

Mig TUNGSTEN CARBIDE

The Ultimate in Abrasion Resistance

For severe abrasion, the Tungsten Carbide Embedding hardfacing process with Postalloy PS98 Tool Steel Matrix Wire offers the ultimate in wear and abrasion protection and is economical to apply. It consists of a vibratory feeder and a standard semi-automatic MIG Gun, that delivers metered Tungsten Carbide particles to a molten weld pool at precisely the right moment prior to the puddle freezing. The result is a weld deposit filled with Tungsten Carbide surrounded in a 58 Rc tool steel matrix.

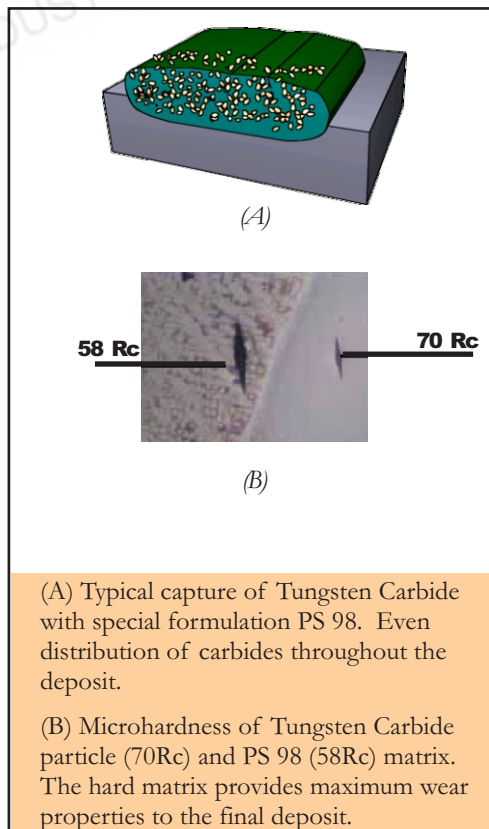
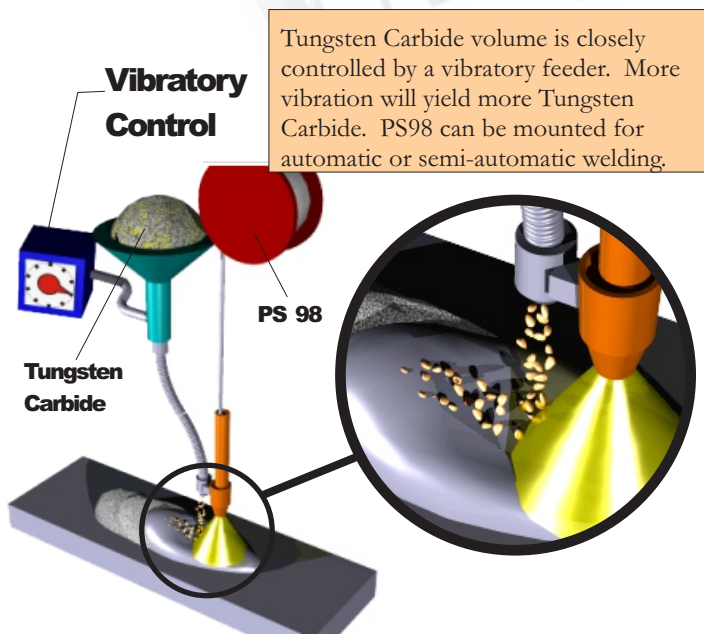
While chromium carbide has served industry adequately for

