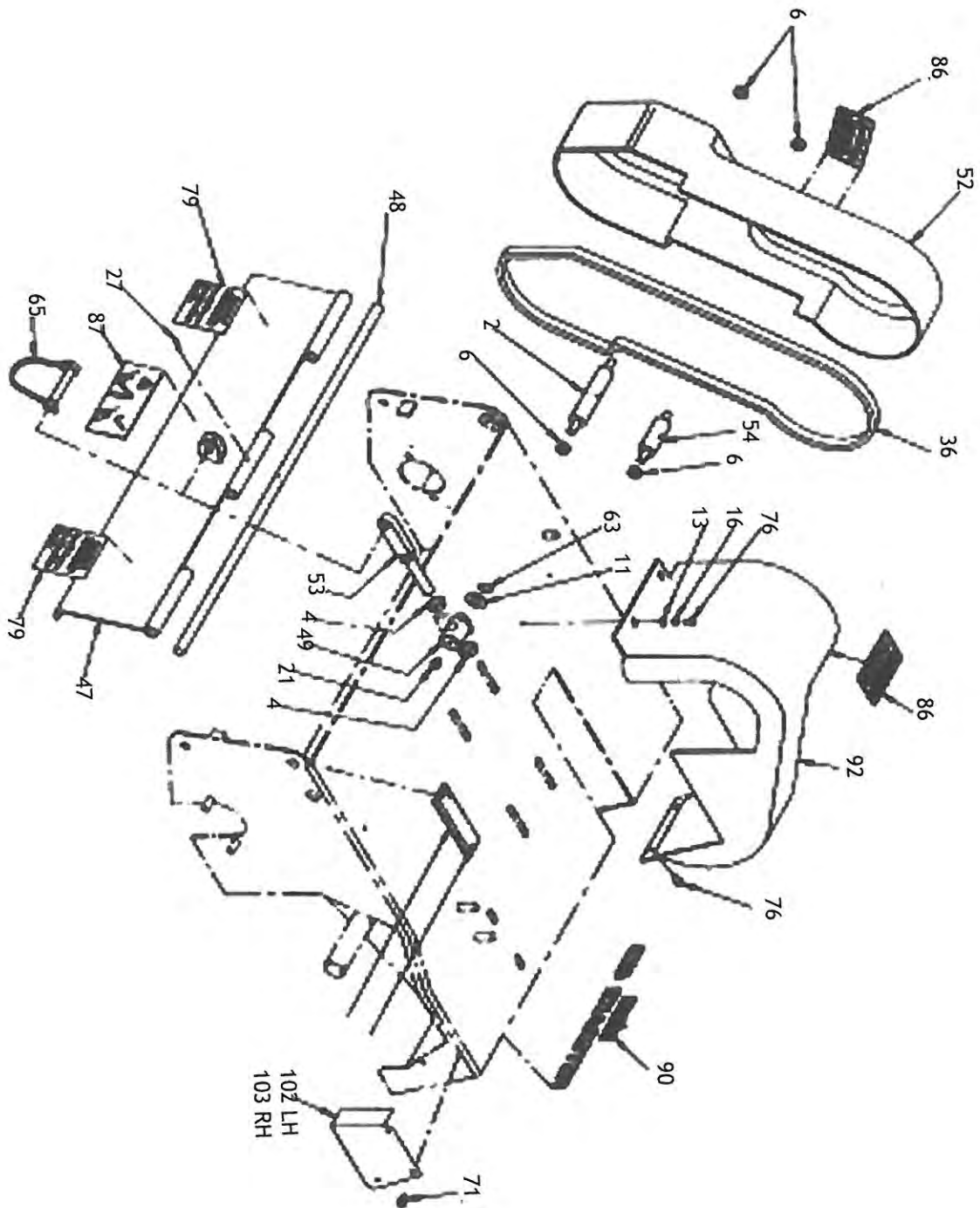
SALES/SPARES 01625 503030
Website www.sisis.com

