

MULTIVATOR ROTARY TILLER

OWNERS MANUAL

MODEL ZB

MODEL ZV

***MULTIVATOR
10784 Industrial Parkway
Marysville, OH 43040
Tel: 614-873-4620***

Model: _____

Serial Number: _____

Width: _____

SAFETY PRECAUTIONS

GENERAL

1. Read this Operator's Manual carefully. Be thoroughly familiar with the controls and proper use of the tiller. Know how to stop the machine and disengage the controls quickly.
2. Never allow children to operate the tiller. Do not allow adults to operate it without proper instructions.
3. Do not permit anyone to ride on the tiller; do not carry riders on the tractor.
4. Keep the operating area clear of all persons -- particularly small children and pets. Also inspect the operating area before using the tiller and remove wire or other materials which could become entangled in the blades.
5. Use only attachments or accessories designed for your tiller.

OPERATION

6. Never adjust, clean, repair or grease the tiller or tractor with the tractor engine running. Stop the engine, disengage the PTO and remove the ignition key whenever you are not at the operating controls.
7. Do not crawl under the tiller when it is in a raised position. Never rely on tractor hydraulics to hold the machine in a raised position. Always provide support with blocks beneath both ends before adjusting, cleaning, repairing or greasing the machine.
8. Do not operate the tiller without all guards, shields and other safety devices correctly installed.
9. Never use an unshielded PTO shaft, and always attach the shield retainer chain to the tractor or tiller.
10. Do not allow bystanders behind the tiller when it is operating. Rocks may be thrown to the rear.

11. Do not operate the universal drive joint at an angle greater than 35°, or vibration and damage could result.
12. Do not till across the face of slopes. Use extreme caution when turning on slopes. Never operate on slopes greater than 30%.
13. Operate the tiller only when you have good visibility. Make sure your feet are properly placed on the footrests and keep a firm grip on the steering wheel.
14. Be careful not to touch tractor or tiller parts which may be hot from operation. Allow parts to cool first.
15. Whenever leaving the tractor and tiller unattended, disengage the PTO, shift into neutral, set the parking brake, lower the machine, stop the engine and remove the ignition key.
16. Always disengage power to the tiller when transporting or when not in use.

MAINTENANCE AND STORAGE

17. Check tightness of bolts, nuts, spring pins and clip pins frequently to ensure a safe working condition.
18. Follow the daily lubrication and periodic maintenance procedures as described in the Operator's Manual.
19. When storing the tiller, make sure it is securely blocked in a safe, level position.

BE A SAFE OPERATOR
BY THINKING BEFORE ACTING,
AND BY READING THIS MANUAL

MOUNTING TILLER TO TRACTOR

1. Before mounting the tiller to the tractor, make sure the tiller is safely blocked at both ends with the main frame parallel to the ground. This will help prevent tipping which could cause serious injury.
2. Set the tractor lower lift arms to match the Category I, 28" spacing (71 cm) between the tiller lower hitch bracket centers. Adjust the tractor stabilizer bars or sway blocks as necessary to achieve the correct spacing.
3. Back the tractor up squarely to the tiller with the lower lift arms set at the same height as the tiller hitch brackets. Stop when the arms are inside the brackets. **Shut the tractor engine off.**

CAUTION: NEVER MAKE ADJUSTMENTS TO TILLER OR TRACTOR WITH TRACTOR ENGINE RUNNING!

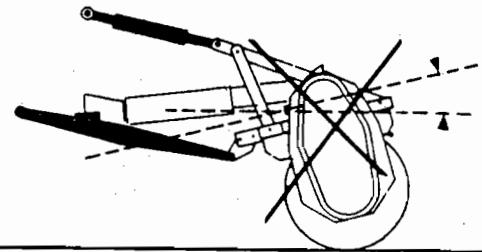
4. Secure the tractor lower lift arms in the brackets with the 7/8" diameter hitch pins and quick pins.
5. Attach the tractor top link to the tiller topmast with the 3/4" diameter top link pin and quick pin. Adjust the top link until the tiller frame is parallel to the ground.
6. Connect the universal joint to the tractor PTO shaft. Make sure the spring pin engages in the PTO shaft groove and the U-joint does not foul in the tractor PTO guard. Also make sure the U-joint does not "bottom together" nor pull apart when the tiller is raised or lowered.
7. Lengthen the tractor lift rods or fit a lift-stop to the lift lever quadrant to prevent the tiller from being raised too high when the PTO is turning. Over-lifting could create an excessive angle in the rotating drive line and damage to the U-joint.

Ground clearance of 6" to 8" (15-20 cm) under the blades when the tiller is raised is adequate in most conditions. This allows the PTO to be left running when making turns in the headlands at the end of each tillage run.

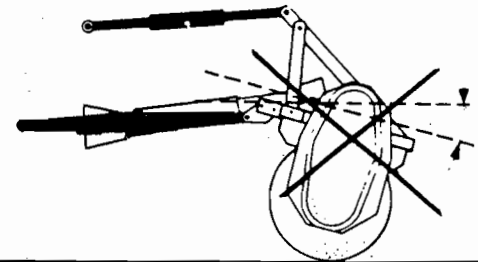
CAUTION: NEVER OPERATE WITH THE U-JOINTS AT AN ANGLE GREATER THAN 35° OR VIBRATION AND DAMAGE COULD RESULT.

8. Adjust the tractor stabilizer bars, chain or anti-sway blocks to limit the tiller side sway to 1"-3" (2-7 cm) maximum.

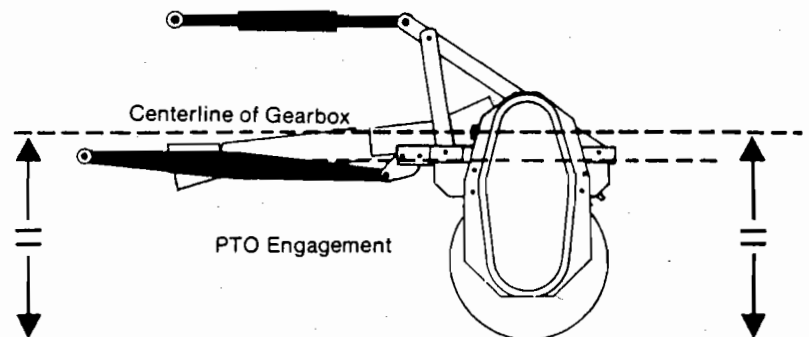
INCORRECT MOUNTING



INCORRECT MOUNTING



CORRECT MOUNTING



TILLER OPERATION

SHUT OFF TRACTOR ENGINE BEFORE TOUCHING THE TILLER.
ALWAYS BLOCK TILLER SECURELY WHEN IN RAISED POSITION.
DO NOT RELY ON TRACTOR HYDRAULICS.
KEEP BYSTANDERS AWAY WHEN OPERATING THE TILLER.

BE A SAFE OPERATOR
BY THINKING BEFORE ACTING, AND BY
READING YOUR OPERATOR'S MANUAL

PRE WORK INSPECTION

Before using the tiller, perform the following checks and services. See "Routine Maintenance" section for details.

1. Inspect and lubricate U-joint bearings and telescoping sections of PTO shaft with good quality grease.
2. Grease rotor stub axle bearing.
3. Check gearbox and side drive for correct oil levels. Recommended lubricant is SAE 90 gear oil.
4. Check side drive chain tension.
5. Check rotor for loose or damaged blades and loose or missing blade bolts. Replace missing blade bolts and tighten all blade bolts to 75 ft./lbs.
6. Check entire tiller for loose or missing bolts, nuts, hitch and quick pins, and replace as necessary. Replace any damaged parts which may cause unsafe operation.

