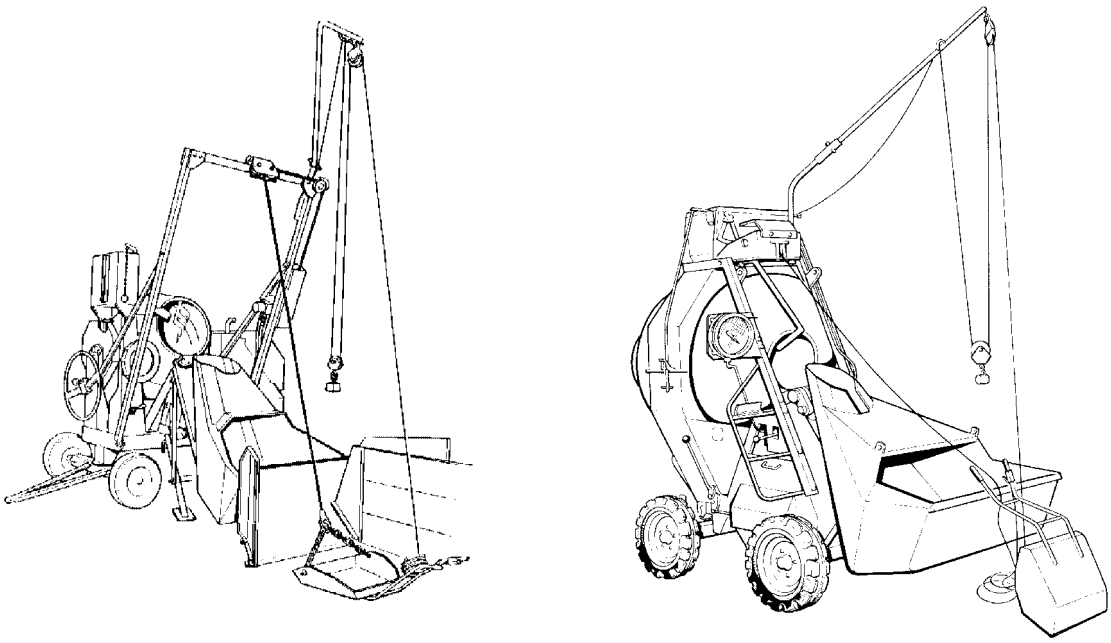
MAINTENANCE INSTRUCTIONS



HYDRAULIC WEIGHING UNITS

WINGET LIMITED
PO BOX 41
EDGEFOLD INDUSTRIAL ESTATE
PLODER LANE
BOLTON
LANCS
BL4 0LS
Tel:-++ 44 (0) 1204 854650
Fax:- ++ 44 (0) 1204 854663
service@winget.co.uk
parts@winget.co.uk
www.winget.co.uk

INTRODUCTION

This manual covers the Batchweigher Loadcell and Guage installed into 200TM Mechanically Fed Mixers and 300R, 400R and 500R Reversing Drum Mixers.

Winget Limited do not recommend that attempts are made in the field to rectify faulty loadcells and gauges as the special tools and equipment required are unlikely to be available. It is recommended that faulty units are returned to Winget Limited for repair or overhaul. However in recognition of the fact that this advice is not always practicable Winget Limited have released this manual subject to the disclaimer below:-

The contents of this manual although correct at the time of publication, may be subject to alteration by the manufacturers without notice and Winget Limited can accept no responsibility for any errors or omissions contained within the following pages. Nor can we accept any liability whatsoever arising from the use of this manual howsoever caused.

Winget Limited operate a ploicy of continuous product development, therefore some illustrations or text within this publication may differ from your machine.

HYDRAULIC WEIGHING UNIT

(British Provisional Patent 15633/59)

"WINGET LIMITED" sealed unit for bulk weighing comprises a load sensing cell coupled hydraulically to an indicating dial gauge of very robust design. The application of a weight to the load cell causes the displacement of a diaphragm of special design and consequently the build up of a hydraulic pressure. This pressure, which is directly proportional to the applied weight, is then measured by the pressure sensitive element in the dial gauge and the pointer is rotated an amount proportiona to the applied weight. The dial of the gauge, which can be either 12" or 18" in diameter, is calibrated in the desired weight units and thus the pointer will indicate immediately the value of the weight which has been applied to the load cell. The sweep of the pointer on the dial is 295° in order that divisions as large as possible may be used.

