KUNDEL
GUARANTEED FOR LIFE

Kundel Industries – Crane Division

Quality Assurance Manual

Rev. 02/2016

Contents

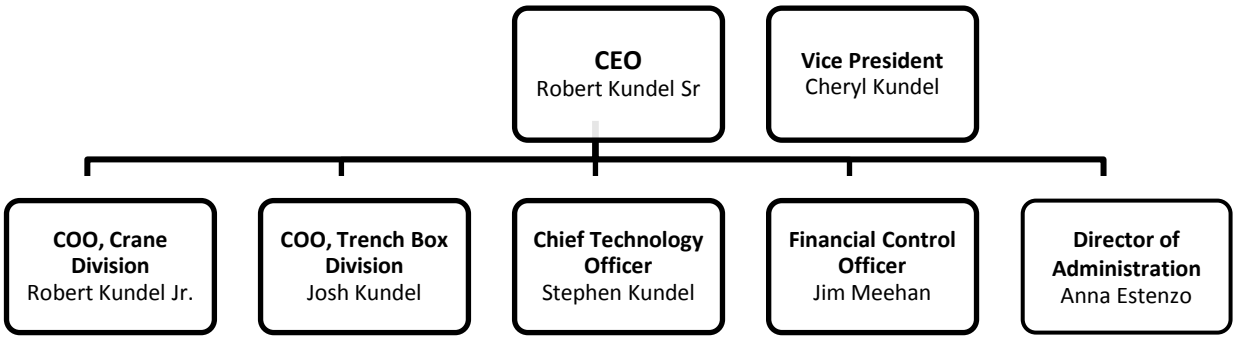
1. Company Statement

1.1. **Values -** We believe in applying God's love in all that we do. We strive to put God's love into action by finding ways to serve God, our customers and community. Our products and services are motivated by the desire to help and enhance the lives of our fellow servants.

1.2. **Purpose -** At Kundel, our goal is to design, build and offer production safety equipment and services that enhance the lives of our customers, partners and communities. We strive to be the benchmark for production safety equipment, while building and instilling traditions of Christian vocation, social concern and charity, in an organization that will have an impact for good. We aim to provide an opportunity for present and future employees to take part in a spiritually fulfilling and challenging vocation, where they can continue to perfect their craft and serve.

2. Organizational Chart

2.1. **Senior Management -**



The Senior Management team directs the following departments:

- Sales
- Design
- Production
- Purchasing
- Quality Control
- Design
- Shop

2.2. **Quality Assurance and Production Coordinator -** The Quality Assurance and Production Coordinator reports directly to the Senior Management Team. The Quality Assurance and Production Coordinator is responsible for:

- Planning to meet the customer's quality requirements;
- Determining inspection points within the system;
- Directing inspection and oversight activities;
- Monitoring procedures to assure compliance;
- Reviewing and maintaining quality records;
- Calibration of measuring and test equipment; and
- Corrective action coordination.

3. Scope of this Manual

3.1. **Overview -** This manual describes the Crane Division of Kundel Industries' Quality System Policies and Procedures. These policies and procedures control all activities, from vendor procurement to customer shipment of products.

3.2. **Policy -** This quality program is developed to assure customer satisfaction by providing quality products. We will perform all activities in a manner which meets or exceeds the expectations of our customers.

3.3. **Reviews -** Management reviews of operations are continuous and any problems indicated with the Quality Program or its implementation will be addressed and corrected as directed by the Senior Management team.