TRACTOR HYDRAULIC LIFT

The tractor hydraulic lift should be adjusted to prevent the tiller from being raised too high while the PTO shaft is turning. If this is not done, the U-joints will vibrate excessively and may be damaged. (See "Mounting Tiller to Tractor" section.) The lift must also allow the 3-point hitch to float while the tiller is operating, otherwise the tiller may be prevented from reaching the desired tillage depth.

OPERATION

Start the tractor engine and raise the tiller off the ground. Proceed to the work site and position the tractor at the head of the first pass to be made.

Engage the tractor PTO at the 540 rpm position. **UNDER NO CIRCUMSTANCES SHOULD A HIGHER RPM SETTING BE USED!**

Select the desired tractor gear and move ahead.

While moving forward, with the tractor running at least 3/4 throttle, slowly lower the tiller into the ground. Increase to full PTO operating speed as the tiller settles into the soil. The flow rate control knob for the tractor hydraulics may need setting to "slow" to ensure a smooth lowering of the machine into the soil.

After a short distance, stop the tractor and tiller and check your work to see that the desired results are being obtained. If your machine is fitted with a friction disc safety clutch, make any clutch adjustments at this time. (See "Safety Clutch" section.)

Each time the headland is reached, raise the tiller clear of the ground while still moving forward. Turn to the right with the blades still rotating, and begin the next tillage run in the opposite direction. Slowly lower the machine into the ground as before. Turning to the left is acceptable but the side drive cover may leave more of a groove in the soil.

DO NOT MAKE TURNS WITH THE TILLER IN THE GROUND. DAMAGE TO THE TILLER AND TRACTOR LINKAGE WILL OCCUR.

TILLER OPERATION Continued

RUNNING IN

The first 10 hours of operation should be undertaken in easy work at a ground speed that does not require full tractor power. Note: when first running in and not under load, some noise will be heard from the gearbox. This is normal and will disappear with use.

TILTH CONTROL

Soil tilth refers to the texture or tilled finish of the soil; from fine to medium to coarse. The tilth is determined by a combination of factors:

1. Tractor travel speed.
2. Rotor speed.
3. Tillage depth.
4. Trailing shield placement.

Traveling at the slowest forward speed with the trailing shield lowered will produce the finest possible tilth. The more you increase the forward speed and raise the trailing shield, the coarser the tilth will be.

Higher rotor speeds and shallower tillage depths give finer tilth than lower rotor speeds and greater tillage depths. To bury weeds or crop residue and create a greater mixing effect, travel with the trailing shield lowered. To leave the surface rougher with residues exposed, work with the trailing shield raised.

GROUND SPEED

Travel speed is governed by the type of soil tilth desired, amount of surface cover, tractor power and soil condition. Hard ground will require low travel speeds of 1-2 mph for smooth operation and maximum depth. Average ground with reasonable moisture will allow travel speeds of 2-4 mph for weed cultivation.

TRACTOR GEAR

To determine the proper tractor operating gear, start in the lowest gear and shift up to the gear that works best for the tillage desired. 1st, 2nd, and 3rd gears are most commonly used. Consult your tractor operating manual for travel speeds of each gear.

You should not allow the engine rpm's to drop below normal working speed, or lug down continuously, or damage to the tractor and tiller could result.

WORKING LIMITATIONS

If the rotor fails to penetrate the ground easily (not more than 1-2" is obtainable on the first pass), soil conditions may be too hard and dry or the blades may be fitted incorrectly. Continued use of the tiller in such conditions with considerable vibration and jumping could cause severe shock to the drive chain and void any warranty consideration.

Usage in excessively hard and abrasive conditions will substantially reduce blade life. It is recommended where these conditions exist, that the ground be chiseled first.

Obstructions such as stones bricks and other debris will be encountered in some applications. The best judgement of the operator must determine if soil conditions are acceptable for use of the tiller. It is important that the soil contain a reasonable moisture content, or the resulting continuous hammer blow action could damage the blades and the machine.

POINTS TO REMEMBER

1. Always do a pre-work inspection of the tiller.
2. Remove rocks, branches, wire, fence posts, and other obstacles before tilling.
3. Determine the direction of travel and turning before tilling to assure maximum tilling efficiency.
4. Do not till in excessively wet conditions. Wet soil will cake on the tiller blades, rotor shaft and trailing shield. This will increase power requirements and fuel consumption, while making tilth control difficult and an ideal seedbed unobtainable.
5. Do not till in excessively dry, hard conditions. Damage to the tiller could result.
6. Adjust the linkage and tractor hydraulics to allow the tiller to float when operating, and to prevent the tiller from raising up too high when out of the ground.
7. Do not allow the tractor engine RPM to drop below normal working speed, or damage to the tractor may result.
8. Before storing your tiller, remove all dirt buildup, lubricate all moving parts, tighten all loose bolts, remove any rust and touch up with paint. Securely block up the tiller to prevent tipping. Store under cover in a good home, if possible.

ROUTINE MAINTENANCE

CAUTION: PLACE TRACTOR GEAR IN NEUTRAL, DISENGAGE PTO, AND SHUT OFF ENGINE BEFORE ATTEMPTING ANY MAINTENANCE!

DAILY

1. Check the gearbox and side drive for correct oil levels. Recommended lubricant is SAE 90 gear oil.
Gearbox capacity: 1-1/2 pints (.71 liters)
Side Drive: 2-3/4 pints (1.3 liters)
2. Grease the rotor stub axle bearing.
3. Inspect and lubricate U-joint bearings and telescoping sections with good quality grease. See next page for details.
4. Check side drive chain tension and adjust as necessary.
5. Check entire tiller for loose or missing bolts, nuts, hitch and quick pins, and replace as necessary. Replace any damaged parts which may cause unsafe operation.
6. Check rotor for loose or damaged blades and loose or missing blade bolts. Replace damaged blades and missing bolts; tighten bolts to 75ft./lbs. Remove trash wrapped around bearing covers at each end of rotor.

PERIODICALLY

LUBRICATION

Check the gearbox and side drive chaincase oil levels before using the tiller each day. Remember that the tiller should be level from side-to-side and front-to-back when checking oil levels. Also lubricate the U-joint and stub axle bearing on a daily basis.

GEARBOX

The gearbox should contain approximately 1-1/2 pints (.71 liters) of a good quality SAE 90 gear oil. To add oil, remove the breather/fill plug on the top of the gearbox. **DO NOT OVERFILL.** Re-tighten the plug after filling. A drain plug is located at the bottom of the gearbox on the back side. (Change the gearbox oil every 400 hours.)

SIDE DRIVE CHAINCASE

The chaincase should contain approximately 2-3/4 pints (1.3 liters) of SAE 90 gear oil. Check for the

correct level by removing the oil level plug at the lower rear of the chaincase. Oil should just begin to flow out when this plug is removed. To add oil, remove the filler plug at the top of the chaincase and fill to the correct level. Re-tighten both plugs after filling. (Change the side drive oil every 400 hours.)

ROTOR STUB AXLE BEARING

The stub axle bearing should be lubricated daily via the grease fitting found at the tiller R.H. end plate. Periodically check the bearing housing bolts for tightness.

UNIVERSAL JOINT ASSEMBLY

The U-joint assembly transmits the tractor engine power and rotating PTO movement to the tiller. As the U-joint assembly rotates, the uneven terrain and raising and lowering of the tiller causes the yoke and shaft assembly to telescope in and out of the yoke and tube assembly. This constantly alters the U-joint assembly angle and causes it to pivot on the cross and bearing assemblies at each end. Correct lubrication is essential to maintain the U-joint assembly in good working order.

