



Orbital welding Systems





ORBITAL WELDING CARRIAGE - PIPE KAT® - RIGID TRACK



Carriage Features and Benefits Include:

- Linear or Radial Oscillation
- Remote Voltage Adjustment
- Motorized Width Adjustment
- High Deposition Rate
- Simple Setup
- Easy to Use Controls
- Gas or Water Cooled Models
- Upto 2.5" (6.35 cm) Oscillation Width

PK-500-LG/RG - GAS/AIR COOLED

PK-500-LW/RW - WATER COOLED



Self Contained Orbital Welding System

AUTOMATE AND IMPROVE PIPE WELDING AND ORBITAL WELDING APPLICATIONS





SPECIFICATIONS:

Carriage Weight: 48 lbs (21 kg)

Control Box Weight: 30 lbs (13.6 kg)

Power Requirements: 42, VAC, 115 VAC, 230 VAC
Models available. Power consumption = 400 watts

Carriage Travel Speed: 1.35" - 44.2" (3.42 cm - 112.27 cm) Per Minute

Torch Adjustment: +/- 10°

Oscillation Speed: 0.5" - 140" (1 cm - 355.6 cm) Per Minute

Dwell Times: 0 to 9.9 seconds

Manual Slide Adjustment: 3" (7.62 cm) Vertical

Motorized Torch Adjustment: 2" (5.08 cm) Vertical

Oscillation Width Adjustment: 4" (10.16 cm) total slide adjustment. Max. oscillation width of 2.5" (6.35 cm)

Welding Spool Size: 8"/10 lbs (20.3 cm/4.5 kg)

Operating Temperatures: 0 to 60°C (32 - 140°F)

Wire Feeder Drive Rolls: 0.8 mm to 1.6 mm V-groove wheels, 1.0 mm to 2.0 mm V-groove knurled wheels (1.0/1.2 mm V-groove knurled comes standard, see chart on reverse for available options)

Carriage Umbilical: 25 ft. (7.6 m) in length and protected by a 500°C (932°F) rated cover. Contains torch power cable, shielding gas hose, carriage power cable, arc start cable, and water hoses if equipped

Compatible Welding Processes: All standard CV & CC processes, MIG, TIG, Pulse

Comes with Pipe KAT® Waterproof Carrying Case made by Pelican

The Pipe KAT® is a pipe welding carriage designed for orbital welding. It is an electrically powered track guided carriage that operates in the forward or reverse directions at precisely controlled speeds. The carriage operates on a track made of durable aluminum extrusion by engaging the track with self-aligning wheels and a rack and pinion drive. This wheel assembly uses a lever to engage that track making it very quick and simple to install the carriage.

The Pipe KAT® is a fully integrated welding system which comes with a wire feeder and wire spool holder. Driven by a 24 VDC motor which feeds wire to the welding torch at precisely controlled speeds. The wire spool holder accepts standard 8"/10 lbs (20.3 cm/4.5 kg) spools.

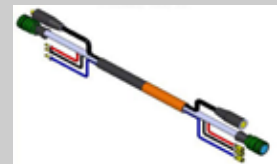
A remote control pendant is provided to allow adjustment of the critical application parameters during the welding process including, oscillation width, speed, dwells, wire feed speed and voltage adjustment.

CARRIAGE ACCESSORIES

CARRIAGE UMBILICAL

25ft (7.6 m)
Carriage Umbilical
Extension Assembly

PK-500-163-G
PK-500-163-N
PK-500-163-W



WATER COOLER POWER INTERFACE KIT

Interface allows control to automatically activate / deactivate water cooler during auto-cycle. Toggle switch included for manual override.

PK-200-216-A 42V
PK-200-216-B 115V
PK-200-216-C 230V



FLOW SWITCH KIT

Flow switch is used to monitor coolant flow to welding torch.

PK-500-177



PENDANT EXTENSION CABLE

15 ft (4.6 m) Extension Cable.

PK-200-368

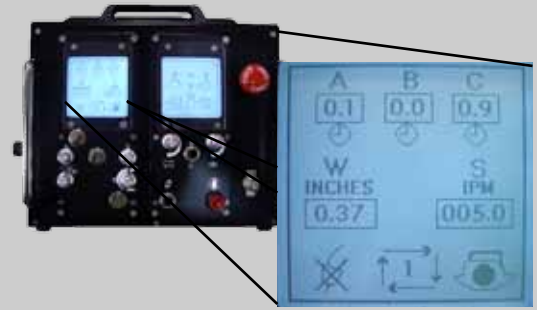


CARRIAGE CONTROL LAYOUT

REMOTE HAND PENDANT



CARRIAGE CONTROL



The Remote pendant (left) is used in conjunction with the main control (right) to provide adjustment during setup, initiate the weld cycle, provide fine adjustment during welding, and to stop the weld cycle.

The remote pendant is supplied with a 35ft communication cable that connects to the right side panel of the PIPE KAT® Main Control.

PIPE BAND ORDERING INFORMATION

PB-500- -

Pipe Outside Diameter (inches)
(2 Decimal Places)

Stand-off Height (inches)
Standard = 1.75" (4.45 cm)
up to 6.00" (15.24 cm)
(2 Decimal Places)

EXAMPLE 1:

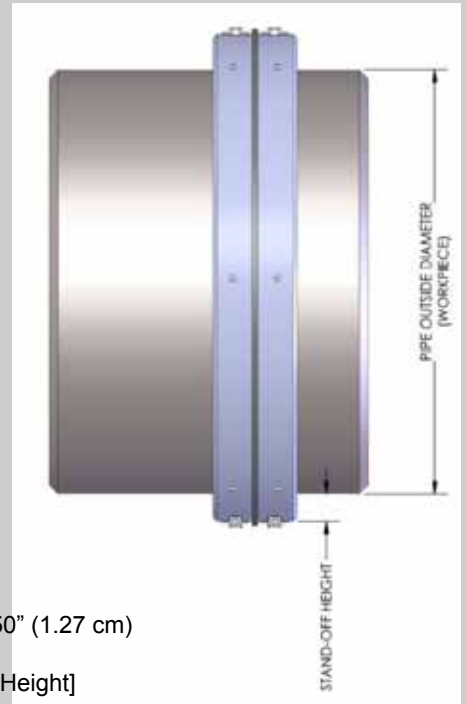
If the Pipe Outside Diameter (O.D) is 22.357" with a stand-off of 3.5" the part number will be: **PB-500-22.38-3.50**

EXAMPLE 2:

If the Pipe O.D is 24" with a standard stand-off the part number will be: **PB-500-24.00-1.75**

NOTE:

- Stand-off heights over 1.75" (4.45 cm) require spacers. Min. spacer height of 0.50" (1.27 cm)
- All stand-offs are adjustable to +/- 0.157" (4 mm) using the 5 mm allen tool
- Min. \emptyset Track Datum = 17.5" (44.45 cm) [\emptyset Track Datum = \emptyset pipe + (2 x Stand-off Height)]
- Max. \emptyset Track Datum = 60" (152.4 cm) [Consult Factory For Larger Dimensions]



Quick Installation Track Band:

The hinged design of the Pipe KAT® track band makes installation simple and quick.

