



20135
20136
20137
20138

RIGHT ANGLE WORM GEAR DRIVE



OPERATING INSTRUCTIONS & SERVICE MANUAL

Rev: A, 9/17/2007

TO REDUCE THE RISK OF INJURY AND EQUIPMENT DAMAGE
USER MUST READ AND UNDERSTAND OPERATOR'S MANUAL.

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SAFETY INSTRUCTIONS



WARNING!

READ AND UNDERSTAND ALL INSTRUCTIONS

Failure to follow all instructions listed below, may result in accident, fire and/or personal injury.

SAVE THESE INSTRUCTIONS

1. **WEAR PROPEL APPAREL.** No loose clothing or jewelry to get caught in moving parts. Rubber gloves and footwear are recommended when working outdoors.
2. **USE SAFETY GLASSES** with most tools. Also face or dust mask if cutting operation is dusty.
3. **SECURE WORK.** Use clamps or a vise to hold work. It's safer than using your hands to operate tool.
4. **DON'T OVERREACH.** Keep proper footing and balance at all times.

OPERATION

Wilson Worm Gear Drives were designed for maximum duty and service life and are expressly suitable for operating in very confined areas of boiler headers. The gear housing is specially shaped and the knurled shank is small enough to provide for expander feed movement when working through a handhole. They will conveniently "reach in" for expanding tubes at right angles to, but offset from, a handhole.

LUBRICATION & MAINTENANCE

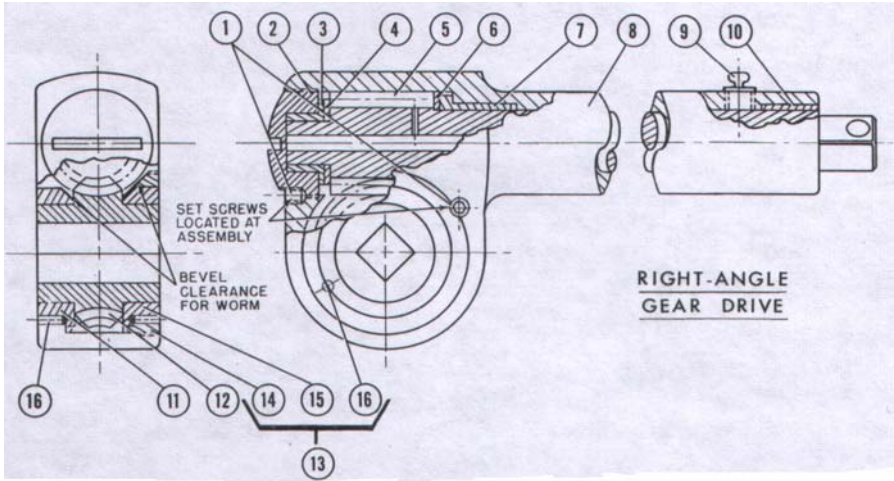
The Wilson exclusive one piece steel housing and one piece worm shaft assures complete rigidity, continued gear alignment, and extended service life. For maximum service, lubricate with Vital ER SAE 250 oil or equivalent.

Select the proper square hole size when ordering.

DIS-ASSEMBLING

- 1 - Remove both set screws (pc.#1) completely.
- 2 - Unscrew worm retainer and bronze bushing within (pc. #2 & 3) and remove.
- 3 - Push out worm and shaft with steel outer thrust washer (pc.#4 & 5). Leave steel inner thrust washer (pc.#6) within housing (pc.#8) unless replacement is required.
- 4 - Unscrew gear retainer sub-assembly (pc.#13) and remove. Use adjustable spanner wrench.
- 5 - Remove gear and socket (pc.#12) from within housing. Do not disassemble press-fitted bronze bushings (pc.#3,7,10,11 or 15) except for replacement.

PARTS LIST



PC. NO.	DESCRIPTION	CATALOG NO.			
		20135	20136	20137	20138
	RIGHT ANGLE GEAR DRIVE ASSEMBLY	20135	20136	20137	20138
1	LOCKING SET SCREW (2 REQ'D)	39806	39806	39806	39806
2	WORM RETAINER	20143	20143	20183	20184
3	WORM RETAINER BUSHING	20144	20144	20168	20168
4	OUTER THRUST WASHER	20145	20145	20169	20169
5	WORM AND SHAFT	20140	20140	20167	20167
6	INNER THRUST WASHER	20146	20146	20170	20170
7	MIDDLE SHAFT BUSHING	20147	20147	20171	20171
8	HOUSING	20139	20139	20173	20178
9	GREASE FITTING	20149	20149	20149	20149
10	SHAFT PLAIN BUSHING	20148	20148	20172	20172
11	GEAR HOUSING BUSHING	20141	20141	20176	20181
12	GEAR AND SOCKET	20151	20152	20174	20179
13	GEAR RETAINER SUB-ASSEMBLY	20987	20987	20985	20986
14	GEAR RETAINER	20142	20142	20175	20180
15	REAR RETAINER BUSHING	20141	20141	20176	20182
16	ROLL PIN (2 REQ'D)	50478	50478	50489	50489
	SPANNER WRENCH	20328	20328	20329	20330

RE-ASSEMBLING

- 1 - Replace bronze bushings (pc.#3,7,10,11 and 15) as required. Be sure gear bushings (pc.#11 & 15) are replaced with warm bevel clearance in the proper position as shown an assembly drawing.
 - 2 - Check grease fitting (pc.#9) for free flow of grease and clean or replace as necessary.
 - 3 - Replace gear and socket (pc.#12) properly and grease gear teeth.
 - 4 - Then screw gear retainer sub-assembly (pc.#13) back in place. Position worm bevel clearance as noted on assembly drawing so that gear and socket side play is held to a minimum. When this is correctly done, the two tapped half holes for set screw (pc.#1) will be aligned.
 - 5- Put steel inner thrust washer with larger hole into housing if necessary and grease inside surface of middle shaft bushing (pc.#7).
 - 6 - After greasing worm, push worm and shaft into housing and engage worm and gear. Check for proper gear and worm mesh by turning square shaft end slowly while holding worm stub shaft with the thumb.
 - 7 - Place steel outer thrust washer on worm stub shaft.
 - 8 - Screw worm retainer and bronze bushing within (pc.#2 & 3) into housing and over worm stub shaft. Tighten worm retainer so that worm end play is held to a minimum while worm turns gear and socket freely. Also align the two tapped half holes for set screw (pc.#1).
 - 9 - Insert and tighten both set screws (pc.#1).
 - 10- Add grease to assembly through grease fitting (pc.#9) with Zerk-type hand gun.
- NOTE: Whenever worm retainer (pc.#2) or gear retainer sub assembly (pc.#13) are replaced in the field, the missing tapped half holes must be added to each part. Therefore, when assembly has been properly completed, re-drill assembly at set screw locations with a number 20 drill (.161 dia.) and then re-tap (#10-32 NF-2) for set screws (pc.#1).

SPECIFICATIONS

Model	20135	20136	20137	20138
Male Square	1/2"		3/4"	
Female Square	1/2"	3/4"		1"
Overall Length	10-3/16"		11-1/4"	
Length	3-3/16"		3-27/32"	4-1/4"
Gear Housing Width	2-1/4"		2-5/8"	3-1/16"
Thickness	1-3/8"		1-7/8"	
Min. Hand Hole Diameter	3-3/8"		4"	4-1/2"
Gear Ratio	4-1/2 to 1			5-1/2 to 1

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