

## PANDROL WORLDWIDE HEAVY HAUL INSTALLATIONS

Pandrol Worldwide Axle Loads >25 Tonnes Installations

Country	Rail Authority	Line	Fastening Type	Toe Load (kgf)	Axle Load (tonnes)	Min Curve radius (m)	Length	Years' Experience or Year Installed
Australia	ARTC	Hunter Valley Coal Lines	FASTCLIP	min 1000	up to 30	N/A	>1000km	>5 years
Australia	Aurizon (Formerly QR National)	Central Queensland Coal Network	FASTCLIP	min 1000	26	N/A	>2600km	>5 Years
Australia	ARTC	Hunter Valley Coal Lines	e2000	1250	up to 30	300	>1000km	>20 Years
Australia	BHP Iron Ore	Pilbara Mainline Network (Iron Ore)	e2000	1250	37	400	>1600km	>20 Years
Australia	Rio Tinto	Pilbara Iron Network (Iron Ore - includes Hamersley Iron & Robe River Mining)	e2000	1250	37.5 - 40	400	>1600km	>20 Years
Australia	Fortescue Metals Group	Pilbara Mainline Network (Iron Ore)	e2000	1250	40	1000	>650km	>4 Years
Australia	Aurizon (formerly QR National)	Central Queensland Coal Network	e2000/FIST	min 1000	26	200	>2600km	>20 Years
Brazil	VALE Carajas Railroad	Iron Ore	DE + e-Clip	1000	37 MT	860	>890km	>20 Years
Brazil	VALE Vitoria-Minas Railroad	Iron Ore	DE	1000	30 MT	300	>1200km double track	>30 Years
Brazil	North-South	Railroad	e-Clip	1000	30 MT	400	>1800km	>10 Years
Brazil	MRS	Mixed Freight	e-Clip	1000	32 MT	300	>1600km	>30 Years
Canada	Canadian National	Mixed Freight	e2000	1250	33	220	>2100km	>20 Years
Canada	Canadian Pacific	Mixed Freight	e2000	1250	33	150	>2100km	>20 Years
Estonia	Estonian Railways	Mixed Freight	FASTCLIP	1000	32	2000	>250km	>10 years
Georgia	Georgian Railways	Mixed Passenger / Freight	FASTCLIP	1000	25	N/A	>150km	>10 years
Lithuania	Mainline Corridors	Mixed Passenger / Freight	FASTCLIP	1000	25	500	>225km	>10 Years
Mexico	Ferromex / TFM	Freight	e2000	1000	25	N/A	>820km	>10 Years
Norway	Norwegian State Railways	Narvik-Riksgransen Ore Line	e2000	1250	30	400	>50km	>5 Years
Saudi Arabia	North-South	Freight	FASTCLIP	1250	32.4	N/A	>2000km	Since 2011
South Africa	Spoornet	Shishden / Saldanha Iron Ore Line	e2000/FIST	1250	30	400	>1000km	>30 Years
South Africa	Spoornet	Richards Bay Coal Line	e2000/FIST	1250	26	400	>700km	>30 Years
Sweden	Trafikverket	Malmbanan Ore Line	FASTCLIP	1250	30	300	>65km	Since 2008
Sweden	Trafikverket	Mixed Passenger Freight	FASTCLIP	1000	25	300 - 400	>1000km	>5 Years – 2008
Sweden	Trafikverket	Malmbanan Ore Line	e2000/ e1817	1250	30	300	>300km	>20 Years
Sweden	Trafikverket	Mixed Passenger / Freight	e1800/ e2000	900/1250	25	300 - 400	>8000km	>30 Years
USA	Union Pacific	Heavy Haul Freight	e2000/ SAFELOK/ SAFELOK III	1250	36	175	>2800km	>20 Years e-Clip >10 Years SAFELOK III
USA	CSX	Mixed Freight	FASTCLIP	1250	36	220	>1300km	>8 Years
USA	Florida East Coast	Mixed Freight	FASTCLIP	1250	30	N/A	>15km	>8 Years
USA	CSX	Mixed Freight	e2000	1250	36	220	>1500km	>20 Years
USA	Norfolk Southern	Mixed Freight	e2000	1250	30	290	>1500km	>20 Years
USA	Florida East Coast	Mixed Freight	e2000	1250	30	N/A	>35km	>20 Years
USA	Burlington Northern	Mixed Freight	e2000/ SAFELOK	1250	35	175	>2800km	>20 Years