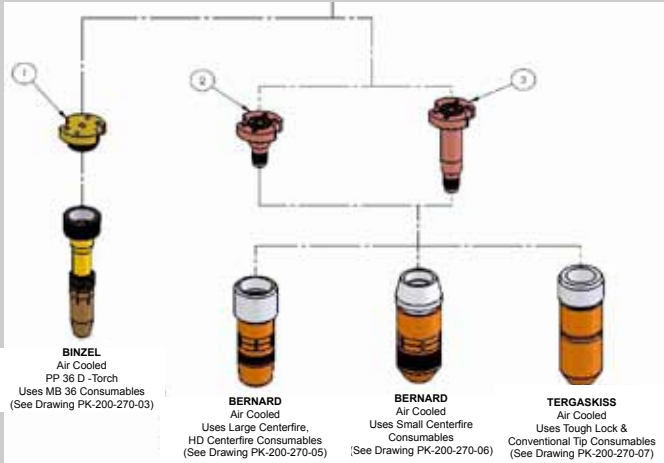


Adjustable Track Mounting Pads:

The Pipe KAT® band comes with stand off pads which allow for +/- 0.157" (4 mm) of adjustment.

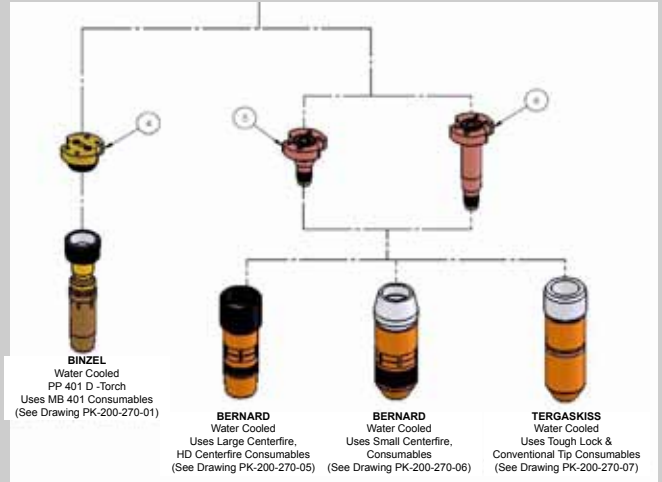
PK-500-LG/RG

For use with gas/air cooled welding torch necks and consumables. Additional items are required.



PK-500-LW/RW

For use with water cooled welding torch necks and consumables. Additional items are required.



WIRE FEEDER ROLL ORDERING SPECIFICATIONS

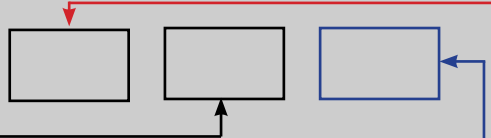


PART #	DESCRIPTION	QTY.
PK-200-035-10	Feed Roll V-groove 0.8 mm + 1.0 mm	2
PK-200-035-12	Feed Roll V-Groove 1.0 mm + 1.2 mm	2
PK-200-035-16	Feed Roll V-Groove 1.2 mm + 1.6 mm	2
PK-200-035-12-K	Feed Roll V-Groove 1.0 mm + 1.2 mm Knurled	2
PK-200-035-14-K	Feed Roll V-Groove 1.2 mm + 1.4 mm Knurled	2
PK-200-035-20-K	Feed Roll V-Groove 1.6 mm + 2.0 mm Knurled	2

*The Pipe KAT® has a selection of feeder rolls available for different requirements.
The Pipe KAT® comes standard with PK-200-035-12

PIPE KAT® PART NUMBER CONFIGURATION

PK-500-



OSCILLATION	
MODEL	TYPE
L	LINEAR
R	RADIAL

VOLTAGES*	
MODEL	INPUT SUPPLY
A	42 VAC
B	115 VAC
C	230 VAC

TORCH TYPES	
MODEL	DESCRIPTION
G	Gas/Air cooled torch - Binzel, Tregaskiss and Bernard
W	Water cooled torch - Binzel, Tregaskiss and Bernard
H	Water cooled torch - Dedicated Binzel torch

* All above voltage supplies are single phase, 50/60 hz, 400 watts

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SPECIFICATIONS ARE SUBJECT TO CHANGE WITHOUT NOTICE. ALL DIMENSIONS ARE NOMINAL



WELDING AND CUTTING CARRIAGE - KAT® FOR FLEXIBLE TRACK



The Gullco Flexible KAT® is used throughout the world to automate a wide variety of welding and cutting operations.

It is a durable, reliable precision travel carriage designed for use on flexible track which enables it to operate on straight or curved surfaces along any position.

Gullco manufactures several systems and accessories designed for use with the Flex KAT® making it one of the most versatile pieces of welding/cutting automation equipment available.



MULTI-PASS WELDS



CLADDING OVERLAY



ALL POSITION

Reliable automation that improves quality and reduces costs in welding and cutting operations

ALL POSITION - PRECISE CONTROL - VARIABLE SPEED





AUTOMATED WELDING SYSTEM KAT® FLEXIBLE TRACK

The Gullco Flex KAT® Carriage is used throughout the world to automate and improve the quality and efficiency of single or multiple "head" welding and cutting operations. Welding guns or cutting torches are mounted on the KAT® carriage as it moves along Gullco Flex Track at precisely controlled speeds along the desired path in forward or reverse direction. Gullco's Flex KAT® carriage enables welding guns or cutting torches to operate with precise motion from start to finish regardless of the number of passes or the work pieces involved. This improves the quality, efficiency and repeatability of the process. Poor or awkward accessibility, operator fatigue, or inconsistent workmanship are eliminated.

