WESTPORT

AXLE MODULES, COMPONENTS AND LOGISTICS

I-BEAM & TUBULAR

STEERABLE AXLES

FRONT AXLE PUSHER & TAG

SERVICE MANUAL

ISO 9001

THIS MANUAL COVERS THE FULL LINE OF WESTPORT AXLES.

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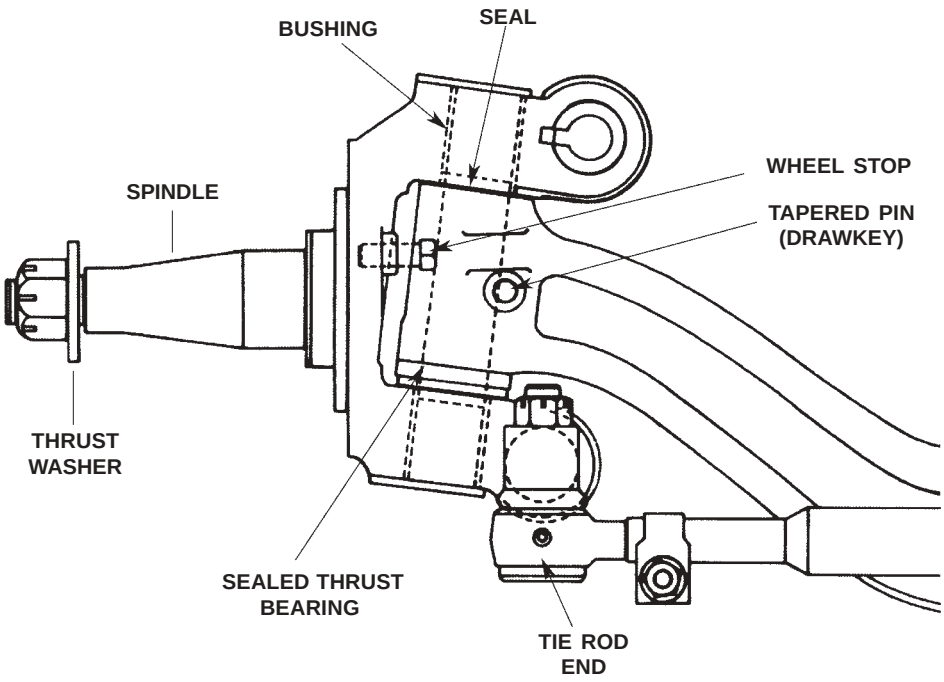
GENERAL INFORMATION



DESCRIPTION

All Westport axles whether I-Beam or Tubular are of an inclined King Pin configuration as shown in the illustration above. With the exception of the tubular beam, the I-Beam, knuckles, tie rod and steer arms are forged, heat treated, high strength carbon or alloy steel.

Inclined king pins of straight (non-tapering) form connect the knuckle to the axle and act as pivots. The upper and lower ends of the king pins fit into replaceable, steel-backed bronze bushings which are pressed and burnished into the knuckle yokes. Supplementing the king pin bushings are steel tapered roller thrust bearings which carry the weight of the axle center and, subsequently the entire weight of the front of the vehicle.

Steering and tie rod arms are designed to attach to the steering knuckle through a tapered hole using a Woodruff key for positioning. This allows the axle to be custom built with regards to specific steering and tie rod arm choices.

All Westport axles that are fully dressed with brakes and wheel equipment at the factory use the oil bath (wet) system exclusively. Greased wheel ends available, upon request.

