



Electronic Service Manuals

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Serving the Cleaning Industry Since 1922

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TOUGHMAN™

Item #87044-00

21" Propane Powered Strip Machine

FEATURES

- Orbital stripping action improves productivity
- Easy walk behind operation, no side torque
- Offset design allows stripping in hard to reach areas and along the baseboards
- Virtually puts an end to solution splash
- Heavy scrub grouted and concrete surfaces

Betco's Toughman™ propane powered strip machine features a super compact design providing unmatched maneuverability. This machine is ideal for stripping both small and large areas. Powered by a 13 hp Honda engine, this machine can handle the toughest jobs. The Toughman strip machine is perfect for use in all types of facilities including schools and retail stores.

WARRANTY

The 13 hp Honda engine is warranted for two years by Honda against manufacturer's defect.

All other components (except wear items)* are warranted for three years by Betco.

**Wear items not covered under warranty are: wheels, filters, throttle cables, pad driver and handle grips.*



SPECIFICATIONS

- Strip path: 21"
- Motor: 13 hp Honda
- Hour meter: Yes
- Brush pressure: 145 lbs.
- Pad speed: 1900 Orbs/minute
- Handle grips: Anti-fatigue
- Deck: Steel and fiberglass
- Tank: Steel
- Noise level: 90 db
- Length: 42"
- Width: 22"
- Height: 28"
- Weight: 230 lbs.
- Productivity: 7,500 sq.ft/hr.

APPLICATIONS

- Stripping
- Heavy scrubbing grouted floors and concrete

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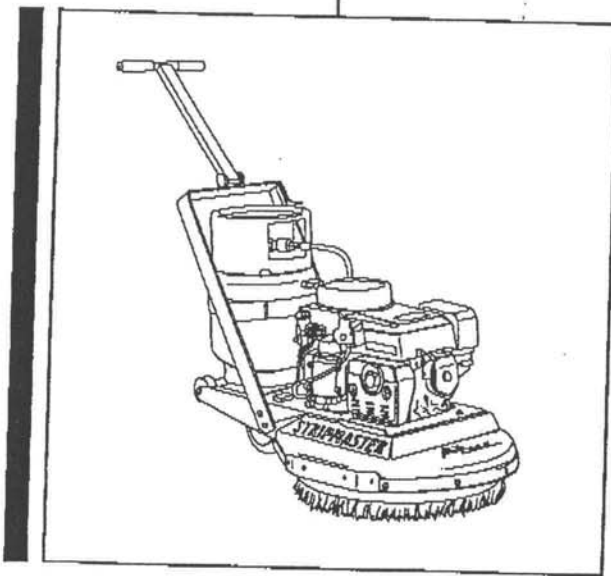




Toughman™ 21" Propane Strip Machine

OPERATOR'S MANUAL

Item #87044-00



Chemicals
Equipment
Programs
Process

BETCO®

I. POWERED EQUIPMENT PREPARATION

- A. Familiarize yourself with equipment by reading manuals and identifying components and controls.
- B. Check that suggested maintenance schedule has been observed.
- C. All machines are equipped with a multi-function maintenance meter. The four functions include the following: hours, job timer, service alarm and tachometer. (See **Engine Maintenance Meter Instructions**)
- D. Never let an untrained person operate or perform repairs on the machine. They may hurt themselves, damage the floor or the equipment.
- E. Never change or alter the propane control equipment!
- F. Always check oil before attempting to start engine!
- G. Install approved and properly filled propane tank.
 - Never complete the connection of the tank to the machine by using a wrench. Always do it by hand. Listen for the rush of fuel to the lock-out device when you open the tank valve. If you hear this, it will indicate that a good connection has been made at the tank.
 - European tank connections may require use of a wrench. However, care should be taken not to overtighten the gas fittings.
 - Provide and use ear protection during operation.

II. STARTING THE ENGINE

- A. Open propane (LPG) tank valve (counter clockwise).
- B. Set throttle control at idle for 12 V & choke for electric start system.
- C. Electric start - push "Start" button until engine starts. Starter should not be engaged for more than 10 seconds at a time.
 - When a propane tank is overfilled it may temporarily cause the fuel regulator to malfunction. Remove the tank to a well ventilated location. Release some gas until the cloud disappears and escaping gas is "clear." Reinstall tank.
 - All machines are equipped with tamper proof fuel systems. If a fuel problem exists, contact an authorized service center.
 - Propane tanks should be removed & stored in a protected off site area.

III. TOUGHMAN OPERATION

- A. After starting engine, put throttle lever in idle position until ready to strip. Unit has centrifugal clutch. Pad Driver or Brush will not turn while engine is in idle position.
- B. Increase engine speed to desired RPM (2500-3000). Pad Driver or Brush will begin to function as you reach 1800 RPM Engine speed not to exceed 3400 RPM.
- C. Push machine straight ahead at normal walking speed.
 - When operation is completed remove tank and store in a secure, protected off site (preferably outdoor) location.
 - Do not use on surfaces with a gradient exceeding 2%.
 - Never tilt back machine to maintenance position while engine is running.
 - Never reach under machine deck when engine is running.

