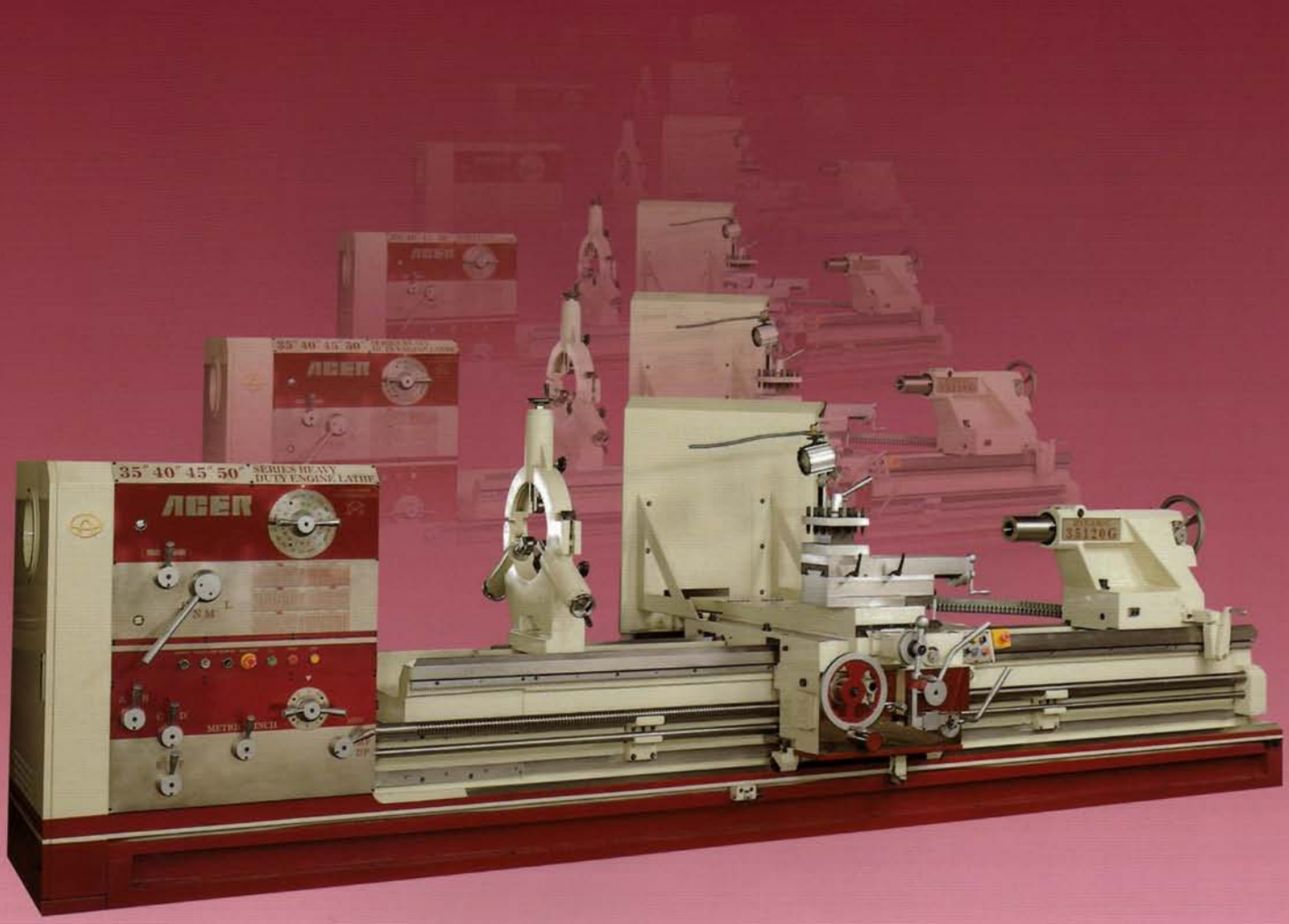
ACER

Technology • Creativity • Reliability
An Unswerving Commitment to Excellence

# Heavy Duty Engine Lathe

## Dynamic 35" ~ 70" Series



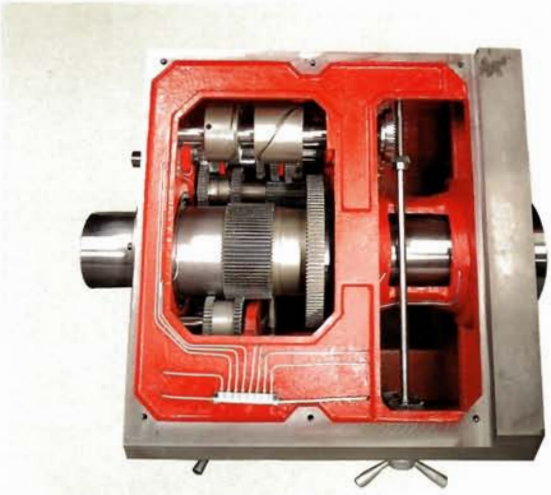
# Machine Features

## Spindle

Two FAG taper-roller bearings, and a third cylindrical roller bearing support are the key to withstand heavy cutting. The spindle is forged from high carbon medium steel (SF45), and induction hardened & ground to its final accuracy. The spindle can hold **11,000 lbs** without center support. (Note: Only when chuck is on spindle and dead center on tailstock.) The sizes of the bore are from 6" to 21".

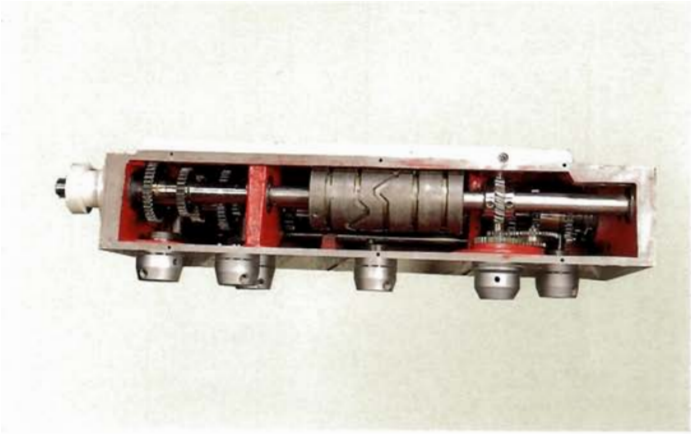
## Headstock

Rigidity and durability of the headstock are derived from extra thick casting (FC-30) and a prolonged annealing process. Heavy internal ribbings and large thick walls provide stability during deep, high RPM cutting. The front and middle taper roller bearings are set within the round ribbing structure of the headstock. This arrangement increases spindle accuracy and reduces spindle movement under heavy cutting. This simple 18-speeds headstock has four power transferring shafts. The shafts and associated gears, made from nickel-chrome molybdenum alloy steel (SNCM21), are treated by cementation and precisely ground to provide smooth and quiet operation. (Note: Double chuck style headstock is also available.)



## Machine Base and Its Bed

One-piece casting (FC-30) of the machine bed and base allow it to rest entirely on the floor for maximum stability. The unit is properly stress relieved, hardened & ground to HRC 55 on its bed ways (bed way accuracy is **8/10,000** per 20"). The bed and base are connected by an arch ribbing design that provides maximum rigidity and stability when making large outer-diameter turning operation. Two slideways support the saddle while a third slideway supports the apron. This design avoids cantilever effects under heavy cutting since the weight of the saddle, cross slide and the apron are evenly distributed. Triangular ribs under the front slideway work as position stops for the tailstock to prevent accidental slippage under heavy cutting. The bed is gaped for large swing capacity, and the base has a built-in coolant tank.

