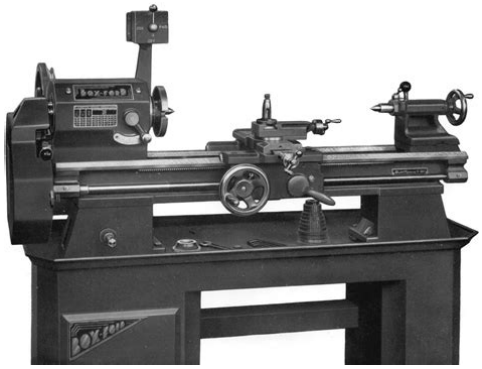
boxford model b manual



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The next version, as shown immediately below, used three bolts with two being set across the bed and passing through a flange on the inner face of the foot with the other on the foots centre line. The final type, and found on most machines, was a simpler arrangement of two bolts one at the front and the other at the rear of each foot. For a complete description of all Boxford lathes go to the Boxford home page By the early 1950s the belt runs were completely guarded, the tailstock had a captive locking handle working though a cam and the electrical switch had been moved from the bed foot to a more convenient and safer position on a bracket bolted to the headstock. While reardrive lathes had 6, 8 or 16 spindle speeds all the underdrive machines, with the exception of the variablespeed VSL, were limited to 10. With some variations, because of special orders or educational and training use, the usual range on the backdrive type was 30 to 1250 rpm whilst the Mk. 1 and Mk. 2 Underdrive types of all models CUD, BUD and AUD generally ran at 40, 66, 105, 165 and 270 r.p.m. in backgear and 210, 340, 540, 850 and 1400 r.p.m in open belt drive.The official release date was May 1976, but machines have been found that predate this, for example AUD III33777 with a bed casting dated 1974 and with year also correctly corresponding to the Serial Number list. These lathes were distinguished by a more modernlooking stand complete with a neat splashback, standardfit lowvoltage halogen light unit and a rather elegant grey and brown finish. However, the designation Mk. 3 was never acknowledged in the advertising literature, though it was used in the spares department to identify the particular models.For safety the lever could be locked down into its two positions with Allen screws and was also connected to a microswitch that cut power if the

handle was moved while the spindle was turning.http://www.flying-vikings.net/UserFiles/corvette-pinball-machine-manual.xml

Before using the backgears, look through the hole drilled in the sloping face on the front of the headstock and turn the chuck by hand until an oil nipple appears. Using a leveraction oil can with a plastic spout, apply no more than three pumps of oil to lubricate the pulleytospindle bearing. Find and oil the other headstock nipples as well. If you are unsure about how the mechanism works, removing the small rectangular plate on top of the headstock its secured by four Allen screws will allow you to peer in and see what happens when the lever is moved. In addition, its easy enough to take off the sheetmetal cover at the back of the headstock to give an even clearer view. As the label on the headstock says if its not been prised off by a former schoolboy operator do not move the lever if the lathe is running; if you do, youll smash the gears. This version produced inchpitch threads; the metric gearbox had the position of the tumbler locating holes reversed left to right. Besides power cross feed this apron provided a finer range of longitudinal feeds than the Model C allchangewheel model the reduction through the aprons gear train meaning that the feed rate slowed by a factor of 0.3. The lathe had its origins in the Denford Small Tools Company D.S.T., founded in Brighouse by one Horace Denford in the years before World War Two. The companys original products included a range of precision tools and inspection equipment and, no doubt, subcontract work for the many local generalengineering and machinetool companies who once inhabited the area. It is believed that Denford moved at least part of their operation to a former spinning factory, Box Tree Mills, in Wheatley, Halifax during the closing years of WW2 193945. The previous occupants had been a ships telephone equipment manufacturer, Arthur Graham Ltd., who used the building between 1942 and 1944 after being bombed out of their Woolwich London premises.