IV. CAUTION IN STORAGE AND HANDLING: PROPANE TANKS

- A. Always store equipment away from heater rooms, boilers, gas-fired water heaters or any other source of open flame and away from possible falling objects.
- B. Always vent an over-full bottle out of doors away from all closed places and away from any fire or flame producing device. Use a screwdriver to vent excess propane which escapes as a white mist until at proper level in tank.
- C. Always store LPG tanks outside. Remove all tanks from inside building except during equipment use. Store them in a secure, well ventilated area.

V. PAD AND BRUSH ADJUSTMENTS

- A. To adjust or change a pad or brush, lean machine back towards propane tank.
Never turn machine on its side.
- B. A Pad Driver assembly with 1" clear nylon bristles is supplied as standard equipment on the TOUGHMAN. Also available is a Strata Grit Brush with 1 1/2" red Strata Grit Bristles. Depending on the application, either can be used.
 - The pad driver has 1" clear nylon bristles. These bristles are not intended to be used for any type of scrubbing or stripping. Their only purpose is to hold the pad.
- C. Depending on what kind of surfaces the machine is used on: concrete, ceramic tile, vinyl tile, brush life

should range from 500,000 to 1,000,000 square feet. As the brush wears down the nose of the machine will lean slightly forward causing the brush to wear down more on the edges.

- D. The brush bristles start out 1 1/2" long. When the outer bristles are approximately 3/4"-1" move the wheels to the higher holes on the wheel mounts. This will extend brush life and allow the machine to most efficiently address the floor.

TOUGHMAN INFORMATION

I. ENGINE

- A. See engine manual for maintenance schedule.
- Consult local laws regarding used oil.

II. PAD DRIVER, BRUSH, BELT, IDLER PULLEY, OR DRIVE SHAFT REPLACEMENT:

- A. Adjust the handle to enable the buffer to stand on rear wheels. Never turn machine on its side.
- Handle must be in shipping (forward) position to insure stability in the "tilt back" position. A second person should aide in the lift and to secure the buffer while being serviced.
 - Do not use handle when attempting to tilt back machine for service or cleaning. Handle is designed for control during operation — Do not use excessive vertical pressure.
- B. Remove pad driver. (Replace if worn.)
- C. Remove brush nut & brush centering device.
- D. Remove brush. (Replace if worn.)
- E. Remove idler pulley. (Replace if worn.)
- F. Remove belt(s). (Replace if worn.)
- G. To remove driveshaft unit: Remove retaining bolt & clip—pull driveshaft out of housing—use of a slide hammer may assist in removal (Do not pry with crow bar). While drive shaft is removed, spin bearings. If roughness is felt, bearing replacement may be necessary.
- H. To reassemble, reverse order of all steps taken above.

NOT ALL OF THESE STEPS WILL BE NECESSARY FOR ALL JOBS, BUT IF THEY ARE, THE ENTIRE JOB CAN BE COMPLETED QUICKLY WITH A FEW TOOLS.