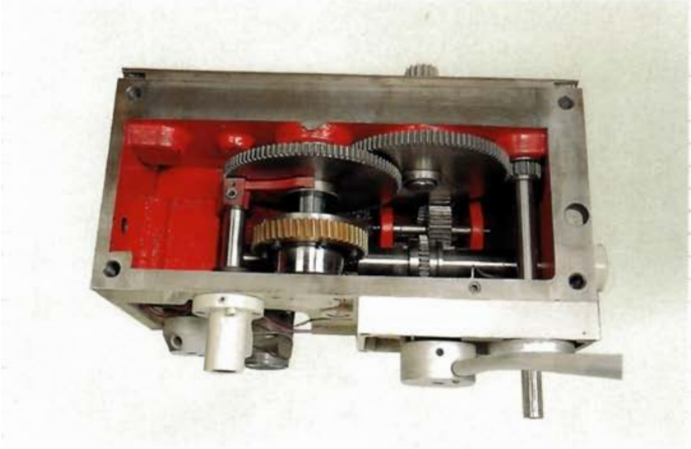


## Gear Box

The uniquely designed gear box offers a comprehensive range of thread choices (inch and metric) without the need to change transposing gears (metric threads: 1~56mm pitch; inch threads: 2/1~28 TPI). A wide range of feed rate selection and threading is easily accomplished using four levers and a rotary dial. The gear box is a one-piece cast design (five sided, only a cover on top) to allow precise machining and oil carrying capacity. The oil bathed internal gears are made from medium carbon steel (S45C) and are hardened and fine machined to their specifications. An oil level gauge is included.

## Saddle

The saddle, made from FC-30 casting, is heavily ribbed to withstand twisting under heavy cutting and is coated with TURCITE-B to provide wear resistance. Bearing surface length is approximately 32.5". Accuracy of the slideways is maintained using a forced lubrication system; repetitiousness of the longitudinal direction can be maintained within **1/1,000"**. The cross slideways are hardened & ground to within **4/10,000** per 12" and will retain their accuracy for many years.