Nevertheless, demand in the UK was such that the factory hinted at a production run of over 400 units. Even today, in confirmation of these numbers, a small but regular supply of these wellmade little machines turns up on the secondhand market. Other machine tools made included a useful little shaper copied from a South Bend original , a tool and cutter grinder also sold under the Union and Harrison names and a variablespeed vertical milling machine. Continued below Details included are scant, just the main dimenions and specification and no hint of a Model Type or Series Nnumber. To date, the earliest catalogue found is a wellproduced folder with a creamcoloured cover in card holding twelve sheets secured with split pins showing all three models, A, B and C, together with a range of accessories. Other catalogue covers can be seen here. By the 1970s Boxford had started to introduce a number of trainingtype CNC lathes and milling machines, a successful path that they follow to this day. In addition, a replacement for the original beltdriven 4.5inch was announced, a gearedheadstock model produced in various versions for both training and industrial use.Harrison eventually sold the Boxford concern, the last machine made under their ownership being Serial 284500 in early 1971. This lathe would, in the years to come, provide stiff competition for Boxford. The Company also widened their range of products to include wood lathes, toolsharpening equipment, floorstanding doubleended grinders and polishers and a number of rebranded machines including pillar and bench drills, a drillsharpening machine, a shaper actually made by Realm Engineering of Croydon, Surrey and also sold as the Royal and a milling made by AEW. In 1962 Gerald Denford, the son of Horace, took over from his father and developed the move to CNC technology.

https://www.becompta.be/emploi/3par-inform-os-cli-administratoru2019s-manual

Even though the South Bend headstock, together with its spindle and plain bearings, had proved to be reliable and rugged a South Bend bed always wears out before the headstock Boxford used a much more rigid, boxlike casting open only at the rear to accommodate the drive belt and carrying a spindle running in easilychanged taper roller bearings. Instead of locating the headstock on a front V and rear flat as South Bend had done, Boxford choose to use a Vway at both locations. However, in

later years, with the development of underdriven versions with a belt running down the front face of a now wider headstock a change was forced back to the original layout. A further advantage was that the bearings could be replaced easily and, if required, much higher spindle speeds reached with reliability. Later models had ordinary bearings with 17 rollers and a shallower cone angle and seemed to have worked just as well. Continued below Collets, sized at C3, were carried in a hardened nose insert and retained by the usual sort of threaded drawtube. Exactly when the gearbox and power crossfeed models were first made is uncertain, but they must have followed within a few months, for South Bend had been offering these versions since 1939 and the first known properly printed and illustrated advertising literature does show all three types. On the very first examples made the lathe was clamped to the stand or bench by two inline bolts that passed upwards into each bed foot the latter having been found cast in both cast aluminium and iron. The next version used three securing bolts, two being set across the bed and passing through a flange on the inner face of the now exclusively castiron foot and with the other on the foots centre line passing through an inwardsfacing boss. The final type, and found on most machines today, was a simpler arrangement of two bolts one at the front and the other at the back of each foot.

When fitted with the optional 2step pulleys on motor and countershaft, and combined with the 3step cone flatbelt headstock pulley, these early versions had a usefully wide spread of spindle speeds though bottom speed was too high of approximately 76, 140, 250, 390, 710 and 1300 in open belt drive and 40, 67, 120, 190, 350, 640 in backgear. The backgears, though often found damaged on used machines by mishandling, were robust enough to allow the lathe to be easily capable of turning the largest faceplatemounted job. Both slides of the compound rest were driven by 10 t.p.i Acmeform or 2.5mm pitch screws fitted with 1.6inch diameter, satinchrome zeroing micrometer dials the friction setting of which could be adjusted or locked by a pair of by socketheaded screws that bore against springloaded balls. In January 1950 the flatbelt drive was abandoned, with lathe No. 1791 to become the first fitted with 4step Vbelt drive a muchimproved arrangement that gave a more useful bottom speed ideal for screwcutting by beginners and a total of 16 rather than 12 speeds. To convert a flatbelt machine to Vbelt specification is simple the pulleys interchange without any modifications being required. The standard Vbelt speed range ran from 38 through 55, 87, 125, 75, 110, 175 and 250 r.p.m. in backgear and 200, 285, 450, 650, 400, 570, 900 and 1300 r.p.m. in direct belt drive. According to Works literature seen by the writer, at the same time the tumblereverse mechanism was altered the inconvenient and slowtochange boltedup arrangement being replaced by a simple, quickaction, springloaded plunger design though its a fair bet that the change was not immediate and some lathes might have had the old parts fitted.Made from welded steel plate, the new stand held the countershaft and motor assembly, the optional coolant tank and motor and provided, in its righthand compartment, storage shelves with a collet tray fastened to the inside of the locking door.

