LITTY
HANDELSGESELLSCHAFT MBH

Operating Instructions

PIRANHA III

Gringding Machine for Tungsten Electrodes

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Operating Instructions

PIRANHA III

This grinding device is particularly designed for tungsten electrodes. It is intended for stationary use only and meets all of the requirements to a state-of-the-art quality product. Without additional tools, it allows for an easy grinding, cutting and flattening of electrodes.
Besides the standard version, diamond wheels with different graining are available, sometimes required for specific kinds of material.

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FEATURES

- Compact device with an outstanding accuracy and repeatability
- Rugged construction, adapted to harsh environmental conditions
- Grinding in longitudinal direction for easy ignition and highest stability of the arc
- Convenient for electrode diameters (with holder) between 1.0 and 3.2 mm. Without holder (manual procedure) from 4.0 to 4.8 mm
- Range of grinding angle between 10° and 60°
- Suitable also for short electrodes (min. 45 mm)
- Depth adjustment to flatten the tip
- Integrated cutter for a simple breakdown of electrodes
- Grinding dust is internally collected. Simple disposal without external extraction system
- Integrated facility to remove worn tips
- High grinding power ensures rapid process cycle
- Circular grinding with maximum precision

ADVANTAGES

- Safe use
- Optimum welding results
- High productivity

SPECIFICATION

Electrode diameter:	1.0 mm, 1.6 mm, 2.0 mm, 2.4 mm, 3.2 mm, 4.0 mm, 4.8 mm
Minimum electrode length:	45.0 mm
Voltage:	100/120 Volt AC, 50/60 Hz, 220V
Power requirement:	500 W
Motor:	1/10 PS, 3000 rpm, 2,5
Length:	340 mm
Width:	180 mm
Height:	240 mm
Weight:	21.00 kg

WARRANTY

All parts of the **Piranha III** grinding machine are covered by a warranty of one year. The grinding wheel is considered as a consumable part and therefore not included.
This warranty shall not apply to any equipment which has been subject to misuse, negligence, applications beyond specification, accidents, fire or exposure to any other service than that it was designed.

SAFETY NOTES

All personnel involved with the installation, operation or maintenance must review and follow these notes to avoid personal injury and equipment hazard.

- The machine should never be running in the absence of the operator. An inattentive member of the staff may touch the turning grinding wheel. In case of doubt, the machine should be stopped and then separated from power supply. Do not remove the plug while the wheel is still in motion.
- The rules for prevention of accidents have to be respected.
- Suitable workwear is mandatory (safety glasses, hair protection). Do not wear handgloves when working. Loose items like ties, watches etc. are strictly forbidden.
- Any service by unexperienced, drunken or other personnel not aware of the inherent danger, is not admissible.
- Provide for a sufficient illumination in the working area.
- Before starting any maintenance procedure, the power has to be removed. Electrical work should only be performed by a qualified technician.
- Defective parts have to be replaced immediately. Provisional repair may increase the damage and represents a violation of warranty regulations.
- The machine should always be operated for the intended purpose in conformity with the specification.
- External forces on a tungsten electrode in the grinding process are not only unnecessary they may even have detrimental consequences, like the jamming of the machine or a premature wear of the wheel.
- Keep your hands away from moving parts.

UNCRATING AND INSTALLATION

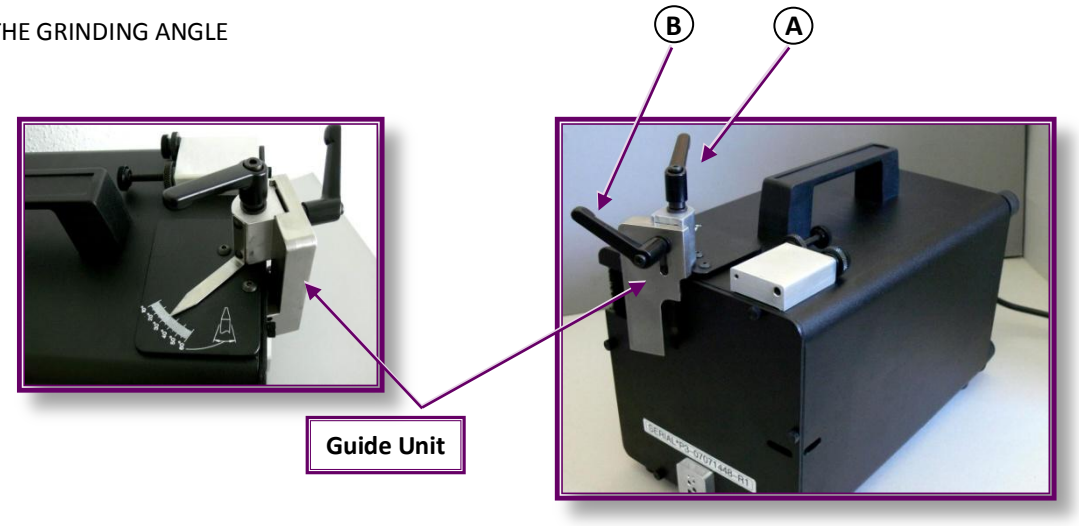
Upon receiving the machine, remove the shipping crate and check for damage. In case of need, the carrier and our factory service should be informed at once. The following items should be contained in the package:

