

# 40,000PXV OFFSET BRACKET

# MANUAL

## **SPARE PARTS**

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These instructions give safety and operations information regarding the use of an Offset Bracket and Auger Powerhead supplied by Autoguide Equipment. They contain the relevant information for products:

Product Code	Description	Maximum Output Power (Nm)
51235	40,000PX Offset Bracket Right Hand	10,000
51245	40,000PX Offset Bracket Left Hand	10,000

To ensure optimum results when operating this equipment it is very important to read this manual carefully, the information will prepare you to do a better, safer job.

Before operating the machine you should familiarise yourself with the instructions in this manual. Incorrect use can lead to damage which is not covered by the Warranty Conditions. This may create a dangerous situation or lead to unsatisfactory results.

These operating instructions **MUST** always be made available to the person or persons operating this equipment.

To assist in the ordering of spares, or other communications with our company, the serial number of the relevant equipment supplied, has been recorded below for your information.

Model No:-

Serial No:-

Date of Delivery:-

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# INFORMATION

Your Offset Bracket Auger Powerhead has been individually built with great emphasis on quality, strength and simplicity of design and with routine care will give many years of trouble free operation.

The following instructions have been written to cover the use and maintenance of the machine. Care should be taken to ensure that you are referring to the correct section of your machine before carrying out any adjustments, or when ordering spare parts.

Like all mechanical products, regular cleaning, lubrication and maintenance will ensure a longer trouble free life. These instructions make no attempt to go beyond routine maintenance, and it is strongly advised that you contact your dealer should any major repairs become necessary.

Use only genuine service parts; non genuine parts may not meet standards required for safe and satisfactory operation.

#### **Safety Instructions**

- 1. Read and understand this operator's manual prior to operating the machine and keep it in a convenient place for future reference.
- 2. Keep untrained personnel away from the machine whilst it is in operation.
- 3. Keep all guards and safety devices in place.
- 4. Do not operate machine with guards removed.
- 5. Beware, pressured hydraulic oil can be very dangerous and can penetrate the skin TAKE THE UTMOST CARE.
- 6. Keep hands, feet and loose clothing away from moving parts.
- 7. Always switch off the machine before making any adjustments or when carrying out lubrication and servicing.
- 8. Keep all nuts, bolts and fasteners tightened.
- 9. Check machine regularly for damaged or worn parts.
- 10. If the machine is left unattended ensure that it is locked or disabled to prevent use by untrained personnel.

#### **Daily Check Items**

- 1. Check the unit is properly and securely attached to the excavator unit.
- 2. Check that all nuts and bolts are secure, mounting pins are properly retained, and all safety shields are in place. (All nuts and bolts should be checked after the first 10 hours of operation.)
- 3. Check the condition and security of any auger or anchor driver attachment.
- 4. Lubricate all grease nipples.

### **Powerhead Compatibility**

Ensuring that you have the correct powerhead for both the machine and required hole is important to get the best results and prevent damage to both Excavator and powerhead.

Powerhead Model	Compatibili	ty	Hole Size	Soil Type
40,000PX		Backhoe Excavator	24"	Soil/Clay/Rock

#### **Auger Selection**

When digging a hole it is important to know what soil type it is that the auger will be trying to penetrate. With this information the correct auger can be selected to give increased penetration and speed.

Soils are classified into 9 categories ranging from hard rock to loose silt. To determine which category will be being augured, a soil probe kit is available from Autoguide Equipment.