Belt tension was released by an external handle that protruded through the stands lefthand face, a fitting that provided a strong temptation to use it as a clutch a potentially dangerous undertaking. This weakness from a safety point of view was removed when the mechanism was redesigned and made accessible only by opening the door. However, the new models did not replace the old, but complimented them, the original reardrive types remaining in the Boxford catalogue optimistically, one would have imagined until at least 1977. With the introduction of the Underdrive models came a superior cosmetic finish with the castings carefully fettled, filled with cellulose knifing putty, rubbed down by hand and spray painted. While not to the standard of the very much more expensive Raglan lathe, with its use of special Trimite paints, this new finish generally in a grey cellulose to BS692 sprayed over a filler was a considerable improvement over the earlier lathes, the first of which had,

to be blunt, a decidedly utilitarian appearance. Although the reardrive models suffered from a very deep countershaft, and consequently took up a good deal of room, the underdrive versions were very compact with a bare stand only 17 inches front to back and today are consequently by far the more popular buy secondhand. From December 1973 approximately Serial No. 33000 the swing was increased to 10 inches, but with the reardrive lathes remaining at 9 inches. Besides the conventional Vbelt drive already described, the lathe was also marketed as the comparatively rare VSL with expanding and contracting pulleys giving a useful mechanicallyoperated variablespeed drive system. The main improvements centred on increasing operator safety and ease of use backgear no longer need two levers to be engaged, instead the initial movement of a single, electricallyinterlocked lever on top of the headstock released the bullwheel from the spindle pulley and the final push sliding the gears into engagement.

A useful addition was a spindle lock, operated by a dished chromeplated button on the face of the headstock; this greatly eased the removal and fitting of chucks and faceplates and obviated the need to use, and possibly damage, the backgears. At the same time the opportunity was taken to reposition the various headstock oil nipples so they could be reached without having to open or remove any covers a hole being drilled through the front face of the headstock on the sloping surface so that an oil can could be used to lubricate the spindleto pulley bearing before engaging backgear. Unfortunately, the rather awkward not to say crude method of adjusting the position of the micrometer dial on the crossslide screw, involving a grub screw through the handle into a dimple on the shaft, was not changed. Captive nuts were fitted to the underside of the motormounting plate so that adjusting the belt tension on the primarydrive involved no more than slackening the clamping bolts and sliding the motor into the correct position; the countershaft spindle was increased in diameter, fitted with sealedforlife deepgroove ball races and the motorend cabinet door louvered to improve cooling. To improve lubrication of the countershaft bearings and avoid having to open the door to do this the end of the countershaft was arranged to protrude through the lefthand face of the stand so that oil could be injected by the direct application of a pressure gun. To improve the appearance of the lathe some small but significant improvements were made to the fit and finish of various components including more precise mating of the headstocktochangewheel guard and bedtoscrewcutting gearbox faces. The appearance of the tailstock was also cleaned up and, as a final touch, a modified catch though still largely useless and easilyopened was fitted to the changewheel guard.

The hardbed option was also offered on other models including the VSL and even the ME10, though it has not been possible to confirm that the older reardrive types which continued to be listed alongside the newer versions for some time could be similarly equipped. Some confusion surrounds exactly when the final version of the Underdrive, the Mk. 3, was put on the market. The official release date was May 1976, but machines have been found that predate this, for example AUD III33777 with a bed casting dated 1974 the year correctly corresponding to the Serial Number list. These lathes were distinguished by a more modernlooking stand complete with a neat splashback, a standardfit lowvoltage halogen light unit and a rather elegant grey and brown finish. However, the designation Mk. 3 was never acknowledged in the advertising literature, though it was used in the spares department to identify the particular models. However, it is known that an ME10A, serial number 43293, was purchased direct from the Company later that year so obviously, although the official stock list had been closed, a number of machines were left over, or built up from parts. Should you have a later example, please do let the writer know.Some changes were made to the drive styten and its controls in November, 1976 but the belts used remained the same. All versions of the VSL are very desirable but, unfortunately especially the 500 difficult to find. While early

versions were very similar mechanically to an ordinary AUD the most significant change being the fitting of a mechanical variablespeed drive system some effort had also been made to upgrade the machine and, instead of castiron used on all lesser models the VSL, from first to last, had backgears in inductionhardened steel together with larger locating holes in the front face of the spindle bull wheel and, to improve reliability, the tumblereverse gears ran on needle roller bearings.