- Grinding machine for tungsten electrodes, Piranha III model
- Three Allan keys: 2 x 3/32", 1 x 7/64", (required to exchange grinding wheels)
- User manual
- Electrode holder

The machine should be placed on a flat surface. Provide for a sufficient area around it. This ensures the required ventilation, and the operator will be able to work without obstructions.
The power switch should be in the **OFF** (*AUS)* position, then the machine can be connected to the mains.
Never draw off the power plug, when the machine is still switched on.

INITIAL WORK BEFORE STARTING TO GRIND

SETTING THE GRINDING ANGLE



The grinding angle is adjusted using lever (A) shown above. When loosening this lever, the guide unit can be rotated, until the pointer is directed to the desired angle on the scale (standard value 28°).

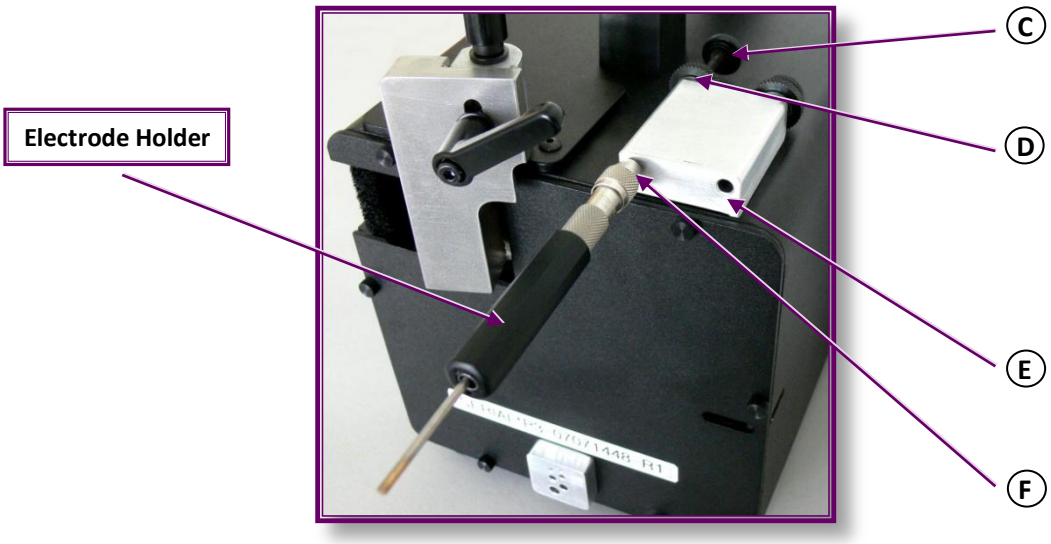
Lever (B) however sets the vertical position of the guide unit and refers to the contact point of electrode and grinding wheel. This position should be altered in regular intervals, otherwise the electrodes continuously touch the same wheel position which entails scoring at the surface.

SETTING THE ELECTRODE HOLDER (COLLET CHUCK)

After grinding angle and positioning, the next parameter to adjust is the projecting length inside the electrode holder resp. the collet chuck.