It is also important that the U-joint assembly never "bottom together" nor pull apart when the tiller is raised or lowered. During operation of the tiller it is essential that at least 4" (10 cm) of engagement be maintained between the sliding shaft and tube assemblies.

U-JOINT LUBRICATION

The U-joint assembly should be inspected and lubricated daily with a good quality grease. Grease fittings can be found on each cross & bearing kit. If the new grease does not flow out of all four bearing seals under pressure from the grease gun, examine the assembly for blocked galleries. It normally takes 10-12 strokes of an average grease gun to completely fill the grease galleries.

The telescoping sections (shaft/tube and shields) should also have a coating of grease applied and the excess wiped off.

ROUTINE MAINTENANCE Continued

SIDE DRIVE CHAIN TENSION

The side drive chain tension should be checked regularly. Adjustment may be needed to compensate for normal chain stretch and wear.

To adjust the chain tension, hold the adjusting bolt steady and loosen the locking nut. Then hold the locking nut steady and turn the bolt in until the slack in the chain is removed. Back off the bolt approximately two turns to allow for 3/8" to 1/2" slack in the chain. Turn the rotor by hand 2 or 3 revolutions checking to make sure there are no tight spots in the chain. If so, readjust the bolt as necessary. When the chain tension is correct, hold the adjusting bolt steady and tighten the locking nut.

PERIODICALLY

ROTOR SUPPORT AXLE

Periodically inspect the housing bolts for tightness and lubricate the rotor support axle via the grease fitting provided.

ROTOR DRIVE SHAFT AND SUPPORT AXLE BOLTS

Periodically check the rotor drive shaft bolts and support axle bolts for tightness. These are the bolts which secure each end of the rotor to the drive shaft and support axle. Re-torque to 75ft./lbs. if necessary.

DEPTH-CONTROL SKIDS

Periodically check both the L.H. and R.H. skid pivot and skid adjustment bolts for tightness. Since the depth-control skids provide protection for the chaincase and tiller end plates, **DO NOT OPERATE THE TILLER WITH THEM REMOVED.** Lightly oil the skid pivot bolts once a week.

TRAILING SHIELD

After each use remove dirt build up from the trailing shield. Oil the trailing shield hinge pin on a regular basis.

EVERY 400 HOURS

**Remove chaincase, check condition of chain, flush oil, reinstall and refill.

**Drain gearbox oil and refill.

SAFETY CLUTCH

Model ZV Multivator tillers are fitted with a friction disc safety clutch. The clutch is comprised of pressure plates and friction discs compressed by coil springs. It is designed to protect both the tiller transmission and tractor PTO where obstacles are encountered. If not adjusted correctly, the friction discs will slip excessively, overheat and smoke. This will cause the clutch to wear prematurely and result in erratic rotor movement and a poor finish to the work. The clutch may also be over-tightened or locked up, which defeats the protection capability of the clutch.

To adjust the clutch, start with the adjusting nuts finger tight against the springs. Then tighten the nuts with a suitable wrench one and one-half turns. Try operating the tiller in ground you plan to work. If it seems to jump and run erratically or the clutch slips excessively, stop and readjust the clutch. Tighten each nut equally one-quarter turn per adjustment until the tiller runs without clutch slippage. Each time the ground conditions change, e.g. going from a clay soil to a loose sandy soil, the clutch should be readjusted.

In normal operation, the clutch should slip only when the blades strike an obstruction. The manufacturer will not be responsible for clutch damage or wear due to incorrect adjustment. Under normal operating conditions and correct adjustment, clutch friction discs will last for several seasons.

Before storing the tiller, and especially before using it each spring, the clutch should be completely disassembled, inspected for worn parts, and reassembled. If this is not done, then there is a good chance that the clutch will be frozen up and will not perform adequately.

SHEAR PIN CLUTCH

Model ZB tillers are fitted with a shear pin clutch to provide protection for the tiller transmission and tractor PTO.

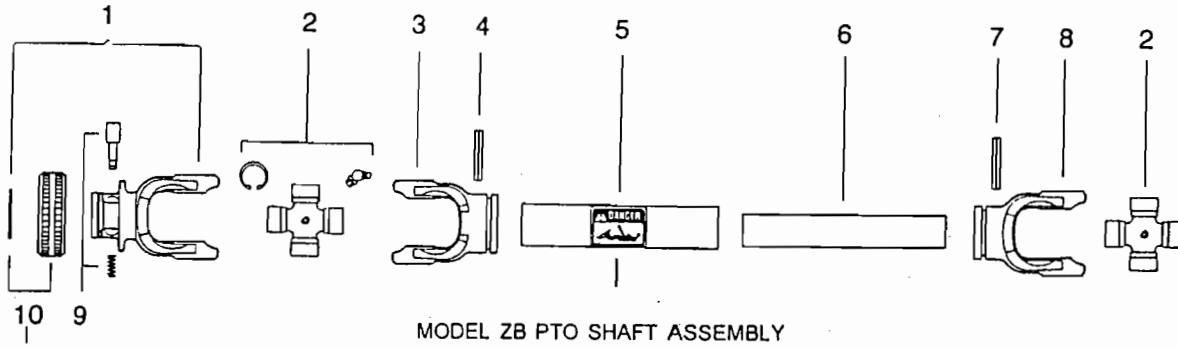
The shear pin is a metric bolt, grade 8.8, M8 x 50.

The shear pin is designed to fail when an obstacle is encountered, or under severe shock loading. Under no circumstances should the shear pin device be defeated with a higher grade, or hardened bolt.

**MULTIVATOR
ROTARY TILLER**

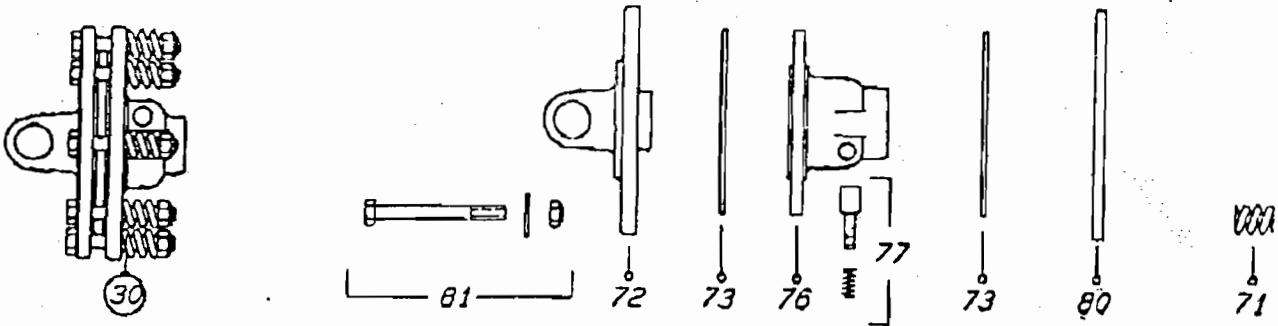
MODEL ZB

PARTS LIST



MODEL ZB PTO SHAFT ASSEMBLY
EQUIVALENT TO BONDIOLI SIZE 3

Item	Part Number	Qty	Description
1	B507030351	1	Tractor yoke 1 3/8"-6 spline
2	B41203	2	Cross & bearing kit #3
3	B204036851	1	Yoke for outer tube
4	B341038000	1	Roll pin
5	B125081500	1	Outer tube #3
6	B125051500	1	Inner tube #3
7	B341048000	1	Roll pin
8	B204036852	1	Yoke for inner tube
9	204056911	1	Push pin kit
10	B240002451	1	RS-collar