This unit is designed for operation on curved surfaces as the flexible track can be positioned to follow the contour of the work piece. The self-aligning wheel system of the carriage grips the top and bottom of the track, enabling it to travel along any plane. The adjustable wheel assembly keeps the carriage snug to the track, while allowing it to be easily mounted and removed from the track at any point. The positive drive of the KAT® is obtained from a uniquely designed sprocket that engages with slots in the track, driven by a low voltage permanent magnet motor and gear-head power unit assembly.

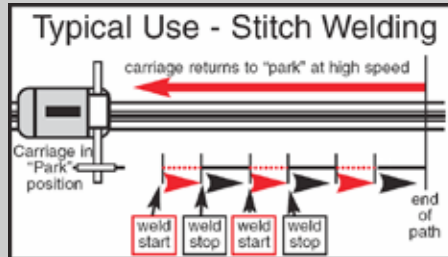


AUTO-WELD CARRIAGE SYSTEM

The KAT® Auto-Weld Carriage option enables a wide variety of automated welding and cutting overlay cycles that can be repeatedly performed. The GSP control in this unit controls travel direction and speed and length of travel path and synchronizes them with precise weld start and weld stop settings. This travel carriage is pre-drilled for mounting



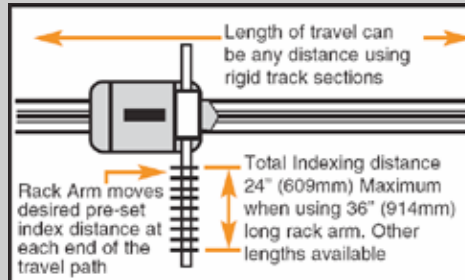
Auto-Weld accessories (sold separately). It is ideal for stitch welding and seam welding applications where repeatability is desired. The reliability and precision of this automated welding and cutting system reduces cost, adds efficiency and improves quality.



A

CLADDING / OVERLAY SYSTEM

The Indexing option Flex KAT® uses a GSP control that combines control of the carriage movement and start/stop parameters with precise indexing of the torch at the end of the path. This fully automates and increases the efficiency of overlay welding operations, flame spray work, hard facing etc. At the end of the path the travel carriage

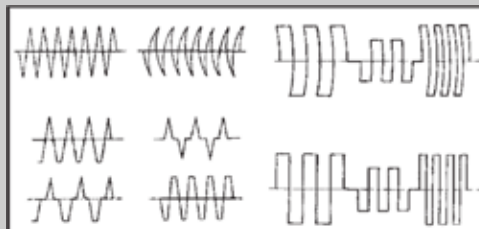


automatically stops and reverses direction while at the same time indexing the gun/torch. It can be programmed to weld or not weld during indexing. Carriage is pre-drilled for quick mounting of the indexing unit (sold separately).

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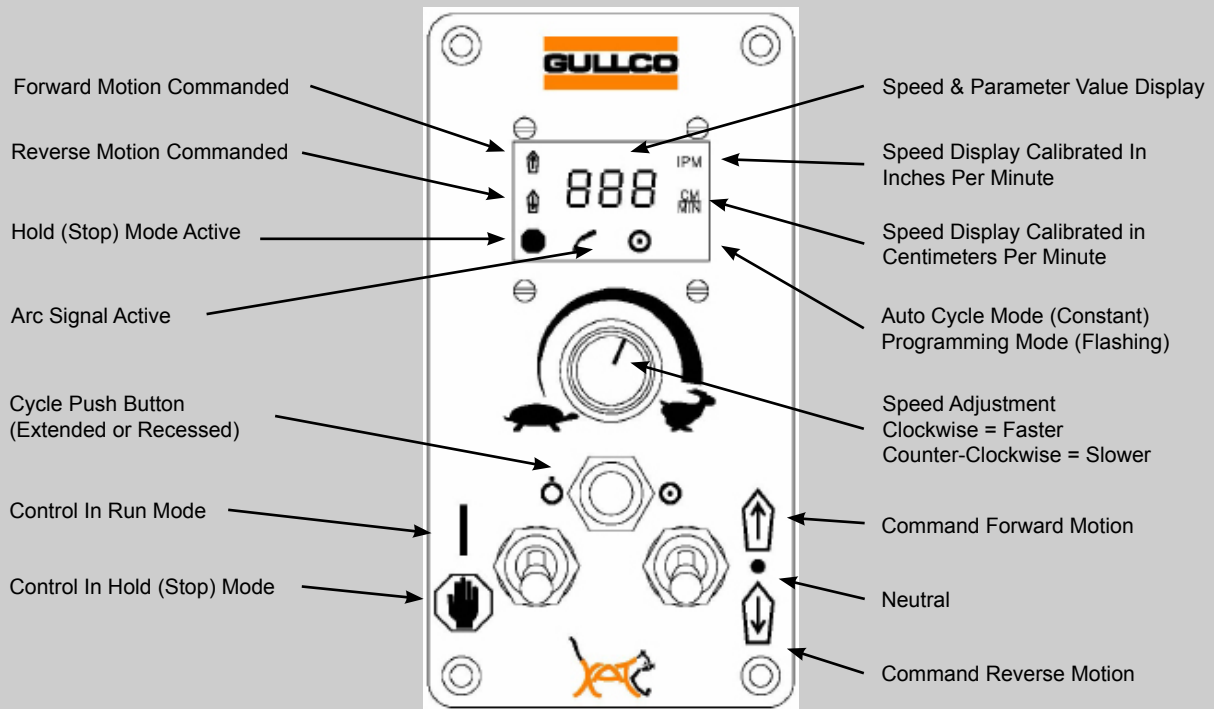
OSCILLATION WELDING SYSTEM

The oscillator is available with a linear, pendulum, tangential or step (square pattern) motion to the welding gun with adjustable motorized stroke width, infinitely variable stroke speed adjustment, three independent position dwell times, motorized centre line positioning and automatic wire feed start and travel start/stop interface.



O

The Gullco Standard Platform range of controls have switching for forward / neutral / reverse, run / stop, Manual / Auto & program variable increment/decrement (where applicable) and a rotary encoder for speed control. This microprocessor based, 24 volt DC motor control can be supplied to provide a variety of "optional" functions such as indexing, weld oscillation and auto-weld. The selected "option" function and carriage travel speed/ direction are directed by a single GSP control. This ensures high levels of accuracy, quality and reliability.