Proceed as follows:

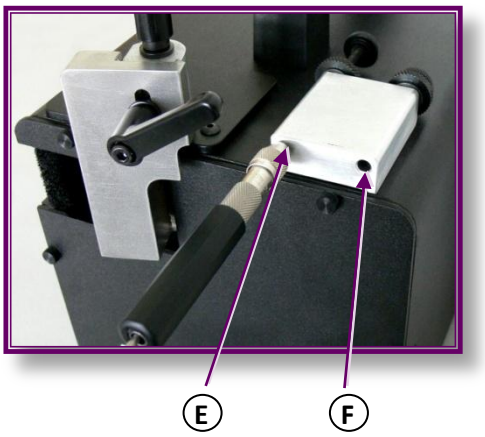
- An electrode with a projecting length of ca. 40 mm has to be fixed inside the holder.
- Switch on the machine.
- Push the electrode through the boring with the corresponding diameter (at the guide unit), until it touches the grinding wheel.
- The holder (and the electrode) have to be rotated with constant pressure, until a concentric tip is achieved
- The procedure ends, when the fixture contacts the guide unit, or the noise of grinding ceases..
- The electrode should be acute. If it is still flat, increase the proceting length and grind again. If necessary, the whole procedure has to be repeated several times.
- On the other hand, if the selected projecting length is too high (long grinding process / strong shortening of the electrode), proceed in the opposite way.
- As soon as an optimum grinding result is achieved, the setup has to be conserved.
- Therefore - without changing the projecting length - push the electrode together with the holder through (E) or (F) boring (depending on the diameter), see below.
- Turn the screw (C) (upwards or downwards), until the depth matches the projecting length between electrode and holder. A tolerance of 1 mm is advisable.
- This setup can be used for all subsequent grinding operations.



PRINCIPLE OF GRINDING

Once the setup is complete, it is not difficult to start grinding the electrode:

- Switch on power.
- Push the electrode into the holder, and adjust the projecting length by introducing the item into the (E) or (F) boring.
- As soon as the electrode is stable in place, introduce it to the boring of the guide unit, until it touches the grinding wheel.
- The holder (and the electrode) have to be rotated with constant pressure, until a concentric tip is achieved.
- The procedure ends, when the fixture contacts the guide unit, or the noise of grinding cannot be heard anymore.



The following table shows the grinding times with standard wheel, which may slightly vary according to the material.

SIZE	PROCESSING TIME
0,040“ / 1,0 mm	5 - 10 sec.
1/16“ / 1,6 mm	10 - 15 sec.
3/32“ / 2,4 mm	20 - 30 sec.
1/8“ / 3,2 mm	45 - 60 sec.
5/32“ / 4,0 mm	70 - 90 sec.
3/16“ / 4,8 mm	100 - 130 sec.

DISMANTLING A WORN ELECTRODE TIP

After welding, it is useful to dismantle the tip before restarting to grind. This increases the lifetime and improves the arc ignition. Switch on power and insert the electrode into the boring which corresponds to the requested diameter, at the front panel of the machine. Carefully push the electrode against the grinding wheel, and shorten it for about 5 to 7 mm. This represents an optimum value to restore the original tungsten grain, in order to obtain a reproducible welding result.

BREAKING DOWN THE ELECTRODE

The cutting procedure is carried out at the right side of the device.
Slide the electrode through the corresponding boring, until it comes out from the other side.
Hold both ends tight and push the electrode (while slowly rotating it) towards the edge of the turning grinding wheel.
Thus the electrode is notched and can be broken at that point.

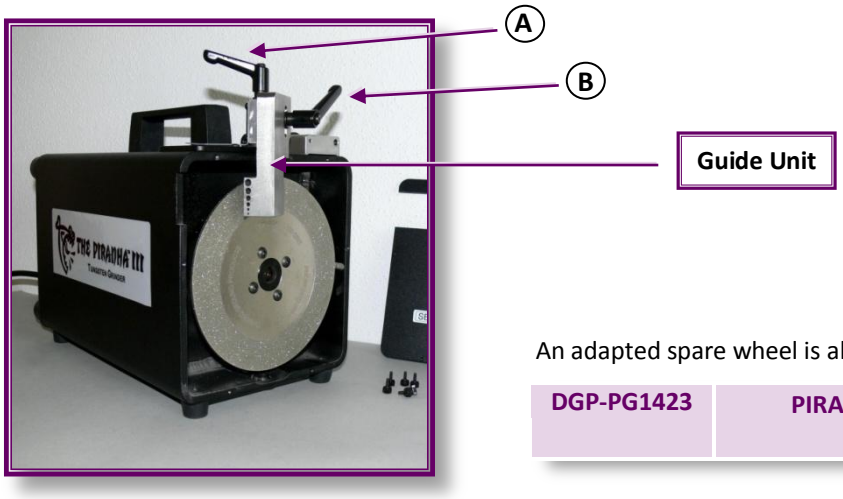
ATTENTION:

Breaking the electrode with an insufficient notch entails cracks. It is therefore important not to interrupt the cutting procedure too soon!