4. Products Provided Under Quality Assurance Program

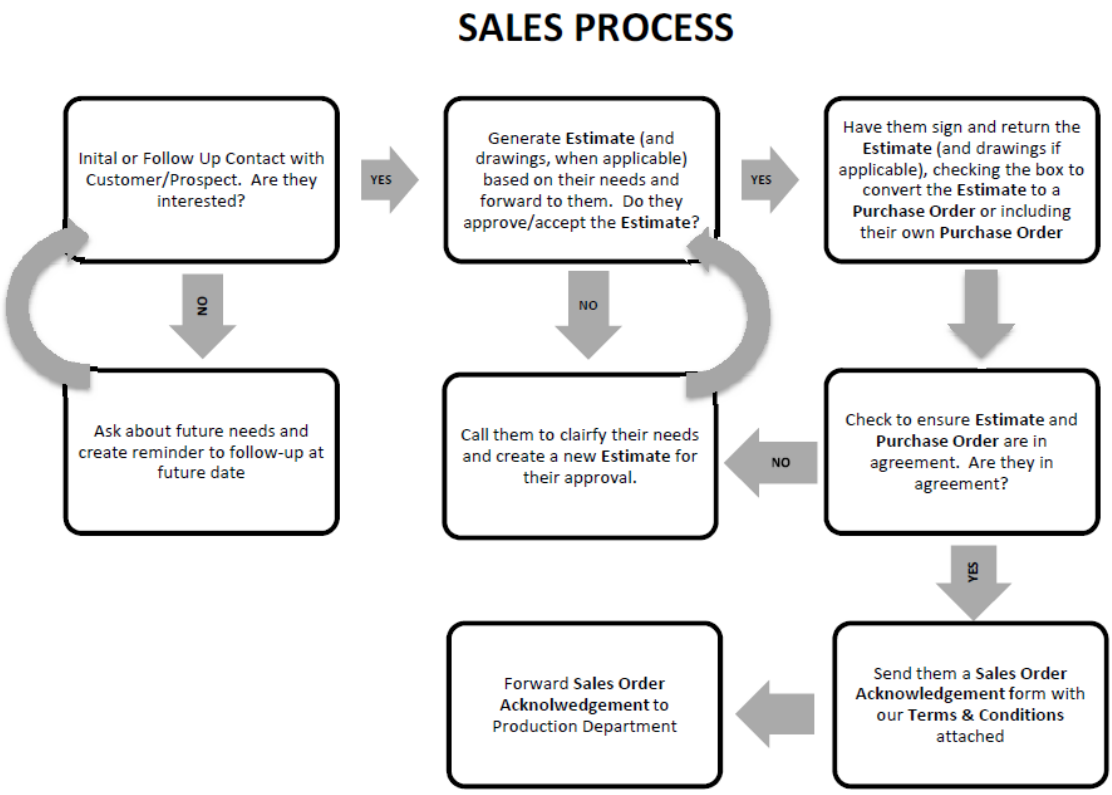
The following Kundel products are included within this program:

- SnapTrac Crane Kits
- KTrac Overhead Cranes
- TTrac Overhead Cranes
- Jib Cranes & Balancers
- Steel Gantry Cranes
- Aluminum Gantry Cranes

5. Processes: Quoting, Drawings, Drafting, Production Scheduling, Purchasing and Shipping

5.1. **Quote Estimates** - A standard quoting program is used by the entire sales department. Oversight and review of all quoting is assigned to the Crane Division COO.

5.1.1. Sales Process:



5.2. **Drawing/Drafting Procedure** – Once a Sales Order Acknowledgement is received, the order will be sent to the Production Department to begin work on the drawings and drafting. Oversight and review of all drawings and drafting is assigned to the Crane Division COO.

5.2.1. Confidential Information: Kundel will ensure that any information or documentation received from the customer and marked as "Confidential" shall be maintained in strict confidence. Confidential information will be available only to those persons within our organization who are necessary for the purposes of completing the order, and that when said information is disclosed or transmitted, Kundel will inform each employee or agent who receives such information or documentation of its confidential nature.

5.2.2. Drawing Modifications – Any substantial drawing modifications may require a new Quote Estimate, Purchase Order and Sales Order Acknowledgement.

5.3. **Production Scheduling** – The Production Order Coordinator will work with the Quality Assurance and Production Coordinator to set the shop production schedule. All orders are then placed in a spreadsheet accessible by the entire production team. The order spreadsheet keeps track of where each order is in the production process and the estimated date of shipping. A production meeting is scheduled each Monday to go over each outstanding order.

5.3.1. Shop Production: For each order, crane production is broken down into sequences:

- 5.3.1.1. Parts: Parts to be ordered and parts to be made in-house
- 5.3.1.2. Sub-Assembly: ½ S and bottom assembly
- 5.3.1.3. Assemble Rail: Tops, Grind, Paint
- 5.3.1.4. Assemble Accessories, i.e. electric bar, hangers, etc.
- 5.3.1.5. Quality Check
- 5.3.1.6. Crate and Ship

Note: all sequences are to be going on simultaneously.