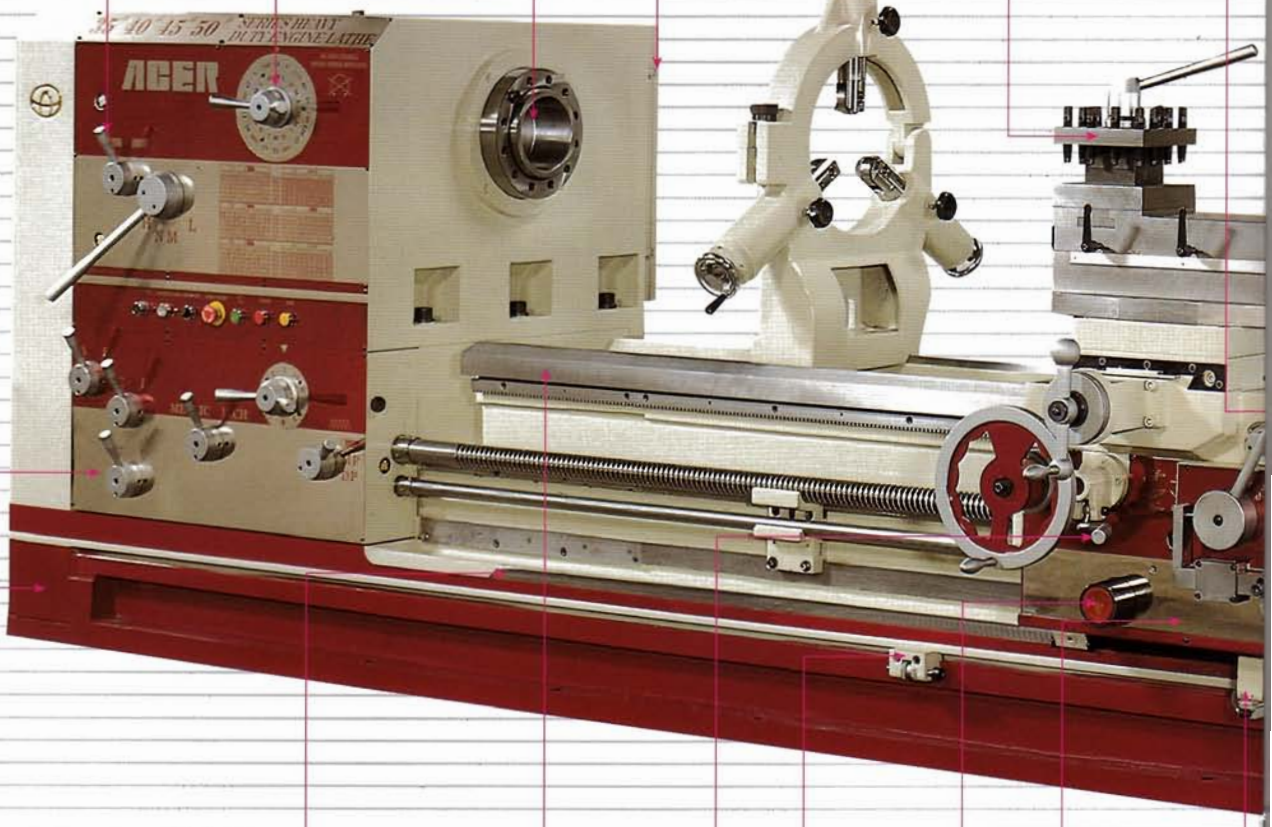
## Apron

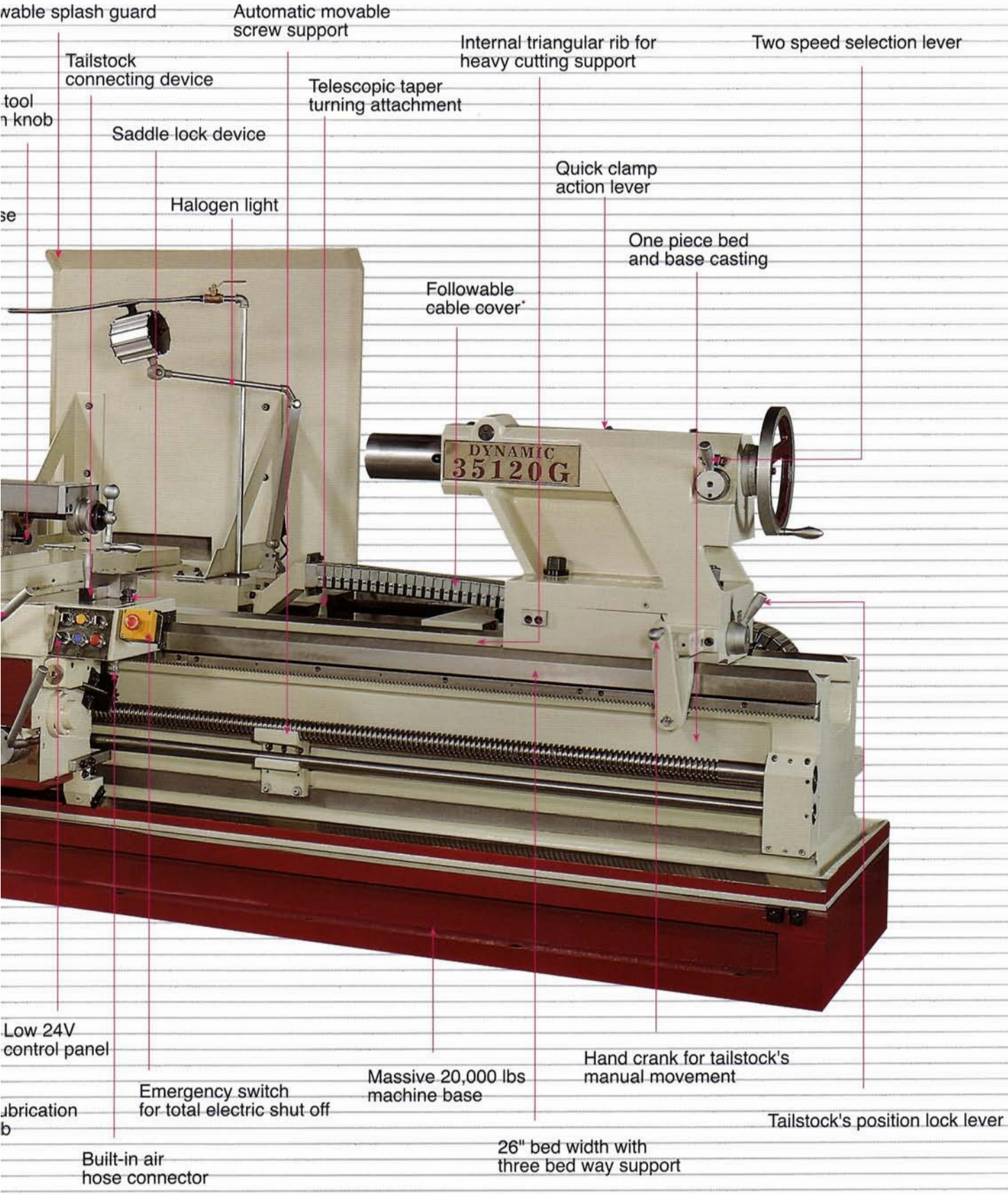
The apron had an electro-magnetic clutch that allows for precision positioning. Automatic feeding and threading in apron are fully interlocked to prevent simultaneous engagement of both functions. The apron is preloaded with a safety device to prevent gear damage. All gears are made of medium carbon steel (S45C), and machined to within **1/10,000"** per teeth. The direction of feeding and threading is easily selected by a lever. An adjustable lubrication pump allows user to choose, using a single selection knob, to lubricate only the apron, only the saddle and apron, or only the bed & apron. A lever on apron controls six power feed and rapid travel directions: saddle left/right, cross slide in/out, and tool post in/out.