EXCHANGING THE GRINDING WHEELS

Only use original spare parts for **Piranha III** diamond wheels. These wheels are manufactured in a particular process introducing a strong binding strength between wheel and diamonds.

Unsuitable spare parts generally cannot fulfill the conditions required for tungsten grinding. This will not only considerably reduce their lifetime, but also cause additional damage, which is explicitely excluded from the warranty.



An adapted spare wheel is always available - Part No:

DGP-PG1423	**PIRANHA III** Grinding Wheel – grain 150 unilateral

INSTALLATION OF A NEW ITEM

To remove a worn grinding wheel and install a new item, proceed as follows:

1. Switch off power, and separate the machine from the mains. Wait until the motor stands still.
2. Screw off lever (B) completely (see above). Lift the guide unit, and remove it. Take care not to lose the disc between guide unit and lever. Put the parts apart.
3. Remove the six thumb screws from the wheel cover. Remove the cover to expose the wheel.
4. Remove the four screws at the front side of the wheel using the Allan key contained in the original package.
5. The worn grinding wheel can be exchanged now. Insert the spare wheel. While mounting, an even orientation should be maintained, to prevent the wheel from jamming afterwards.
6. Reassemble the machine just following the steps in the opposite way.

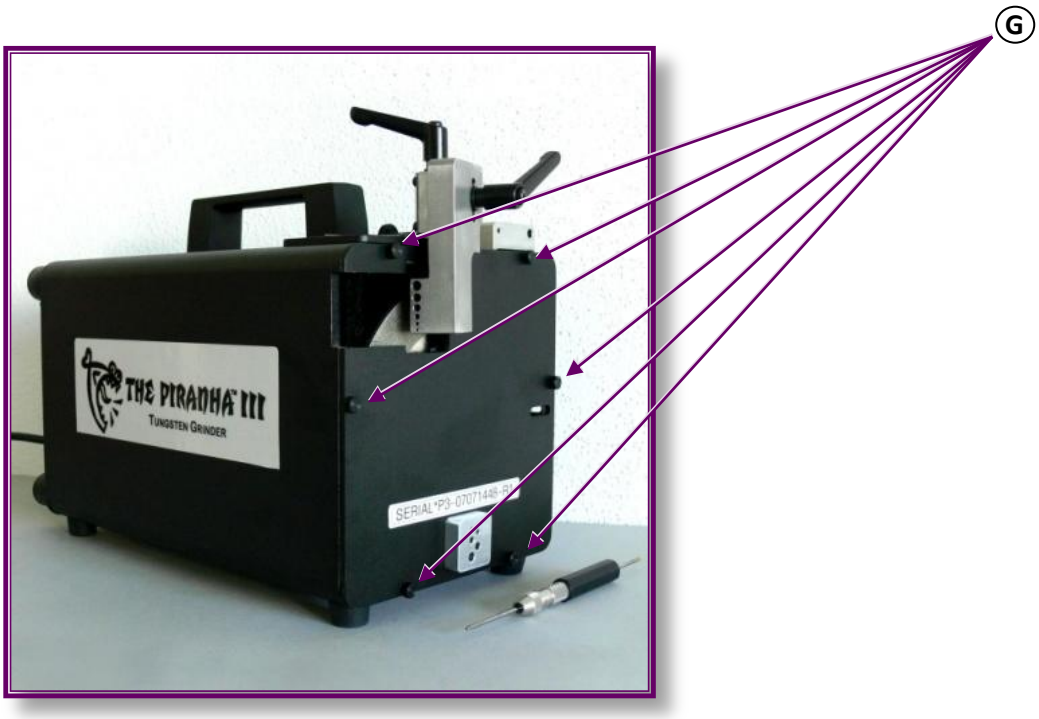
REMOVAL OF GRINDING DUST / CLEANING PROCEDURE

- The machine needs no particular maintenance. Grinding dust is automatically collected close to the grinding wheel (front part). An external extraction system is therefore unnecessary.
- The cleaning frequency depends on the number of grinded electrodes.
- Simply remove the thumb screws (G) at the front panel, open the cover, and remove the dust using a small brush or a vacuum cleaner.
- Electrodes free from radiation do not require a safety procedure, but
  In the case of radioactive elements, carefully follow the instructions issued by your safety advisor.

