SHOPSMITH Modifications 10E to 10ER made 1947-1953
FORWARD

In the process of restoring a very rare MAGNA 10E Preliminary Manual preserved by John S. Burger, I created a new documentation series that seeks to document all the production changes through the years that began with the 1947 Model 10E that soon became the 1948 Model 10ER manufactured through 1953.

It is as complete as I have been able to discern changes made through the years. It was prepared originally as Appendix C, but after publication of that restored preliminary manual, many folks have asked me to publish this as a separate document of just the known production changes.

I would encourage anyone who has an interest in this model, to download all three of the restored and expanded documents I prepared for these models.

1) The 10E Preliminary Manual which predates the first printed manual. (Has extensive new material not even present in the later manuals.)

2) The 10E Owner’s Guide (Has enhanced photo and illustrations, including supplemental material)

3) The 10ER Owner’s Guide (Has enhanced photo and illustrations, including supplemental material)

Each manual has an active table of contents, searchable text, is zoom-capable for those among us who need to explode the illustrations for viewing.

Everett L. Davis

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APPENDIX C – Production and Model Changes from Preliminary Production of 10E – 10ER

This Appendix is based on Skip Campbell and Bill Mayo’s original documentation that I supplemented to help document the Original MAGNA 10E Machine through production changes, revisions and migration into the 10ER with some annotation by photographs and illustrations. I have included some of the less common accessories.

00 10ER Later Headstock Assembly noting areas where Production / Model Changes Exist
01 New Headstock Casting

- Headstock recast (Late 1947)
- Early casting machines produced had no Shopsmith front logo plate in Preliminary Manual

Original Machine Headstock Cast had a threaded mount on the left front of the headstock that was moved to the back (note the setscrew P 1016 on the back to retain bearings) and a new mount at top left in the second Headstock casting for the 10E, used to attach the upper pulley and belt guard.

This occurred before the first commercial production run for Montgomery Ward, on sale Nov. 8, 1947, as even the Preliminary Manual already had the Parts Illustration updated with the new location.

MAGNA Shopsmith 10E was made in Berkeley in the plant of Production Engineering Company.

Demonstrator units with the front casting were recalled from the field and used in the manufacturing plant to build other 10E’s, 10ER’s and eventually Mark 5’s and Mark V’s.

Numerous period photos of those machines in the plant, including the 2nd Shopsmith ever made have the front threaded casting visible (shown on next page).
02 Quill Advance Knobs – Front and Rear

- Quill Advance Knobs (Late 1947)

Concurrently with the Headstock Casting Change noted above, the Quill Advance Knobs were also changed.

While they were not changed in the 1947 physical photos of the Headstock used in the Preliminary Manual which appear to have been demonstrator models recalled from the field to the manufacturing plant, the Illustrated Parts View and the actual part number 102-7 was already changed in the 1947 Preliminary Parts View as seen.

The photo (below) of the 2nd Shopsmith ever produced, in Jan 1951 Western Machinery and Steel World article photograph, remained in use in the factory for years. In addition to the earliest Headstock, it has the tri-lobed Quill Advance Knob opposed to the 102-7 Round one used in production.

It is unknown how many of these early Headstocks with the threaded front facing casting, shown here with the Tri-Lobed Quill Advance Knobs actually made it into private ownership. It would seem some would have existed, since that is only what they had to sell initially.

I have a 1947 - 10E SN 1414 and it is the new style headstock, so it could not have been many, considering demonstrators being recalled. I have not seen one of them privately owned yet. That doesn’t mean they aren’t any out there.

I personally suggest we refer to those castings as Shopsmith 10’s opposed to 10E’s (Enhanced) as some refer to them. If they were indeed ‘Enhanced’, something without those enhancements, preceded them. It is descriptive, and logical, but appears nowhere in OEM documentation I have ever located. That is solely my recommendation. – Everett L. Davis -
03 Tailstock Stud replaced with 2nd Wing-Nut

Late 1947

- Lower Square Stud on Tailstock replaced with second threaded stud and Wing Nut which appears in the first published Owner’s Guide.

- Subsequently in years following, there were two threaded knobs. In late 1948 they will introduce the tailstock with groove for new extension table.