## Apron's Quick Threading System

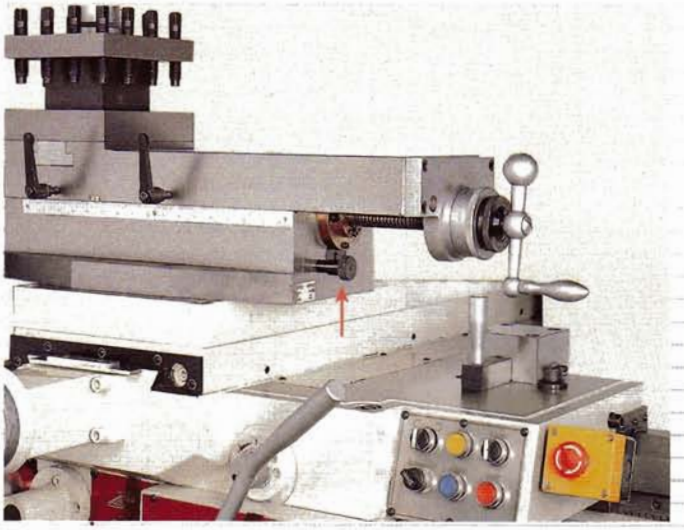
The apron contains a quick threading system that simplifies repetitious threading. To use the quick threading system, the user first sets the six direction lever for saddle left/right movement. A half nut engagement lever is then activated. Once the threading has through this half nut lever is then deactivated. Rapid travel is then used to go back to the original threading spot. The user saves time since a second lever is not needed to complete the task. To repeat the thread, simply turn the tool post handle and repeat the cycle. If the auto start switch is on, a limit switch will stop the feeding and bring the spindle to stop after 30 seconds. Otherwise the spindle will remain turning.

# Machine Description



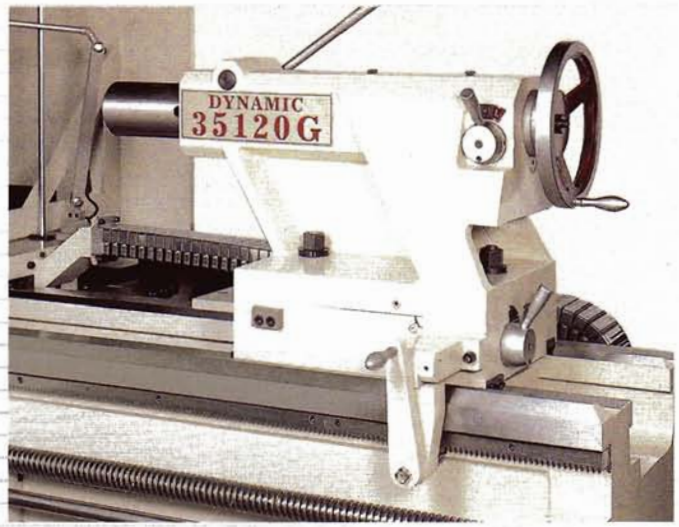

wable splash guard
Automatic movable screw support
Tailstock connecting device
Internal triangular rib for heavy cutting support
Two speed selection lever
tool
n knob
Telescopic taper turning attachment
Saddle lock device
Quick clamp action lever
Halogen light
se
One piece bed and base casting
Followable cable cover*
DYNAMIC
35120G
Low 24V control panel
Hand crank for tailstock's manual movement
Massive 20,000 lbs machine base
Emergency switch for total electric shut off
ubrication
b
Tailstock's position lock lever
26" bed width with three bed way support
Built-in air hose connector