Class	Common Soil Type	Geological Soil Classification	Probe Values	Typical Blow Count in/labs (Nm)
1	Sound, hard rock – Unweathered	Granite, Basalt, Massive Limestone	N/A	N/A
-	Very dense and/or cemented	Caliche (Nitrate-bearing	750-1600	60 100
	sands, Coarse gravel & Cobbles	Gravel/Rock)	(85-181)	60-100+
-	Dense, Fine Sands, very hard	Basalt Till, Boulder Clay, Caliche,	750-1600	45 60
	silts & clays (may be pre-loaded)	Weathered Laminated Rock	(85-181)	45-60
L	Dense sands & gravel, hard silts	Glacial Till, Weathered Shale's,	600-750	35-50
	& clays	Schist, Gneiss & Sandstone	(68-85)	30-00
5	Medium dense sand & gravel;	gravel; Glacial Till, Hardnan, Marls	500-600	24-40
	very stiff to hard silts and clays	Clacial Hil, Hardparl, Maris	(58-68)	27 70
G	Medium dense coarse sands & sandy gravels: stiff to very stiff	Saprolite's Residual Soils	400-500	14-25
	clays		(45-56)	17 20
7	Loose to medium dense fine to coarse sands to stiff clays and	Dense Hydraulic Fill, Compacted	300-400	7-14
	silt	Fill, Residual Soils	(34-45)	
	Loose, fine sands; alluvium;	Flood Plain Soils. Lake Clays,	100-200	4-8
	loess; medium & varied clays, fill Abode, Fill		(11-25)	
9	Peat, organic silts, inundated silts, fly ash, very loose sands, very soft	Miscellaneous Fill, Swamp Marsh	Less than 100	0-5

Once the soil classification is known the appropriate auger can be selected.



#### **Aggressor Augers**

Designed for drilling in loose soil and sand, Aggressor Augers come in 1.2m lengths, with an optional 1m extension.

These suit powerheads with up to a maximum rated output of 4500Nm. They use a 2" hexagon socket industry standard drive. Standard teeth are bolt on drop forged high carbon steel and carbide versions are available.

#### **Heavy Duty Augers**

Designed for drilling in dense gravel and soil, Heavy Duty Augers come in 1.2m lengths, with an optional 1m extension

These suit powerheads with up to a maximum rated output of 15,000Nm. They use a 2" hexagon or 65mm hexagon drive. Teeth are drop forged special steel or carbide tipped, retained with a rubber lock system.

#### **Rock Ripper Augers**

Designed for drilling solid rock, Rock Ripper Augers come in 1.2m lengths, with an optional 1m extension

These feature a unique computer generated tooth layout utilising self-sharpening carbide teeth which rotates in work. Whilst they do not perform well in hard clay soils, they will drill all materials up to hard concrete. Drilling performance in hard conditions depends on the application of sufficient down force. If additional down force is require a Rockmaster hammer system is available from Autoguide.

Autoguide have a wide range of different Augers available to dig holes ranging from 6" to 36" diameter in all soil classifications. These can be both rented and purchased.

# **POWERHEAD INSTALLATION**

The safe operation of this equipment is the responsibility of the operator, who should be familiar with the lifting process, the power unit and all safety practices before starting operations.

The Autoguide Offset Bracket and Auger Powerhead has been designed to enable a powerhead to be attached to the backhoe of an excavator whilst having minimal impact on its generic usage and stowage.

- SAFETY: Never place any part of your body where it could get trapped, crushed or injured. Careful operation and a common sense approach will ensure you achieve these objectives.
- IMPORTANT: The Offset Bracket unit is a welded construction and therefore cannot be dismantled for servicing. In the unlikely event that a problem arises, the unit must be returned to Autoguide Equipment Ltd for any repair or service work.

#### **Installing the Bracket**

- 1. Remove the backhoe bucket from the excavator boom.
- 2. Position the offset bracket on the ground with the mounting location on the offset bracket accessible and the powerhead underneath.
- 3. Move the backhoe boom until it is positioned within the offset bracket with the mounting pins locations aligned.
- 4. SWITCH OFF the power unit.
- 5. Lubricate the mounting pins.
- 6. Attach the bracket to the backhoe using the mounting pins. Ensure that it is mounted facing the correct way.



- 7. De-pressurise hydraulic systems using the manufacturers approved techniques before connecting the Powerhead.
- 8. Ensure all connections are clean and free from dirt before connecting the Powerhead hydraulic supply into the power units' auxiliary hydraulic supply.