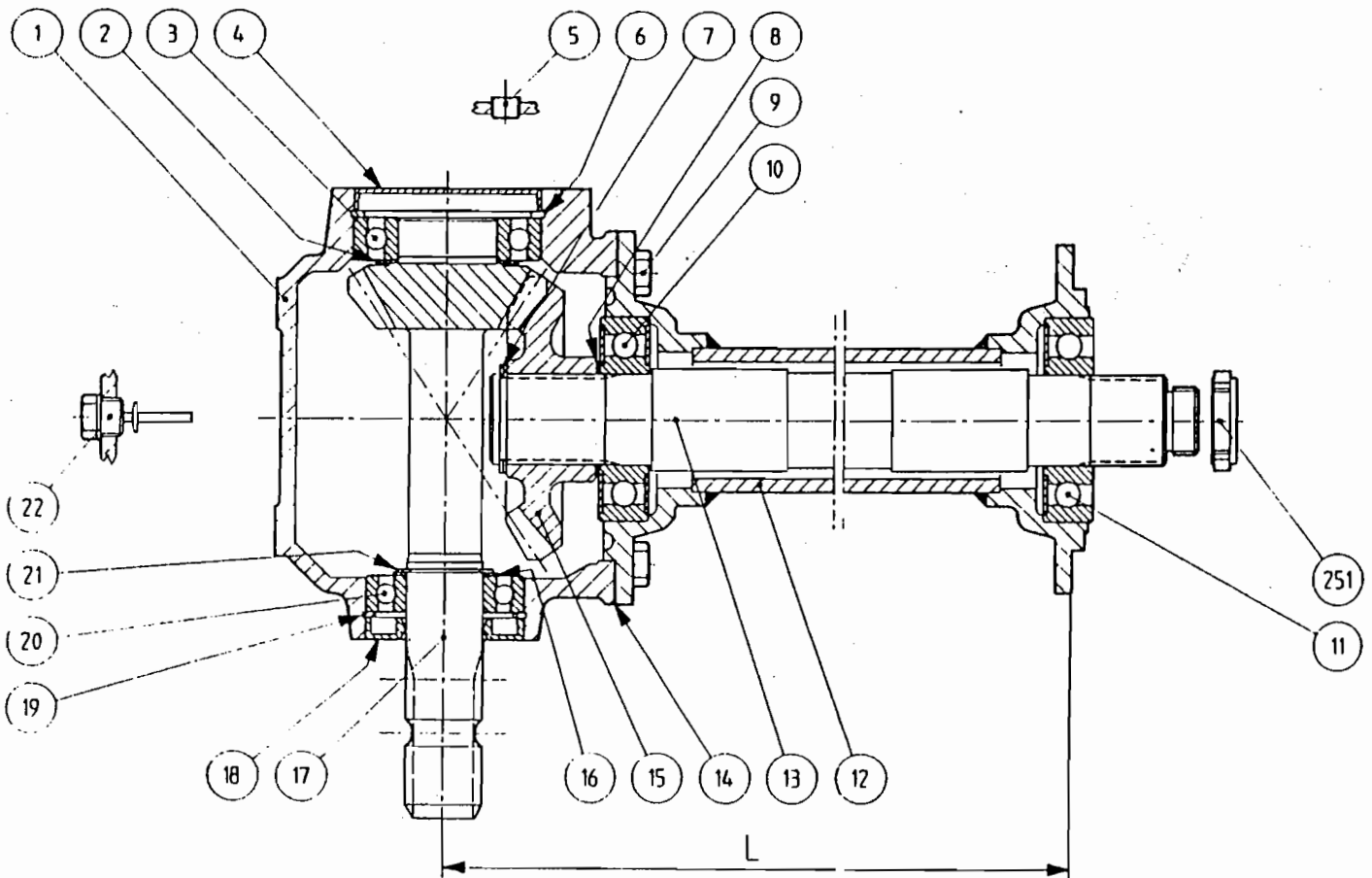
DF1 FRICTION DISC CLUTCH ASSEMBLY
(8 SPRINGS ON IMPLEMENT SIDE)

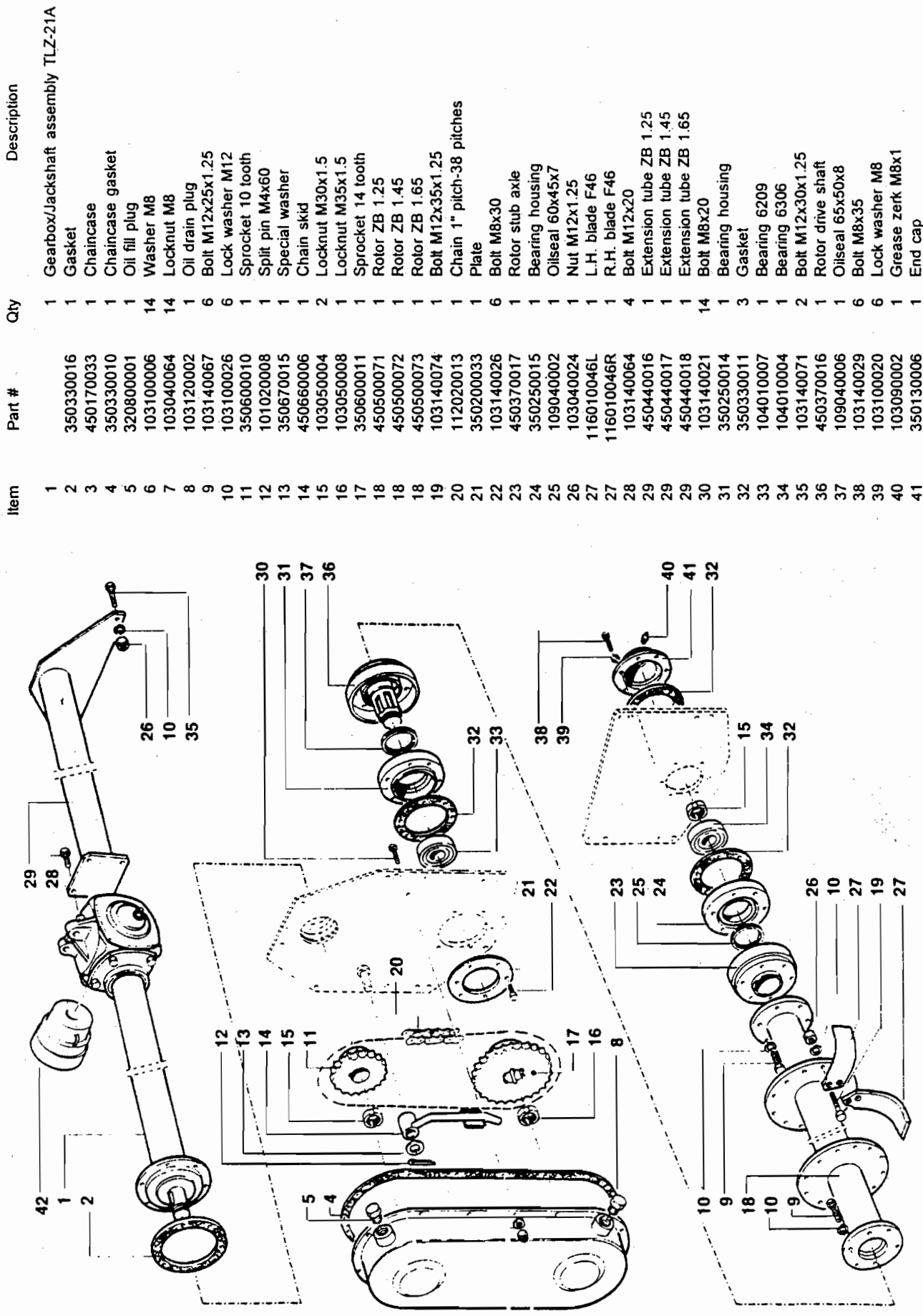
Item	Part Number	Description
30	B6F1332103	DF/1 Clutch assy
71	B351022370	Spring
72	B253038501	Clutch plate
73	B247006151	Friction disc
76	B513610301	Hub assy
77	204056911	Push pin kit
80	B248850001	Back plate
81	B408000045	Clutch bolt/nut

Multivator ZB friction disc clutch assembly with external springs.
Used on ZB Multivator Tillers from serial number 300.