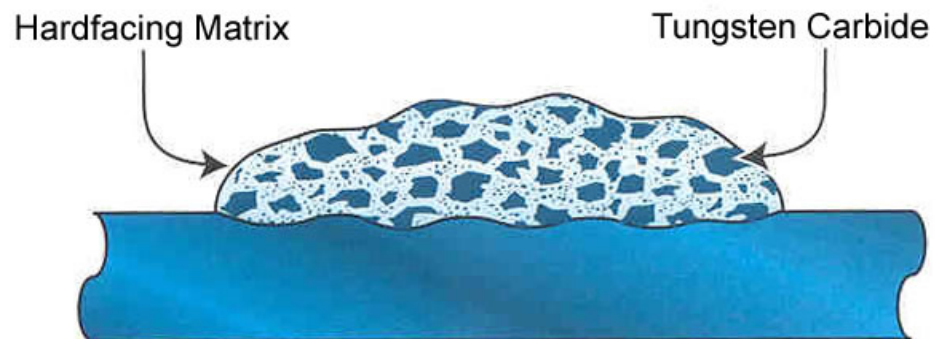
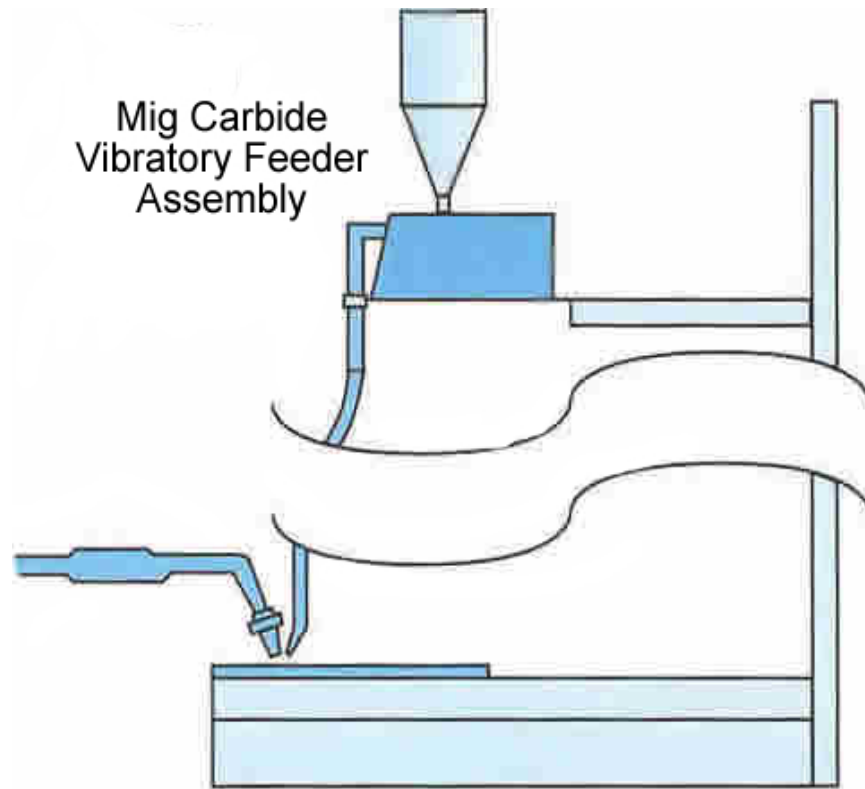
many years, more recent production demands on parts and equipment have dictated a harder, more wear resistant solution. MIG Carbide Embedding with PS-98 offers 2 to 8 times better wear life than typical hardfacing alloys and can be deposited at 1/3 the cost of tungsten carbide hardfacing wires.

Typical equipment that can benefit from MIG Carbiding are mining and construction equipment, dredging equipment, mixing, blending, shredding and processing equipment, drill bit and equipment, agricultural parts.



Bucket tooth gets new life with MIG
TUNGSTEN CARBIDE.





MIG CARBIDE

Vibratory Feeder Assembly

REFERENCE MANUAL & OPERATING INSTRUCTIONS



MIG CARBIDE

Vibratory Feeder Assembly

This is a turnkey system for a Tungsten Carbide feeder which is capable of delivering all grades of carbide to a hand-held, semi-automatic MIG (GMAW) gun (not included).