Select a speed, voltage and option to configure a KAT® specifically suited to your needs

GK-200-

SPEED RANGES	
MODEL	SPEED RANGE
FL	0.8 to 25.8 IMP (2 to 65.4 cm/min)
FM	1.5 to 51.5 IPM (3.9 to 131 cm/min)
FH	4.2 to 139.1 IPM (10.6 to 353 cm/min)

VOLTAGES	
MODEL	INPUT SUPPLY
A	42 VAC
B	115 VAC
C	230 VAC

SPECIFICATIONS

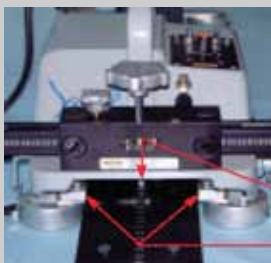
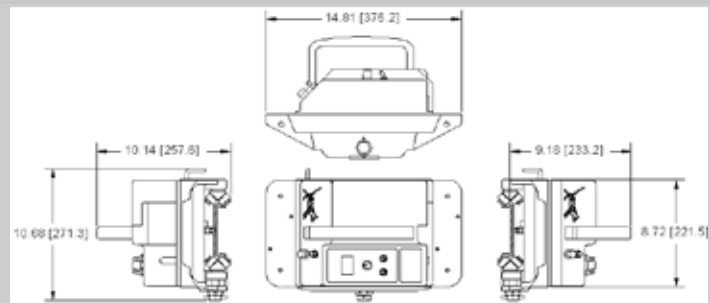
Weight: 29 lbs (13 kg)

Vertical Load Capacity: 100 lbs (45 kgs)

Drive Motor: 24 VDC permanent magnet gear motor

Supply Voltage: 42, 115, 230 VAC, single phase 50/60 Hz., 200 Watts

Complies With: CSA & CE Certification

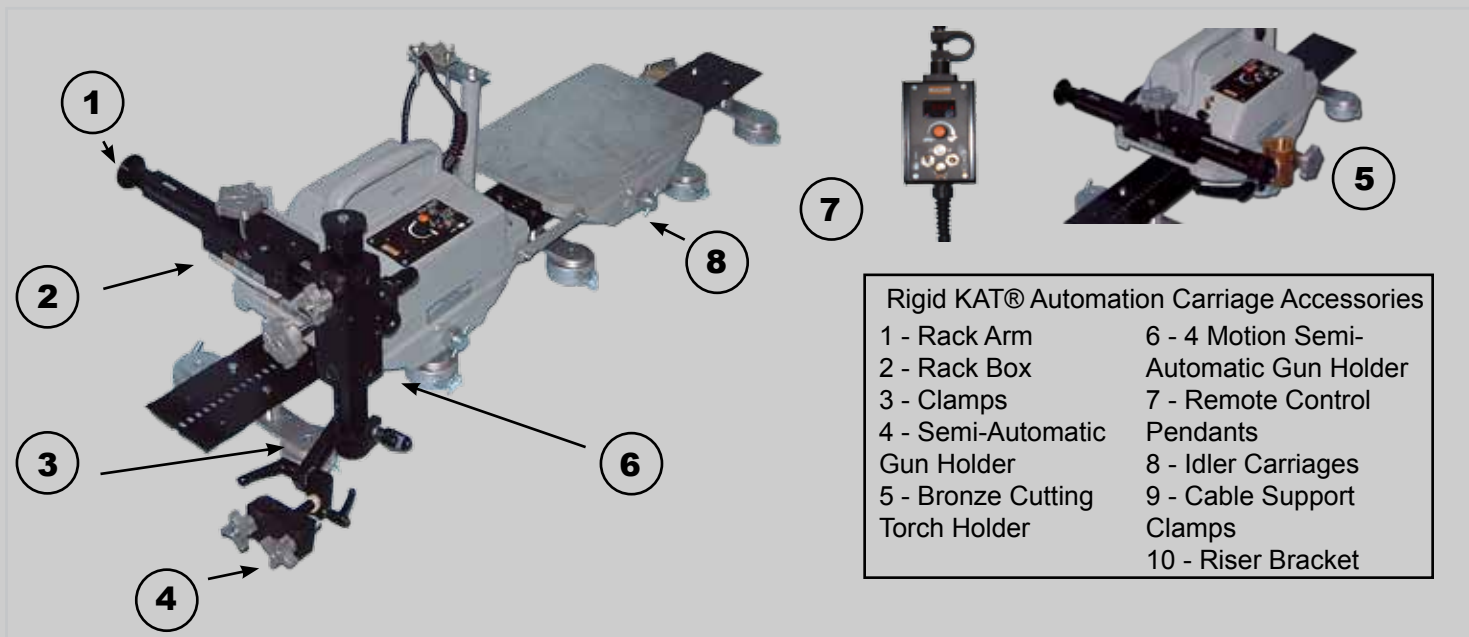


Unique Drive System and Wheel Assemblies Enable Travel in All Positions Including Overhead



Ball studded drive sprocket engages apertures in the track

Self-aligning wheel assemblies run on both top and bottom of the track... enabling operation on any plane.



- Rigid KAT® Automation Carriage Accessories**
- | | |
|---------------------------------|--|
| 1 - Rack Arm | 6 - 4 Motion Semi-Automatic Gun Holder |
| 2 - Rack Box | 7 - Remote Control |
| 3 - Clamps | 8 - Idler Carriages |
| 4 - Semi-Automatic Gun Holder | 9 - Cable Support |
| 5 - Bronze Cutting Torch Holder | 10 - Riser Bracket |

FLEX KAT® TRACK AND MOUNTING DEVICES

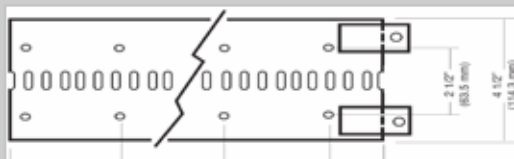
Gullco Heavy Duty Flexible Track is specifically designed for use with Gullco Flexible KAT® all position travel carriages. Flexible Track is made from specialty tempered spring steel and can be easily mounted to conform with curved surfaces. This Flexible Track can be used in applications involving curved surfaces 60" (1524 mm) diameter and greater. The track is securely mounted on ferrous materials using round or square magnet assemblies and vacuum mount assemblies for non-ferrous materials.