Pulley movement was controlled by a cable and rod system driven from a handwheel on the front of the stand. The upper drive pulley, which reacted to the movement of the motor pulley by opening and closing automatically, was carried in bearing hangers from which a second conventional linktype Vbelt took the drive up to the headstock spindle. The speed range was typically 50 to 2000 rpm and, because the drive was infinitely variable, an electronic rev. If the tachometer is broken or missing, businesses specialising in vintage car and motorcycle restoration can often help with replacement or repair. Unfortunately, because the drive mechanism fitted to them has to be accurately aligned to work properly, the VSL is difficult to change to singlephase operation. In addition, because the coolant pump, light unit and safetyinterlock transformers are also 440 volt 3phase though some may be on stepdown transformers to run at 110V, rather than attempt to completely reengineer the peripheral controls, it is much easier to leave everything in place and run the lathe from a phase converter or inverter. Coupling the inverter as is usually recommended by their makers directly to the motor and bypassing the builtin controls has been known to produce a far more effective conversion. At one time it was believed that all gearboxes on the L00 VSL lathes had the altered internal ratios but several examples have been found in the USA one being a VSL500 manufactured in 1977 with serial number V.S.L. 71861L00 where this is not the case, the gearboxes being of the earlier, ordinary type. It is suspected that, while Boxford fitted a different gearbox to the earlier VSL models with the L00 spindle nose, this practice was discontinued and later editions of the manual not updated to reflect the change. If you buy a gearboxequipped lathe that appears not to generate the pitches shown on the screwcutting plate check the special manual produced by lathes.co.

uk, it shows all the exfactory arrangement of the changewheels. One lesscommonly found accessory offered for the latemodel VSL lathes was a full height cabinet on the righthand face of the stand that held a set of C5 collets and the necessary draw bar. All the gears necessary to generate metric and other pitches are now available at a good saving on the factory price. Early ME10s had a normal, fulllength countershaft and were little different to the runofthemill reardrive models the aim, presumably, being to use up supplies of nolongerneeded parts as the successful underdrive models took centre stage. Also available mounted on a special stand, the lathe was intended to run alongside the underdrive and reardrive models and could be had in any of the three usual A gearbox and power feeds, B changewheels with power feeds and C changewheels and handcross feed specifications. Early versions of the ME10 used a standard reardrive countershaft unit the type that is rather long front to back but most are found with a much more compact design that significantly reduced amount of room required to install it; indeed, as a consequence, fitted to its own cabinet, the ME10 took up only a little more depth than the underdrive versions. Thus, the end result was an arrangement that made the lathe much more suitable for the home workshop the market segment that Boxford must have been targeting. In order to achieve the reduction in backtofront length a different design of countershaft was used and available in standard form without a clutch or, at a considerable extra cost, with. The assembly consisted of two brackets bolted to the back of the headstock with each carrying an inwards facing stud from which hung a casting that formed, at its rear, two bearing housings held on a hinged plate so that the belt tension could be relaxed to change speeds.

Lathes could be supplied with either eight or sixteen speeds, the difference being achieved by using either a single or double pulley arrangement of the motortocountershaft drive. The 2step motor

pulley was the same size as employed on other models but the matching pair on the countershaft were, due to the lack of room under the cover, forced to be rather smaller the result being that bottom speed was raised to 60 and the top to 2000 r.p.m. against the more normal 30 to 1300 r.p.m. of the ordinary reardrive models and the 40 to 1400 r.p.m. of the underdrive type. Interestingly the clutch the operating handle for which was splined and could be lifted out and replaced in any position desired was only ever offered on the ME10, no mention of it can be found in any literature relating to the other Boxford models. One difference on most of these lathes though its not certain that all were so equipped was the use of quieterrunning, Oilitebushed, tumblereverse gears in fibre. The fibre gears can be fitted to all other models and have definite advantages if the lathe is to be used where noise might be a problem though being weaker the gears are, of course, more likely to fail. To adjust the motortocountershaft belt tension meant repositioning the motor itself however, once this had been done it was not normally necessary to make any further changes until the belt began to wear. Early examples of the CSB were different, and fitted with the novel, quickaction belttensioning device used on the lathes of the late 1940s probably another case of using up nolongerneeded spares. Other evidence of clearing storeroom shelves was the use, throughout the life of the model, of an earlypattern South Bend type saddle with its simple screwin, rather than bolton, crossfeed screw support bracket.