Included in the system are the following:

- Vibratory feeder assembly with remote control
- Built-in Carbide hopper
- Five (5) feet of .625" I.D. drop hose
- One (1) aluminum metering funnel
- 4" metering tube
- 5" SS short guide tube w/clamp for MIG gun mounting (*MIG gun not included*)
- 115 VAC line cable with three-pronged plug (No plug on 230 VAC units)
- Current sensing reed with cable

Control functions and over-all description of system:

Power is supplied to this system via 115 VAC (1 Amp fuse) 60 cycle line cable with three-prong plug. An optional 230 VAC 50/60 cycle system is available. A red light indicates when the vibrator is on.

•Automatic Mode: A magnetic current-sensing relay cable with a reed switch assembly is used to provide an automatic start signal for semi-automatic, hand-held operation. When the function switch is in the automatic mode (up position), the start signal comes from the magnetic reed attached to one of the weld cables. **Important:** The magnetic reed must be mounted **90 degrees** across either weld cable with the flat side against the cable. **Do not mount the magnetic reed parallel with the cable.**

•Manual Mode: When the function switch is in the manual mode (down position), the system feeds continuously.

•Carbide Feed Rate: The carbide feed rate is controlled by a single-turn control pot, mounted on the cover panel of the remote control.

•Mounting: Use existing bolts to mount unit on your mount plate.

•Carbide Feed: The advantage of this trough-fed system is that it can accurately meter any size carbide granule, pellet or particle without the need to add any new system component or adjust any component of the system other than the speed pot. The feed-rate pot allows for a wide range of feed rates with a simple turn of the dial, while the unit is in full operation. There is no need to stop in order to make and test mechanical adjustments.

Additional Information On Welding With MIG Carbide

Preparation: Always try to grind the weld area to clean, white metal. Many shops do not clean to save time and money. The surface does not have to be perfect but at least touch the surface.

Wire: The most versatile wire size is .045 diameter. 1/16 (1.6mm) wire can be used but the higher amperages and voltages needed to operate this wire can cause operational difficulties as well as excessive warpage. Postalloy metal cored hardfacing wires provide an excellent weld matrix to protect and hold the carbide particles. They also make a very clean puddle for the carbide to drop through and have a high tolerance for dirty base metal surfaces. Typical coverage rates: 1# of wire with 1# of carbide will cover 30 square inches 3/16 high. Non slag forming open arc hardfacing wires can be used but the weld puddle is not as fluid as a gas shielded wire. The more fluid puddle is, the easier it will be for the carbide particles to disperse evenly.

Postle Industries manufactures PS98, a 55-60 Rc hardfacing wire that has been specially engineered for MIG Carbide. We produce other wires as well. Please consult with Postle for other recommendations.

Carbide Depositions: A mixed carbide (15-30 mesh size) is recommended. Many MIG Carbide users are now zeroing in on 12-25 mesh size or something close to this range – about the size of very coarse sand. For very fine particle abrasion use 20-30 mesh size—slightly coarser than beach sand. The best choice for general service is the 15-30 mesh size. For pure rock service use 5-10 or 8-12 mesh size. For pure fine sand service use 20-30 mesh size with hardfacing wire.

Screening Used Carbide: After several re-cycles, used carbide tends to pick up over-sized particles, splatter, dust, dirt, etc. This contamination will begin to affect the weldability. Screen the recycled carbide through 8" diameter Tyler sieve screens of the same mesh size as your carbide. For example, if you are using 15-30 carbide, buy two screens and one bottom pan. The top screen would be 15 mesh. The middle screen would be 30 mesh. Discard or re-crush everything on top of the 15 screen and throw everything in the bottom pan. (We can furnish Tyler screens.)

Gases and Voltages: 98% Argon / 2% O2 is the most popular mix. Pure Argon is also used, however, it is colder. 75% Argon/25% Carbon Dioxide is the second choice. Pure CO2 is can be used but it requires very high voltages.

