

# DAVCRON ENGINEERING



**THE DAVCRON AGITATOR MUST BE OPERATED BY  
TRAINED AND AUTHORISED PERSONNEL ONLY**

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# Davcron Concrete Agitator Operations Manual

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## 1.0 SAFETY

### 1.1 GENERAL SAFETY

The design of all Davcron Concrete Agitators have taken into account the safety of the operator and other personnel, however safety is dependant on careful and trained personnel undertaking the correct operation along with regular safety checks and a thorough and up-to-date maintenance schedule.

### 1.2 OPERATIONAL SAFETY

There are a number of key components of operational safety which lead to the use of the agitator in a safe work environment:

- DO NOT load the mixer beyond its design capacity (please refer to mixer specifications) as this may lead to unstable and unsafe operation.
- Before moving vehicle ensure that removable chutes are detached from the barrel chute and stowed in their storage position.
- Ensure that the swivel chute is properly hooked in the parked position and that the chute brake is tightened before moving vehicle.
- Ensure that the park brake is engaged when the vehicle is parked.
- When in transit ALWAYS remember that the mixer has a high centre of gravity and the load shifts to the right and elevates when the barrel is rotating. Greater caution therefore must be exercised when making a LEFT turn than making right turns due to the moving centre of gravity towards the right during rotation.
- DO NOT exceed 6rpm barrel rotation during transit.
- When the vehicle is in transit the barrel should always be rotating. The driver needs to adopt sensible driving speeds to carry his load safely and to the general driving conditions.

### 1.2 BARREL ENTRY

When entering the barrel for inspection or routine maintenance personal safety is extremely important. The requirements detailed in AS2865 'Safe work in a Confined Space' published by STANDARDS AUSTRALIA and can be downloaded from [www.safeworkaustralia.gov.au](http://www.safeworkaustralia.gov.au)

When barrel entry is required the minimum isolation recommended is the removal of the ignition key and the attachment of the 'Personal Lock Out' tag to the ignition switch.

## 2.0 OVERVIEW

### 2.1 GENERAL OVERVIEW

The Davcron Hydraulic Agitator that you are operating is an open end inclined axis model in which charging and discharging is accomplished through the same opening at the rear of the barrel.

The steel barrel is located and supported by the means of a three point suspension. The centre front of the barrel is supported by a bolted connection between the barrel and the self aligning drive flange of the geared head unit. The rear of the barrel has welded circular track ring which rides on two trunnion rollers with tapered roller bearings.

Mixing and discharge is accomplished by a system of press formed helical blading running the full length inside the barrel.

### 2.2 CHARGING AND DISCHARGING EQUIPMENT

The charge chute is located and angled to funnel material into the mixing section of the barrel. The swivel chute for material discharge may be pivoted to any desired position and locked by a friction brake. Three additional extension chutes are provided to increase the chute length and they can be raised or lowered by the hydraulic ram assembly which is powered by the mixers hydraulic system. (Please refer to Safety for stowing of these when in transit).

**IMPORTANT: Extreme care must be taken when operating, handling and fitting extension chutes as there are several pinch points, which could result in injury to fingers and hands.**

### 2.3 WATER SYSTEM (PRESSURISED)

All Davcron Agitator Mixers are fitted with a pressurised water system. The lightweight alloy water tank is designed to Australian Standard and the system incorporates several safety mechanisms which must only be serviced and adjusted by authorised service personnel. This tank is mounted above the gear drive on your vehicle, or on 'J' brackets on the truck chassis, or mounted on brackets fitted to mixer chassis.

The pressurised water system is fitted with the following safety features:

- A regulator ensures that air supply does not exceed the designed operating pressure of psi for the installed tank.
- A pressure relief valve protects the tank from over-pressurisation should the primary safety device fail. This is located on top of the tank and is set at 40psi.

**IMPORTANT: Adjustment or servicing to any part of the pressurised water system should be completed by authorised service personnel only.**

**OPTIONAL EQUIPMENT:** The admixture tanks are of stainless steel fabrication and have been pressure tested to 1.5 times the working pressure of 40psi. The tank is low mounted and located on a 'J' bracket on the side of your vehicle.

## 2.4 TANK OPERATION

A fill valve with a hose tail fitted suits a 25mm bore hose. The tank can be filled by opening this valve and pushing the water/ad-mixture supply hose directly onto the hose tail. PLEASE NOTE: A 25mm bore supply hose is required otherwise you will need to change the hose tail to suit your requirements).

A three-way pressurising valve is operated by the handle located on the back and when moved anti-clockwise the tank is pressurised, When the handle is moved clockwise the tanks will be vented.

Once the tank is pressured both water and/or the admixture are available by pressing the lever on the hand nozzle. The volume of water or admixture is measured by the meter installed and only one tank can be pressurised at one time.

After using the admixture through the meter it is recommended that the water be flushed through meter for cleaning purposes.

### IMPORTANT TANK INFORMATION:

- Only pressurise the water and admixture tank when they are required.
- Vent water and admixture tanks when no longer required
- Always have tanks totally vented when vehicle is in transit
- Ensure you always flush the meter with water when finished.

## 2.5 POWER EQUIPMENT

The engine of your vehicle transfers the power to the mixer barrel via the hydraulic power system

The power unit consists of a variable displacement pump, which is driven by the engine to supply hydraulic oil to a fixed displacement hydraulic motor. This motor is directly coupled to a gear reduction unit mounted on the front of the mixer frame. The front of the mixer barrel is bolted to the self aligned output flange of the reduction unit.

