

PATENTED AUTOMATIC ELECTRODE JOINTER FOR DIRECT JOINTING ON FURNACE (ITEM 1):

Advantages:

- Reduction of furnace down-time during adds
- Elimination of thermal shock
- Reduction of electrode oxidation
- Reduction of heat loss as the column of electrodes is not removed
- Total security
- Totally automatic adds
- Reduction of electrode handling
- Monitoring of data, alarms, and status, and easy maintenance with touch-screen display.



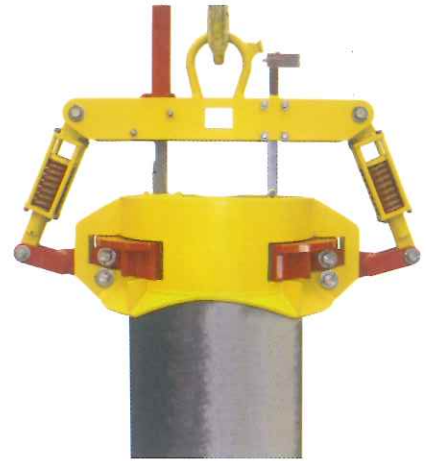
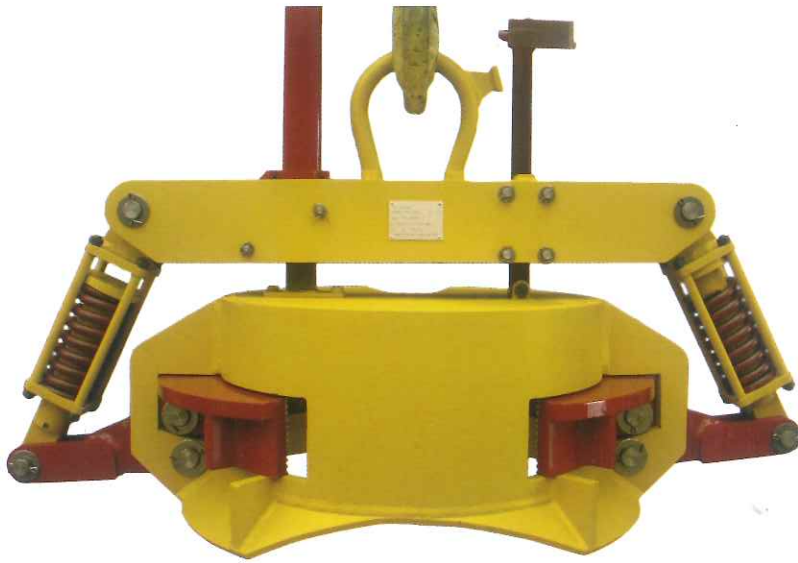
ELECTRODE DEPOSIT AND TILTING STATION (ITEM 4):

Hydraulic machine that houses the electrodes to be added and moves them to the vertical position without lifting plug. The electrode is both tilted to the vertical position and secured in place hydraulically. An optional feature allows the auto-rolling of one electrode into the tilting cradle and makes the operation completely automatic.



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EQUIPMENT FOR ELECTRODE HANDLING



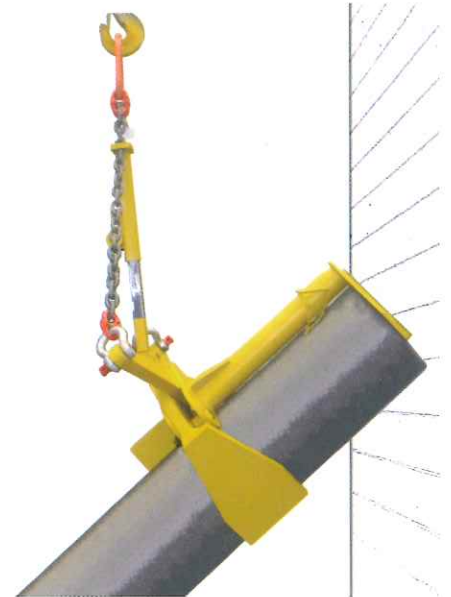
PATENTED BELL-PINCERS (ITEM 2):

Enables the electrode or the electrode column to be picked up without a lifting plug. It can be safely used as an alternative to other electrode transport systems..., while maintaining the use of the safety latch on the crane hook.



PATENTED FISHING PINNERS (ITEM 3):

Used for retrieving broken electrodes out of the furnace. The length of the front pipe is adjustable and may be used for retrieving an inclined electrode.



PATENTED SIDE LIFTER (ITEM 13):

Brand new product that has been designed to allow the extraction of the electrode column from the furnace when the excessive column length doesn't permit to use traditional lifting system owing to the low height of the crane's bridge.