5.4. **Purchasing** – The production team will create a BOM (Bill of Material) for each order and determine if any outside parts or accessories need to be ordered. They will then direct the purchasing department to order, including required shipping times in order to meet our production deadlines. Purchase Orders (PO) are prepared by the purchasing department and submitted to the Crane Division COO for approval prior to ordering. The PO shall contain all ordering requirements for the material specification and shall reference the job number for the order.

5.4.1. Material Standards: The following standards shall be used when purchasing material:

- 5.4.1.1. Pipe – ASTM A-53
- 5.4.1.2. Tubing – ASTM A-500
- 5.4.1.3. Sheet Steel – min. 60,000 yield
- 5.4.1.4. I-Beam – A992
- 5.4.1.5. Plate Steel and Bar – A36
- 5.4.1.6. Hardware, Bolts – Gr 5
- 5.4.1.7. Hardware, Nuts – Gr 8
- 5.4.1.8. Hardware, Spherical Nut/Washer – cold formed Gr 5 equivalent
- 5.4.1.9. Trolleys – Cast 1030
- 5.4.1.10. K-Trac Rail – HRPO – A1011-80y

5.5. **Receiving and Inspection of Material** – All material received into Kundel is inspected by the Quality Assurance and Production Coordinator and/or the Shipping/Receiving Coordinator for

damage, quality and correct quantity, as well as to ensure it is in compliance with the material specification listed on the PO. Any material that fails to meet these conformities is immediately returned to the Vendor. Acceptance of the material is documented on the packing list and the identity of the inspector is included by initialing the document.

5.6. **Shipping** – Inspection of products to be delivered to the customer is accomplished by the Quality Assurance and Production Coordinator and/or the Shipping/Receiving Coordinator prior to packaging/crating for identification and damage in accordance with the Bill of Lading. Customer ordered requirements are included with the Bill of Lading. Inspection of the packaging will include evaluation to determine adequacy to preclude damage during delivery and any special requirements directed by the customer's order. Inspection and approval of the product being shipped is documented on the Bill of Lading and the identity of the inspector is included by initialing the document.

6. Quality Control

6.1. **Specifications -** All cranes are structurally designed with close review and in accordance with of the following, as applicable:

6.1.1. CMAA-74
6.1.2. ASME B30.2, B30.11, B30.16, B30.17
6.1.3. AISC Steel Construction Manual
6.1.4. AISI S100 Cold Formed Manual
6.1.5. OSHA Specifications 1910.179
6.1.6. ANSI Specifications, as applicable
  6.1.6.1. MH 27.1
  6.1.6.2. MH 27.2
6.1.7. Canadian CSA Standard B167-96 and CSA and C22.2 No. 33-M1984 (re-affirmed 2004)

6.2. **Deflection* -**

6.2.1. Standard Under-Hung Bridge Cranes: L/450 or L/600, as requested.
6.2.2. Enclosed Track Jibs:
  6.2.2.1. Enclosed Track Wall-Mounted Jibs – L/320
  6.2.2.2. Enclosed Track Free-Standing Jibs – L/200
6.2.3. Structural Jibs
  6.2.3.1. Structural Wall-Mounted Jibs – L/450
  6.2.3.2. Structural Free-Standing Jibs – L/150

*Due to configuration restrictions, some models may not meet these guidelines.

6.3. **Basic Design -** All Kundel under-hung bridge cranes and monorails pendulate, giving free movement to trolleys and end trucks, as well as absorbing impact forces.

6.4. **Quality Control Procedures -** Strict quality control procedures are maintained throughout the production process:

6.4.1. End Trucks and Trolleys: All parts will be checked upon receipt for quality and quantity and signed off by an inspector. Parts are not to be used if not checked for quality.

6.4.1.1. All end trucks and trolleys shall be checked by an overseer after assembly.

6.4.2. Required checks: Welds, Web Width (5/8”), Squareness of Body, Assembly of all Components

6.4.3. Heavy-Duty End Trucks Assembly: Clamp, Max. Width .625”, Welded Lug Beveled , Welded Lug Length 11/16”.

6.4.4. Punching: First five rails being punched must be observed and checked by an overseer. Every tenth rail must be checked by each worker that processes it for correctness and marked with their initial. All rail sections that don’t meet the specifications must be discarded. A plan with tolerances must be posted at the punching machine. (Note: The punched holes location is the foundation for the quality of the product.)