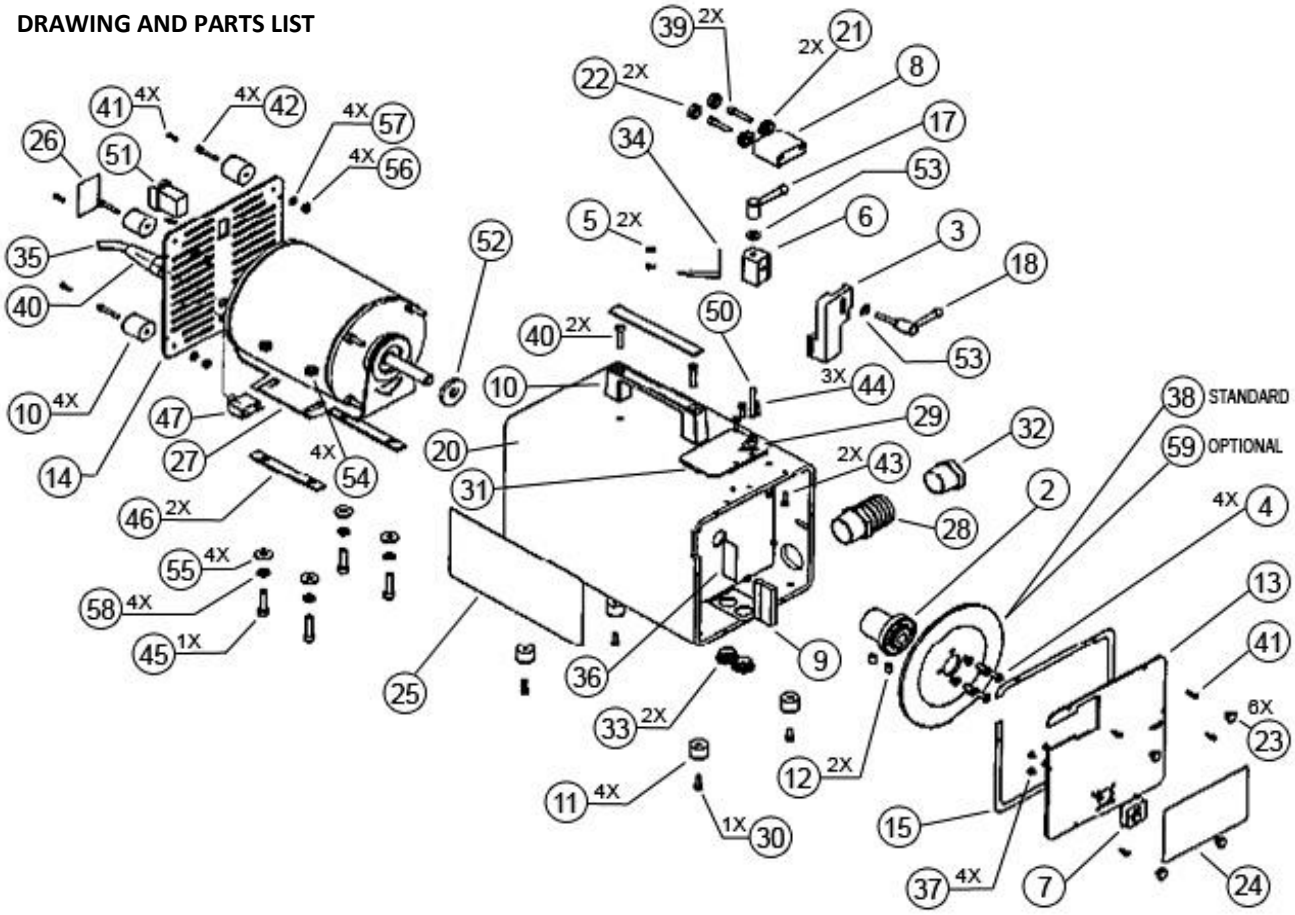
  Radioactive dust should never be inhaled or enter the body through eyes and ears.

  Long-term damage to health cannot be excluded.

  Furthermore, the local jurisdiction of disposal must be observed.