Minimizing Distortion: To minimize distortion (especially on thinner parts), use lower volts and amps with pure Argon. Use preheat on all parts to eliminate or minimize distortion. Most thick and wide ledges can be made almost flat with lower weld settings, medium preheat and use of clamps. Thinner parts must be pre-bowed and warped (along with pre-heat). Most thin parts are bowed .5 to .75 inches and warped about .5 to 1.0 inch.

Typical Weld Settings: Weld settings for medium weld speeds would be the following:

Wire Size	.045	.062
Volts	29-30	29-31
Amps	230-245	290-300
Gas	Argon/O2	Argon/O2

Set-Up: Mig carbiding must be done in the flat or almost flat position because most welding is done in the spray transfer mode. A catch tray should be located underneath the part for recovering the carbide particles. Since this is a gravity fed vibratory assist feeder, for best results, the part should be located directly underneath the feeder.

Welding Techniques: Single layer welds are recommended. Multiple layers tend to dissolve the carbide in the lower layer and produce a very hard deposit that will chip and spall off with only light impact. Begin carbide feeding with a setting of 3 or 4 on the vibratory amplitude dial. After test welding, adjust this setting for your particular application. Use oscillated beads about 5/8" - 1" wide. Use a backhand welding technique (pull gun) and aim carbide into the **trailing** side of the arc puddle. The aim point is critical for good carbide distribution. If these basic parameters are followed, reliable work can be readily produced by any weld shop.

Postalloy® PS-98

Data Sheet



Postle Industries, Inc. • Cleveland, OH 44142 USA • Phone: (216) 265-9000 • Fax: (216) 265-9030 • E-mail: sparky@postle.com

A Tungsten Carbide Matrix Wire for Extreme Abrasion & Light Impact

Description

Postalloy® PS-98 is a metal-cored, triple deoxidized, iron base hardfacing matrix wire, alloyed with chromium and molybdenum. It is primarily used as a matrix alloy for the MIG Carbide Embedding Process and will consistently provide an even distribution of carbide particles throughout the entire weld deposit. Hardness range is 55-60 HRC. Unlike soft mild steel welding wires which are commonly used with the MIG Carbide Embedding Process, the high hardness tool steel microstructure of **Postalloy® PS-98** is designed to encapsulate and protect the tungsten carbide particles from premature erosion.

Most carbide embedding operations use solid mild steel welding wires, requiring higher voltage and amperage settings to achieve a fluid puddle. **Postalloy® PS-98** is metal cored and develops a spray transfer at very low current levels. This property, combined with its unique alloy content

forms a very fluid, clean weld puddle which promotes an even dispersion of tungsten carbide, as the particles are dropped into the weld puddle.

Tungsten carbide particles, which are extremely hard and wear-resistant, combined with the hard PS98 matrix alloy, protect a wide variety of equipment from premature wear in many challenging applications, such as bulldozer and grader blades, dragline bucket wear parts, loader and excavator buckets, railroad tie tampers, wear plate, logging and wood chipping wear parts, as well as construction, demolition, and land fill equipment including hammermills, horizontal grinding equipment and tub grinding hammers.



Hardness impression
is a PS-98 Matrix
58Rc



Hardness impression in
a Tungsten Carbide Particle
70Rc

Welding Parameters & Packaging

Diameter	.045" (1.2mm)	1/16" (1.6mm)
Polarity	DC Reverse	DC Reverse
Current <i>amps</i>	170-220	180-250
Wire Speed	180-210	160-190
Voltage (DCRP) <i>volts</i>	26-28	27-29
Gas Shielding (98% Argon / 2% Oxygen)	35	35
Stickout	1 - 1 1/4" (25-32mm)	1 - 1 1/4" (25-32mm)
Hardness (1 Layer)	55 to 60Rc	55 to 60Rc
Deposits are slag free		