MODEL and PART IDENTIFICATION

MODEL IDENTIFICATION

MODEL	RATING	DESCRIPTION	DROP	BARE AXLE WEIGHT
F4W-0800	8K	I-BEAM, STEERABLE AXLE	Double 4.0"/1"	240
*F5W-0900	9K	I-BEAM, STEERABLE AXLE	5.0"	310
F5W-1200	10.5K, 12K	I-BEAM, STEERABLE AXLE	5.0"	315
F3W-1300	13.2K	I-BEAM STEERABLE AXLE	3.5"	363
F6W-1300	13.2K	I-BEAM STEERABLE AXLE	5.62"	364
F3W-1400	14.6K	I-BEAM STEERABLE AXLE	3.5"	363
F6W-1400	14.6K	I-BEAM STEERABLE AXLE	5.62"	364
F6W-1400W	14.6K	I-BEAM STEERABLE AXLE (Widetrack)	5.62"	373
F3W-1600	17K	I-BEAM STEERABLE AXLE	3.5"	396
F6W-1600	17K	I-BEAM STEERABLE AXLE	5.62"	415
F3W-2000	21.5K	I-BEAM STEERABLE AXLE	3.5"	458
F3W-2000D	21.5 K	I-BEAM STEERABLE AXLE	Double 3.5"/2.5"	458
FOW-1300	13.2K	TUBULAR STEERABLE AXLE	0	337
FOW-1400	14.6K	TUBULAR STEERABLE AXLE	0	337
FOW-1600	16K	TUBULAR STEERABLE AXLE	0	370
FOW-1800	18K, 20K	TUBULAR STEERABLE AXLE	0	389
FIW-1300	13.2K	TUBULAR STEERABLE AXLE	1.5"	380
FIW-1400	14.6K	TUBULAR STEERABLE AXLE	1.5"	380
FIW-1600	16K	TUBULAR STEERABLE AXLE	1.5"	413

ALL AXLE WEIGHTS ARE LESS STEERING ARM

** Discontinued. Call Westport for parts availability.*

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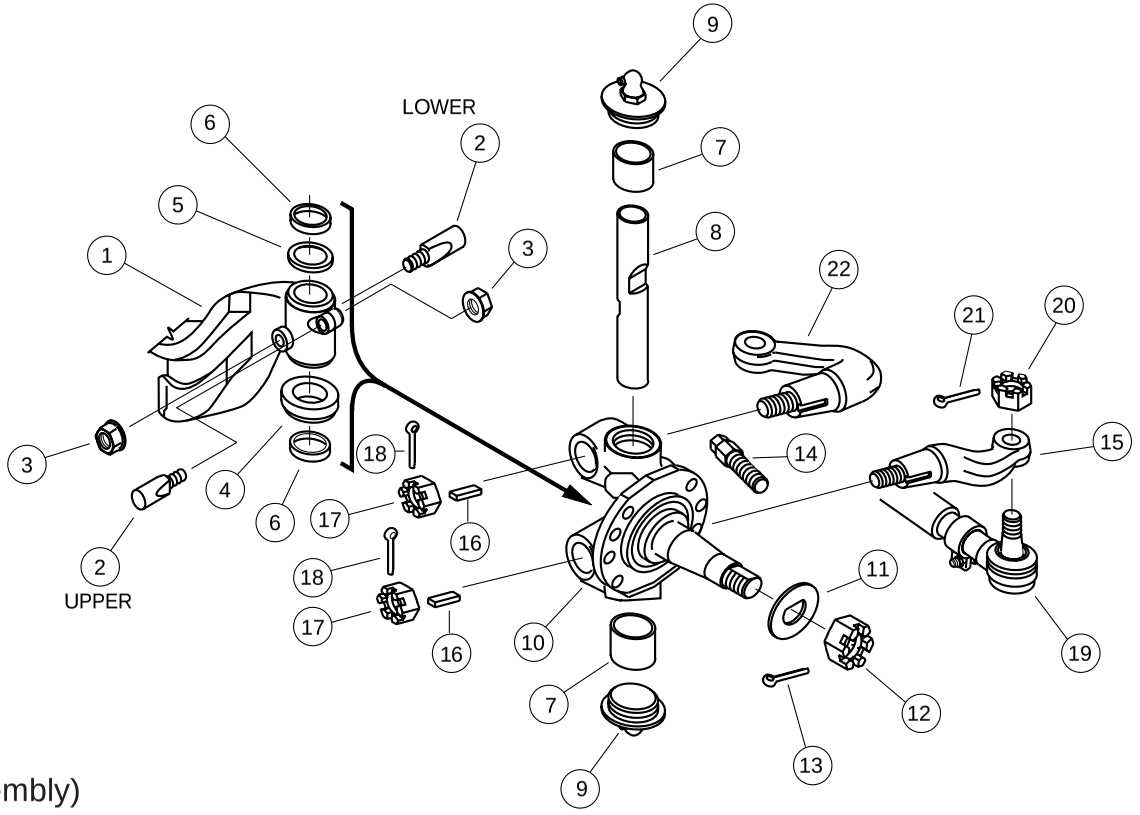
PART IDENTIFICATION