- Finally there was just one threaded knob by 1952

The blue tailstock shown is from my 1947 10E serial number 1414. Very few folks have ever seen one of these early un-updated Tailstocks.

It was changed in 1947 to two threaded studs and wing-nuts by the time the first printed Operator’s Guide was available late that year with the first Montgomery Ward shipments.

The only place I have ever found the lower Square Stud 104-2 actually documented anywhere is in the Preliminary 10E Manual, for which John S. Burger appears to have saved the only surviving original known to exist.
04 Stop Rod Collar changed from Cast Iron to Cast Aluminum

(Early to mid-1948)

- Stop rod collar changed from cast iron with Bolt and Nut to Cast Aluminum.

Note: it is a 10ER actually pictured with that change. Reference the Quill Spring Housing discussed later.
05 Quill with Machined Groove for Aluminum Depth Gauge Collar mounting

Quill with Machined Groove for Aluminum Depth Gauge Collar mounting

Using a photo from (JPG) James Grange Sr. in the Shopsmith Forums I was able to illustrate the original Quill which had a flat for the top set-screw as illustrated on left side.

James is another of my Shopsmith mentors.
06 Hole in Headstock Casting behind Shopsmith Logo Plate

A hole was added to the headstock behind the Logo Plate presumably to allow internal access to quill and lock areas without having to remove the motor.

Yes some people re-paint theirs other colors they prefer more.

Do what pleases you on your machine.

No, this one is not one of mine. I used it just to illustrate the added hole.

Yes, they should have taped over the insides of the holes. I’m sure they found that out when they tried to reassemble.

Late 1948 – 10ER Introduced
Chrome Quill Spring Housing and New Depth Gauge was introduced in late 1948 with the introduction of the 10ER.
Late 1948

- 10E Table compared with 10ER Table with new Trunnion and locking design with detents for 45° and 90° tilt positions and corresponding Table Tie-Bar. Lifting Arm also shown.
09 Table Raiser Arm and Crank (replaced optional 10E table raiser)

Late 1948

- Table Raiser Arm and Crank (replaced optional 10E Table Raiser)

The optional Table Raiser Arm and Crank were replaced in late 1948 with the 10ER Table Crank and Arm Assembly.

The optional 10E Table Raiser assembly is an accessory that was rather scarce and hard to find today as not too many were bought back in the day. The 10ER was available just about one year after the 10E hit the market in late 1947.

There were do-it-yourself upgrades and factory upgrades done by Magna or their dealer network, so they tended to disappear over time.

John S. Burger and a few others are the only folks I know who still have one today.
10 Rip Fence with Rear Lock

The Original Style Rip Fence was replaced by a re-designed fence with a pressure cast body with depth of cut indicator engraved on the side.

It was provided with a Rear Lock to help secure it to the back side of the Work Table to keep it straight and a fence bar on the front to use the front lock in the same manner as on the work table itself.

Prior to this time, the Rip Fence was attached to the Wooden Extension Table (discussed later) via holes in the Rip Fence via Wing-Nuts and Studs in the Extension Table, or to the newer Aluminum Table, by front locking assembly only.

There will be a subsequent Second re-design of the Rip Fence that I will discuss later that changes the angle of the locking mechanism.

Additionally, Magna released an optional accessory rear lock mechanism to retrofit the Original 10E fence. It will be discussed later as I illustrate a custom fabricated rear lock assembly that Skip Campbell fabricated in his shop.
11 New Extension Table

The new metal Extension Table mounted to the new Tailstock with milled channel for extension table bracket 104-1RX. The new Metal Extension Table with a fence bar on the front to use the front lock in the same manner as on the work table was released with the Tailstock. In the prior version, the lock only worked with the main work table and the fence attached to pins with wing-nuts (left).

The Bracket length will be later lengthened from 7.25 inch slot to a 9.25 inch slot to allow for more range.

Special Note:

Magna Engineering offered a Special Conversion Kit for Tailstock-Extension Table K-120 at $17.20 on sale through Oct 1, 1949 (regularly $23.25).