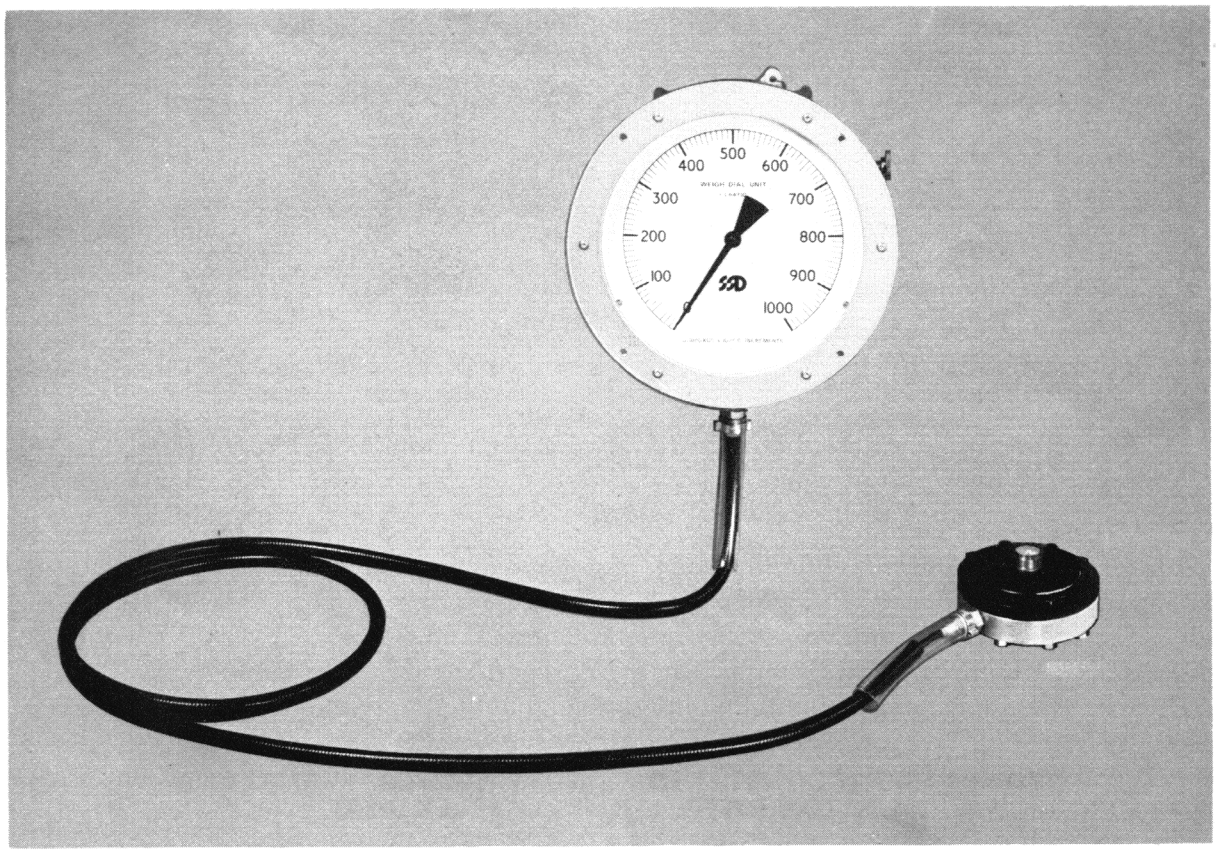
Being completely self contained, with no exposed moving parts, the **"WINGET LIMITED"** HYDRAULIC WEIGHING UNIT offers considerable advantages over conventional types of weighing systems which may employ beams, knife edges, etc. The units are thus particularly valuable for use on concrete mixing or batching plants where dirt and grit may affect the operation of a conventional weighing system.

The hydraulic connection between the cell and the indicating dial gauge is made with a flexible armoured capillary tube which will withstand rough handling and the end fittings have been specially designed to prevent unauthorised tampering with the sealed hydraulic system.

The load indicating dial may be placed remotely from the load cell or at any height above or below it without the calibration being affected, and the very sensitive gauge mechanism is provided with an adjustable pointer dampener should excessive vibration be present in the structure on which it is mounted.

The indicating dial mechanism is provided with an externally operated adjustment so that the pointer may be "zeroed" as desired to compensate for changes in skip or container weights due to the adherence of the material being weighed. Standard "clip-on" pointers, are fitted to the rim of the indicating dial where mixed loads are to be weighed in the same container. These can be supplied in different colours to represent the different materials being loaded.