Ambitious advertising in the modelengineering press of the day attempted to position the CSB as an alternative to the Myford ML7; unfortunately, the Boxford cost nearly twice as much and, while it did offer a range of advantages, there can have been few takers. Shorn of screwcutting equipment and usually, but not always, backgear as well, this model was aimed at the school and college market and had apart from its low price little appeal for the model or experimental engineer. The reardrive system usually gave 4 speeds from around 200 to 1200 r.p.m. although the writer has seen examples with 2step pulleys on motor and countershaft to give 8. The underdrive models had 5 directdrive speeds of 210, 340, 540, 850 and 1400 r.p.m. or, with backgear fitted, an additional 5 slower speeds. The development of the training lathes mirrored that of the more highly specified versions changing from rear to underdrive and then incorporating the other small improvements already described. The last versions were of 5inch centre height and mounted on a version of the more modernlooking stand and even complete with the splashback, chuck guard and halogen light unit. Although an attractive proposition, because of their low price, the plainturning versions are of limited use other than in a training role, for the very simplest of work or as a backup lathe for roughing out. Can they be converted to fullspecification machines. I do know one person who managed it, but he enjoyed the unfair advantage of working night shifts at the RollsRoyce aeroengine factory in Derby and had access to, shall we say, a rather comprehensive range of workshop facilities. In other words, the conversion is possible, but not even worth considering unless you can find all the missing bits and enjoy the skills necessary to make the most of comprehensive turning, milling, grinding, boring and fitting facilities.

Drive Systems, Countershafts and Belts Because the 9inch lathes had been flatbelt driven the maker, following usual practice to optimise grip, had set the pulleys as far apart as reasonably possible. However, even after a change to Vbelts and through two changes of countershaft Boxford made no effort to take advantage of the shorter centres on which these can run to make the machines more compact. The movement was activated a quickaction, twostart thread controlled by a handle on the end of a shaft that protruded through the front face of the bed foot immediately below the headstock. When moving these lathes, take care to support the rear of the countershaft otherwise the bars on which it sits may be bent. On later reardrive models a very heavily built, separate 16speed countershaft of different design was fitted with the motor mounted on a rather overengineered even unnecessary horizontal platform. This allowed a separate adjustment to be easily made to the motorcountershaft belt tension. At some point the new countershaft was modified and its righthand bearing made detachable to ease belt replacement though it was still necessary to

completely dismantle the headstock if a standard Vbelt was to be used. Wellused belts or belts with stiff sections, caused by being left under tension for some considerable time fall into and then ride up the pulleys, effectively varying the drive ratio, causing the speed to rise and fall rapidly and so induce vibration. New, highquality machinetool specification belts which we can supply, just email for details can make a significant improvement to the smooth running of any machine tool.An important point when dismantling Boxford drive systems the makers were inclined to use two grub screws to lock pulleys to their shaftsthe upper screw acting as a lock. So, before getting out the 14 lb hammer, do check first why it wont come apart.

A serious problem with the reardrive machines, when used in educational establishments, was the difficulty of securing the belt guards against curious fingers. With the drive now held securely in the stand behind an electrically interlocked door another advantage emerged the depth of the machine was reduced to as little as 17inches 400 mm. Early underdrive lathes had their countershaftspindle bushes pressed directly into the material of the motor platform itself, with the belttensioning handle mounted externally on the lefthand side of the cabinet. With the handle so temptingly placed many owners were inclined to use it as an unofficial and dangerous substitute for a clutch. While reardrive lathes had 6, 8 or 16 spindle speeds all the underdrive machines, with the exception of the variablespeed VSL, were limited to 10. With some variations, because of special orders or educational and training use, the usual range on the backdrive type was 30 to 1250 rpm while the Mk. 1 and Mk. 2 Underdrive types of all models CUD, BUD and AUD generally ran at 40, 66, 105, 165 and 270 r.p.m. in backgear and 210, 340, 540, 850 and 1400 r.p.m in open belt drive. Its well known that a lathe fitted with a spindle clutch is a good deal easier to handle than one without and it remains a mystery why the only Boxford ever so fitted as an option was the ME10. Its design was similar to that used on the Myford ML7 with a brakedrum housing formed inside the countershaft drive pulley and an operating lever working through a push rod and togglearm that opened and closed a pair of brake shoes. Owners of clutchequipped lathes report that the unit is not only reliable but has a pleasingly light yet positive action. Interestingly, although large numbers were sold set up in this way, some were fitted but probably unknown to their first owners with an imperial leadscrew driven by a metricconversion changewheel set.