# Note: Hose size and condition of any quick couplers that are used will have an effect on the efficient operation of the unit.

9. Disconnect the hoses from the motor, connect together and flush the system through for a minimum of 10 minutes to ensure any debris from installation is removed by the filter system of the supply.

# Note: All hydraulic motors are sensitive to foreign objects in the hydraulic oil. Debris can cause damage thus reducing the efficiency and output power of the motor.

- 10. Reconnect to the motor, ensuring no debris gets on the connections.
- 11. Raise the backhoe boom to lift the powerhead and bracket.
- 12. Operate the digger's auxiliary circuit to test the Powerhead and ensure rotation.
- 13. Raise, lower and fold the backhoe to make sure that there is no interference with the boom or offset bracket.
- 14. Once complete, either lower the auger unit to the ground while not in use or fold the backhoe into its stowage position.

#### Excavators without an Auxiliary Hydraulic Circuit

On older models of backhoe excavators an auxiliary hydraulic circuit isn't installed along the boom. In such instances a 6 Port Solenoid Diverter Valve is required to direct the flow either to the bucket ram or to the auger powerhead via a switch within the cab. This removes the requirement for an addition hydraulic circuit to be fitted.

The 6 port diverter value is fitted onto the backhoe and protected with a steel frame. A positive power input will direct the flow to the auger powerhead.

As the swivel block design of the bracket allows the powerhead to hang free, it removes the need for the bucket ram to be operational once the powerhead is deployed.





#### **Preparing the Powerhead**

System checks are required prior to use to ensure the system is free of foreign objects that can cause damage.

- 1. Connect the double acting services together and flush the system through in both directions for at least ten minutes to ensure that any debris from installation is removed by the filter system of the supply.
- 2. Reconnect the two hydraulic lines to the powerhead.
- 3. Raise and lower the backhoe to make sure that there is no interference with the boom or swivel bracket.
- 4. Once complete, lower the auger unit to the ground while not in use.

#### **Pre-operation check list**

- 1. Keep bystanders away from all rotating attachments.
- 2. Ensure you are aware of the environment you are working in; be aware of overhead cabling and other utilities services.

# **POWERHEAD OPERATION**

#### **Operating the Offset Bracket**

This method utilises the auger tube, catching and securing it within a latch. The latch is designed with manual opening, an automatic locking system and an additional safety lock for transport.

The auger hangs from the centre of the bracket when working, but stows at an angle to permit full backhoe articulation and stowage. The system usually uses 1m long augers as the backhoe can only accommodate this length when folded, although extensions are available where required.

#### **Releasing the Powerhead**

1. Unfold the backhoe boom until the final extension is parallel to the ground.



2. Using the bucket ram, position the bracket mount so that the powerhead and auger hang vertically with no load on the latch.



3. Pull down the safety locking pin located on the latch mechanism and twist to lock into the open position.



4. Using the handle, pull the latch open. It will lock into an open position

5. Slowly change the angle of the bracket mount using the bucket ram on the backhoe to move the bracket away from the powerhead.



6. Allow the powerhead to hang free and fold the bracket up until parallel to the backhoe arm and causing minimal interference.



7. Test the powerhead to ensure rotation in both directions.

If using an older excavator without an auxiliary hydraulic circuit, operate the switch in the cab to direct the hydraulic flow from the bucket ram to the powerhead.

#### **General Principles of Operation**

All powerheads are designed to stall at the rated operating pressures before anything breaks, however continuous operation of stalled motors will overheat the hydraulic system and cause expensive damage. Therefore operate as fast as required but avoid excessive motor stall.

When drilling it is better to remove the auger from the hole when it is half full of soil and remove the excess. If loose material comes beyond the top of the auger it may act as an anchor and prevent the auger from being raised. In such cases engage reverse to get it out.

Always replace worn teeth before damage occurs to the tooth holders. Regular hard face welding will extend the auger life.