<i>item</i>	<i>part</i>	<i>description</i>	<i>qty</i>	<i>item</i>	<i>part</i>	<i>description</i>	<i>qty</i>
1	20237	washer	2	56	7908	cover	1
2	1/5123	long support	1	57	8024	key	1
3	1/1231	nyloc nut	1	58	8036	grubscrew	4
4	1/1227	half nut	9	59	8058	spring	1
5	1/1223	nyloc nut	5	60	8068	grubscrew	4
6	1/1220	nyloc nut	16	61	8164	sel lok pin	2
7	1/1217	nyloc nut	4	62	8165	parallell key	1
8	1/1123	bolt	2	63	8175	circlip	2
9	1/1118	setscre	2	64	22019	hand grip	2
10	1/1105	setscrew	8	65	8436	pin	1
11	1/1076	washer	2	66	20310	wheel	2
12	1/1072	washer	8	67	11163	cable tie	6
13	1/1070	washer	4	68	20016	cable splice	1
14	1/1063	spring washer	2	69	20052	choke lever	1
15	1/1062	spring washer	4	70	22416	circlip	2
16	1/1060	spring washer	2	71	8498	self tapping screw	6
17	1/1039	setscrew	6	72	21595	bearing	2
18	1019	key	2	73	21773	spz belt	1
19	1040	split pin	2	74	21797	engine	1
20	1/1083	washer	4	75	22415	rolelr clutch	2
21	1947	grease nipple	2	76	22103	but head screw	4
22	1306	grub screw	1	77	22281	clutch lever	2
23	1394	stop switch	1	78	22352	belt roller	1
24	1493	inspectin label	1	79	30465	decal	2
25	1623	clutch	1	80	30518	clamp strip	2
26	1628	key	1	81	31197	roller	1
27	1854	lock pin	1	82	32151	adjust rod	1
28	1871	pop rivet	2	83	32152	pivot	1
29	21144	handwheel	1	84	32154	rolelr frame	1
30	1911	drive chain	1	85	37738	throttle cable	1
31	21970	split pin	2	86	33384	decal	3
32	1079	washer	4	87	32003	decal	1
33	2355	rubber spacer	23	88	36000	nameplate	1
34	2390	washer	2	89	37550	chassis	1
35	2991	bearing	4	90	37551	machine label	1
36	3171	rubber strip	1.5m	91	37552	handle	1
37	1893	roller bearing	2	92	37553	engine drive guard	1
38	4033	20T sprocket	1	93	33941	CE label	1
39	37057	tine	24	94	37561	belt tensioner	1
40	4917	ferrule	1	95	37562	belt tensioner cable	1
41	5113	stub shaft	1	96	37563	drive shaft extension	1
42	5117	tine shaft	1	97	37566	200pcd SPZ pulley	1
43	5135	offset ferrule	1	98	37568	wheel drive shaft	1
44	5622	split pin	2	99	37569	hexagon drive shaft	2
45	6636	roller shaft	1	100	37579	slide brackt	1
46	6638	grassbox ferrule	2	101	37629	coupling	1
47	7815	support flap	1	102	37677	shaft cover LH	1
48	7816	flap pivot	1	103	37678	shaft cover RH	1
49	7819	pivot	2	104	37661	spring mount	1
50	7820	pviot	1	105	21528	oilite bush	1
51	37672	adjusting rod	1	106	22428	spring	1
52	7823	chain guard	1	107	1/1092	setscrew	2
53	7824	flap adjuster	1	108	37161	belt pin	1
54	7826	short support	1	109	1/1436	setscrew	1
55	7907	joint mod.	1				