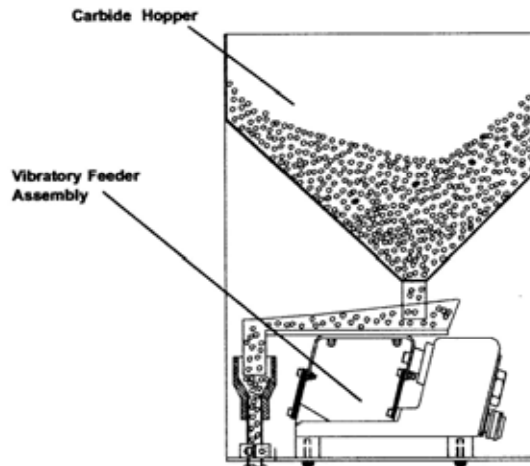
Packaging

25 lb. spools	Standard	Standard
50 lb. spools	Standard	Standard



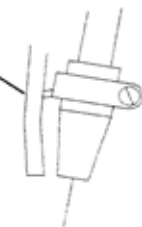
MIG CARBIDE Vibratory Feeder Assembly

SYSTEM COMPONENTS



5' Drop Hose

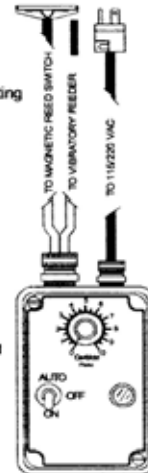
Guide Tube & clamp for
Mounting on your MIG gun
(MIG gun is not included)



INCLUDES:

- Vibratory feeder assembly with built-in control
- Carbide hopper
- Five (5) feet of .625" I.D. drop hose
- 6" SS short guide tube w/clamp for MIG gun mounting
- 115 VAC line cable with three-pronged plug
- Current sensing reed with cable
- All screws and nuts for assembly
- Remote table-mount control unit