MULTIVATOR MODEL ZB GEARBOX ASSEMBLY TLZ-21A

Item	Part Number	Qty	Description
1	0.261.0701.00	1	Gearbox housing
2	0.252.7500.00	1	Shim 45.3x65.3
3	104.010.007	1	Bearing 6209
4	0.121.7101.00	1	Cap 85x10
5	8.6.6.00271	1	Plug 1/4"
6	8.5.2.00332	1	Circlip internal 85mm
7	8.5.1.00029	2	Circlip external 40mm
8	0.457.7500.00	2	Shim 40.3x46.7
9	8.1.1.00501	6	Hex bolt M10x22 gr. 8.8
10	8.0.1.00171	1	Bearing 6308 2RS
11	8.0.1.00552	1	Bearing 6308 Z
12	2.121.1306.00	1	Extension tube ZB1.25
12	2.121.1308.00	1	Extension tube ZB1.45
12	2.121.1310.00	1	Extension tube ZB1.65
13	0.256.3005.02	1	Jackshaft ZB1.25
13	0.256.3006.02	1	Jackshaft ZB1.45
13	0.256.3007.02	1	Jackshaft ZB1.65
14	0.121.7200.00	1	Gasket
15	0.121.6001.00	1	Crownwheel 22 tooth
16	0.259.7500.00	1	Shim 35.3x48
17	0.121.5004.00	1	Input shaft/pinion 15 tooth
18	8.7.3.00055	1	Oilseal 35x72x10
19	8.5.2.00131	1	Circlip internal 72mm
20	8.0.1.00025	1	Bearing 6207
21	8.5.1.00005	1	Circlip external 35mm
22	0.121.7105.00	1	Plug
251	8.2.6.00216	1	Locknut M30x1.5



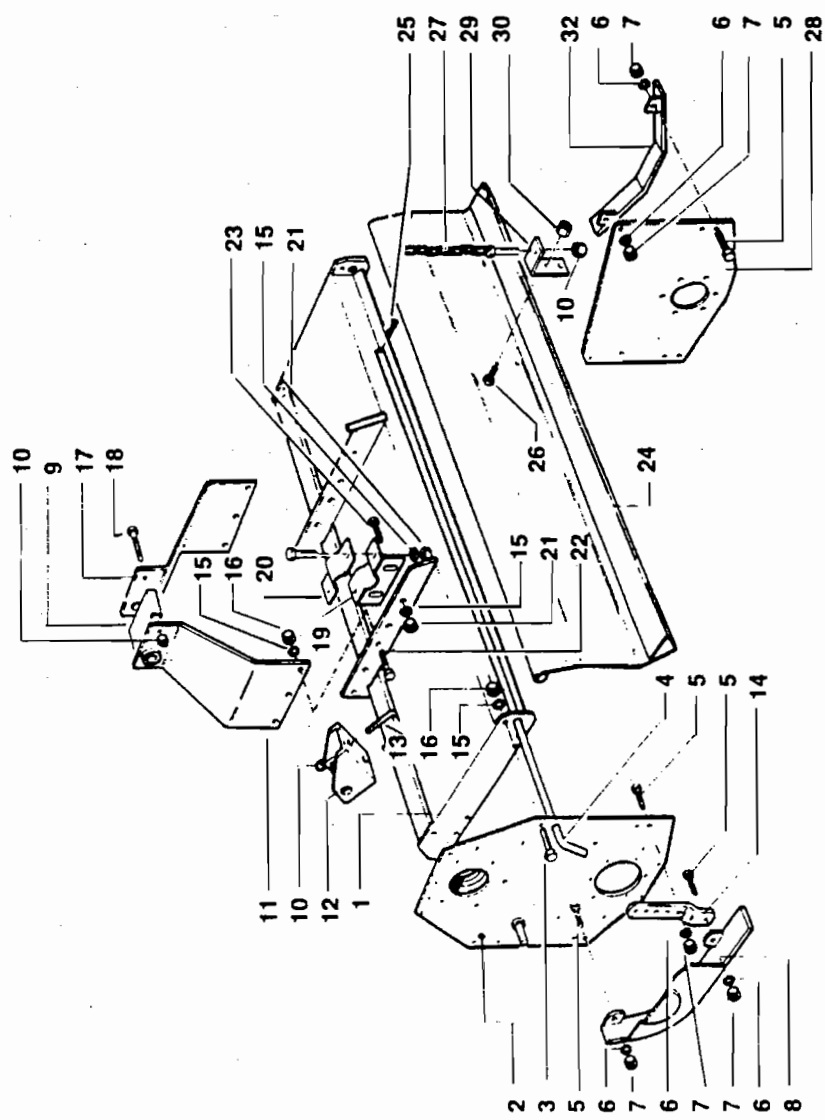


Item	Part #	Qty	Description
1	350330016	1	Gearbox/Jackshaft assembly TLZ-21A
2	450170033	1	Gasket
3	350330010	1	Chaincase
4	320800001	1	Chaincase gasket
5	103100006	14	Oil fill plug
6	103040064	14	Washer M8
7	103120002	1	Locknut M8
8	103140067	6	Oil drain plug
9	103100026	6	Bolt M12x25x1.25
10	350600010	6	Lock washer M12
11	101020008	1	Sprocket 10 tooth
12	350670015	1	Split pin M4x60
13	450660006	1	Special washer
14	103050004	1	Chain skid
15	103050008	2	Locknut M30x1.5
16	350600011	1	Locknut M35x1.5
17	450500071	1	Sprocket 14 tooth
18	450500072	1	Rotor ZB 1.25
18	450500073	1	Rotor ZB 1.45
18	450500073	1	Rotor ZB 1.65
19	103140074	1	Bolt M12x35x1.25
20	112020013	1	Chain 1" pitch-38 pitches
21	350200033	1	Plate
22	103140026	6	Bolt M8x30
23	450370017	1	Rotor stub axle
24	350250015	1	Bearing housing
25	109040002	1	Oilseal 60x45x7
26	103040024	1	Nut M12x1.25
27	116010046L	1	L.H. blade F46
27	116010046R	1	R.H. blade F46
28	103140064	4	Bolt M12x20
29	450440016	1	Extension tube ZB 1.25
29	450440017	1	Extension tube ZB 1.45
29	450440018	1	Extension tube ZB 1.65
30	103140021	14	Bolt M8x20
31	350250014	1	Bearing housing
32	350330011	3	Gasket
33	104010007	1	Bearing 6209
34	104010004	1	Bearing 6306
35	103140071	2	Bolt M12x30x1.25
36	450370016	1	Rotor drive shaft
37	109040006	1	Oilseal 65x50x8
38	103140029	6	Bolt M8x35
39	103100020	6	Lock washer M8
40	103090002	1	Grease zerf M8x1
41	350130006	1	End cap