It included the new Rip Fence Assembly 107-6RX, Miter Gauge Assembly with Detents 106-1X, The new Tailstock with milled channel for extension table bracket 104-1RX, and the New Extension Table Assembly with Knobs 109-6RX, and a Revised Owner’s Guide. (I am still trying to identify what the release numbers were relative to that version of the Owner’s Guide or if it was just a new release of the Guide that occurred about the same time and was just included in the kit.)
12 Tailstock with Groove for New Extension Table

The new Tailstock with milled channel for extension table bracket 104-1RX

The new Metal Extension Table with a fence bar on the front to use the front lock in the same manner as on the work table was released with the Tailstock.

The attaching bracket for that table will be lengthened in another update discussed later.
Miter Gauge Upgrade with Spring Button and Detents were added to improve accuracy by providing stops for some of the more common miter cuts.

I chose to use a later 10ER manual drawing to illustrate it since the diagram better illustrated the components. This drawing also reflects another change as in this version manual Magna had switched (in that later manual) to the 4 digit part numbering scheme.
Upper Belt and Pulley Guard with Wider Skirt and Flat Top provided more saw clearance for stock.
Jointer, Jigsaw and other Accessories added

These were never part of the base machine, and were bundled from time to time during sales promotions, selling most often as separate Accessories.
15 [Optional] Variable Speed Changer (0-5 range version)

Optional Variable Speed Changer (0-5 range version)

Note the aftermarket switch shroud that allows small padlock to lock-out power switch below.

Variable Speed Changer is a highly desirable option if you do turnings, especially bowls. - Everett -

There are two versions out there one with gauge range of 0-8 and one with gauge range of 0-5
Jan, 1951

16 Vertical Lock Knob, from Aluminum Knob to Steel Knob (101-12x to 101-10)

Vertical Lock Knob, from Aluminum Knob to Steel Knob (101-12x to 101-10, then A 2266)
Tailstock Lock Knob from Aluminum Knob to Cap Screw with Hex Cup, allowed Tailstock removal with Allen Wrench opposed to marring the Aluminum Knob with pliers etc. when it was too tight to remove by hand.

The 10E Tailstock drawing reflects two Aluminum Knobs to hold on the extension table, which as you will recall, were previously two wing-nuts. Prior to that one wing nut and a square locating stud only available on the earliest 10E’s made.

Eventually, the two knobs were scaled back to one on the 10ER, with the redesign of the table extension bracket which positioned along two machined surfaces of the newly designed tailstock.
April 1951:

18 Solid Saw Guard (replaced the one with open slots in the sides)

Solid Saw Guard replaced the one with open slots in the sides.

And for those who say there is no such thing as a surviving lower saw guard for the 10E/10ER, the one below sold on eBay a year ago for a modest price. I missed buying it by just a few seconds.
19 Sanding Disc (upgraded with extra support ribs)

The Sanding Disk was upgraded to improve rigidity and to maintain flatness across surface which would warp slightly under heavy pressure.

Obviously one should not use heavy pressure, they should use a more aggressive abrasive grit, but this helped mitigate the problem.
No clue what drove the design change other than this part may have been used on other equipment that required it to be knurled.

It appears the holes for the set screw as well as the three positions of the Quill Advance Handle were drilled after it was already knurled since they go through the knurling.
21 Pivot Base Footprint Change to Shorten Required Bench Length

The Pivot Base was shortened by reducing the rounded end and rounding over the corners.

Speculation by some is that this was done due to the extra length of the Jointer Mount, and recommendations the Bench Length be extended to allow the drop-away Jointer to rest on the Bench itself.

Scuttlebutt was that by extending the length of the bench, it no longer would ‘fit in the space of a bicycle’ and that by changing the profile of the base, that moniker could still be used.

*I have found nothing in print that substantiates that notion, but it seems plausible that marketing could have driven this change.*
22 Tool Rest Arm set screw moved to center line

Tool Rest Arm set screw moved to center line

Raiser Crank part number change (103-40x to 103-39x) There is a Chrome one and a Painted one in the Owner’s Guide.

Vertical Lock Screw, part number change (101-12x to 101-10)

Tailstock Locking Knob, part # chg. same picture (104-7RX to 104-9) in two different manuals.

Feb 1952
One Piece Wedge Locks to fix sticking problem

Locking wedges (headstock, carriage & Quill) One piece Locks were introduced in April 1951 to remedy a sticking problem.

Personally, my 10E has the original 2 piece Brass Lock that presumably did not stick.

