

# SLOW IDLE

## Tohatsu TLDI 115

Tohatsu's TLDI 115 provides an awesome combination of torque and fuel efficiency, reports **Andrew Norton**...

**B**ased on the existing M115A outboard but modified with Tohatsu's Low Pressure Direct Injection technology, the TLDI 115 is now Tohatsu's most powerful DFI outboard. At this stage the TLDI 115 meets only US EPA 2006 and Australian '2 star' (known as the 'Voluntary Emissions Limiting Scheme' or VELS) exhaust emission regulations but Tohatsu Corporation says that it will meet California Air Resources Board 2008 and Australian '3 star' requirements when the time comes.

But even so, the TLDI 115 has more torque than some in its class while being more fuel efficient than others. The TLDI 115 has the Orbital Combustion Process, which utilises a combination of pressurised air and fuel. The atomised mix is then injected into each combustion chamber giving fuel efficiency not possible with the E-TEC system because the fuel droplet size is down to five microns compared with about 30 for E-TEC engines.



A combination of stratified and homogenous combustion is used with air/fuel ratios of about 40:1 below 3000 rpm and 25:1 above. A single throttle body air intake incorporates Throttle Position Sensors for load and barometric pressure (to ascertain the correct air/fuel ratios) and the fuel/oil ratios vary from about 450:1 at dead slow troll (DST) to 50:1 at wide open throttle (WOT). Electric oil pumps accurately deliver lubricating oil where needed.

Standard are warning systems for engine over-rev, low oil, engine overheat and low battery voltage, the latter function essential as the OCP won't function should the voltage drop below 10.8, nor will the engine operate should the air compressor belt break. Any faults in the engine management computer can be diagnosed using a combination of 28 different troubleshooting codes displayed in three lights on the tachometer, eliminating the need for a separate laptop computer. TLDI electronic control units have at least 300 hours of memory and record any operating problems encountered during this period.

As with its less powerful counterparts, the 115 trols down to 700 rpm and features variable rpm from 700 to 900 achieved by pushing in the ignition switch for one second at a time. The rpm increase in increments of 100 rpm to 900 rpm then back to 800 and 700.

Mounted on a Makocraft 560 Trophy Console Deluxe and spinning a 16 inch pitch Power

Tech stainless steel prop, the demo 115 from Lakeside Marine had tons of midrange torque and at WOT outperformed comparable four stroke outboards tested on similarly-sized hulls. The total displacement was 970 kg including two adults and test equipment.

Through full lock figure-of-eight turns at 4000 rpm no prop ventilation occurred and when the throttle was 'floored' at 4000 rpm the acceleration was breathtaking for a 115 hp outboard. At WOT the 115 was so quiet we could hold a normal conversation at the helm.

The demo engine started instantly hot or cold and had very low DST vibration levels. No oil smoke appeared at any time but when backing upwind there was always a slight oil smell. Providing the antivibration plate was kept three quarters immersed, power astern was good and no cooling water starvation occurred. The standard Tohatsu remote control box provided good feel when shifting and like all TLDI engines the rpm remain constant in or out of gear.

Powerhead access is very good even though the undercowl oil tank takes up a fair amount of space. Recommended servicing intervals are 50 hours or every six months and the waterpump impeller should be replaced every 100 hours or yearly and the air compressor belt every 200 hours or two years. The warranty coverage is three years for recreational usage. **AN**



### FWF SPECIFICATIONS

Engine type	In-line 4 cylinder Orbital DFI 2 stroke
Prop hp/rpm	113.4/5500
WOT rev range	5150 - 5850
Piston displ (cc)	1768
Bore x stroke (mm)	88 x 72.7
Ignition system	Electronic Control Unit
Charging circuit	12 volts 37 amps with voltage regulation
Break-in period (hrs)	5
Fuel delivery	Dual-stage DFI
Fuel type	ULP 91 RON only
Fuel capacity	Portable tank not supplied
Oil type	Recommended Valvoline High Performance TC-W3
Oil capacity (Lt)	NA
Gear ratio	2.0:1
Transom heights (ins)	20/25
Weights (kg)	173/176
Rec. retail longshaft	\$15,030
Spare prop	\$900
Servicing costs*	
Year One	\$704
Year Two etc	\$484

\*As per manufacturer's recommended servicing schedule. Prices current as of October 2006. Demo 115 from Lakeside Marine, Charmhaven NSW 02 4392 6110, servicing prices from Coast To Coast Boating, Morisset NSW 02 4970 5541.

### FWF PERFORMANCE AND FUEL CONSUMPTION FIGURES:

rpm	km/hr	L/hr	km/L
700	5.3	0.7	7.6 (DST)
2800	27.0	8.4	3.2 (clean plane)
4000	46.7	18.6	2.5 (cruise)
5000	58.8	28.5	2.1 (fast cruise)
5800	67.9	38.0	1.8 (WOT)