III. LUBRICATION INSTRUCTIONS:

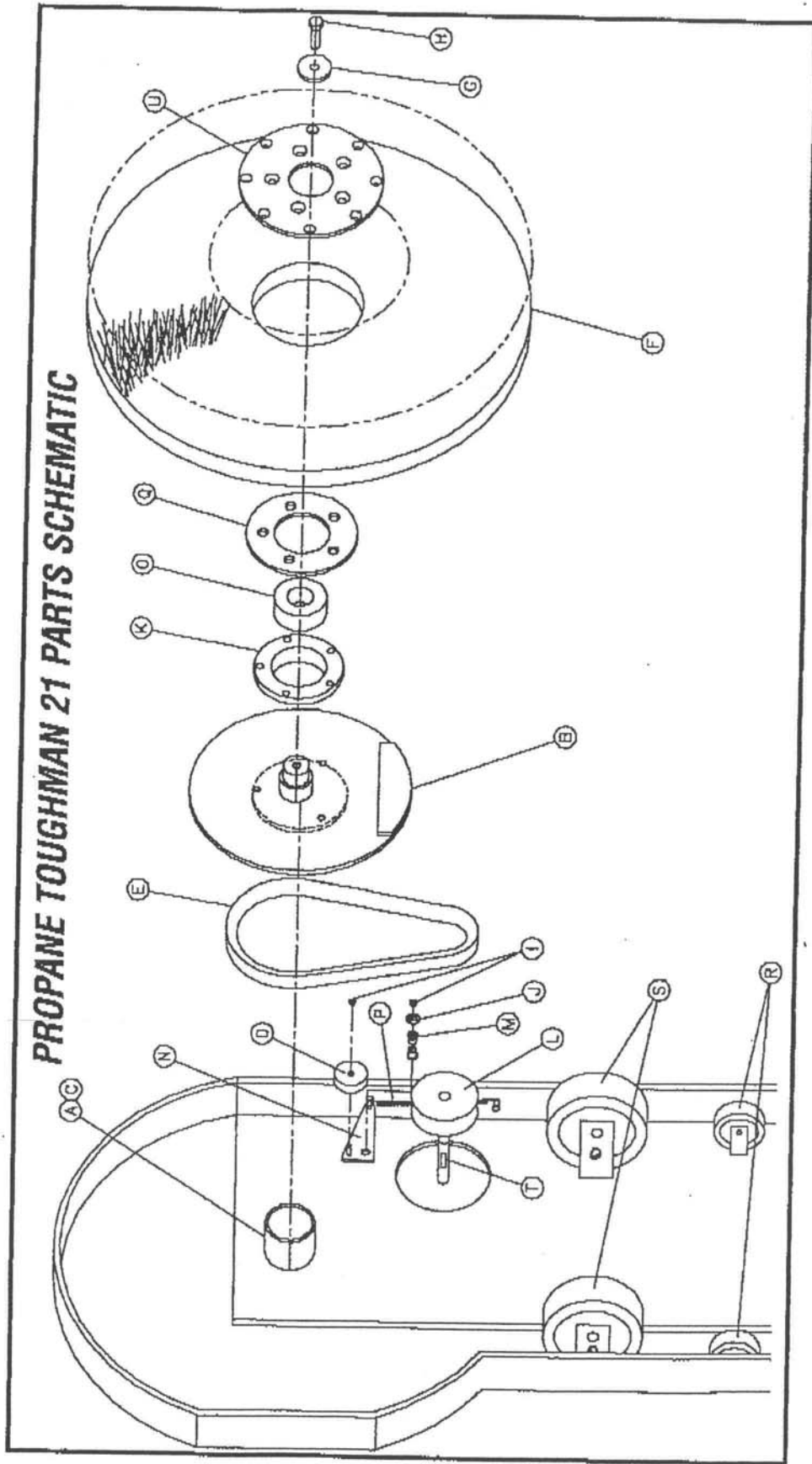
- A. Refer to engine manufacturer's owner's manual and comply completely with the lubrication instructions. Any evidence of under-lubrication will make a claim against the manufacturer invalid.
- B. Thoroughly clean air filter each time engine oil is changed.

IV. ENGINE MAINTENANCE METER

- A. This meter is used to perform preventive maintenance which benefits you with increased fuel economy, less down time and longer engine life. It is simple to operate because of its functional and user friendly design and has a function for every application, detailed as follows:

HOURLY METER: Records actual running time of engine. Non-erasable.

- B. **TACHOMETER:** Tells you what RPM your engine is running at for maximum power and efficiency. Reads up to 6,000 RPM. Do not run in excess of 3400 RPM.



PART LIST FOR TOUGHMAN 21

| PART | DESCRIPTION | PART NUMBER | QTY | NOTES |
|------|----------------------|-----------------|-----|------------------------|
| A | BEARING CAPTURE | N/A | 1 | |
| B | DRIVE SHAFT | 024-772DS | 1 | |
| C | SET SCREW | N/A | 1 | 1/4x20x1/2" BOLT |
| D | V-IDLER PULLEY | 188-V42B | 1 | |
| E | DRIVE BELT | 113-L536 | 1 | |
| F | BRUSH 20" | 201-20000SP | 1 | |
| G | BRUSH HOLDER PLATE | 024-700 | 1 | |
| H | BOLT | N/A | 1 | |
| I | HEX NUT | N/A | 4 | 3/8"-16x1 1/4x3/4 BOLT |
| J | FLAT WASHER | N/A | 3 | 3/8"-16 HEX NUT |
| K | BEARING HOUSING | N/A | 2 | 5/16" FLAT WASHER |
| L | CENTRIFUGAL CLUTCH | 024-100 | 1 | |
| M | NYLON BUSHING | 311-160015 | 1 | |
| N | CLUTCHING IDLER | 196-71200 | 2 | |
| O | BEARING | 024-962I | 1 | |
| P | SPRING | 024-200 | 1 | |
| Q | SPACER | 173-7599-DWG | 1 | .085-.75(OD)x7" SPRING |
| R | POLY WHEEL | 024-300 | 1 | |
| S | 5" WHEEL | 156-PB-03041-08 | 2 | 3x1.25 POLYOFIN WHEEL |
| T | KEY | 156-ACPL4-5J3 | 2 | |
| U | BRUSH ADAPTER PLATES | 199-NHNT-SE-UND | 1 | 1/4" SQUARE KEY |
| | | 024-400 | 1 | |