The hydraulic pump is mounted under or behind the cabin and is coupled to the engine via driveshaft.

The hydraulic circuit is a highly efficient closed loop system in which hydraulic oil from the motor outlet is returned direct to the pump inlet. A small charge pump supplies make-up oil as well as circulating cooling oil through the pump and motor case. The pump also drives the swivel chute hydraulic ram.

### 3.0 MIXER OPERATION

#### 3.1 GENERAL OPERATION

To ensure your mixer is operating at peak performance:

- Clean mixer after each day's use.
- Perform periodical service/lubrication scheduled items as they fall due.
- Regularly check the level of oil in the hydraulic reservoir and top up when necessary with Grade 68 hydraulic oil or equivalent.
- Regularly check the level of oil in the barrel drive reduction unit and top up if necessary with 85-140W gear oil.
- Create a walk around daily inspection routine of the entire mixer looking for warning items such as lubricating oil leaks, chaffed or bulging hoses, hydraulic oil leaks, damaged or badly worn trunnion rollers and faulty discharge equipment. Report to manager or supervisor.
- A three-way pressurising valve is operated by the handle located on the tank and when moved anti-clockwise the tank is pressurised. When the handle is moved clockwise the tanks will be vented.
- Check chutes are properly stowed ready for transit.
- Fill water tanks ready for daily use.
- Ensure that mixer controls are in NEUTRAL before starting or stopping the engine of your truck.

#### 3.2 CHARGING AND DISCHARGING

When charging always adhere to:

- If charging the mixer, move the pump control unit in the mix direction and increase the engine speed to obtain a barrel speed of 14-18rpm.
- After mixing is complete, reduce engine speed to idle and select the transit mode which is pre-set **to turn the barrel at 1-2 rpm for transit** to your job site.
- When driving to the job site please refer to the SAFETY SECTION of this manual taking note of the turning information regarding gravity.

When discharging always adhere to:

- When setting up the placement chutes which consist of three (3) detachable chute, **extreme care** must be taken when operating, handling and fitting extension chutes as there are several pinch points and which could result in injury to fingers and hands.

### 3.2 CHARGING AND DISCHARGING cont...

The detachable chutes maybe hooked to extend the chute length with the whole chute length raised or lowered using the hydraulic ram control unit.

**PLEASE NOTE** - No more than the three (3) extension chutes which are supplied with this mixer can be used. If you need to reach a drop point please transfer by manual carriage or a concrete pumping device.

A chute brake is installed to hold the chute at any angle while discharging, The brake is operated by screwing in the clamp crank bolt handle on the brake boss assembly.

The concrete discharge can be controlled from two points on your mixer; the cabin control unit; the remote control transmitter.

Engine speed can be increased or decrease to control the rate of discharge, please start with idle speed to ensure a slow initial discharge.

### 3.3 MIXER CLEANING AND SHUTDOWN

Immediately after the discharge of the concrete from the barrel all residue concrete should be removed by washing concrete from all equipment.

Immediately after discharge clean blades and inside the barrel by adding water while the barrel is rotating in MIX direction. This wash-out water is to remain in the truck until access to a recycling water system is available.

Prior to transit back to the depot ensure that the cleaning of the outside of the unit is complete and the chutes are properly stowed for safe travel.

At the end of each working day when back at the plant a minimum of 600-1000 litres of water should be used to completely clean the inside of the barrel. With the water in the barrel rotate the barrel in the MIX direction for a few minutes to ensure through cleaning.

Once completed, discharge the water at a speed that ensures splashing of the water over the outside areas of the truck does not happen on the initial spins. Once the rate of discharge drops off, increase the barrel speed RPM up to the maximum to ensure that all water and slurry from the barrel is removed. **ALL WASH-OUT WATER MUST BE DISCHARGED INTO AN APPROVED RECYCLING SYSTEM.**

### 3.4 EMERGENCY UNLOAD

The manual override operates in both the MIX or DISCHARGE directions, but there is no barrel speed control as the valve opens the pump fully.



### 3.5 OPERATIONAL RUN-IN

After 50 hours of service (maximum allowed up to 100 hours), please check the following on your new unit:

- Check all bolts on the overall unit and tighten where necessary.
- Check gearbox mounting bolts and tighten where necessary
- Check gearbox to barrel bolts and tighten where necessary
- Check front and rear pedestal chassis mount bolts and tighten where necessary

### 4.0 OPTIONAL EQUIPMENT (if fitted)

#### 4.1 WATER METER

Digital water metres can be fitted into the pressurised water system for measurement of water or admixtures by the litre accurate to 0.1 litres.

#### 4.2 SLUMP GAUGE

The slump gauge is a 100mm diameter, 400 bar pressure unit installed into the hydraulic system to read the hydraulic pressure during the mix cycle at any speed.

As the system pressure is proportional to the slump, the gauge can be used as an indicator of the slump. However the actual pressure may vary with the strength of the concrete, type of raw materials, condition of the mixing blades etc. It must be calibrated by the operator using visual slumping to determine the relationship.

e.g. For 32MPa Concrete the system pressure for a 80mm slump would be approximately 2200psi independent of the load. If the mix is too dry the pressure would be higher and if lower the mixture would be too wet.

The proportional relationship does not apply if:

- The load is less than two (2) cubic metres
- Slump is greater than 120mm

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