MULTIVATOR - MODEL ZB - TRANSMISSION PARTS LIST

MULTIVATOR - MODEL ZB - FRAME ASSEMBLY PARTS LIST

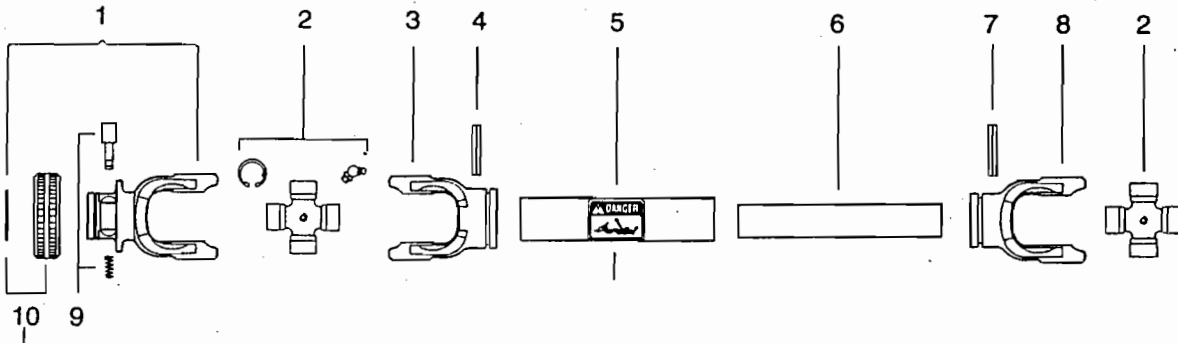
Item	Part #	Qty	Description
1	450650064	1	Frame ZB 1.25
1	450650065	1	Frame ZB 1.45
1	450650066	1	Frame ZB 1.65
2	450420014	1	L.H. side plate
3	103140071	8	Bolt M12x30x1.25
4	350040004	1	Hinge pin 1.25
4	350040005	1	Hinge pin 1.45
4	350040006	1	Hinge pin 1.65
5	103150072	5	Bolt M12x35
6	103100010	5	Washer M12
7	103040022	5	Nut M12
8	450570007	1	L.H. depth skid
9	350660029	1	Spacer plate
10	103040068	6	Locknut M12
11	350404042	1	L.H. top mast half
12	350580156	2	Hitch bracket
13	350140009	2	U-bolt
14	350580118	1	Depth skid adjusting bar
15	103100026	16	Lock washer M12
16	103040024	16	Nut M12x1.25
17	350402042	1	R.H. top mast half
18	103150087	1	Bolt M12x80
19	450610098	2	Support bracket
20	350770022	2	Clamp plate
21	103040022	4	Nut M12
22	103140074	6	Bolt M12x35x1.25
23	103140070	2	Bolt M12x30
24	350150013	1	Trailing shield ZB 1.25
24	350150014	1	Trailing shield ZB 1.45
24	350150015	1	Trailing shield ZB 1.65
25	101020003	2	Split pin
26	103150034	2	Bolt M10x20
27	103030002	1	Chain
28	450420016	1	R.H. side plate
29	350730021	1	Bracket
30	103040066	2	Locknut M10
31	103150084	1	Bolt M12x70
32	450570008	1	R.H. depth skid



**MULTIVATOR
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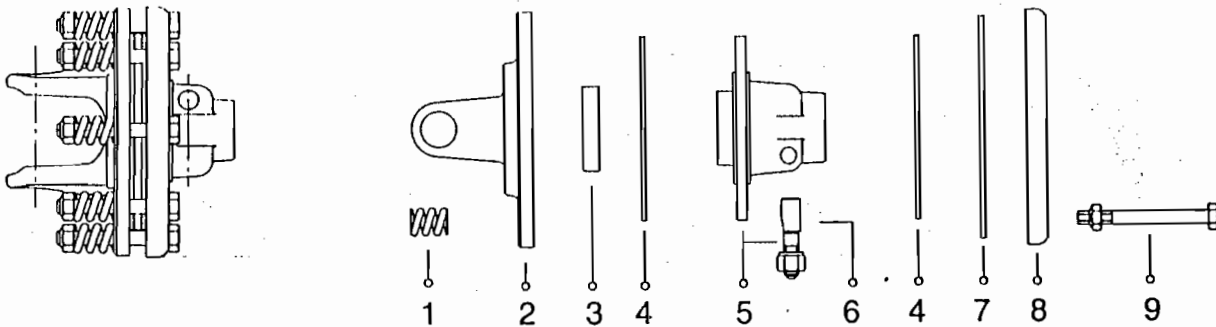
MODEL ZV

PARTS LIST



MODEL ZV PTO SHAFT ASSEMBLY
EQUIVALENT TO BONDIOLI SIZE 4

Ref.	Part Number	Qty	Description
1	204051440	1	Tractor yoke 1 3/8"-6 spline
2	204056906	2	Cross & bearing kit #4
3	204051410	1	Yoke for outer tube
4	204056907	1	Roll pin 8x60
5	204054580	1	Outer tube #4
6	204054590	1	Inner tube #4
7	204056908	1	Roll pin 8x55
8	204051420	1	Yoke for inner tube
9	204056911	1	Push pin kit
10	B240002451	1	RS-collar