# Machine Features



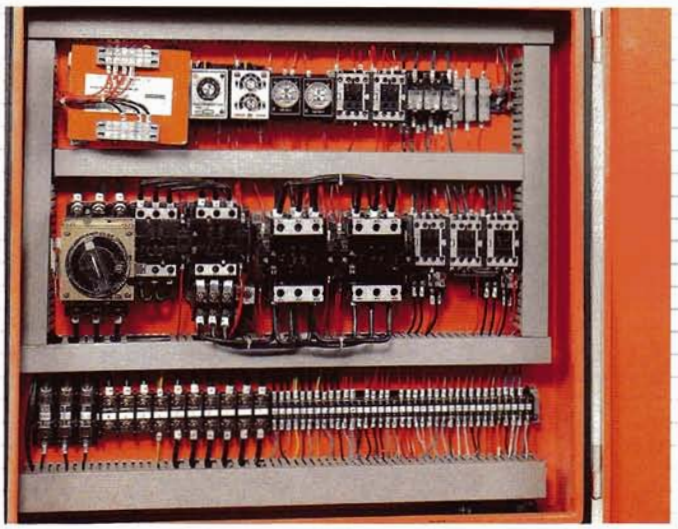
## Automated Tool Post

One unique feature of the lathe is its patented powered tool post. By engaging the apron lever and selecting this function on the tool post's engagement button, the tool post will travel by itself and it can also swivel 360 degrees. This unique design permits the mechanically powered tool post to perform oblique cutting at different angle. The travel of the top slide is 15-3/4".



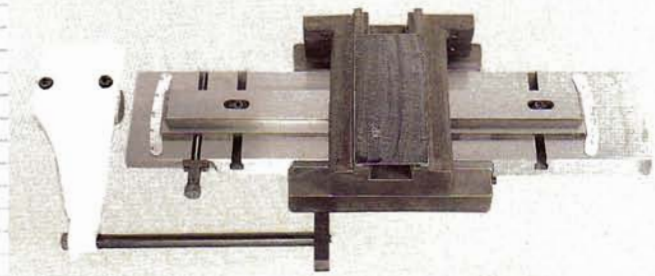

## Tailstock

A 4-1/2" diametered quill, graduated in both inch and metric units, is made from high tensile steel that is hardened and ground to accuracy (hardness of the quill is HRC 60 degrees). The massive body and rigid design of the tailstock ensure stability under all cutting conditions. A key-way lock prevents rotation of the tailstock under heavy drilling. Positioning of the tailstock is made either by crank and pinion, or by power feed of the saddle. A dual feed system in tailstock allows rapid positioning and fine drilling. Finally, the tailstock has a clamp-lock design that allows its body to clamp to the ribs of the bed way to prevent accidental slippage.



## Electric Cabinet

The electric cabinet has a simple layout to allow easy maintenance or repair. The cabinet's control voltage of 24 volts minimizes the risk of shock. Start-up of the machine occurs in two stages with the full torque being reached in 30 seconds. The stop button activates an electronic brake to stop the machine. The longer the button is pressed, the faster the spindle will stop.



## Telescopic Taper Turning Attachment

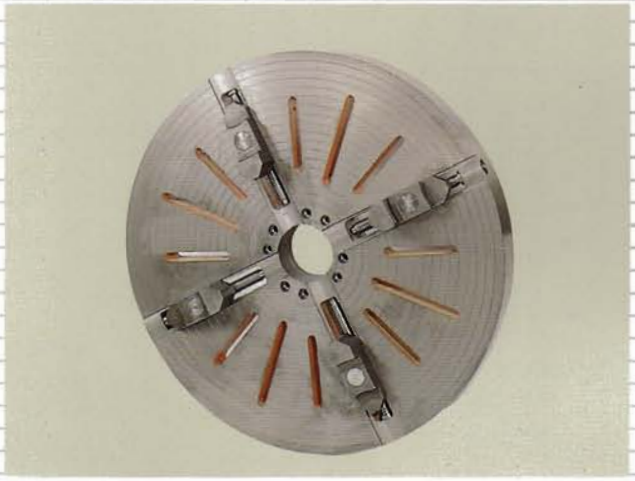
A taper turning attachment allows customers to cut taper for a length of 17-3/4" with 19-7/10" of travel. The attachment's slideways are made from FC-25 casting and are hardened and ground and will not deform or become damaged under heavy use.