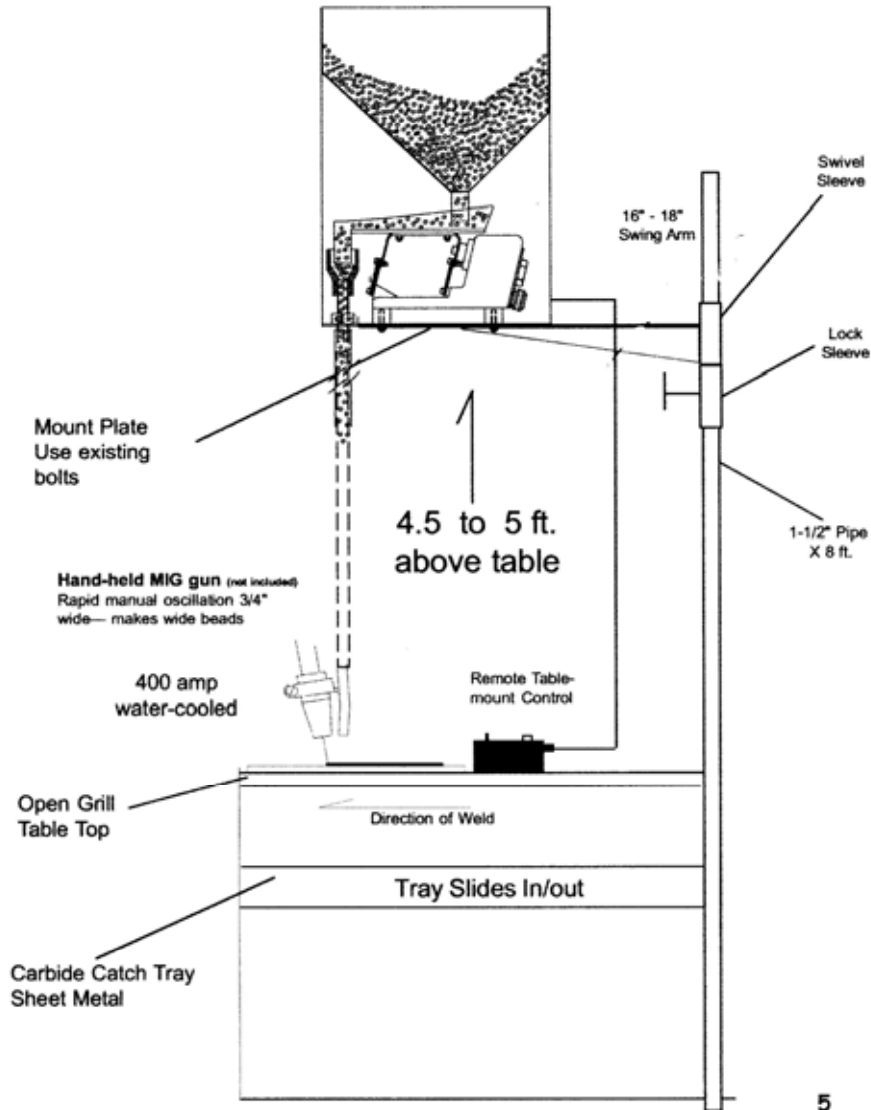
Remote Control
Pendant

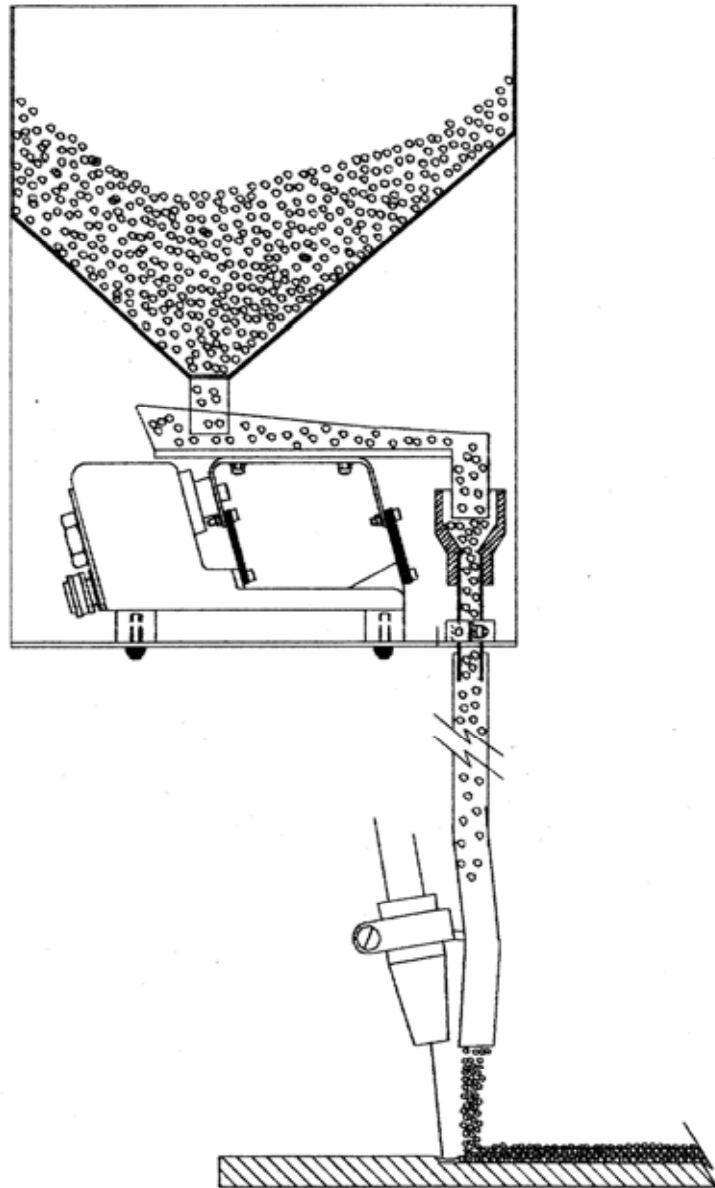


TYPICAL INSTALLATION

MIG CARBIDE

Vibratory Feeder Assembly





REV.09.12.04-TFS