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EQUIPMENT FOR ELECTRODE HANDLING

- PATENTED AUTOMATIC LIFTING DEVICE. THE SAFEST METHOD TO PREVENT UNHOOKINGS -



AUTOMATIC LIFTING DEVICE (ITEM 8):

Used to hook and replace the furnace columns. The advantages are:

- High security (the device remains hung on the crane's hook with safety latch when picking up the electrode with item 11).
- Minimum height encumbrance.

ASSEMBLY DEVICE (ITEM 9):

It is used to move the electrodes to the vertical position and to hold them while adding off furnace or on the furnace.

FUNNEL WITH STEEL HALF NIPPLE (ITEM 11F):

For coupling with the lifting device or the assembling device.

FUNNEL WITH GRAPHITE HALF NIPPLE (ITEM 11G):

For coupling with the lifting device or the assembling device.



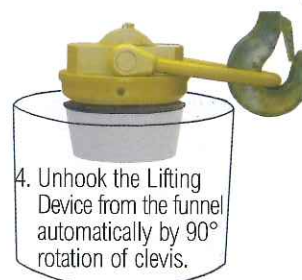
1. Insert the Lifting Device into funnel.



2. Hook Lifting Device to the funnel automatically by 90° rotation of clevis



3. Raise the electrode column and carry it to floor or to the furnace.



4. Unhook the Lifting Device from the funnel automatically by 90° rotation of clevis.



5. Remove the Lifting Device and store it on the floor.

LIFTING PLUGS: Used for transporting electrode columns and raising individual electrodes from the horizontal position. Only the Item 16 may be used for lifting more than one electrode from the horizontal to the vertical position. While transporting the electrode columns we recommend to use a shock absorber (Item 20).



STEEL LIFTING PLUG WITH SELF LOWERING MECHANISM (ITEM 14):

The self-lowering mechanism allows adding without an auxiliary device. The threaded half nipple is made in steel.



STEEL LIFTING PLUG (ITEM 15):

Standard sized lifting ring and threaded half nipple made in steel.



LIFTING PLUG WITH SWIVELLING RING (ITEM 16):

Special lifting device for lifting the complete electrode columns from the horizontal to the vertical position.



TALL LIFTING PLUGS WITH CROSS BAR (ITEM 17):

Taller lifting ring for this device, that has the threaded half nipple made in graphite.



LIFTING PLUG-LIGHT LINE (ITEM 18):

This version is 30-40% lighter than the standard lifting plugs and offers the same safety parameters. The threaded half nipple is made in graphite.



LIFTING PLUG (ITEM 19):

Classic version of the lifting device with the threaded half nipple made in graphite.

EQUIPMENT FOR ELECTRODE HANDLING



SHOCK ABSORBER (ITEM 20):

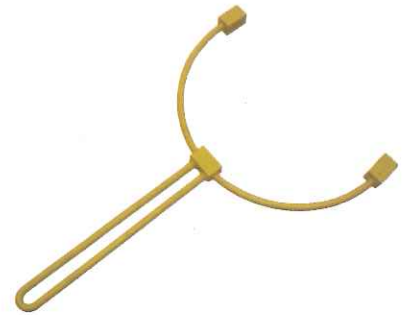
Used for:

- Transport of single electrodes and electrode columns: absorbs the strain while the crane raises, preventing shock to the electrode.
- Slipping: provides a cushioning effect against tension that might cause thread damage.
- Adding: available with self-lowering mechanism to prevent damage to the threaded nipple/socket.



SWIVEL-MOUNTED CARRYING RING FOR NIPPLES (ITEM 21):

The swivel-mounted carrying ring is used for transporting and inserting heavy nipples into horizontally positioned electrodes.



SPACER (ITEM 22):

Prevents thread damage to the electrode and nipple when the nipple is lowered into the socket. Also makes the alignment of the electrodes easier.



NIPPLE REMOVAL TOOL (ITEM 23):

Used to extract damaged nipples from the electrode socket. Use a hand drill to make the holes, then insert the lever to extract the broken nipple.



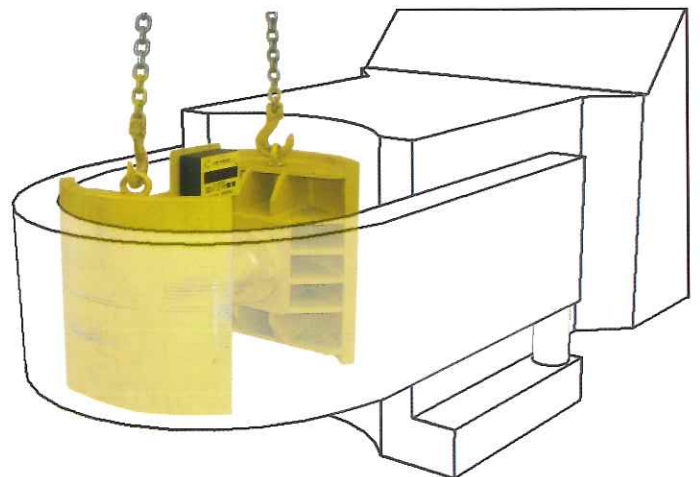
TRANSPORT RING (ITEM 24):

Recommended for use in special cases when individual electrodes and full columns are transported with a nipple in the top socket.