DRAWING AND PARTS LIST



Q'ty	ELEMENT	PART NO.	DESCRIPTION
-	1	DGP-PG3A	UPPER SIDE– PIRANHA III
1	2	DGP-PG1405	SLEEPER
1	3	DGP-PG1473	ARM – ELECTRODE
4	4	DGP-PG1442	BHCS - #10-32 X 1/2 LG
2	5	DGP-PG1430	BHCS - #4-40 X 3/18 LG
1	6	DGP-PG1474	BLOCK – SWINGING ARM
1	7	DGP-PG1477	BLOCK – PLANISH
1	8	DGP-PG1486	STRUCTURE – STOPPER
1	9	DGP-PG1487	BRUSH
4	10	DGP-PG1432	BUMPER – 1" DIA X 1"
4	11	DGP-PG1433	BUMPER – 3/4" DIA X 3/16"
2	12	DGP-PG1439	SET OF SCREWS – 1/4-20 X 3/8 LC
1	13	DGP-PG1478	COVER – CASE FRONT PANEL
1	14	DGP-PG1410	COVER – CASE REAR PANEL
1	15	DGP-PG1479	GASKET
1	16	DGP-PG1310	HANDLE
1	17	DGP-P410	HANDLE – ADJSUTABLE
1	18	DGP-PG1000	HANDLE – ADJUSTABLE WITH BOLT
	19		
1	20	DGP-PG1470	WELDMENT JOINT CASE
2	21	DGP-PG1365	BUTTON – KNURLED – #10-32
2	22	DGP-P460	BUTTON – FEED LOCK – #10 – BLACK
5	23	DGP-PG1317	BUTTON – FEED LOCK – #4 – BLACK
1	24	DGP-PG1453	LABEL – P-III FRONT INST.
1	25	DGP-PG1452	LABEL – P-III MAIN PANEL
1	26	DGP-PG1454	LABEL – P-III POWER
1	27	DGP-PG1436	MOTOR – P-III
1	28	DGP-PG1489	CONNECTION PIECE – 1 NFT
1	29	DGP-PG1416	ARBOR – SWINGING ARM
4	30	DGP-P570	SHCS – #8-32 X 1/2 LG

Q'ty	ELEMENT	PART NO.	DESCRIPTION
1	31	DGP-PG1476	ANGULAR POSITION MEASURING PLATE
1	32	DGP-PG1489	PLUG – 1 MPT
2	33	DGP-PG1438	PLUG – FINE MACHINING – 3/4"BORE – NYLON - BLACK
1	34	DGP-PG1475	POINTER – ANGLE
1	35	DGP-P355	MAINS CABLE WITH SLEEVE
1	36	DGP-PG1483	PSA BAND - BRUSH
4	37	DGP-PG1354	SCREW – FLAT HD BASE - #6-32 X 1/4 LG
1	38	DGP-PG1425	DIAMOND WHEEL – GRAINING 300
2	39	DGP-PG1363	SHCS – #10-32 X 1 LG
2	40	DGP-PG1338	SHCS – #10-32 X 3/4 LG
10	41	DGP-PG1318	SHCS – #4-40 X 5/16 LG
4	42	DGP-PG1441	SHCS – #6-32 X 1 LG
2	43	DGP-PG1379	SHCS – #6-32 X 1/2 LG
3	44	DGP-PG1335	SHCS – #6-32 X 3/8 LG
4	45	DGP-PG1444	SHCS – 1/4-20 X 1 LG
2	46	DGP-PG1420	SPACER – MOTOR FIXTURE
1	47	DGP-PG1026	SAFETY SWITCH
1	48	DGP-PG1027	STRAIN RELIEF
	49		
1	50	DGP-PG1480	BOLT – #10-32UNF X 1.75 LG
1	51	551-0001	SWITCH – ROCKER AC
1	52	DGP-PG1413	GASKET – FELT F-1
2	53	DGP-P730	GASKET – FLAT #10 X 1/2" DIA X 3/32"
4	54	DGP-PG1437	HEX NUT – 1/4-20
4	55	DGP-PG1334	GASKET – FLAT – 1/4 X 11/15
4	56	DGP-PG1323	HEX NUT WITH NYLON STOPPER – 6-32
4	57	DGP-PG1327	GASKET – FLAT – #6
4	58	DGP-P720	GASKET – GAP STOPPER – 1/4
[1]	59	DGP-PG1426	DIAMOND WHEEL WITH GRAINING 600 (OPTIONAL)
	60		