



**WHEELS FOR
RAILROADS, INDUSTRY,
MINES AND QUARRIES**

THE NOLAN COMPANY

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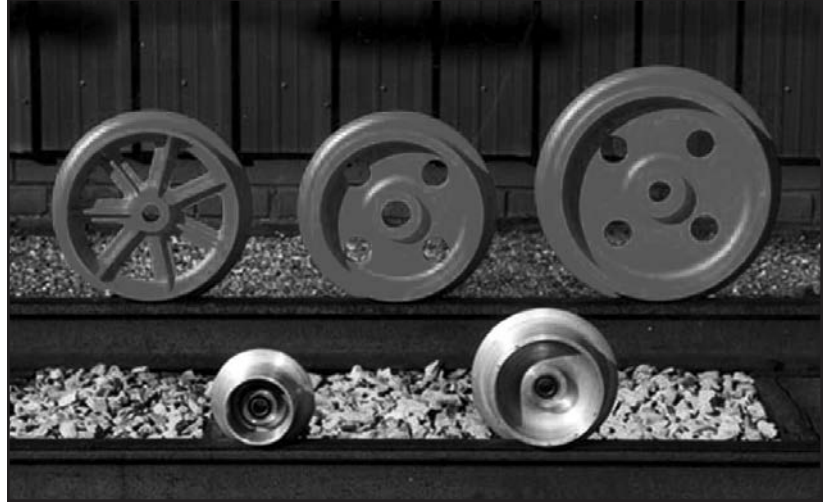
www.NolanCompany.com

Cast Replacement Wheels

The Nolan Company recommends the use of its special ductile alloy cast wheels instead of pressed steel wheels. Nolan's cast wheels are tougher, have a larger load capacity and last many times longer. Nolan's wheels are available for replacement or OEM use.

Testing by an independent laboratory proved Nolan's ductile alloy wheels superior to 5/16" pressed steel wheels in straight running time, curve stresses and even drop tests. Tread and flange on all wheels conform to AREMA Standards.

Nolan also offers a heat-treated aluminum wheel in 5" and 8" diameters. These wheels are used on lighter maintenance-of-way equipment when weight and ease of handling are considerations. For very corrosive working conditions, 5" wheels are available in Nolan's special ductile alloy.



▲ Top row: 7005, 7001, 7013; Bottom row: TS-12, TS-12A

Wheel insulation kits are available for 1-15/16" and 2-15/16" size axles. The kits consist of an insulation sleeve that fits the taper of the axle, a filler washer and a steel washer—all held in place by the axle taper and a castle nut. Insulation kits for 5" and 8" wheels consist of a nylon sleeve that insulates the axle. ("TI" model wheels are insulated, "TN" model wheels are non-insulated.)

TS SERIES WHEELS			
SPECIFICATIONS	TS-12	TS-12A	TS-13
Diameter	5" (127 mm)	8" (203 mm)	5" (127 mm)
Material	Aluminum	Aluminum	Ductile Alloy
Weight per Wheel	6-1/2 lbs. (3 kg)	11-1/2 lbs. (5 kg)	14 lbs. (6 kg)
Load capacity (per wheel)	1,250 lbs. (567 kg)	1,250 lbs. (567 kg)	1,250 lbs. (567 kg)
Axle Diameter	1" (25.4 mm)	1" (25.4 mm)	1" (25.4 mm)

SPECIFICATIONS	7005 WHEELS		7001 WHEELS		7013 WHEELS	
	7005-30TI	7005-30TN	7001-50TI	7001-50TN	7013-30TI	7013-50TN
Diameter	16" Heavy Duty		16" <u>Extra</u> Heavy Duty		20" <u>Extra</u> Heavy Duty	
Material	Ductile Alloy		Ductile Alloy		Ductile Alloy	
Weight per Wheel	82 lbs. (37 kg)	82 lbs. (37 kg)	108 lbs. (50 kg)	112 lbs. (51 kg)	153 lbs. (69 kg)	152 lbs. (68 kg)
Load capacity (per wheel)	2,850 lbs. (1,293 kg)	2,850 lbs. (1,293 kg)	12,500 lbs. (5,670 kg)	12,500 lbs. (5,670 kg)	2,850 lbs. (1,293 kg)	12,500 lbs. (5,670 kg)
Standard Bore Diameter*	2" (50.8 mm)	2" (50.8 mm)	3" (76.2 mm)	3" (76.2 mm)	2" (50.8 mm)	3" (76.2 mm)
Axle Diameter	1-15/16" (49 mm)	1-15/16" (49 mm)	2-15/16" (75 mm)	2-15/16" (75 mm)	1-15/16" (49 mm)	2-15/16" (75 mm)

NOTE: "TI" model wheels are insulated, "TN" model wheels are non-insulated.