TORQUE METER FOR FURNACE CLAMPS (ITEM 28):

Enables to check periodically the furnace clamps tightening strength. It becomes necessary when doing maintenance work at the furnace arms. A light and well designed tool, equipped with a display for the immediate read of the measured value.





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EQUIPMENT FOR ELECTRODE HANDLING

MANUAL TORQUE WRENCH (ITEM 5):

The standard tool for joining graphite electrodes up to dia.600mm (24") to a preadjustable torque.



MANUAL TORQUE WRENCH WITH COLLAR (ITEM 5A):

The alternative tool to standard torque wrench.

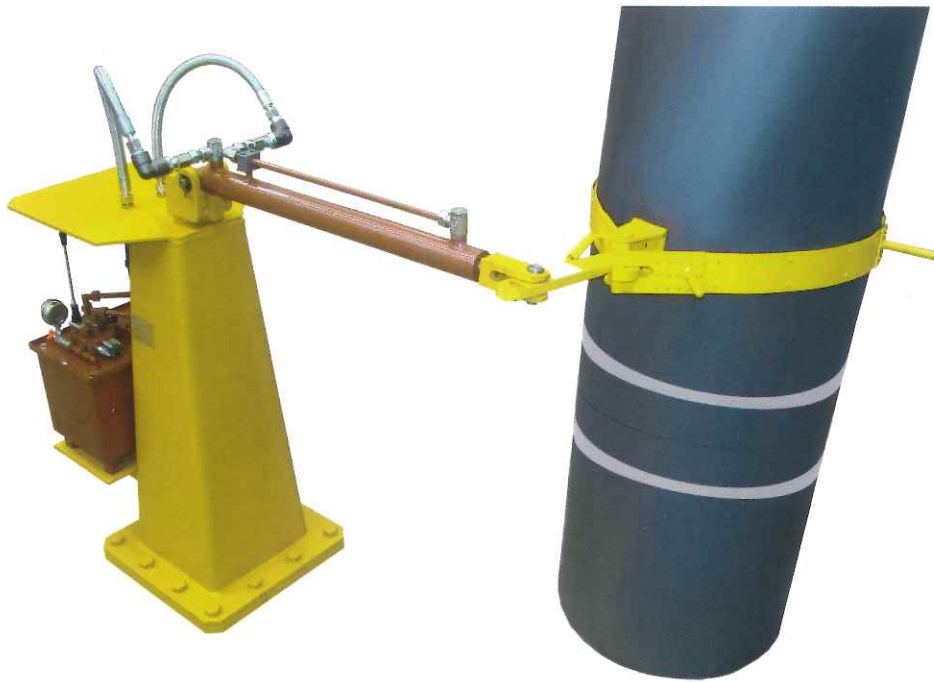
Advantages:

- lighter weight
- self-supporting of the collar on the electrode.



NOTE:

Assembly station (Item 25 & Item 26) or Joints (Item 1) recommended for electrode diameters from 18".



ASSEMBLY STATION LIGHT LINE (ITEM 25):

Hydraulic machine for easy electrode adds at the ground.

Available in two versions:

- With cylinder and lever clamping collar. This system also allows the unscrewing of previously joined electrodes.
- With cylinder, wire rope and clamping collar with hooking points, for joining electrodes at different distances.

LEVER CLAMPING COLLAR (ITEM 6):

A very strong and effective clamping ring used to assemble or disassemble the electrodes employing a hydraulic or pneumatic cylinder to achieve the required torque.



MANUAL CLAMPING COLLAR (ITEM 7):

A lightweight clamping ring used for adding graphite electrodes manually.



CLAMPING COLLAR FOR CYLINDER (ITEM 7C):

A strong clamping ring used for adding graphite electrodes via a hydraulic or pneumatic cylinder to reach the required torque.



EQUIPMENT FOR ELECTRODE HANDLING



ASSEMBLY STATION (ITEM 26):

A hydraulic machine made up of:

- Clamps to support the electrode column for prolonged periods of time.
- Lever clamping collar and hydraulic cylinder to provide the required torque, that may be checked at the LED display.

This system also allows the unscrewing of joined electrodes.



ELECTRODE STORAGE RACK (ITEM 27):

Equipment to vertically hold and store electrode columns for prolonged periods of time. The electrode columns are held tight by eccentric locks manually positioned. The rack is welded or screwed by bolts to the floor. A special feature is access from the side to provide easier loading/unloading operations for the crane operator.

Recommended and distributed by:

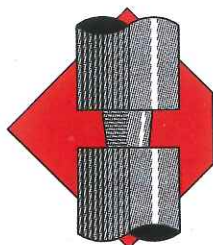


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