# Standard & Optional Accessories

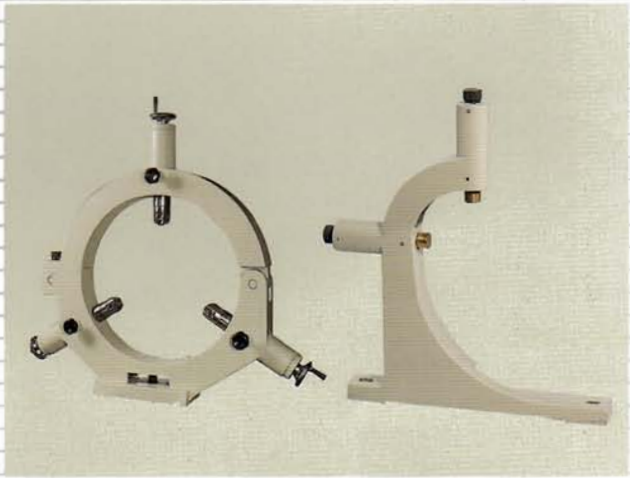
## ACER Standard

| | | Swing over 30" | Swing over 50" |
|---|---|---|---|
| 1. Spindle center run-out | | 0.0004" | 0.0006" |
| 2. Cam action of spindle | | 0.0004" | 0.0006" |
| 3. Spindle taper run-out | (front at 0" position) | 0.0006" | 0.0006" |
| | (rear at 12" position) | 0.0012" | 0.0012" |
| 4. Headstock alignment | vertical | 0.0012/12" | 0.0012/12" |
| | horizontal | 0.0008/12" | 0.0008/12" |
| 5. Saddle way alignment | | 0.0006/40" | 0.0006/40" |
| 6. Cross slide alignment | | 0.0006/12" | 0.0006/12" |