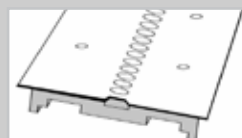
Rare Earth On/Off
Track Magnet



Vacuum Track
Mounting Device



Weight
Heavy Duty:
Model **GK-192-F-054-2**
175 lbs/ft. (2.6 Kg/m)



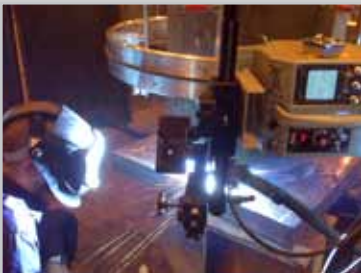
Flexible-Track Stiffener
Extruded aluminum for attachment to Gullco Flexible Track sections for "rigid track" applications. Supplied in 8 ft. sections



**KAT® FLEXIBLE-TRACK
HEAVY DUTY FLEX-TRACK Model
GK-192-F-054-2**
Supplied in 8 ft. (2438 mm) lengths. Also available in custom lengths up to 8 ft. (2438 mm) with interlocking ends to facilitate complete circles for diameter 60" (1524 mm), O.D. & I.D. and over. Tracks are easily joined for continuous runs. Other lengths available on request.

**WELDING AND CUTTING CARRIAGE - KAT® FOR RIGID TRACK**

The Gullco Rigid KAT® is used throughout the world to automate a wide variety of welding and cutting operations. It is a durable, reliable precision travel carriage designed for use on rigid track which enables it to operate along any plane. The rigid track can be used in straight sections or can be formed for use on curved surfaces. Gullco manufactures several systems and accessories designed for use with the Rigid KAT® making it one of the most versatile pieces of welding and cutting automation equipment available in the industry.

**MULTI-PASS WELDS****CLADDING OVERLAY****ALL POSITION**

Reliable automation that improves quality and reduces costs in welding and cutting operations

ALL POSITION - PRECISE CONTROL - VARIABLE SPEED





AUTOMATED WELDING SYSTEM KAT® RIGID TRACK

The Gullco Rigid KAT® carriage is used throughout the world to automate and improve the quality and efficiency of single or multiple “head” welding and cutting operations. Welding guns or cutting torches mounted on the KAT® carriage move along Gullco standard or deep section track at precisely controlled speeds along the desired path in forward or reverse direction. Gullco’s Rigid KAT® carriage enables welding guns or cutting torches to operate with precise motion from start to finish regardless of the number of passes or the work pieces involved, improving the quality, efficiency and repeatability of the process. Poor or awkward accessibility, operator fatigue, or inconsistent workmanship are eliminated. This unit is designed for operation on flat or curved surfaces as the track can be used in straight sections or roll formed to follow the contour of the work piece. The self-aligning wheel system of the carriage grips the top and bottom of the track, enabling it to travel along any plane. The adjustable wheel assembly keeps the carriage snug to the track, while allowing it to be easily mounted and removed from the track at any point. The positive drive of the KAT® is obtained from a uniquely designed rack and pinion system, driven by a low voltage permanent magnet motor and gearhead power unit assembly.

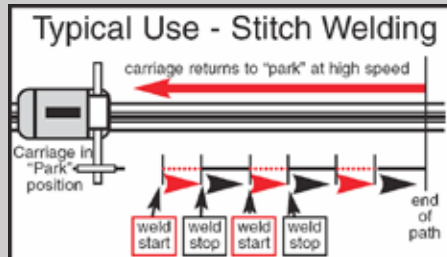


AUTO-WELD CARRIAGE SYSTEM

The KAT® Auto-Weld Carriage option enables a wide variety of automated welding and cutting overlay cycles that can be repeatedly performed. The GSP control in this unit controls travel direction/speed and length of travel path and synchronizes them with precise weld start and weld stop settings. This travel carriage is pre-drilled for mounting



Auto-Weld accessories (sold separately). It is ideal for stitch welding and seam welding applications where repeatability is desired. The reliability and precision of this automated welding and cutting system reduces cost, adds efficiency and improves quality.



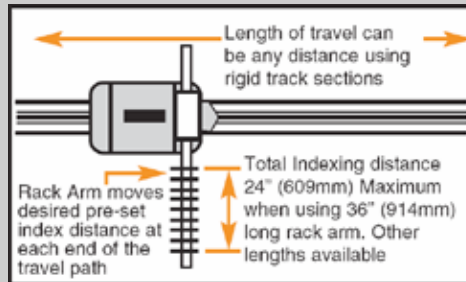
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CLADDING / OVERLAY SYSTEM

The Indexing option Rigid KAT® uses a GSP control that combines control of the carriage movement and start/stop parameters with precise indexing of the torch at the end of the path. This fully automates and increases the efficiency of overlay welding operations, flame spray work, hard facing etc. At the end of the path the travel carriage



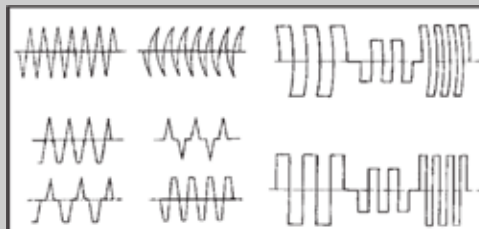
automatically stops and reverses direction while at the same time indexing the gun/torch. It can be programmed to weld or not weld during indexing. Carriage is pre-drilled or quick mounting of the indexing unit (sold separately).