SEALED SCREW-IN STYLE KING PIN CAP

1. Axle Beam
2. Tapered Pin (Draw Key)
3. Tapered Pin Nut
4. Thrust Bearing
5. Shim Pack
6. Seals
7. King Pin Bushing
8. Kin Pin
9. Screw-in Cap
10. Knuckle
11. Thrust Washer
12. Wheel Bearing Nut
13. Cotter Pin
14. Stop Bolt
15. Tie Rod Arm
16. Woodruff Key
17. Castle Nut (Tie Rod Arm)
18. Cotter Pin (Tie Rod Arm)
19. Tie Rod Assembly
20. Castle Nut (Tie Rod Assembly)
21. Cotter Pin (Tie Rod Assembly)
22. Steering Arm

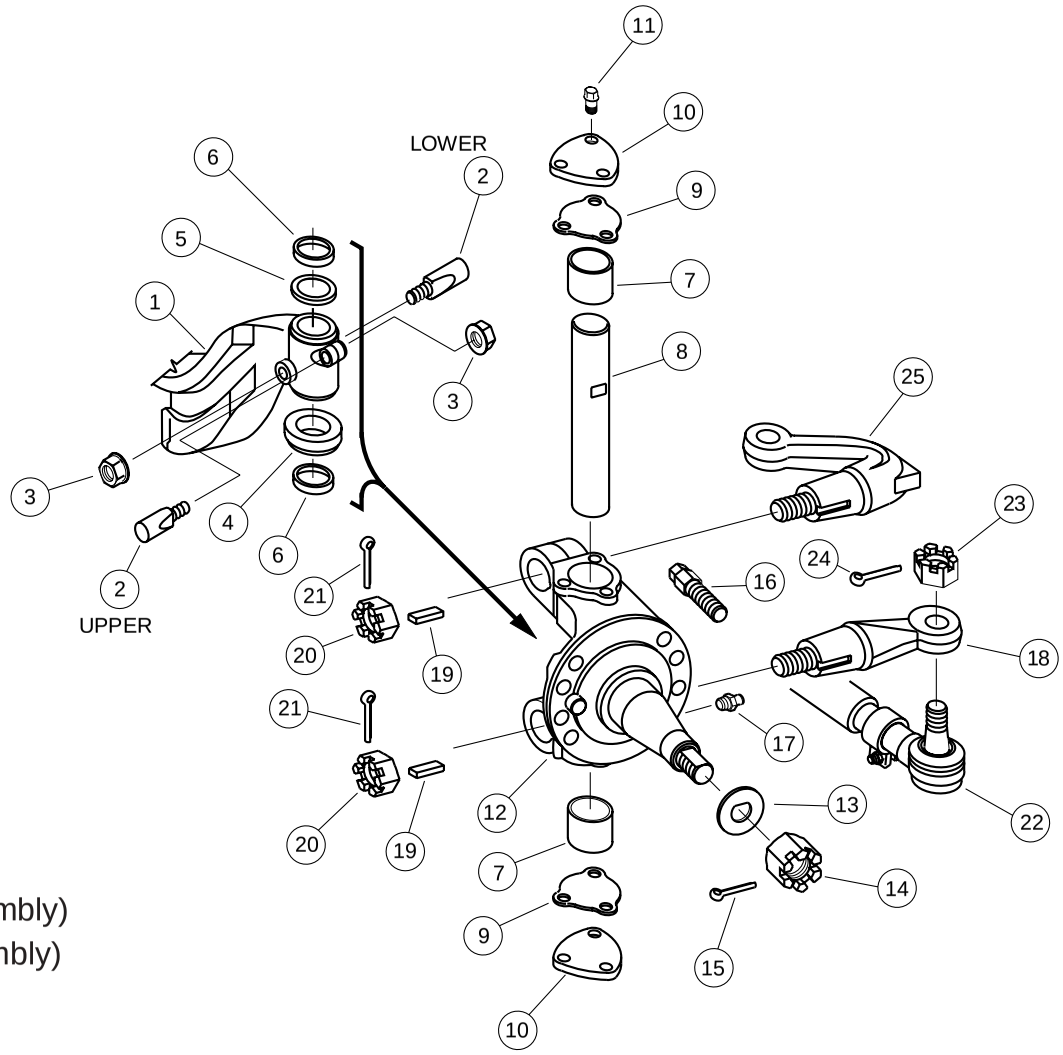


Refer to pages 22, 23 and 24 for repair kits.

PART IDENTIFICATION

CONVENTIONAL BOLT-ON STYLE KING PIN CAP

1. Axle Beam
2. Tapered Pin (Draw Key)
3. Tapered Pin Nut
4. Thrust Bearing
5. Shim Pack
6. Seals
7. King Pin Bushing
8. Kin Pin
9. Gasket
10. King Pin Cap
11. Bolt (King Pin Cap)
12. Knuckle
13. Thrust Washer
14. Wheel Bearing Nut
15. Cotter Pin
16. Stop Bolt
17. Grease (Zerk) Fitting
18. Tie Rod Arm
19. Woodruff Key
20. Castle Nut (Tie Rod Arm)
21. Cotter Pin (Tie Rod Arm)
22. Tie Rod Assembly
23. Castle Nut (Tie Rod Assembly)
24. Cotter Pin (Tie Rod Assembly)
25. Steering Arm



Refer to pages 22, 23 and 24 for repair kits.

TROUBLE SHOOTING

CONDITION	CAUSE	CORRECTION