6.4.5. Bending: An overseer must help set up the press and observe a minimum of 10 rails being bent that consecutively meet the specifications. Every tenth rail must be checked by each worker that processes it for correctness and marked with their initial. All rail sections that don’t meet the specifications are to be reported and set aside. An ongoing list of discarded rail sections will be reported to management.

6.4.5.1. Dimensions, degrees, and location of holes to the rail wheel location are of utmost importance. (Note: The location of the holes in relation wheel track area sets the quality of the product; welding on top.)

6.4.6. Cutting: An overseer is to check drawing dimensions to cut sheet. Rails are to be cut square. Sequence of the holes must align from the end. The rail number is to be marked on all sections with a sequence number to each page. The rail section pieces are to be stacked together and staged, ready to build.

6.4.7. Welding Each Rail Half: Rail half holes are to align from opposite sides. Rail half is to be straight. Wheel track area is to be flush. Final length shall be checked to ensure they match the drawing and then initialed by the worker.

6.4.8. Bottom Assembly: Placement of spacers must be per specification. All rivets are to be firmly pulled in. Lugs are to be placed with a jig to the edge of the rail and welded.

6.4.9. Squaring ends: Grinder is to be checked once a month for squareness in all directions by an overseer. After check, and reset if required, the overseer is to sign-off what was required on a sign-off sheet located on the grinder.

6.4.10. Welding on Top: The rail section is to be welded with a bow up, so after the welding is complete, the rail is slightly bowed up or straight. No bow down is permitted. There shall be no twist welded into the rail section and all twist must be fixed. All welded rail sections must be inspected by an overseer. The rail shall be clamped for welding with the spacer level (checked). All twist rocking shall be brought to the attention of an overseer before welding. The overseer will give the ok or reject orders.

6.4.11. Painting:

6.4.11.1. All enclosed rail sections are primered inside and out.
6.4.11.2. Small parts are zinc plated.
6.4.11.3. SnapTrac is powder coated.

7. Correction of Nonconformities

7.1. **Adverse Quality Conditions -** Conditions adverse to quality shall be promptly identified and corrected. In the case of significant conditions adverse to quality, the cause of the condition shall be determined and action planned to correct and prevent repetition.

7.2. **Customer Complaints -** Each customer complaint is taken seriously and reviewed by the Senior Management team. Responses to customer complaints will be documented and will include cause of the condition, actions taken to prevent a future occurrence and the effective date.

8. Welding Control

8.1. All welding shall be performed in accordance with AWS D14.1 and is to be performed by qualified welders.

8.2. Welders shall be qualified by undergoing a weld test under the supervision of the Shop Foreman and Quality Assurance and Production Coordinator. The test weld shall be examined and, if acceptable, the welder shall be qualified according to the Employee Training Status attached hereto as Exhibit B.

8.3. Welders shall require requalification if any of the following occurs:

8.3.1. A change in performance.

8.3.2. Weld process has not been used for a period of six months.

8.3.3. When there is reason to question their ability to make acceptable welds.

8.4. Each qualified welder shall be listed on a log maintained by the Shop Foremen.

8.5. The Shop Foremen and/or the Quality Assurance and Production coordinator is responsible for assigning only qualified welders to a job.

8.6. Each welder is assigned a unique identification number to be stamped or written at not more than three foot intervals adjacent to the weld he makes.

8.7. Tack welds, whether removed or left in place, shall be made using qualified welders and procedures. They shall be identified with the welder's identification. Tack welds left in place shall be prepared for inclusion into the final weld. Defective tack welds shall be removed.

8.8. No welding shall be performed on metal surfaces when the metal temperature is below 60°F.

8.9. Finished welds shall be ground or machined to blend with the surface of the parts being joined.

9. Calibration of Measuring and Test Equipment

9.1. **Commercial Equipment -** Calibration of normal commercial equipment (i.e. rules, tape measures, levels and other similar devices) is not required. It is the responsibility of the user to report worn or damaged equipment to management to prevent inadvertent use.