* Special bores available on request.

Cast Replacement Wheels

Nolan cast replacement wheels last 28.5 times longer than pressed steel wheels.

Nolan special ductile alloy wheels are available for replacement or OEM use rather than the 5/16" pressed steel wheel - and the alloy wheels last many times longer. Wheel tread meets AAR/AREMA specifications.

Under laboratory tests simulating straight running time on a rail that conforms to AAR/AREMA specifications, a 16" diameter 5/16" pressed steel wheel failed at 31.4 hours under a 2,500 lb. load and in only 3.5 hours under a 5,000 lb. load. Nolan's heavy-duty special ductile alloy wheel did not fail after 100 hours under a 5,000 lb. load - nearly 28.5 times longer. Under a second test that simulated running on a curve with a 2,500 lb. load, the pressed steel wheel failed after 66,700 cycles. The Nolan Company's special ductile alloy wheel did not fail after 300,000 cycles - more than 4.5 times longer. Nolan wheels also survived a drop test.

Bigger Load Capacity - Nolan's 16" diameter cast wheels are available in load capacities of 5,000 and 10,000 lbs. versus 2,500 lbs. for a 5/16" pressed steel wheel. Cast steel wheel rims are flame-hardened.

Small Diameter Wheels Available - Nolan also offers a heat-treated aluminum wheel in 5" and 8" diameters. These wheels are used on lighter weight maintenance-of-way equipment, such as Nolan's tool and supply carts. For very abrasive working conditions, a special ductile alloy wheel is available in a 5" diameter.

Insulation Kits - Wheel Insulation Kits are available for 2" and 3" diameter axles with 16" wheels. They consist of an insulation sleeve that fits the taper of the axle, a fiber washer, and a steel washer. The parts are held in place by the axle taper and a castle nut. Insulation kits for the 5" and 8" diameter wheels consist of a nylon sleeve that insulates the axle. Axle tapers conform to AAR/AREMA specifications.

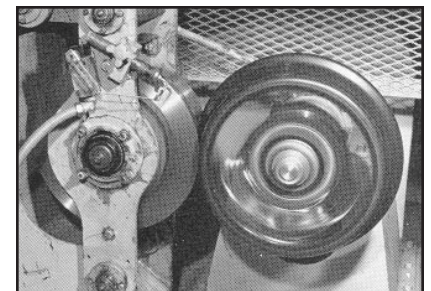
Nolan wheel durability is tested by an independent laboratory.

To establish the durability and expected wheel life of Nolan's special ductile alloy wheels, we engaged an independent laboratory to test 16" diameter pressed steel wheels of 5/16" material and Nolan's cast wheels under identical conditions. The results of the following tests are tabulated below -- Straight Radial Fatigue Test, Rotary Fatigue Test, and Drop Test. A copy of the complete report is available on request.

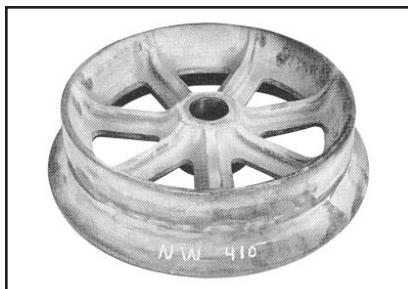
Straight Radial Fatigue Tests

The laboratory test shown at left was set up to run all wheels at 25 MPH while engaged with a rail that conforms to AAR/AREMA specifications. The test results are shown in the table below.

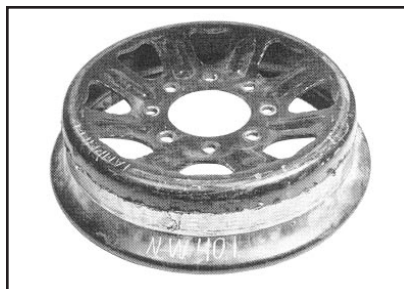
Straight Radial Fatigue Test Results (comparison)		
Type of Wheel	Under 2,500 lb. Load	Under 5,000 lb. Load
16" dia. 5/16" pressed steel	Failed at 31.4 hours	Failed at 3.5 hours
16" dia. Nolan special ductile alloy	Not tested	No failure after 100.0 hours



▲ Radial fatigue test set-up.



▲ Nolan special ductile alloy wheel after 100.0 hours under 5,000 lb. load shows normal wear.



▲ Pressed steel wheel after 31.4 hours under 2,500 lb. load shows EXTENSIVE wear.