The accuracy of the hydraulic weighing unit is of the order of + or -3 % of its maximum capacity, *i.e.* the accuracy of indication of weight on a system capable of weighing, say 1000 lbs., will be within + or -30 lbs.



HEAVY DUTY HYDRAULIC WEIGHING UNITS

GENERAL INFORMATION, INSTALLATION, OPERATING AND MAINTENANCE INSTRUCTIONS

1. Introduction

These units consist of a dial indicator connected to a load cell by a flexible capillary tube. Upon the application of a load to a load cell a hydraulic pressure is generated which is transmitted to the indicator through the capillary tube.

The indicator is calibrated in units of nett weight (lbs or kgs) or in the case of liquids - gallons or litres.

WARNING

The system is sealed at the Factory after filling with hydraulic fluid by a special high vacuum process. Any attempt to disconnect the capillary tube, at either end, or to dismantle the load cell will immediately render the whole unit inoperative.

In the event of fluid leakage or damage to the capillary tube, the indicator will give a false reading and the whole unit must be returned for repair to the works or an agent having the necessary fluid filling and calibrating facilities.

Never allow the load cell or the gauge to be suspended by the capillary tube.

Note:

The weighing unit should always be mounted with anti-vibration pads onto the machine structure and we would advise that the machine motor is similarly mounted to give steady pointer reading.

2. Specification

a) Heavy duty pattern, weatherproof indicators for surface mounting.

This indicator is extremely robust, fully weatherproof and capable of withstanding excessive overload conditions. The movement is fitted with a friction type damping device which can be adjusted to reduce pointer oscillation caused by excessive vibrations. Adjustable coloured pointers are provided on the front flange for use as required. A pointer zero re-set device is fitted and this is operated by a knob projecting from the side of the case. 12" (300mm) and 18" (450mm) sizes are available and the indicators can be provided with electrical contacts.

Note:

Although the indicator will withstand extreme overloads, it must be emphasised that the load cell must be protected from excessive shock loads (for example, a skip unladen or laden must not be allowed to drop on to the load cell without restriction).

3. Load Cell Specification

The load cell consists of a central plattern bonded with natural rubber to the walls of the cell body. Standard indicators are fitted with 3 sq. in., 5 sq. in. or 10 sq. in. load cells, depending upon the loads to be applied.

Load cells of greater capacity are also available.

The standard load cells are suitable for the following conditions:-

3 sq. in.	Maximum occasional load	1500 lb. (680 Kg)
	Maximum continuous load	900 lb. (408 Kg)
5 sq. in.	Maximum occasional load	2500 lb. (1134 Kg)
	Maximum continuous load	1500 lb. (680 Kg)
10 sq. in.	Maximum occasional load	5000 lb. (2268 Kg)
	Maximum continuous load	3000 lb. (1361 Kg)

4. Capillary Tube Specification

Flexible nylon tube, terylene braided with an outer nylon coating, protected by a terylene reinforced PVC armouring.

Bursting pressure 11,000 p.s.i. (773.40 Kg/cm²) at an ambient temperature of 20°C.

Operating temperature -40°C to 100°C continuous, or up to 120°C intermittent.

5. Installation

a) Application of Load

The load cell has a central domed button to which the load must be applied by means of a flat, hardened steel plate. A suitable plate must therefore be rigidly fixed to the bottom of the skip or whatever container carries the material to be weighed, and arranged to be at right angles to the load cell centre line when in the weighing position.

Note:

1. For some applications, for example, hanging loads, a 'V' button and ball is fitted as an alternative to the domed button.
2. Weighing units can be supplied for systems employing lever action, offset, unbalanced loading and for other applications where the ratio of the weight of the container and contents are not on a 1:1 ratio to the load on the load cell. In such applications, full details should be provided.

Shock and Overload

The load must be applied to load cell with the minimum amount of shock. The unit will accept an accidental overload (this varies with the calibration) but repeated dropping of an empty skip on to the load cell will eventually rupture the rubber bonding. Any arrestor gear to prevent shock must be arranged so that this does not bear any of the load during the actual weighing process. Buffers or cushions interposed between the skip and the load cell domed button are usually ineffective due to the relatively small movement of the load cell diaphragm.

Note:

The weight of the empty skip or container must not exceed one-third of the total scale reading of the indicator required.

b) Load Cell

The load cell must be positioned to meet all the above requirements of load application and securely bolted to a suitably rigid support which will accept the maximum load with a minimum of deflection. The location should be free from excessive heat and from danger of contamination by mineral oils which adversely affect the natural rubber diaphragm bonding.