Rock Ripper augers will drill very hard material but the rate of penetration depends on the down force available. The Rockmaster hammer system available from Autoguide permits high penetration rates.

In hard material careful addition of water to the powder material in the hole will allow the auger to work at increased rates.

#### Note: Do not operate the powerhead while in the bracket

The powerhead must always hang free when drilling or anchoring – the unit is not designed for side loads. You can, however use the folding bracket to support the head when loading or transporting ground anchors.

### **Drilling Holes**

1. Attach the Auger to the powerhead by sliding it over the hexagon bar output.



- 2. Insert the safety pin through the corresponding holes on both the auger and powerhead.
- 3. Carefully raise the powerhead on the backhoe into position with the tip of the auger resting on the ground *a*t the desired hole position.



- 4. Operate the auxiliary circuit on the digger to start the powerhead turning.
- 5. Let the auger penetrate the surface. It may require some additional downwards force depending on the soil classification.
- 6. Gradually bore out the hole, removing the auger at regular intervals to remove the excess material.

### **Inserting Single Helix's**

The offset bracket comes equipped with a driver capable of inserting AB Chance Helix Flights and Pisa rods into the ground for anchoring supports. The attachment is supplied as a 2m or 3m length as required.

1. The attachment is held onto the offset bracket using two pins. With the bracket laying on the ground, remove the two pins and lift the bracket up using the boom. The extension will be left on the ground.



- 2. Attach the extension to the powerhead in the same style as an auger using the pin supplied.
- 3. Attach the helical flight and Pisa rod together and insert into the end of the extension, securing at the top with the pins supplied.
- 4. Position the powerhead using the backhoe in the desired position ready to insert the helix.
- 5. Insert the helix into the ground.
- 6. If the model you have is a 40PX it will have a gauge on the front. Use the gauge to determine the torque that you are installing the helix to.
- 7. Remove the two pins holding the Pisa rod in place and then remove the extension from the ground without twisting, leaving the flight secured in the ground with the rod end above ground level.

### **Storing the Powerhead**

1. Position the backhoe boom horizontal with the powerhead hanging free.

2. Using the bucket ram bring the bracket arm down to meet the powerhead slowly.





3. Continue to lower the offset bracket until the latch snaps shut with the powerhead secured within it. The latch will automatically open under pressure as arm pivots round.

4. Release the safety locking pin and lower into place.



5. Using the bucket ram fold the bracket and powerhead parallel to the boom and the backhoe into its stowage position.



6. The powerhead is now stored securely.

# TROUBLESHOOTING

Symptom	Possible Cause	Action
Jerky Cold Oil		Allow time to warm up
	Air in Pipes	Check oil Level
	Non Compatible Quick Couplers	Use Matched pairs
	Non Compatible Quick Couplers	Replace
	Hoses too small for flow	Replace
	Wrong Model Powerhead	Select appropriate model
Slow	Pump Failing	Carry Out flow and Pressure Check
	Oil Filter Blocked	Carry Out flow and Pressure Check
	Dirt Contamination	Service Exchange Motor
	Low Speed Lock Engaged	Put Selector in Auto
	Low Hydraulic Pressure	Carry Out Flow and Pressure Check
Poor Torque	Excessive Oil Temperature	Check Pump, Check Hose Sizes, Use Correct Powerhead
	Relief Valve Blows	Use smaller Auger or Larger Powerhead
	Loose Fittings	Tighten Up Fittings
Oil leaks	Leaky Connections	Reseal or check Configuration
	Pressure Too High	Use compatible head and fittings
	Drain Link is Kinked	Check 2 bar max back Pressure. Replace Relief Valve.
Leak from Relief Valve	Non Return Valve Seizes	Remove unit and check ball is free moving. Ball can become wedged & sticky, due to high pressure (over 20 bar) or extended storage. Replace valve & relief valve

# END OF LIFE

When the machine reaches the end of its useable lifetime it is important that the independent elements of the machine are reused, recycled or disposed of suitably.