Steering Wheel Kick	1. Looseness in steering system from steering wheel to tires. 2. Worn king pin bushings. 3. Worn tie rod ends. 4. Loose/worn wheel bearings.	1. Inspect/replace or repair all loose components. 2. Replace with king pin kit. 3. Replace tie rod end. 4. Adjust or replace wheel bearings.
Darting/Oversteer	1. King pin bind. 2. Tie rod end bind.	1. Replace with king pin kit. 2. Replace tie rod end.

NOTE: The "steering wheel kick" cause can be affected by problems from shock absorbers, pump, or air in system.

The "darting/oversteer" cause can be affected by problems from U-joints, steering gear, miter box, or fifth wheel.

NOTES:

TROUBLE SHOOTING

CONDITION	CAUSE	CORRECTION
Hard to steer	1. King pin bind 2. Tie rod end bind 3. Rusted thrust bearing 4. Incorrect front end alignment 5. Axle overload	1. Grease king pin - or - Replace with king pin kit 2. Grease tie rod ends - or - Replace ends 3. Replace with king pin kit 4. Align front end 5. Check front end weight Adjust if necessary
Non-steering Wheel Recovery	1. Same as “Hard to Steer” 2. Same as “Hard to Steer” 3. Same as “Hard to Steer” 4. Same as “Hard to Steer”	1. Same as “Hard to Steer” 2. Same as “Hard to Steer” 3. Same as "Hard to Steer” 4. Same as “Hard to Steer”

NOTE: The “Hard Steering” cause can also include problems from the power steering system, gear, pump, steering linkage, fifth wheel or tires. These items must be considered when trying to solve this problem.