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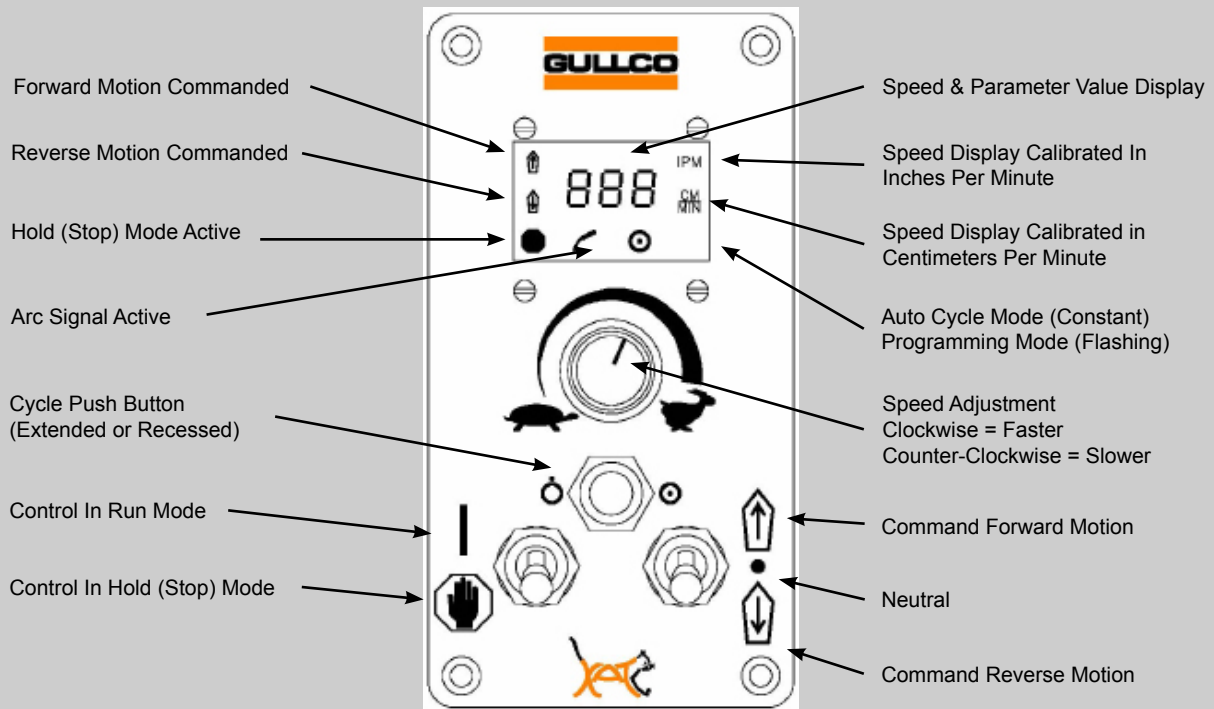
OSCILLATION WELDING SYSTEM

The oscillator is available with a linear, pendulum, tangential or step (square pattern) motion to the welding gun with adjustable motorized stroke width, infinitely variable stroke speed adjustment, three independent position dwell times, motorized centre line positioning and automatic wire feed start and travel start/stop interface.



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The Gullco Standard Platform range of controls have switching for forward / neutral / reverse, run / stop, Manual / Auto & program variable increment/decrement (where applicable) and a rotary encoder for speed control. This micro-processor based, 24 volt DC motor control can be supplied to provide a variety of "optional" functions such as indexing, weld oscillation and auto-weld. The selected "option" function and carriage travel speed/ direction are directed by a single GSP control. This ensures high levels of accuracy, quality and reliability.



Select a speed, voltage and option to configure a KAT® specifically suited to your needs

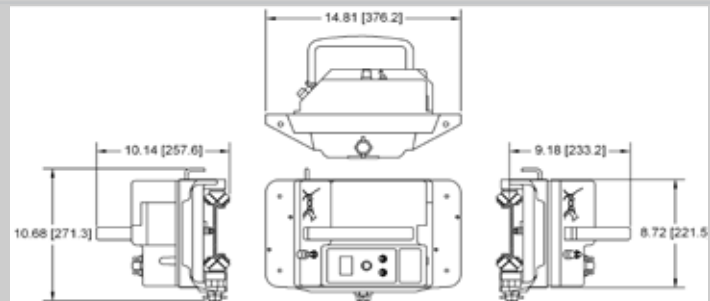
GK-200- —

SPEED RANGES	
MODEL	SPEED RANGE
RL	0.5 to 16.4 IMP (1.2 to 41.6 cm/min)
RM	1 to 32.7 IPM (2.5 to 83.1 cm/min)
RH	2.7 to 88.4 IPM (6.7 to 224 cm/min)

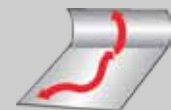
VOLTAGES	
MODEL	INPUT SUPPLY
A	42 VAC
B	115 VAC
C	230 VAC

SPECIFICATIONS

Weight: 29 lbs (13 kg)
 Vertical Load Capacity: 100 lbs (45 kgs)
 Drive Motor: 24 VDC permanent magnet gear motor
 Supply Voltage: 42, 115, 230 VAC, single phase
 Complies With: CSA & CE Certification