Note:

Additional protection has now been provided by the application of a Neoprene coating.

c) Dial Indicator and Capillary

Before mounting, check that the capillary can be conveniently routed, protected from abrasion, excessive heat, etc., and secured avoiding tension, compression, sharp bends or kinks. Excess length should be coiled (min. radius 6" (150mm) and secured to prevent vibration which would otherwise cause pointer oscillation. Securely fix the dial indicator in a vertical position, with anti-vibration pads if necessary. Ensure that the zero adjustment-knob is accessible for tone adjustment. Under no load conditions the pointer will be in a position anti-clockwise from zero on the scale. This is normal and the pointer will approach zero when the weight of the empty skip is applied to the load cell.

6. Operation

The weighing action is entirely automatic giving a direct reading on the dial instantaneously and continuously. The operator should ensure that the skip or container is settling correctly on to the load cell dome, with the smallest possible shock, and check that the pointer reads zero with the empty container at rest.

Zero or tare adjustment

Compensation for any change in weight of the skip is quickly and simply acheived by turning the zero re-set knob in a clockwise or anti-clockwise direction as necessary until the pointer rests at zero.

7. Maintenance

a) Lubrication

DO NOT attempt to lubricate any part of this system. The movement bearings of the indicator are pre-lubricated and the load cell diaphragm will be attacked by any form of mineral oil.

b) Routine checks

Make regular checks of:-

i) Security of load cell and indicator mounting.
ii) Security, protection and condition of capillary.
iii) Hardened steel plate and load cell domed button.
iv) Correct operation of any arrestor gear.
v) Correct application of load to cell.

c) Oil Contamination

In the event of contamination of the load cell by diesel fuel or mineral oil, petrol or paraffin, as quickly as possible remove the drip shield (when fitted) and scrub the top of the load cell with warm water and ordinary soap (not detergents or solvents).

d) Calibration Check

The calibration can be checked by placing known weights in the skip. In the event of error, the calibration can be adjusted but this requires the service of a skilled mechanic. (See Appendix A).

e) Pointer oscillation

Excessive pointer oscillation caused by erratic filling of the skip or container or by external vibrating sources can be damped by means of an adjustable mechanism. inside the dial indicator. (Fitted to Heavy Duty Units only).

Note:

If this adjustment entails removal of the indicator from its mounting take care that the capillary is not in any way strained. Do not disconnect the capillary. (See Appendix B).

HYDRAULIC WEIGHING UNITS

APPENDIX A

POINTER ADJUSTMENT

The instructions set out below are for the adjustment of the pointer only, if the readings are overweight or underweight.

1. Remove backplate.
2. Before adjusting the pointer, release the blue locknut on the pointer oscillation damper and turn the blue hexagon headed screw in an anti-clockwise direction as this will release any restriction on the pointer.
3. Set pointer to read zero on dial by means of adjusting knob on side of case after applying equivalent skip weight to load cell.
4. Take various readings on the gauge by applying known weights and thus giving some indication as to whether the gauge is reading over or underweight.
5. If the gauge reads overweight throughout the complete scale of the dial, slacken off the link screw (painted green) and turn the toggle screw (painted red) in an anti-clockwise direction. Only slight adjustments of the toggle screw should be made. Note: ½ turn of the toggle screw makes approximately 1" difference in linear travel of the pointer (tip).
6. Re-tighten link screw (painted green).
7. If the gauge reads underweight throughout the complete scale of the dial, slacken off link screw (painted green) and turn the toggle screw (painted red) in a clockwise direction, this being the reverse procedure to Note (5).
8. Re-tighten link screw (painted green).
9. Before re-checking calibration it is most important that the gauge pointer should be set at zero, otherwise a false impression of the errors may result.
10. To re-set oscillating damper, see Oscillating Damper Instructions.
11. Re-fit backplate.

APPENDIX B

POINTER OSCILLATING DAMPER ADJUSTMENT

The instructions set out below are for the adjustment of the pointer oscillating damper only.