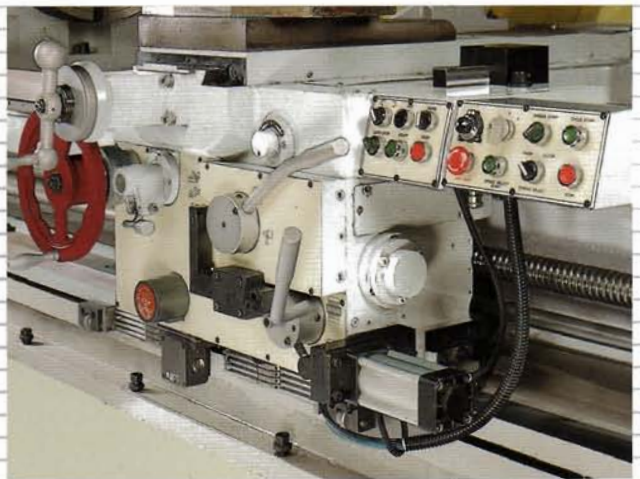
## Optional Accessories



Combo face plate with four jaws from 32"~60" in diameter



Steady rest / follow rest



## SPECIFICATIONS

| ITEM | MODEL | 35 series | 40 series | 45 series | 50 series | 45 series | 50 series | 60 series | 70 series |
|---|---|---|---|---|---|---|---|---|---|
| General Capacity | Length of gap from headstock | 23-3/4" | | | | | | | |
| | Swing over bed | 35" | 39-3/4" | 44-3/4" | 50-1/8" | 44-3/4" | 50-1/8" | 60-1/8" | 70-1/2" |
| | Swing over gap (Gap type only) | 52-3/4" | 57-3/4" | 63" | 68-1/2" | 64-3/4" | 70-1/2" | 80-1/4" | 90-1/2" |
| | Swing over cross slide | 24" | 29-1/8" | 34-1/4" | 39-3/4" | 31-3/4" | 37-3/8" | 47-1/4" | 57-3/8" |
| | Distance between centers | 60" ~ 560" | | | | | | | |
| Main Spindle | Spindle nose | A2-11 | A2-15 | A2-11 | A2-15 | A2-15 | A2-20 | A2-20 | A2-28 | A2-28 | A2-32 |
| | Spindle bore diameter | 6" | 9" | 6" | 9" | 10" | 12-1/2" | 14" | 16-1/8" | 21" | 24" |
| | Spindle step | 18 steps (mamual) | | * Auto 4 steps (with inverter) | | | | | | | |
| | Spindle speeds 1rang-rpm | | | 18~130 | 16~120 | 13~95 | 12~85 | 10~75 | 8~50 | 6~40 | 4~25 |
| | Spindle speeds 2rang-rpm | | | 35~260 | 30~200 | 25~185 | 23~170 | 20~150 | 15~100 | 12~80 | 8~50 |
| | Spindle speeds 3rang-rpm | | | 85~550 | 70~420 | 60~400 | 55~300 | 50~250 | 35~200 | 30~180 | 20~140 |
| | Spindle speeds 4rang-rpm | | | 165~1000 | 150~700 | 120~600 | 110~400 | 95~350 | 65~300 | 50~250 | 40~220 |
| | Taper of center | M.T. #6 | | | | | | | |
| Carriage | Cross slide travel | 26-3/8" | | | | 31-1/2" | | | |
| | Compound rest travel | * 15-3/4" | | | | * 19-5/8" | | | |
| | Max. size cutting tool | 1-3/5" x 2-3/4" | | | | | | | |
| Tailstock | Spindle diameter | 4-1/2" | | | | 5-3/4" | | | |
| | Bearing surface on ways | 19-8/5" | | | | 23-1/2" | | | |
| | Taper of center | M.T. #6 | | | | | | | |
| Bed | Bed length | 100" ~ 589" (Approx.) | | | | | | | |
| | Bed width | 22" | | | | 28" | | | |
| | Width of gap | 17-3/4" | | | | | | | |
| Threading & Feeding | System | Inch / Metric | | | | | | | |
| | Pitch of leadscrew | 50 Ø, 2 TPI | | | | | | | |
| | Metric pitch threads | 1~56 mm (60) | | | | | | | |
| | Inch pitch threads | 1/2 (2 inches per thread) ~ 28 TPI (60) | | | | | | | |
| | Module pitch threads | M.P. 0.25~14 (60) | | | | | | | |
| | Diametral pitch threads | D.P. 0.2~112 (60) | | | | | | | |
| | Range of longitudinal feeds | 0.0016 ~ 0.096 IPR, 0.042 ~ 2.4 mm | | | | 0.0021 ~ 0.1248 IPR, 0.055 ~ 3.136 mm | | | |
| | Range of cross feeds | 0.0008 ~ 0.0481 IPR, 0.02 ~ 1.2 mm | | | | 0.001 ~ 0.0624 IPR, 0.0275 ~ 1.568 mm | | | |
| Power | Main drive motor | 30 / 40 HP (opt.) | | | | 40 / 50 HP (opt.) | | | |
| | Rapid traverse motor | 1 HP at 80" ~ 40"/min | | | | 2 HP at 80" ~ 40"/min | | | |
| | Coolant pump motor | 1/8 HP | | | | 1/8 HP | | | |
| Floor Dimension (Max.) (L x W) | | 147" ~ 876" (Approx.) x 118" | | | | 147" ~ 876" (Approx.) x 130" | | | |
| Net Weight for 120G (± 2200 lbs every 40") | | 24200 Lbs | 24970 Lbs | 25740 Lbs | 26510 Lbs | 27750 Lbs | 30000 Lbs | 32250 Lbs | 34500 Lbs |
| Gross Weight for 120G (± 2200 lbs every 40") | | 26400 Lbs | 27170 Lbs | 27940 Lbs | 28710 Lbs | 29950 Lbs | 32200 Lbs | 34450 Lbs | 36700 Lbs |
| Packing Dimension (L x W x H) | | 151" ~ 885" x 90" x 91" | | | | 155" ~ 890" x 91" x 91" | | | |

Note: The manufacture reserves the right to modify the design, specifications, mechanisms, etc. to improve the performances of machine without notice.
All the specifications shown above are for reference only.
*Can perform oblique cutting with standard automatic feed.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