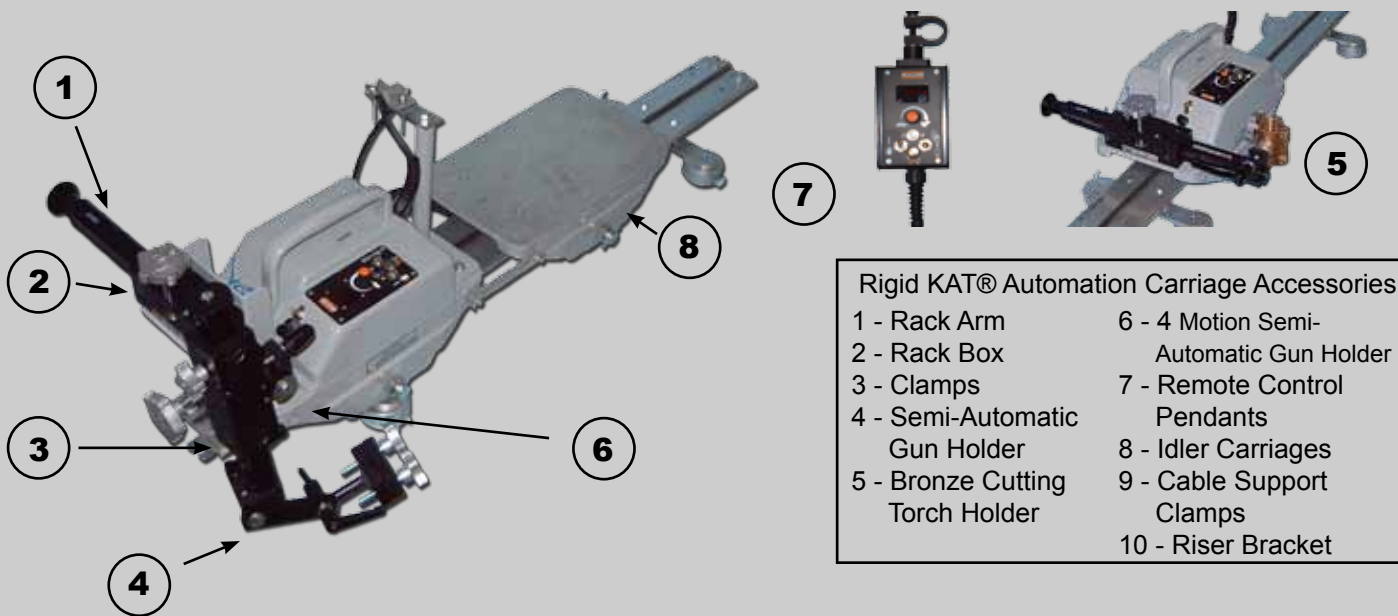


Unique Drive System and Wheel Assemblies Enable Travel in All Positions Including Overhead



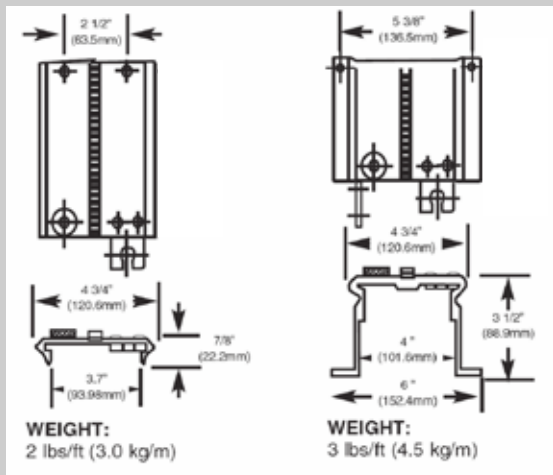
Positive drive rack and pinion system

Self-aligning wheel assemblies run on both top and bottom of track... enabling operation on any plane.

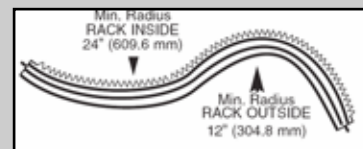
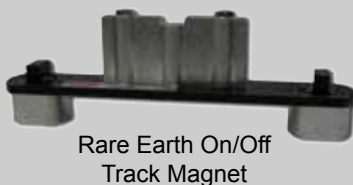


RIGID KAT® TRACK SYSTEMS

Gullco Rigid Track is made from precision extruded aluminum and a securely affixed steel rack. The interchangeable end design enables fast accurate joining of the track sections. Standard Track, used in most portable applications, is available in 48, 96 and 120 inch (1219, 2438 and 3048 mm) lengths and can be formed to suit the work contour. Deep Section Track is used in permanent, straight run applications. It is available in 60" and 120" (1524 and 3048mm) lengths. The track is securely mounted on ferrous materials using round or square magnet assemblies. Vacuum mount assemblies can be used on non-ferrous or ferrous materials.



TRACK MOUNTING DEVICES



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AUTOMATED OSCILLATION WELDING CARRIAGE - KAT®



Ideal for heavy fabrication industries such as: Shipbuilding, Tank Welding, Pipeline and Bridge Construction

Motorized weld center line adjustment

Motorized stroke width adjustment

Precise oscillation speed control

Stores up to 10 different weld programs for quick recall of frequently used processes

Linear or Radial Oscillation Capability

ALL POSITION WELDING AND CUTTING AUTOMATION CARRIAGE





Models For All-Positions, Flat or Curved Surface Weld Oscillation

The Gullco KAT® Oscillator Package is comprised of the compact oscillator head, controls, mounting brackets, connecting cable, 1-1/8" heavy duty micro fine rack boxes with rack arms for horizontal and vertical adjustments and standard MIG gun holder, together with a KAT® carriage for rigid track or flex track as shown above.

Model Series GK-200-F (left) is supplied with a Gullco KAT® specifically designed for operation on spring steel KAT® Flexible Track.

Model Series GK-200-R Combo (right) is supplied with a KAT® specifically designed for operation on rigid aluminum KAT® track.

All are equipped with the Gullco microprocessor-based programmable control with a closed loop feedback system for complete speed accuracy regardless of load [0-100 lbs. (45kgs)] when operating in any weld position.

Detailed information is provided on the back page of this brochure.

Also Available Are The Linear or Radial Separate Remote Controlled Compact Oscillator Assembly - Model GK-201-100-RC

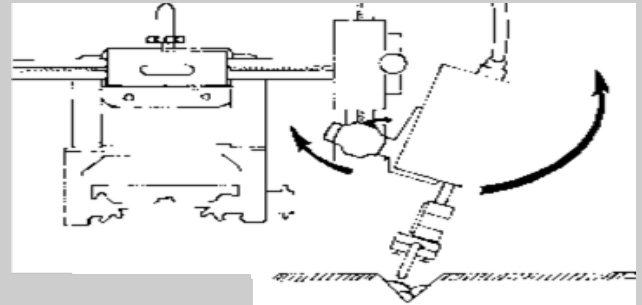
This assembly is comprised of either radial or linear Oscillator Head with MIG gun holder, Remote Control Box, Control Cable (up to 20ft), Micro Fine Rack Boxes, Rack Arms, and Brackets. It can be mounted on existing KAT® All-Position Travel Carriages, Welding Head Manipulators, Side Beam Carriages, etc.





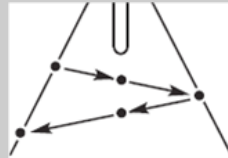
TANGENTIAL AND PENDULUM OR LINEAR MOTION

The oscillator heads are capable of producing three distinct motions when mounted in either the horizontal or vertical position. Shown in the above (right) is a tangential or scribing motion. The other, (middle) is a pendulum motion. Combined with the third linear straight line head they meet all welding oscillation requirements.



MOTORIZED CENTRELINE ADJUSTMENT

With independent, electronically controlled dwells (0-5 sec.) at each end of the stroke and at the centre of the stroke path.

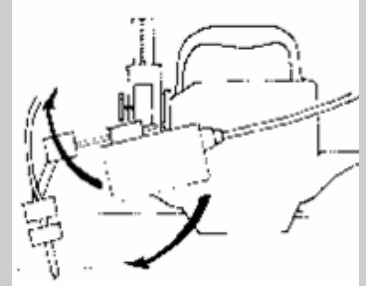


MOTORIZED STROKE WIDTH - Easy, precise adjustment to provide the required weld pattern.

