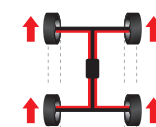




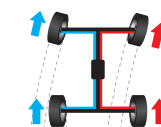
## How a standard differential works

When a vehicle with four wheel drive engaged is driven in a straight line, the standard differentials in most vehicles allow equal transfer of engine torque to all four wheels. When the vehicle turns a corner, torque is delivered to the wheels that experience the least resistance. This principle ensures that the inside wheels will rotate freely and power is delivered to the outside wheel to prevent tyres from scuffing and wearing out prematurely.

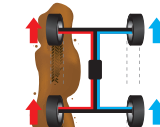
Because the standard differentials transfer the torque to the wheels that encounter the least resistance, you will lose drive on loose/slippy ground or if one wheel is suspended in mid air. This becomes a problem as the wheel will spin and won't allow the wheel on firmer ground to drive the vehicle out of a situation.



4WD in a straight line



4WD cornering



4WD on a slippery surface





In 2005, TJM combined a renowned patented design with extensive testing and further engineering. Combining this with TJM's established production facilities resulted in the birth of the TJM Pro Locker.

TJM released the Pro Locker into the market for a select few models and three and a half years on the TJM Pro Locker has endured intensive testing which has taken the already proven Pro Locker design and made it even tougher. Based on comparative advantages, there is no doubt the TJM Pro Locker is superior to any other locker available today.

Be assured, the TJM Pro Lockers combination of simplistic design with components of exceptional strength and quality will leave you satisfied with your choice for years to come.



Transmission of torque



Wheel providing drive



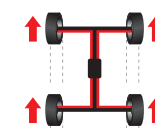
Wheel not providing drive



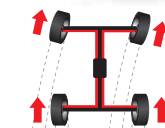
## How a TJM Pro Locker works

The operation of the Pro Locker differential is simple and straightforward. Utilising compressed air, the internal selector ring will engage the lock ring. Once the TJM Pro Locker is engaged it forms a solid link between the carrier and the side gears. The differential is now locked and will deliver equal drive to both axles. The vehicle that was once suspended in mid air can now have equal power delivered to the wheel on firmer ground and can be driven out of the situation.

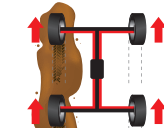
Unlocking the differential involves the pressurised air being redirected through an exhaust port on the solenoid valve. The spring and the actuator pushes the selector ring back, which in turn pulls the locking ring back out of engagement with the side gear. The differential is now unlocked and the gears are free to differentiate as before.



4WD in a straight line



4WD cornering



4WD on a slippery surface



## Advantages of a TJM Pro Locker

- › Unique air operated piston style actuator eliminates the possibility of oil being pumped up the airline
- › Hardened thrust washers and the size of the locking ring make Pro Locker extremely strong in operation
- › Contains stronger materials and a thicker carrier compared to most standard differentials
- › Larger pinion gears are used in comparison to most standard differentials
- › No carrier modification needed other than the drilling and tapping of a bulkhead fitting port
- › Large pre-tensioned 3/8" bolts hold the Pro Locker hemisphere together
- › Robust design equals less maintenance
- › Reinforced rubber external hose extension is supplied as standard to minimize the risk of the airline being damaged by debris while driving
- › Recessed coloured L.E.D. cabin switches show clearly when TJM Pro Locker is on or off
- › Patented design that has been used and proven in the field for over 20 years



### 1. Differential casing

High strength SG iron - these pieces hold the solid one piece cross shaft & 4 pinion gears together by 8 high grade bolts, making the TJM Pro Locker one of the strongest locking differentials on the market.



### 2. Flange cap assembly

TJM's extra thick flange cap features longer crown wheel bolts for extra strength. (where applicable).



### 3. Side locking gear

With extra large teeth & featuring a leading edge the TJM Pro Locker is one of the easiest to engage.



### 4. Pinion gears

Thicker than standard case hardened thrust washers that are perfectly shaped to the internal spider gears.



### 5. Lock ring

When activated the case hardened lock ring has a full 10mm of engagement over the side locking gear.



### 6. Hardened one piece cross shaft

This hardened one piece cross shaft is the heart & one of the key strengths of the TJM Pro Locker.