Component	What to do?
Metals	All metals should be recycled with an appropriate scrap metal merchant, preferable sorted into metal type.
Electronics	All electrical components should be recycled at an appropriate facility according to the WEEE Directive and Regulations 2013
Oils	Oil waste is classed as Hazardous and therefore must be stored separately and according to legal regulations (that differ dependent on country). It must be disposed of be a suitable Waste Oil collection company.
Hydraulic Hoses	Hydraulic hoses should be drained of oil, metal ends removed and then recycled with a suitable specialist recycling company. Metal ends can be sent to metal recycling centers.
Plastics	All plastics should be sorted into recyclable and no recyclable and then either sent to suitable recycling facilities or landfill.

# **SPARE PARTS**

### 51235 - 40,000PX Offset Bracket Right Hand



Description 40,000PX Offset Bracket Right Hand		
uantity		
1		
1		
1		
1		
1		
1		

### 51199 - 40,000 PX Offset Brkt GA RH



CodeDescription5119940,000 PX Offset Brkt GA RH

No.	Code	Description	Quantity
1	51200	Offset Bracket Arm WA RH	1
2	23620	Swivel Universal Block	1
3	51223	40,000 PX Power Head GA	1
4	51224	6 Bolt Flange to 65 Hex WA	1
5	51201	Offset Bracket Latch GA RH	1
6	36712	JCB Pin	2
7	38844	1 ¼" Pin	1
8	50496	Top Pin	1
9	03107	Link Pin	2
10	05410	Lynch Pin	2
11	02137	Grease Nipple M6	2
12	08300	Grub Screw M6	2
13	02703	Bolt M10 x 65mm	3
14	01583	Bolt M10 x 120mm	1
15	02702	Washer M10	2
16	02523	Nyloc M10	4
17	10796	Bolt M16 x 65mm	6
18	03941	Nyloc M16	6

### 51201 - Offset Bracket Latch GA RH





CodeDescription51201Offset Bracket Latch GA RH

No.	Code	Description	Quantity
1	51221	Latch Catcher WA RH	1
2	51206	Latch Arm GA RH	1
3	51208	Latch Lever WA RH	1
4	51212	Latch Clamp Plate	1
5	51202	Pivot Pin WA	1
6	04084	Washer 1"	2
7	02838	Spring	1
8	02455	Bolt M8 x 70mm	1
9	02496	Nyloc M8	1
10	02872	Bolt M10 x 40mm	6
11	02702	Washer M10	12
12	02523	Nyloc M10	6
13	02104	Washer M16	2
14	02366	Washer M16 Form G	1
15	03941	Nyloc M16	2

### 51206 - Latch Arm GA RH



# CodeDescription51206Latch Arm GA RH

No.	Code	Description	Quantity
1	51204	Latch Arm WA RH	1
2	03248	Bush	2
3	10722	Spring Bolt	1
4	12688	Handle	1
5	02137	Grease Nipple M6	1
6	10345	Button Screw M6 x 25mm	4
7	02513	Nyloc M6	4
8	02329	Bolt M10 x 25mm	2
9	02525	Spring Washer M10	2
10	02702	Washer M10	2

### 51245 - 40,000PX Offset Bracket Left Hand



Code	Description
51245	40,000PX Offset Bracket Left Hand

No.	Code	Description	Quantity
1	51244	40,000 PX Offset Brkt GA LH	1
2	51234	40,000 PX Offset Bracket Hyd	1
3	46668	1M 65mm Hex Extension Assy	1
4	46652	Auger 18" RR 1.2M 65mm Hex Assy	1
5	51707	Driver 65 Hex 35sq 2M GA	1
6	51708	Driver 65 Hex 45sq 2M GA	1