OSCILLATION SPEED CONTROL- Oscillation speed is electronically controlled by a speed potentiometer (140 inches per minutes (linear) 45° per second (radial)).

The proper torch angle/position is established quickly and easily with the Gullco KAT® Oscillator Head.

It's simply a matter of tilting the oscillator, which can be adjusted side to side or forward and backward this results in the elimination of the time consuming and generally ineffective procedure of tilting the carriage or track.



Combining High Precision With Exceptional Versatility

High precision, state-of-the-art controls on the KAT® carriage automatically direct the desired forward/reverse movement or dwell of the welding gun and its oscillation motion to produce the numerous weld patterns shown below. The carriage control enables the carriage speed and direction to be pre-set and shown on its

LED display in IPM or cm/min. The oscillator controls enable pre-setting of the carriage delay/start after wire feed start, dwell times, stroke speed, stroke width, program storage and cycle start.

Control information is available on the following page

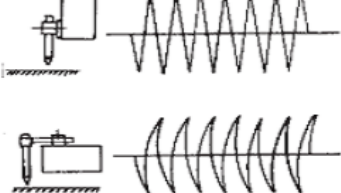


Some of the Weld Patterns Attainable With the KAT® Oscillator System

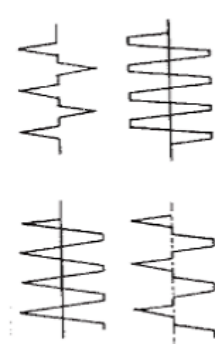
ANGULAR OSCILLATION PATTERN

KAT CARRIAGE TRAVELS CONTINUOUSLY

WITH OSCILLATOR HEAD VERTICAL TO WORK



COMBINING OSCILLATION AND OSCILLATOR DWELL

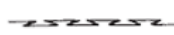


SPECIAL OSCILLATION

Tilted - for welding on horizontal plane



Straight Line - Back and forth oscillation



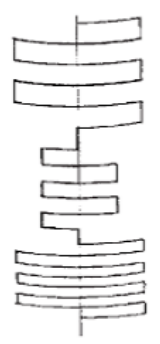
STEP OSCILLATION PATTERN

KAT CARRIAGE TRAVELS ONLY DURING END DWELLS

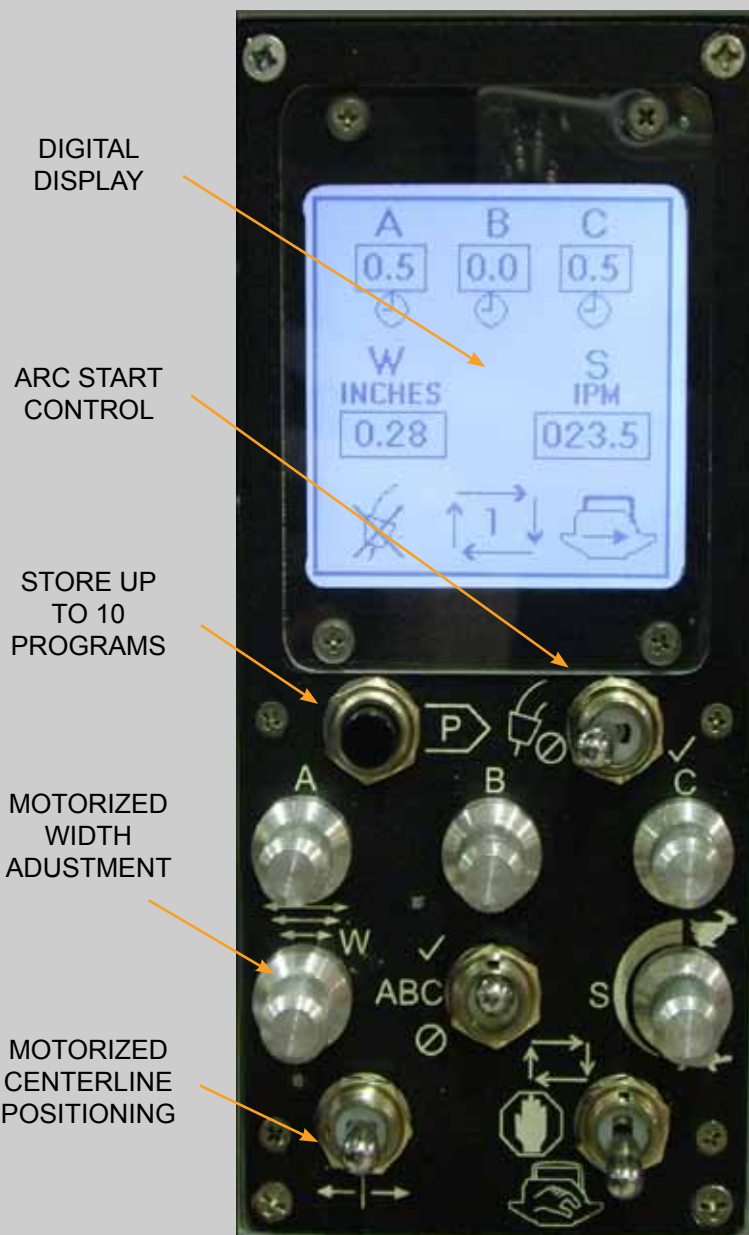
Oscillation Head Vertical



Oscillation Head Horizontal



OSCILLATOR CONTROL



RADIAL OSCILLATOR



This advanced oscillation package is designed to increase production and improve the quality of the weld produced in automatic mechanized welding operations by minimizing weld defects such as poor penetration, incomplete fusion, overlap and undercut.

The GK-200 Series Compact Oscillator Carriage combination comes with the option for linear or radial oscillation head and can be equipped for use on either rigid or flexible track.

The oscillator is available with a linear, pendulum, tangential or step (square pattern) motion to the welding gun with adjustable motorized stroke width, infinitely variable stroke speed adjustment, three independent position dwell times, motorized centre line positioning and automatic wire feed start and travel start/stop interface.

By combining welding gun oscillation movement with the precision controlled travel speed of the Kat carriage, up to 10 weld programs can be produced and stored.

LINEAR OSCILLATOR



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