Welded Tube Pros LLC Mill Alignment Report

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"The end to end alignment service"

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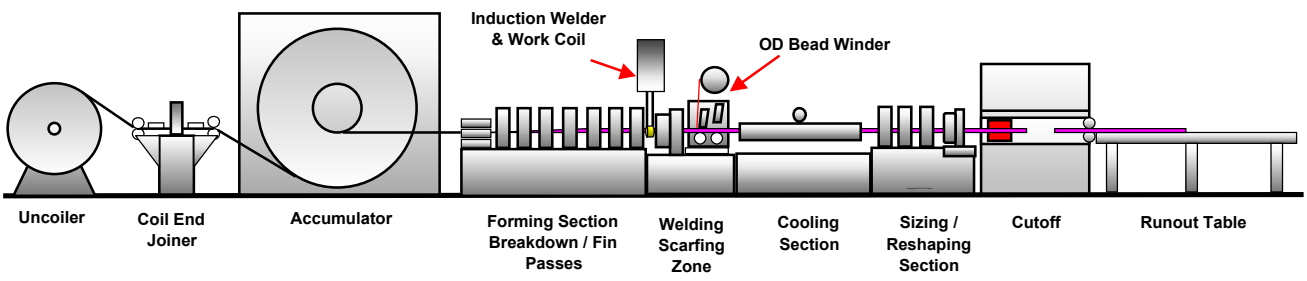
Customer Name	Steel Tube Company
Street Address	123 Steel Street
City, State, Zip Code	Anywhere
Contact Name	
Contact Phone / Fax Numbers	Fax #
Mill Name / #	Mill #2
Date of Service	02 XXX 02 Service
Purchase Order #	ABCDEF

Alignment Notes, machine conditions:

Welded Tube Pros Service Provider:



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Customer Name	Steel Tube Company	Date of Service	02 XXX 02
Mill Name / #	Mill #2	Purchase Order #	ABCDEF

Breakdown Passes, Shaft Shoulder Alignment

Thickness of current Spacer (as measured during the mill inspection prior to alignment check witht the laser position indicator)

	BD 1	BD 2	BD 3	BD 4
Top Shaft Spacer	0.438	0.438	0.438	
Bottom Shaft Spacer	0.448	0.448	0.448	

Dimensions in the "red" circles are the required spacer thickness to provide perfect shoulder alignment. "Change" shows an spacer that requires work. "OK" shows spacers that do not require work.

	BD 1	BD 2	BD 3	BD 4
Top	0.450	0.418	0.392	0.000
	Change	Change	Change	OK
	OK	Change	Change	OK
Bottom	0.448	0.436	0.418	0.000

Laser Measurement of "Shoulder" or outer "Face" of Spacer Position

	Initial	Final		Initial	Final		Initial	Final		Initial	Final	
Top Shaft	(0.012)	0.004	OK	0.020	0.005	OK	0.046	(0.012)	Change			OK
Bottom Shaft	0.000	0.000	OK	0.012	0.012	Change	0.030	(0.005)	OK			OK

Minimum Strip Thickness	0.125		
Shoulder permissible offset %	5%	Percentage	Permissible offset inches 0.0063

Fin Passes, Shaft Shoulder Alignment

Thickness of current Spacer

	F1	F2	F3	F4
Top Shaft Spacer	0.438	0.438	0.438	0.438
Bottom Shaft Spacer	0.448	0.448	0.448	0.448

	F1	F2	F3	F4
Top	0.453	0.400	0.406	0.406
	Change	Change	Change	Change
	Change	Change	Change	Change
Bottom	0.474	0.425	0.428	0.428

Laser Measurement of "Shoulder" or outer "Face" of Spacer Position

	Initial	Final		Initial	Final		Initial	Final		Initial	Final	
Top Shaft	(0.015)	0.001	OK	0.038	(0.001)	OK	0.032	(0.002)	OK	0.032	(0.002)	OK
Bottom Shaft	(0.026)	0.000	OK	0.023	0.006	OK	0.020	0.002	OK	0.020	0.002	OK

Sizing Passes, Shaft Shoulder Alignment

Thickness of current Spacer

	S1	S2	S3	S4
Top Shaft Spacer	0.438	0.438	0.438	
Bottom Shaft Spacer	0.448	0.448	0.448	

	S1	S2	S3	S4
Top	0.401	0.414	0.450	0.000
	Change	Change	Change	OK
	Change	Change	Change	OK
Bottom	0.418	0.433	0.412	0.000

Laser Measurement of "Shoulder" or outer "Face" of Spacer Position

	Initial	Final		Initial	Final		Initial	Final		Initial	Final	
Top Shaft	0.037	(0.006)	OK	0.024	(0.004)	OK	(0.012)	(0.012)	Change			OK
Bottom Shaft	0.030	0.000	OK	0.015	0.000	OK	0.036	0.000	OK			OK

This worksheet is an sample alignment report.

The "green" cells are input cells filled in as the inspection progresses from rollpass to rollpass. The "yellow" cell are calculated numbers generated by the input measurements.

The inspector must decide the allowable offset permitted by the mill and tooling arrangement. Here the permissible offset is set to 5% of the minimum strip thickness or a maximum out of alignment of + / - 0.0063"

Initial readings are collected after the laser is "bucked" into alignment with the reference planes.
After the initial reading are collected the report generates a list of suggesting new master spacer thickness to return the mill shoulder location to an "aligned" reference plane. All locations showing the symbol "Change" require new master spacers. Locations showing the symbol "OK" do not require any additional work.

After the new master spacers are installed an second set of measurements is collected to confirm that the new master spacers have corrected the problem. If the second measurement confirms the alignment within the desired tolerance the "OK" symbol will be displayed. If the measurement shows a shoulder out of alignment greater that that permitted by the preset accuracy the symbol will still show "Change". Passes BD2 Bottom, BD3 Top and S3 Top are example where additional work is required to complete the shoulder alignment process.
When all cell show "OK" the alignment is complete.