### 7. Hardened selector ring

The all metal, hardened selector ring connects to the lock ring via 4 metal posts.



### Actuator

The uniquely designed actuator works like a motor piston. The fork sits on top of the selector ring guiding it across when engaging or disengaging.



### Heavy duty airline

This comes standard with the TJM Pro Locker. It will not pull out if hooked on rock or logs.



### Solenoid valve

Designed especially for TJM. Sealed against dust & moisture to IP65 standards. Machined & anodised from billet aluminium.

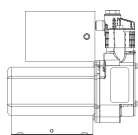


### Pro Locker switches clearly lit L.E.D.

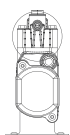
switches are recessed into the switch block for protection against accidental engaging or disengaging of the TJM Pro Locker.



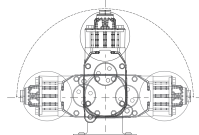
Head configuration		Pressure only	
Stroke		.560 inches	
Pressure		Flow @12v	
CFM @ PSI	LPM @ bar	CFM	LPM
PSI	bar		
01	0	.57	16.1
10	.5	.51	14.9
20	1.0	.45	13.7
30	1.5	.40	12.5
40	2.0	.35	11.5
50	3.0	.32	9.6
60	5.0	.29	7.2
70	7.0	.26	5.2
80	-	.24	-
90	-	.21	-
100	-	.19	-
110	-	.16	-
120	-	.14	-
Max continuous pressure		N/A	
Max Intermittent pressure		120 PSI	8.3 bar
Max duty cycle (Minutes on/off at 23°C)		10% (3 on / 30% off)	
Max ambient air temperature.		149°F	65°C
Min ambient start temperature.		-22°F	-30°C
Max restart pressure		120 PSI	8.3 bar
Motor voltage/frequency		12v DC	
Motor type		Permanent magnet	
Current at rated load (Amps)		9.0	
Starting current (Locked rotor, Amps)		28.0	
Capacitor value		N/A	
Min full load speed (RPM)		3700	
Thermal protector		N/A	



Side view



Front view



180° of rotation

The TJM Pro Locker compressor is an ultra compact, vehicle-mounted air compressor, designed specifically to meet the needs of the next generation TJM Pro Locker.



Complete traction kit.

TJM Pro Locker, Pro Locker compressor, Pro Locker wiring harness

- › Oil-less, non-lube piston & cylinder
- › Stainless steel & silicone valves
- › Light weight plastic components
- › Built-in check valve
- › Balanced, for smooth, low vibration operation
- › Long-life, high performance PTFE compound piston ring
- › External air intake filter
- › Dust & moisture resistant
- › Permanently lubricated motor shaft & connecting rod bearings
- › 180° of rotation adjustment allowing fitment in confined spaces



The WOB-L principle has a unitary piston rod that 'wobbles' inside the cylinder as the crankshaft rotates. Taking its name from its principle of operation, the WOB-L trademark was patented by engineers working at Thomas forty years ago. They provided a piston compressor radically different from any other design on the market at that time and remains a significant innovation in the field of compressor technology today.

Unlike the more conventional articulated piston pump, the WOB-L has no gudgeon pin (wrist pin) connecting the piston rod to the piston. Instead the piston and piston rod are a single item, usually a single casting. The piston rod is mounted to an eccentric bearing assembly, which in turn is mounted to the motor shaft to convert rotary energy from the motor into linear motion of the piston within the cylinder.

The piston is sealed to the cylinder by a flanged disk cup, that forms both a seal and mechanical guide for the piston. It runs without lubrication in contact with a low friction, surface coated cylinder of high heat conductivity. As the piston is driven up and down, air resistance on the upward stroke expands the disk's seal on the piston against the cylinder wall to increase its efficiency, while compensating for the 'wobble' action.

The oil-free operation makes the WOB-L piston extremely popular in the medical, automotive and beverage industries. The pressure vs. flow and vacuum vs. flow characteristics are generally superior to those of diaphragm pumps. In use, WOB-L provides far greater flows at any given pressure or vacuum, to ensure a more consistent operation, to provide longer life operation by allowing a physically smaller pump to be used to perform any given task.

As a piston pump, an inherent characteristic of the design is the failure mode is a gradual fatigue, rather than a catastrophic failure mode which is a characteristic of many other designs.