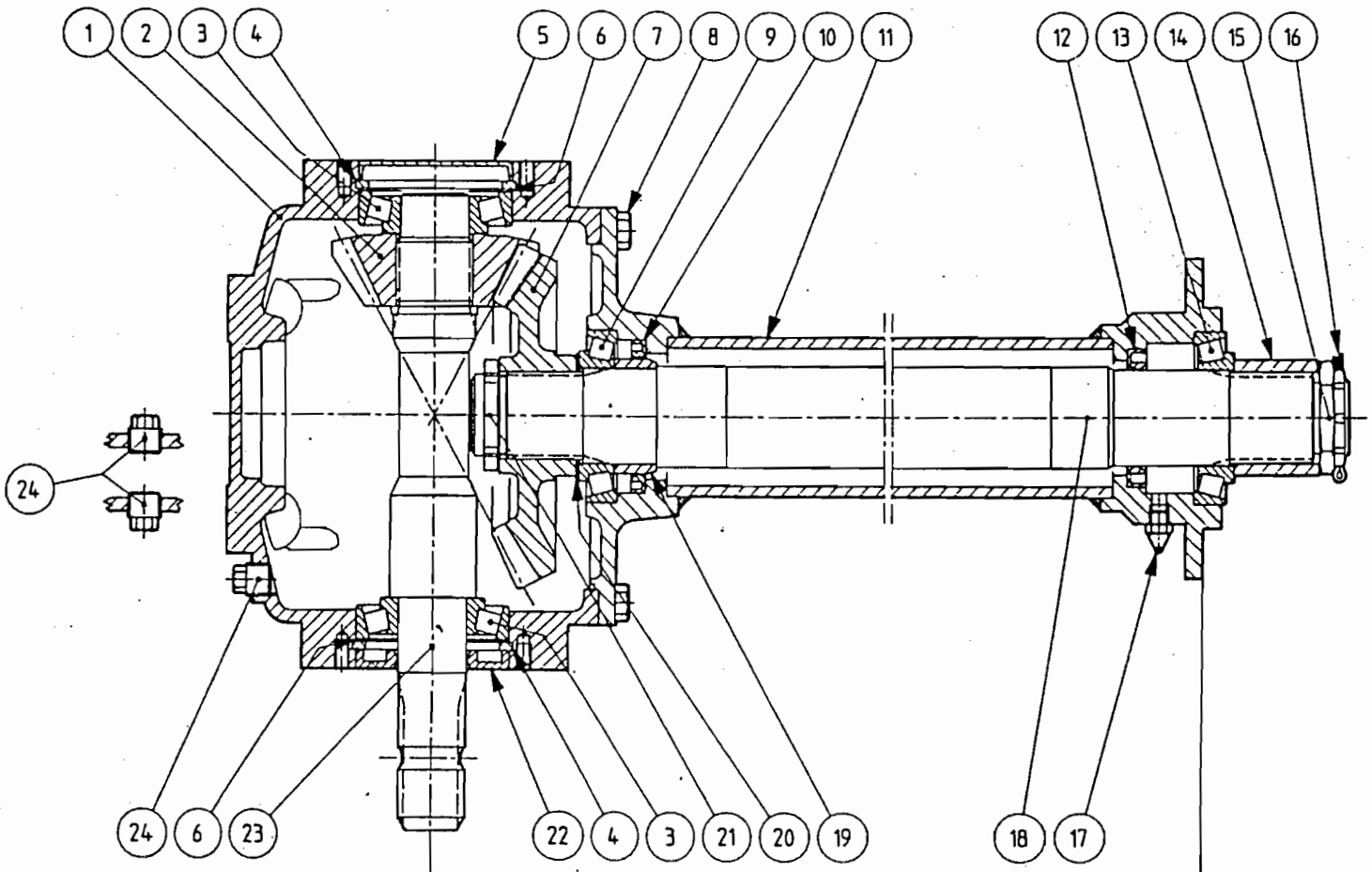


MODEL ZV FRICTION DISC CLUTCH ASSEMBLY

Ref.	Part Number	Qty	Description
	204056949	1	Clutch assembly FF1/#4
1	204056410	8	Spring
2	204056952	1	Flange yoke
3	204056200	1	Centering sleeve
4	204056340	2	Friction disc 140x85
5	204056841	1	Clutch hub
6	204056863	1	Taper lock pin kit
7	204056540	1	Wearing disc
8	204056530	1	Pressure plate
9	301210855	8	Bolt M10x85
9	307210125	8	Locknut M10

MULTIVATOR MODEL ZV GEARBOX ASSEMBLY TLZ-292A

Item	Part Number	Qty	Description
1	0.292.0301.00	1	Gearbox housing
2	0.272.6000.00	1	Pinion gear 15 tooth
3	8.0.9.00129	2	Roller bearing 30307
4	8.5.2.01370	2	Circlip internal 80mm
5	8.7.0.00790	1	Cap 80x10
6	0.110.7500.00	2	Shim 65.3x79.7
7	0.272.5000.00	1	Crownwheel 28 tooth
8	8.1.1.00061	8	Bolt M10x25 gr 8.8
9	8.0.9.00469	1	Roller bearing 30210
10	8.7.3.00737	1	Oilseal 60x80x8
11	2.731.1719.00	1	Jackshaft tube ZV 1.85
12	8.7.3.00620	1	Oilseal 50x72x10
13	8.0.9.00888	1	Roller bearing CLA30210
14	0.701.7112.00	1	Spacer
15	0.132.7107.00	1	Slotted nut M40x1.5
16	8.4.7.01112	1	Split pin
17	8.8.1.00072	1	Grease zerk M10x1
18	0.731.3204.00	1	Jackshaft ZV 1.85
19	0.292.7100.00	1	Sleeve
20	0.350.7500.00	1	Shim 46.3x65.3
21	0.278.7103.00	1	Ring nut M40x1.5
22	8.7.3.00081	1	Oilseal 35x80x10
23	0.292.2000.00	1	Input shaft
24	8.6.5.00006	3	Plug 3/8"