Was it a cost control measure to make the change from brass? Possibly.

For whatever reasons, these were changed in production to a 2 piece alloy Lock, which actually is known to have had the sticking problems. We will discuss this more when we get to Skip Campbell’s contributions in data collection discussed later.

I did not document this as a separate change item though it was indeed a production change.

The One Piece Lock required a new Headstock Casting with the smaller threaded hole.

Yes, that indeed is an un-serialized Shopsmith Badge on the BACK side of a 10E / 10ER. It seems this was done on Magna Demonstrators to possibly improve brand visibility when these machines were in public. The Montgomery Ward demonstrators had a SS label on the back.

If one considers the Model 10 as I refer to the ‘original headstock’ with the threaded extrusion on the front for the setscrew, then these are then version two, and three.
Longer extension table bracket was introduced. The photo is one provided by Skip Campbell and the annotations E-5, ER-4, and ER-6 were his references he used to help owners identify what they had in their survey responses.
25 Hollow Table Support Rods

Feb 1953 saw the introduction of Hollow Table Support Tubes

This is one Owner’s Guide that shows a painted table raiser handle. The others were nickel chrome.

Should I have documented that production change as well? Perhaps but it didn’t have much fan-fare.
26 Thin Way Tubes

Later in 1953 the 1/8” Wall Thickness Way Tubes were introduced which replaced the thicker wall and much heavier ¼” Wall Way Tubes used previously.
27 Headrest Bolt Pattern 2 or 4 Bolt

Originally the 10E was introduced with the 4 Bolt Headrest. Later it was changed to the 2 bolt design.

With the introduction of the Magna Jointer, the third type D 3045 was introduced which allowed the Jointer to drop away, allowing other SPT (Special Purpose Tools) to mount and be driven.

Going further, there are both Cast Iron versions and Aluminum castings of the first two types.

I have never seen nor can I envision a Jointer Headstock Headrest made in anything but Cast Iron due to the weight of the Jointer it supports.
An Optional Rear Lock for the Original 10E Fence was available. The photo illustration of one (on the right) was ‘fabricated by Skip Campbell in his shop’

Skip said of this fabricated rear lock: "Here is an upgrade rear fence clamp for the 10E rip fence which did not come with one. There was an optional 10E upgrade for this purpose but they are hard to find. This one turned out great. The end of the fence was drilled and tapped 1/4 x 28 for the cap screw to hold it in place."

Skip shows his compared to the newer rounded 10ER Fence with Rear Lock mechanism in the photo at right.

The much larger OEM Magna offering appears below. It is a rare part to find.

_Were there other changes?_

Yes some subtle changes were introduced I am sure that I have no knowledge of yet as I have not encountered them. That does not mean they aren’t out there. Some subtle changes in the headstock or headstock machining practices occurred that I know of, which likely indicates some other part was changed that fit there.

I know that I do not have a copy of every version of Owner’s Guide they released starting 70 years ago, but I am still looking to find copies of the Illustrated Parts pages and Parts Listings from any of them that we can discover, just to glean any new discoveries.
Other Accessories Available

While these Accessories were all available well before 1953, I placed them here in the date sequence because they were taken from a 1953 Accessories Catalog. I personally did not have access to an earlier vintage Accessory Catalog than 1953, but these accessories were available well before that date.

Most of the accessories at right are still available today in the market from someone, and some of the newer Shopsmith Mark V items such as Arbors and Drum Sanders will fit. Volumes of them appear on eBay from time to time.

The under table saw guard and motor pulley guard were among the least ordered accessories, therefore they are among the hardest to find today in the used marketplace. If you find them, someone will want them.

There were specialty mounts in the Power Mount Adapter Kit 11-920 to allow other accessories to attach to the way tubes such as the Magna Sprayer, or the Bandsaw that came about the time the Mark 5 was introduced in 1953.

The ¾ HP motor, the Bench Legs and the Retractable Casters were among the most popular accessories and are far more commonly available today in the used marketplace.

Part Numbers Changed to 4 digit format in the Owner’s Guides printed in February 1953 per my late friend and mentor Bill Mayo.

This concludes Appendix C, but there is far more added in the 10E Preliminary Manual in which I originally assembled this document. – Everett-