NOTES:

TROUBLE SHOOTING

CONDITION	CAUSE	CORRECTION
Directional Pull	1. King pin bind	1. Replace with king pin kit
	2. Tie rod end bind	2. Replace tie rod end
	3. Incorrect front end alignment	3. Align front end
	4. Improper wheel bearing adjustment	4. Adjust/replace wheel bearings
	5. Tires	5. Check tire pressure, correct if necessary
		Check for tire damage, replace tire if necessary
		Check for uneven wear, replace tire if necessary
	6. Axle overload	6. Check front end weight Adjust if necessary
Road Wander	1. Worn king pin bushings	1. Replace with king pin kit
	2. Worn tie rod ends	2. Replace tie rod ends
	3. Loose or worn wheel bearings	3. Adjust/replace wheel bearings
	4. Looseness in steering system from steering wheel to tires	4. Inspect/replace or repair all loose components
	5. Tires	5. Check tire pressure, correct if necessary
		Check for tire damage, replace tire if necessary
		Check for extreme wear, replace tire if necessary
	6. Front end alignment	6. Align front axle
	7. Vehicle alignment	7. Align all vehicle axles

TROUBLE SHOOTING

CONDITION	CAUSE	CORRECTION
Shimmy	1. Worn king pin bushings 2. Worn tie rod ends 3. Loose or worn wheel bearings 4. Looseness in steering system from steering wheel to tires 5. Front end alignment 6. Vehicle alignment 7. Tires and/or wheels out of balance 8. Worn shocks	1. Replace with king pin kit 2. Replace tie rod ends 3. Adjust/replace wheel bearings 4. Inspect/replace or repair all loose components 5. Align front axle 6. Align all vehicle axles 7. Balance or replace wheels and/or tires 8. Replace shocks
Front Suspension - Noise “Groans or Creaks”	1. Worn king pin bushings 2. Worn tie rod ends 3. Loose or worn wheel bearings 4. Looseness in steering system from steering wheel to tires	1. Replace with king pin kit 2. Replace tie rod ends 3. Adjust/replace wheel bearings 4. Inspect/replace or repair all loose components

NOTES:

TROUBLE SHOOTING

CONDITION	CAUSE	CORRECTION
Uneven, Aggressive, Irregular Tire Wear	1. Incorrect tire pressure 2. Mismatched tires 3. Tires out of balance 4. Front axle out of alignment 5. Lug nuts not torqued properly 6. Front suspension weak or with loose attachments 7. Rear axle out of alignment 8. Worn king pin bushings 9. Worn tie rod ends 10. Incorrect tie rod arms 11. Designed axle rating not matched to actual loads	1. Correct air pressure in tires 2. Make sure front tires are same size and type 3. Balance tires and wheels 4. Align front axle 5. Inspect/torque to required values 6. Repair/replace worn components. Torque fasteners to specified values 7. Align rear axle 8. Replace with king pin kit 9. Replace tie rod ends 10. Replace arms to reduce ackerman error 11. Re-spec axle. Redistribute load weight
Worn Tie Rod Ends	1. No lubrication 2. Boot damaged 3. Excessive preload in tie rod ends	1. Grease or replace 2. Replace boot or end 3. Replace tie rod end

NOTES:

TROUBLE SHOOTING

CONDITION	CAUSE	CORRECTION
Worn King Pin and King Pin Bushings	1. No lubrication	1. Grease or replace with King Pin Kit
	2. Incorrect lube procedure	2. Refer to lube chart section VI
	3. Incorrect lube	3. Refer to lube chart section VI
	4. Lube frequency not matched to vocation	4. Refer to lube chart section VI
	5. Alemite missing	5. Repair/replace
	6. King pin gaskets worn/missing	6. Replace with king pin kit
Bent or Broken Front Axle Components	1. Damage caused by accident	1. Inspect/replace damaged components - or- Replace axle assembly
	2. Front axle over loaded	2. Adjust front axle loads or replace with different axle
	3. Power steering system exceeds designed axle requirements	3. Adjust power steering system
	4. Abuse	4. Train in proper techniques and driving habits
	5. Incorrect welding on tube axles	5. Refer to section IV or contact Westport Eng.

NOTES:

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Corporate Office: BP Tower
200 Public Square
Suite 2520
Cleveland, Ohio 44114
T: 216.875.7515
F: 216.623.0620
sales@westportaxle.com
www.westportaxle.com