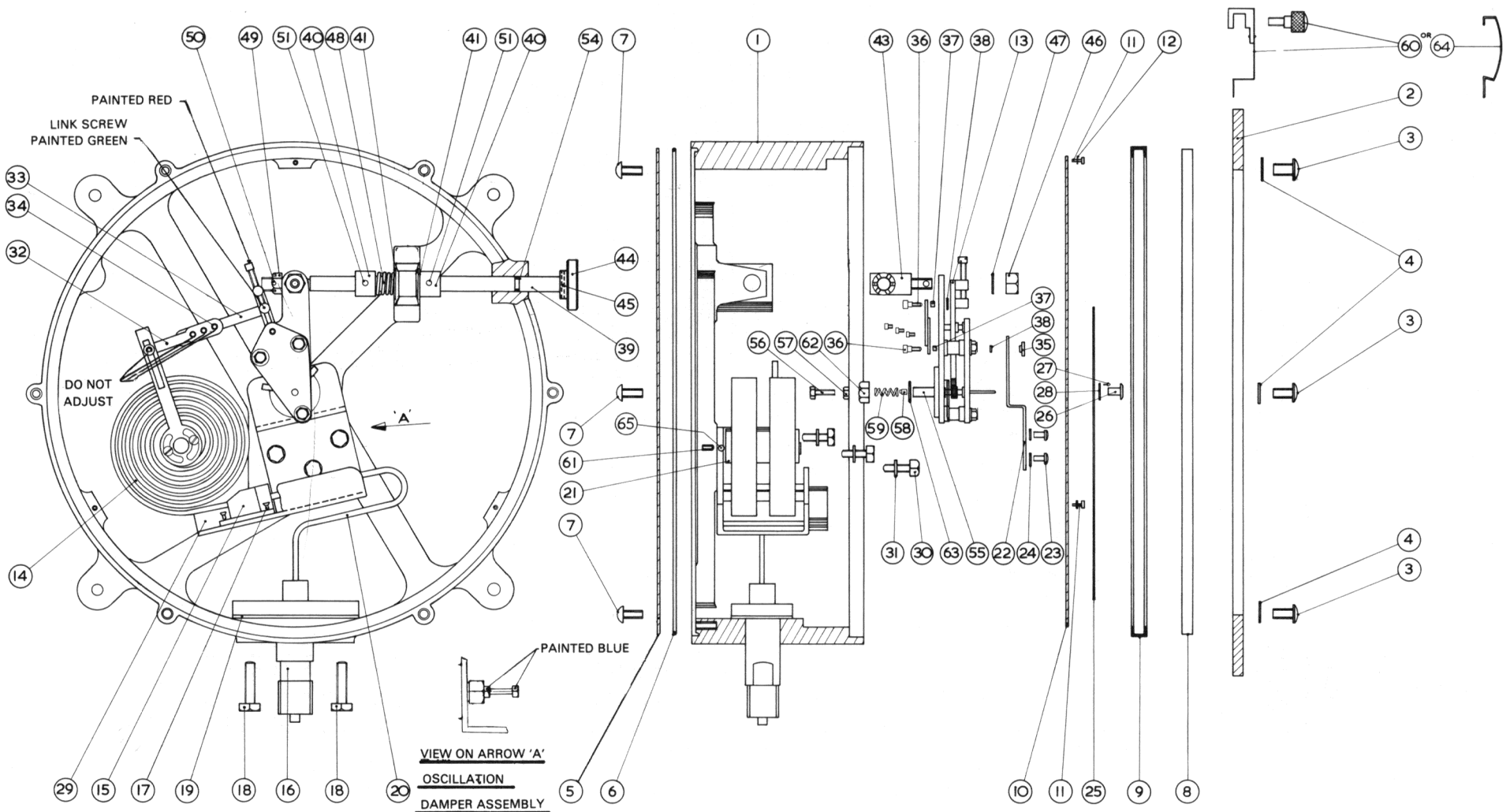
The oscillating damper will be found on the rear side of the movement comprising a small blue hexagon screw with a blue locknut.

With machine running and skip in the "ready to load" position:-

1. Remove backplate.
2. Release the blue locknut.
3. Turn the hexagon headed screw in a clockwise direction until pointer oscillation is reduced to a minimum, at the same time avoid excessive tightening of hexagon headed screw.
4. Add known weights to ensure that application of damper has not affected weight readings.

5. If the readings have been affected this will indicate that the hexagon headed screw has been tightened down too far and it should be released slightly until the readings become accurate.
6. Remove the weights and check that pointer returns to zero.
7. Re-tighten blue locknut.
8. Re-fit backplate.

These instructions are for the adjustment of the pointer and oscillating damper only and on no account should any other form of adjustment take place or screws interferred with as this may result in making the whole unit unserviceable.