9.2. **Special Devices -** Calibration will be performed and maintained at prescribed intervals in accordance with their service manuals. Calibration intervals are to be kept track of on a spreadsheet accessible to all production employees. Responsibility for maintaining calibration of special devices according to the calibration schedule is assigned to the Quality Assurance and Production Coordinator.

10. Records Retention

10.1. Records traceable to a Customer will be stored by the Customer's Order Number. The retention of records is a minimum of seven (7) years or as otherwise directed by a Customer Order Requirement

11. Exhibits

11.1. **Exhibit A -** Quality and Safety Checklists

11.2. **Exhibit B -** Employee Training Status

EXHIBIT A

QUALITY AND SAFETY CHECKLIST FOR K-TRAC CRANE SYSTEMS

Order # _____ - KS

SECTION 1 – **FABRICATOR CHECKLIST**

CIRCLE ONE K12 K16 K19 K22 K26 K30

CIRCLE ONE RUNWAY BRIDGE

CIRCLE ONE HOT COLD

CAPACITY _____LBS

CHECKLIST

SPACERS _____ OK

RIVETS _____ OK

TOP STRAPS _____ OK

JOINT CHANNELS _____ OK

BOTTOM LUGS _____ OK

TOP LUGS _____ OK

CAP TYPE _____ OK

CROWN _____ OK

TWIST _____ OK

3500LB STRAPS _____ OK

WELDS _____ OK

BUSSING CLIPS _____ OK

CHECKED BY _____ DATE _____

Refer to QC Procedure VII.A. and Work Order for Details

EXHIBIT B

KUNDEL EMPLOYEE TRAINING STATUS

Employee Name:

Date of Hire:

Date of Report:

General Labor

	Job Knowledge			Safety			Productivity			Quality		
	Level			Level			Level			Level		
	1	2	3	1	2	3	1	2	3	1	2	3
Fork Lift Trained	☆			☆			☆			☆		
Overhead Crane Trained	☆			☆			☆			☆		
Assembly Helper	☆			☆			☆			☆		
Hand Tools/ Drill Presses	☆			☆			☆			☆		
Rigging	☆			☆			☆			☆		

NOTES:

Welder Fitter

	Job Knowledge			Safety			Productivity			Quality		
	Level			Level			Level			Level		
	1	2	3	1	2	3	1	2	3	1	2	3
Box Trained	☆			☆			☆			☆		
Crane Trained	☆			☆			☆			☆		

NOTES:

Employee Name:

Date of Report:

Welder

	Job Knowledge			Safety			Productivity			Quality		
	Level			Level			Level			Level		
	1	2	3	1	2	3	1	2	3	1	2	3
Box Trained	☆			☆			☆			☆		
Crane Trained	☆			☆			☆			☆		

NOTES:

Painter

	Job Knowledge			Safety			Productivity			Quality		
	Level			Level			Level			Level		
	1	2	3	1	2	3	1	2	3	1	2	3
Box Trained	☆			☆			☆			☆		
Crane Trained	☆			☆			☆			☆		

NOTES:

Fabricating Equipment Operator

	Job Knowledge			Safety			Productivity			Quality		
	Level			Level			Level			Level		
	1	2	3	1	2	3	1	2	3	1	2	3
Shear	☆			☆			☆			☆		
Brake Press	☆			☆			☆			☆		
Plate Plasma	☆			☆			☆			☆		
Hand Tools/ Drill Presses	☆			☆			☆			☆		
Pipe Plasma	☆			☆			☆			☆		
Combination	☆			☆			☆			☆		

NOTES:

LEVEL 1 = BASIC
LEVEL 2 = AVERAGE
LEVEL 3 = ADVANCED

Employee Name: _____ Date: _____

Kundel Employee Personality Card										
	1	2	3	4	5	6	7	8	9	10
Attendance	☆									
Attitude	☆									
Loyalty	☆									
Honesty	☆									
Drug Free	☆									
Physically capable	☆									
Mentally capable	☆									
Emotionally stable	☆									
Co-operative	☆									
Team Player	☆									
Enjoys Job	☆									
Employee Roaming	☆									
Distraction Level	☆									
Level 1 -Lowest (Not likely) Level 10 - Highest (Most likely)			**NOTES:**							