CodeDescription5124440,000 PX Offset Brkt GA LH

No.	Code	Description	Quantity
1	51257	Offset Bracket Arm WA LH	1
2	23620	Swivel Universal Block	1
3	51223	40,000 PX Power Head GA	1
4	51224	6 Bolt Flange to 65 Hex WA	1
5	51256	Offset Bracket Latch GA LH	1
6	36712	JCB Pin	2
7	38844	1 ¼" Pin	1
8	50496	Top Pin	1
9	03107	Link Pin	2
10	05410	Lynch Pin	2
11	02137	Grease Nipple M6	2
12	08300	Grub Screw M6	2
13	02703	Bolt M10 x 65mm	3
14	01583	Bolt M10 x 120mm	1
15	02702	Washer M10	2
16	02523	Nyloc M10	4
17	10796	Bolt M16 x 65mm	6
18	03941	Nyloc M16	6

### 51256 - Offset Bracket Latch GA LH





CodeDescription51256Offset Bracket Latch GA LH

No.	Code	Description	Quantity
1	51259	Latch Catcher WA LH	1
2	51262	Latch Arm GA LH	1
3	51258	Latch Lever WA LH	1
4	51212	Latch Clamp Plate	1
5	51202	Pivot Pin WA	1
6	04084	Washer 1"	2
7	02838	Spring	1
8	02455	Bolt M8 x 70mm	1
9	02496	Nyloc M8	1
10	02872	Bolt M10 x 40mm	6
11	02702	Washer M10	12
12	02523	Nyloc M10	6
13	02104	Washer M16	2
14	02366	Washer M16 Form G	1
15	03941	Nyloc M16	2

### 51262 - Latch Arm GA LH



# CodeDescription51262Latch Arm GA LH

No.	Code	Description	Quantity
1	51260	Latch Arm WA LH	1
2	03248	Bush	2
3	10722	Spring Bolt	1
4	12688	Handle	1
5	02137	Grease Nipple M6	1
6	10345	Button Screw M6 x 25mm	4
7	02513	Nyloc M6	4
8	02329	Bolt M10 x 25mm	2
9	02525	Spring Washer M10	2
10	02702	Washer M10	2

### 51223 - 40,000 PX Power Head GA



Code Description	
51223	40,000 PX Power Head GA

No.	Code	Description	Quantity
1	50504	Body WA	1
2	50497	Top Plate WA	1
3	08582	Gearbox	1
4	27913	Motor	1
5	50544	Gauge Backing Plate WA	1
6	50586	Gauge Box WA	1
7	51243	Gauge Scale	1
8	08635	6" Gauge	1
9	03424	Bolt M8 x 45mm	3
10	02977	Washer M8	3
11	02521	Washer Spring M8	3
12	01158	Bolt M10 x 30mm	4
13	02702	Washer M10	8
14	02523	Nyloc M10	4
15	02352	Bolt M14 x 55mm	12
16	03008	Washer M14	24
17	03006	Nyloc M14	12
18	02363	Bolt M16 x 50mm	8
19	02104	Washer M16	16
20	03941	Nyloc M16	8



Code Description	
51234	40,000 PX Offset Bracket Hyd

No.	Code	Description	Quantity
1	51238	Hose Kit	1
2	08889	QR FF 1" M	1
3	06996	QR FF ¾″ M	1
4	01136	Tee FMM ½"	1
5	04111	Barrel Nut ½"	1
6	05530	Adaptor BSPP SAE O-Ring	2
7	01891	Adaptor MM ½" – 1"	1
8	01099	Adaptor MM ½" − ¾"	1
9	01097	Adaptor MM ½"	1
10	08643	Adaptor MF 3/8" – ½"	1
11	08787	Gauge Cutting Ring ½"	1
12	02182	Bonded Seal ½"	2
13	01159	Bonded Seal ¾"	1
14	04808	Bonded Seal 1"	1



Code	Description
51238	Hose Kit

No.	Code	Description	Quantity
1	51239	Hose 1 Gauge	1
2	51241	Hose 2 Feed	1
3	51242	Hose 3 Return	1



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