HYDRAULIC WEIGHING UNIT

Item No.	Description	Qty	Part No.	Code	DRG. No.
1	Case	1	WDG12-MK.2-1-1		A1-3545
2	Rim	1	WDG 12-2-1		G/1987
3	Rim Screws	6	WDG 12-3-6		None
4	Rim Screw Washers	6			None
5	Backplate	1	WDG 12-4-1		A3-1699
6	Backplate Gasket	1	WDG 12-5-1		A4-3599
7	Backplate Screws	6	WDG 12-6-6		None
8	Window	1	WDG 12-7-1		A4-3599
9	Window Gasket	1	WDG 12-8-1		G/1981/Item 21
10	Dial	1	WDG 12-9-1		A4-3599
11	Dial Screw	3	WDG 12-10-3		None
12	Dial Screw Washers	3			None
13	Movement Assembly	1	WDG 12/18-11-1		G/3241/C
14	Tube	2	WDG 12/18-12-2		A4-3598
15	Tube Block	1	WDG 12/18-13-1		G/1980/Item 11
16	Connection Block	1	WDG 12/18-14-1		G/1980/Item 12
17	Tube Block Screws	4			None
18	Connection Block Bolts	4	WDG 12/18-15-4		None
19	Connection Block Gasket	1	WDG 12/18-16-1		G1988/Item 26
20	Connecting Tube	1	WDG 12/18-17-1		G1988/Item 29
21	Endbit	1	WDG 12/18-18-1		G1980/Item 13
22	Endbit Lever	1	WDG 12/18-19-1		G1738/Item 1
23	Endbit Screws	2	WDG 12/18-20-2		None
24	Endbit Washers	2			None
25	Pointer	1	WDG 12-21-1		G/16/460
26	Pointer Bush	1	WDG 12-22-1		G3696 B
27	Pointer Rivet	1			None
28	Pointer Washer	1	WDG 12/18-23-1		G/16/460
29	Mounting Frame	1	WDG 12/18-24-1		A2/3530
30	Mounting Frame Screws	3	WDG 12/18-25-3		None
31	Mounting Washers	3	WDG 12/18-26-3		None

Item No.	Description	Qty	Part No	Code	DRG No.
32	Link	1	WDG 12/18-27-1		G3446B
33	Slotted Link	1	WDG 12/18-28-1		4G-5169
34	Link Adjustment Screws	3	WDG 12/18-29-3		None
35	Link Nut	1	WDG 12/18-30-1		G3592B
36	Link Screw	2	WDG 12/18-31-2		G3591B
37	Link Screw Brush	2	WDG 12/18-32-2		G3595B
38	Link Washer	2	WDG 12/18-33-2		G3593B
39	Adjustment Rod	1	WDG 12-34-1		3G-5166
40	Adjustment Rod Bush	2			None
41	Adjustment Rod Thrust Washer				
43	Adjustment Pillar	1	WDG 12/18-37-1		G1981/Item 18
44	Adjustment Knob	1	WDG 12/18-38-1		G1979/Item 10
45	Adjustment Knob Pin	1			None
46	Adjustment Pillar Nut	1	WDG 12/18-39-1		None
47	Adjustment Pillar Washer	1	WDG 12/18-40-1		None
48	Adjustment Rod Spring	1	WDG 12/18-41-1		4G5170
49	Adjustment Rod Castle Nut	1	WDG 12/18-42-1		None
50	Adjustment Rod. Nut Cotter Pin.	1	WDG 12/18-43-1		None
51	Adjustment Rod. Bush Cotter Pin	2	WDG/12/18-44-2		4G-5170
54	Spindle 'O' Ring	1	WDG 12/18-47-1		None
55	Swivel Plate	1	WDG 12/18-50-1		G2091/Item 1
56	Damper Adjustment Screw	1	WDG 12/18-51-1		G2091/Item 2
57	Lock Nut	1	WDG 12/18-52-1		G2091/Item 3
58	Friction Pad	1	WDG 12/18-53-1		G2091/Item 4
59	Friction Pad Spring	1	WDG 12/18-54-1		G2091/Item 5
60	Screw-on-Pointer	3	WDG 12-55-3-8		G/9/160 & G1910 Item 8
61	End Bit Bleeder Screw	1	WDG 12/18-57-1		G1980 Item 13a
62	Swivel Plate Nut	1			None
63	Swivel Plate Washer	1			None
64	Clip-on Pointer	3			G/1988 Item 31
65	Steel Ball Bleed Seal	1			G1980 Item 13b

PARTS LIST