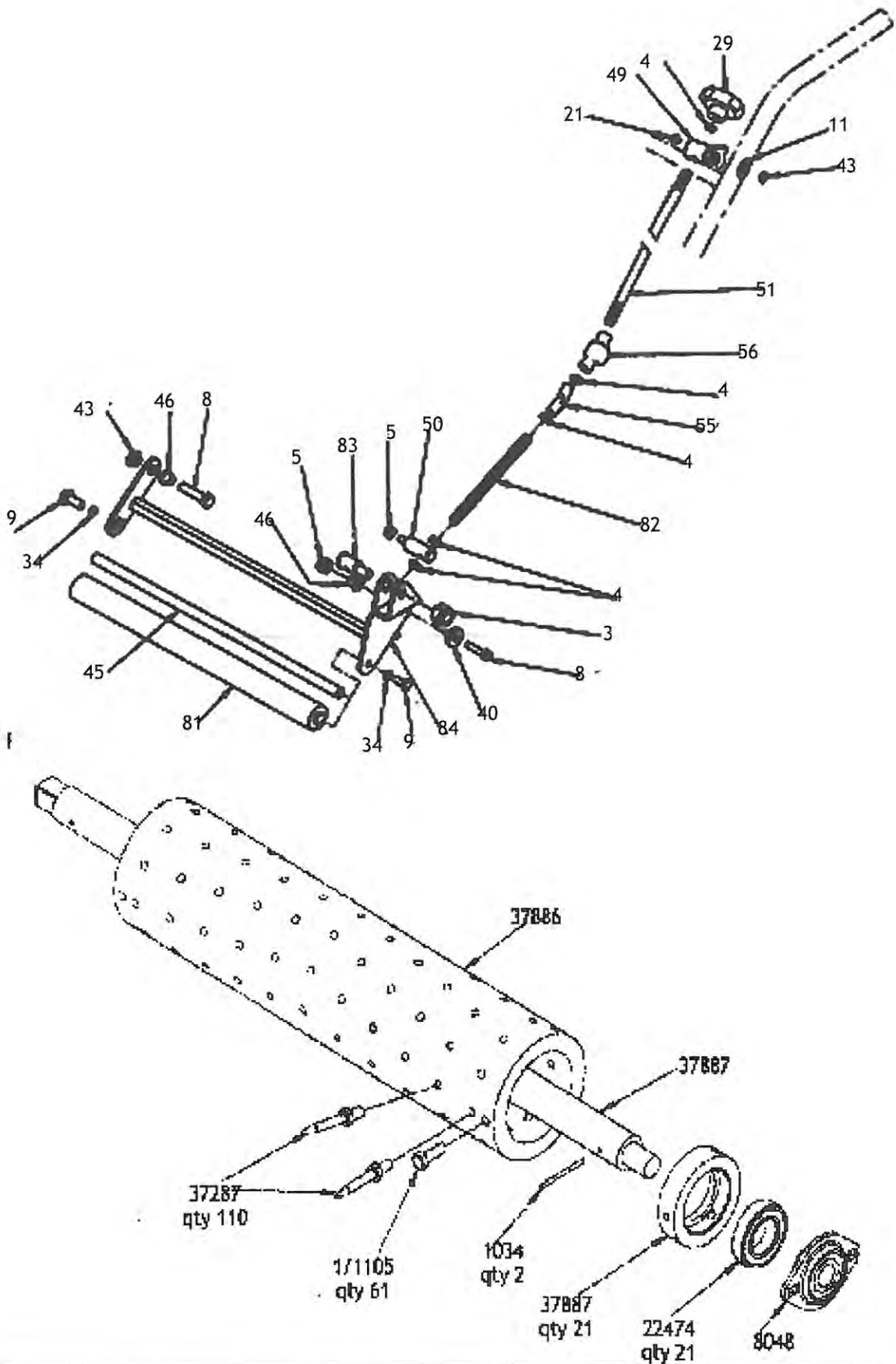
DRIVE



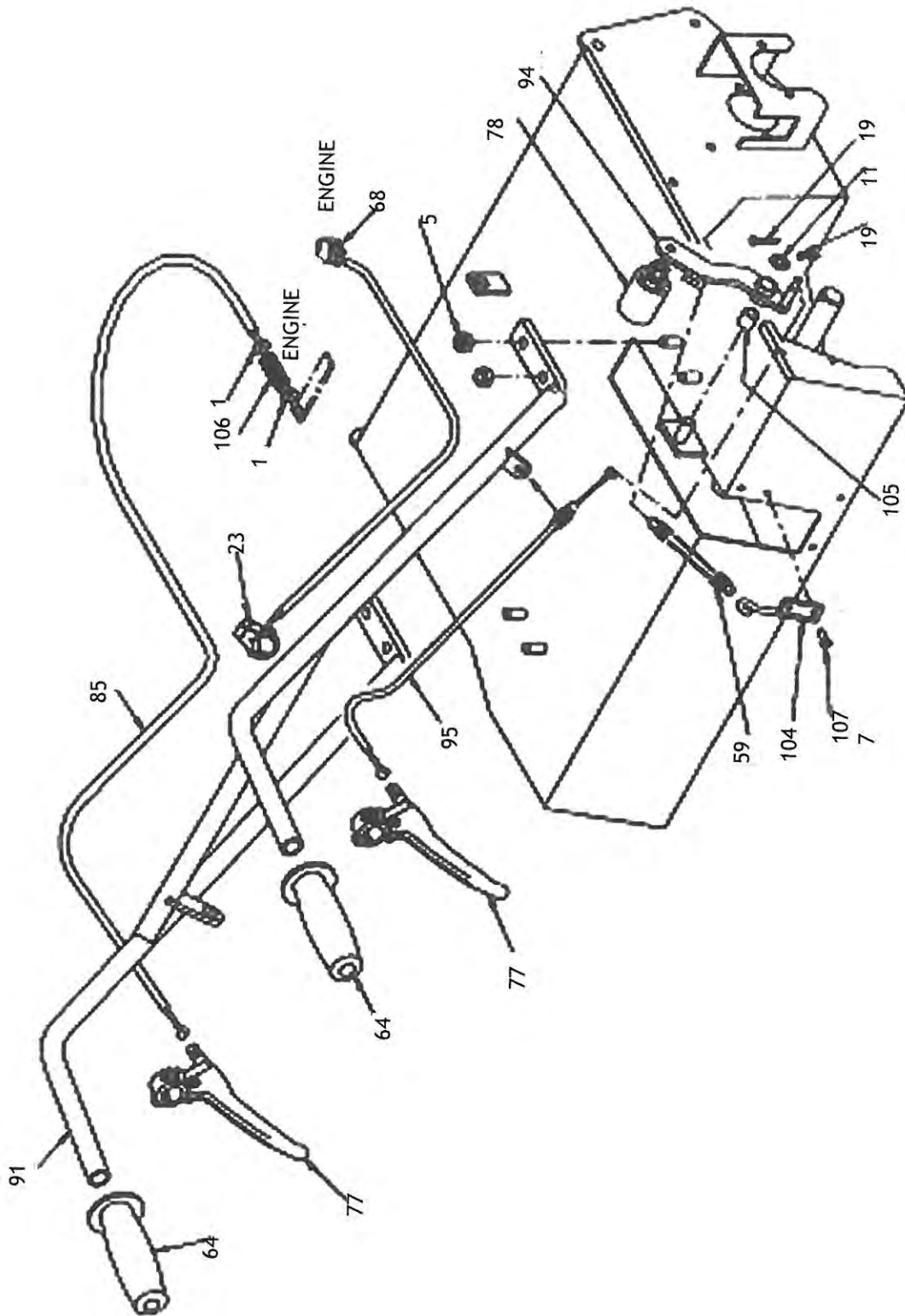
GUARDS AND COVERS



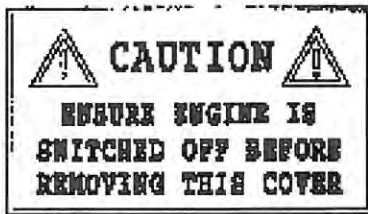
ROLLER



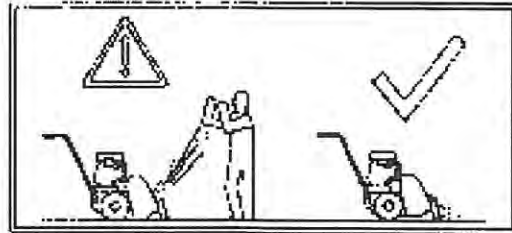
CONTROLS



DECALS



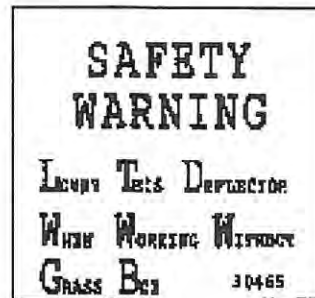
33384



34003



36000



30465

SISIS
ROTORAKE 450

37551



33941



1493



VIBRATION LEVELS

Method Used

Machine Name

Rotorake 450

Machine Reference

RR/450

Engine

Briggs & Stratton

Vibration Level

ALL READINGS TAKEN AT FULL REVS

PERSONAL SAFETY EQUIPMENT

Use Safety Glasses

Use Breathing Mask

Use Safety Gloves

Use Ear Protectors *optional*

Use Safety Boots