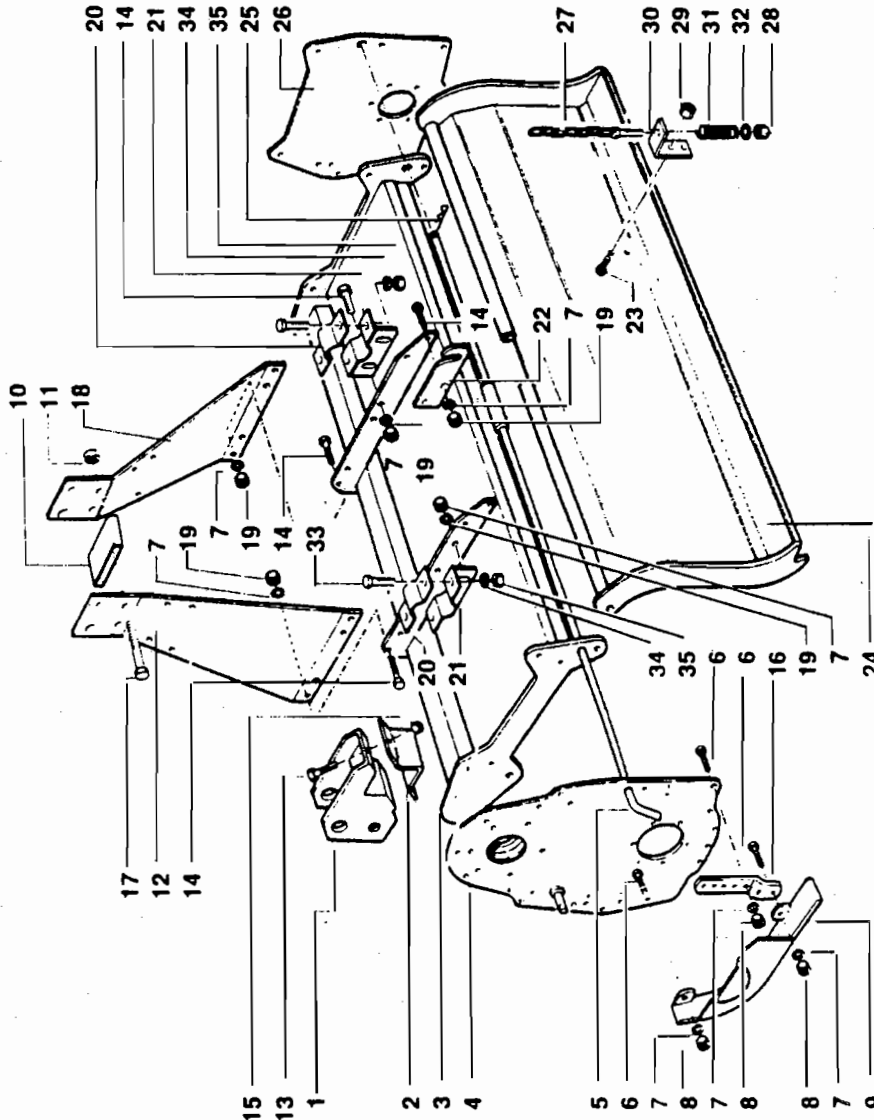
Item

Part #

Qty

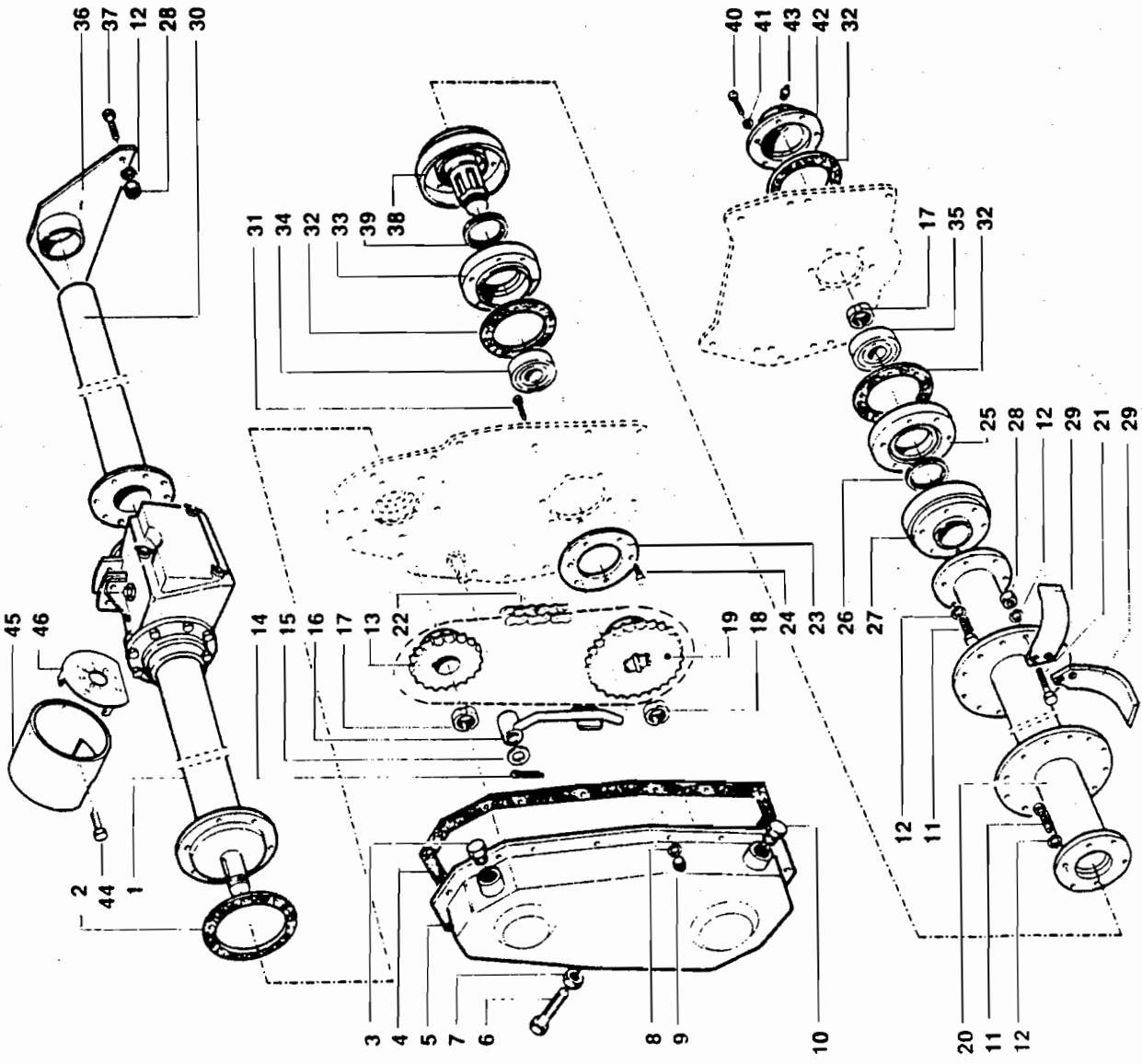
Description

1	450040020	2	Hitch bracket
2	350770012	2	Clamp plate
3	450650033	1	Frame ZV 1.45
3	450650034	1	Frame ZV 1.65
3	450650035	1	Frame ZV 1.85
4	450420009	1	L.H. side plate
5	350040005	1	Hinge pin 1.45
5	350040006	1	Hinge pin 1.65
5	350040007	1	Hinge pin 1.85
6	103150072	1	Boit M12x35
7	103100026	1	Lock washer M12
8	103040022	1	Nut M12
9	450574003	1	L.H. skid (pictured)
9	450572003	1	R.H. Skid (not pictured)
10	350660029	1	Top mast spacer
11	103040068	2	Locknut M12
12	350404044	1	L.H. topmast half
13	103150125	1	Boit M16x45
14	103140074	1	Boit M12x35x1.25
15	103040072	1	Locknut M16
16	350580084	2	Depth skid adjusting bar
17	103150090	2	Boit M12x90
18	350402044	1	R.H. topmast half
19	103040024	1	Nut M12x1.25
20	350770022	2	Clamp plate
21	450610098	2	Support bracket
22	350730016	1	Chain hook
23	103150034	2	Boit M10x20
24	450170009	1	Trailing shield ZV 1.45
24	450170010	1	Trailing shield ZV 1.65
24	450170011	1	Trailing shield ZV 1.85
25	101020003	1	Split pin
26	450420010	1	R.H. side plate
27	450150002	1	Chain
28	103040068	1	Locknut M12
29	103040066	2	Locknut M10
30	350730021	1	Chain bracket
31	350470015	1	Spring
32	103100010	1	Washer M12
33	103150044	4	Boit M10x30
34	103100024	4	Lock washer M10
35	103040014	4	Nut M10



MULTIVATOR - MODEL ZV - FRAME ASSEMBLY PARTS LIST

Item	Part #	Qty	Description
1	350330016	1	Gearbox/Jackshaft assembly
2	320800001	1	Gasket
3	350330006	1	Oil filler plug
4	450170001	1	Chaincase gasket
5	450480001	1	Chaincase
6	103040042	1	Bolt for chainskid
7	103100006	1	Nut M18
8	103040064	14	Washer M8
9	103120002	14	Locknut M8
10	103140067	1	Oil drain plug
11	103100026	1	Bolt M12x25x1.25
12	350600012	1	Lock washer M12
13	101020008	1	Top sprocket 9 tooth
14	350670015	1	Split pin M4x60
15	450660006	1	Special washer
16	103050004	1	Chain skid
17	103050008	1	Locknut M30x1.5
18	350600014	1	Locknut M35x1.5
19	450500005	1	Bottom sprocket 14 tooth
20	450500006	1	Rotor ZV 1.45
21	450500007	1	Rotor ZV 1.65
22	103140074	1	Rotor ZV 1.85
23	112020032	1	Bolt M12x35x1.25
24	350200033	1	Chain 1-1/4" pitch-36 pitches
25	103140026	6	Plate
26	350250015	1	Bolt M8x30
27	109040002	1	Bearing housing
28	450370017	1	Oilseal 60x45x7
29	103040024	1	Rotor stub axle
30	116010043L	1	Nut M12x1.25
31	116010043R	1	L.H. blade F43
32	350850063	1	R.H. blade F43
33	360850064	1	Extension tube ZV 1.45
34	350850065	1	Extension tube ZV 1.65
35	103140021	1	Extension tube ZV 1.85
36	350330011	14	Bolt M8x20
37	350250014	3	Gasket
38	104010007	1	Bearing housing
39	104010004	1	Bearing 6209
40	450420008	1	Bearing 6306
41	103140074	1	Plate for tube support
42	450370016	2	Bolt M12x35x1.25
43	109040006	1	Rotor drive shaft
44	103140029	1	Oilseal 65x50x8
45	103100020	6	Bolt M8x35
46	350130006	6	Lock washer M8
47	103090002	1	End cap
48	103150005	1	Grease zerk M8x1
49	350620044	3	Bolt M8x16
50	450040033	1	Clutch guard
51		1	Guard mounting bracket



MULTIVATOR - MODEL ZV TRANSMISSION PARTS LIST