Employee Name: _____ Date: _____

Kundel Employee Personality Card										
	1	2	3	4	5	6	7	8	9	10
Attendance	☆									
Attitude	☆									
Loyalty	☆									
Honesty	☆									
Drug Free	☆									
Physically capable	☆									
Mentally capable	☆									
Emotionally stable	☆									
Organization	☆									
Team Building	☆									
Enjoys Job	☆									
Employee Roaming	☆									
Communication Skills	☆									
Teaching Skills	☆									
Lead / Confronting	☆									
Innovation	☆									
Tool Maintenance	☆									
Cleanliness	☆									
Company Policy	☆									
Level 1 -Lowest (Not likely) Level 10 - Highest (Most likely)			**NOTES:**							

KUNDEL EMPLOYEE SALES TRAINING STATUS

Employee Name:

Date of Hire:

Date of Report:

Product Knowledge

	Employee Level										
	1	2	3	4	5	6	7	8	9	10	Expert
TrenShor	☆										
Shore Lite	☆										
Titan Series	☆										
Basic Series	☆										
Specialty Shoring	☆										
Snap Trac	☆										
K-Trac	☆										
T-Trac	☆										
I-Strut	☆										

NOTES:

Competitor Knowledge

	Employee Level										
	1	2	3	4	5	6	7	8	9	10	Expert
Boxes	☆										
Cranes	☆										

NOTES:

KUNDEL EMPLOYEE SALES TRAINING STATUS

Employee Name:

Date of Report:

Qualification Ability

	Employee Level										
	1	2	3	4	5	6	7	8	9	10	Expert
Boxes	☆										
Cranes	☆										

NOTES:

Software Knowledge

	Employee Level										
	1	2	3	4	5	6	7	8	9	10	Expert
Microsoft Office	☆										
Word	☆										
Excel	☆										
Outlook	☆										
Power Point	☆										
Goldmine	☆										
Contact Creation	☆										
Contact Classification	☆										
E-mail	☆										
Mass E-mail	☆										
Scheduling Tasks	☆										
Completing Tasks	☆										
Calender	☆										
Mail Template	☆										
QuoteWerks	☆										

NOTES:

LEVEL 1 = BASIC
LEVEL 10 = ADVANCED
EXPERT = Desiged / Built / Assembled Product

Employee Name: _____ Date: _____

Kundel Sales Personality Card										
	1	2	3	4	5	6	7	8	9	10
Attendance	☆									
Attitude	☆									
Loyalty	☆									
Honesty	☆									
Drug Free	☆									
Mentally capable	☆									
Emotionally stable	☆									
Customer Service	☆									
Co-Op Management	☆									
Co-Op w/ Others	☆									
Oppurtunity Seeking	☆									
Computer Skills	☆									
Communication Skills	☆									
Cold Call Ability	☆									
Closing Ability	☆									
Info. Gathering	☆									
Productivity	☆									
Passion / Enjoyment	☆									
Task Oriented	☆									
Company Strategies	☆									
Time Allocation	☆									
Seeks Advice	☆									
Motiviation	☆									
Focus on Tasks	☆									
Sales Education	☆									
Level 1 -Lowest (Not likely) Level 10 - Highest (Most likely)			**NOTES:**							

SECTION 2 – **ASSEMBLER CHECKLIST**

DO NOT PAINT RAIL IF FABRICATION CHECKLIST IS NOT COMPLETED

CHECKLIST

ENDS SQUARED _____ OK

PAINT COLOR _____ OK

PAINT QUALITY _____ OK

END STOPS _____ OK

JOINT HARDWARE _____ OK

HANGER PLACEMENT _____ OK

HANGER ASSEMBLYS _____ OK

TORQUE BOLTS _____ LOCK WASHER_____

SPHER. NUTS _____ SPHER. WASHERS_____

J AM NUTS _____ SET SCREWS _____

LOCK TITE _____ RUBBER BANDS _____

RUBBER CAPS _____ COTTER PINS _____

BUSSING JOINTS _____ OK

POWER TAP LOCATION _____ OK

BUSSING TESTED _____ OK

BUSSING CAPS _____ OK

CHECKED BY _____ DATE _____

FINAL CHECK _____ DATE _____

Refer to QC Procedure XII.A. and Work Order for Details

Note to Installer: Please check all hardware!