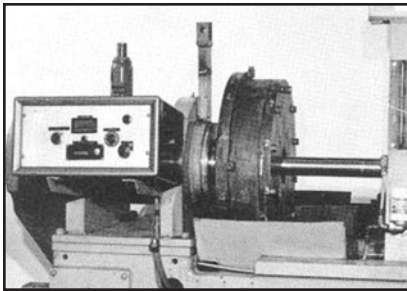


▲ Pressed steel wheel after only 3.5 hours under 5,000 lb. load shows EXTENSIVE wear.

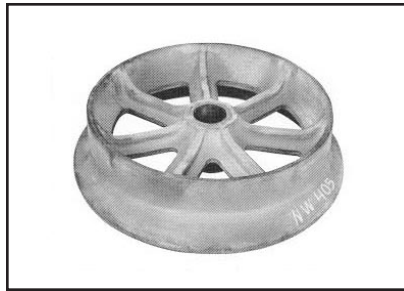
Rotary Fatigue Tests

The laboratory test shown at right simulated a wheel running on a curve at 25 MPH under a 2,500 lb. load. The test measures the wheel's capabilities under continuous side loading. A limit switch shut down the test at the first sign of failure to avoid destroying the wheel. The test results are shown in the table.

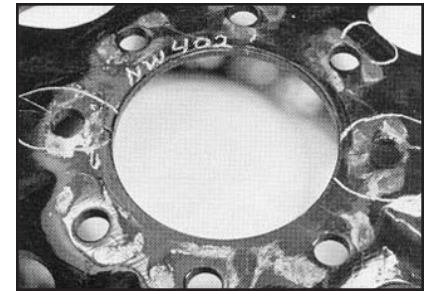
Rotary Fatigue Test Results (comparison)	
Type of Wheel	Under 2,500 lb. Load
16" dia. 5/16" pressed steel	Failed at 66,700 cycles
16" dia. Nolan special ductile alloy	No failure after 300,000 cycles



▲ Rotary fatigue test set-up.



▲ Nolan special ductile alloy wheel after 300,000 cycles shows normal wear.



▲ Pressed steel wheel after 66,700 cycles shows cracks in steel.

Drop Test

The laboratory also set up a test that dropped a weight against the rim of Nolan's special ductile alloy wheel. The test simulated the dropping of a 1,000 lb. push car a distance of two feet. The test results showed no damage to the Nolan wheel.

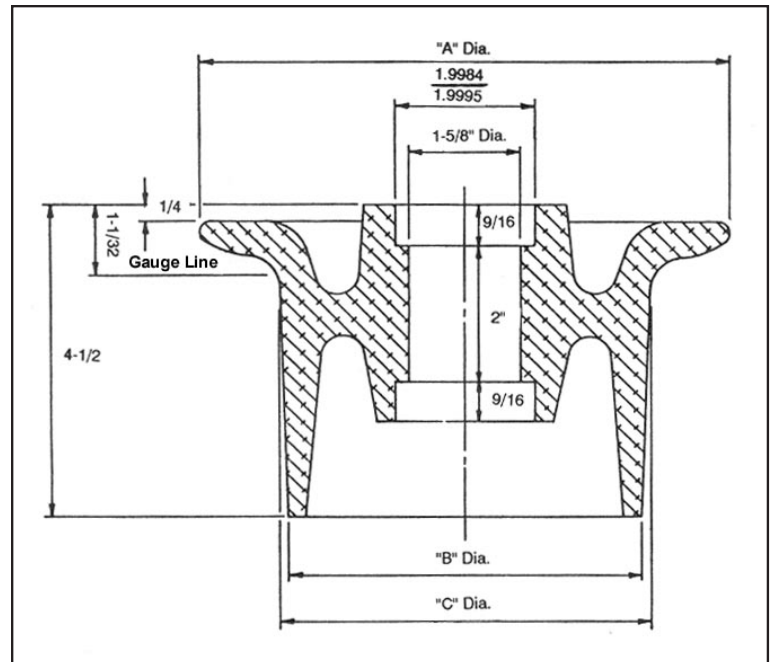
Aluminum Wheel

Developed for use with a 5,000 lb. capacity tool and supply cart for railroad maintenance-of-way, this Nolan wheel is cast from a tough aluminum alloy and is then heat treated. The end results of a durability equivalent to steel wheels on most applications. And because aluminum weighs about one-third as much as steel, the weight of a set of these wheels is substantially reduced. Extensively field tested, thousands of these wheels are now in service. For specifications, please refer to the table on page 2 under **TS-12** and **TS-12A**.



This wheel is available with a number of bearing options to suit a specific application. A stub axle is also available.

Please call the Nolan Sales Department toll-free at 1-800-297-1383 for additional information or a quotation for small or large quantities.



▲ Cross section: Nolan's aluminum wheel.