



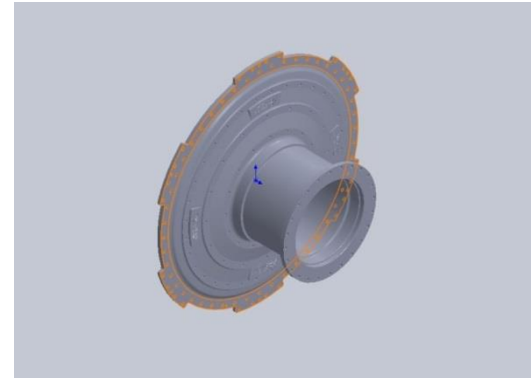
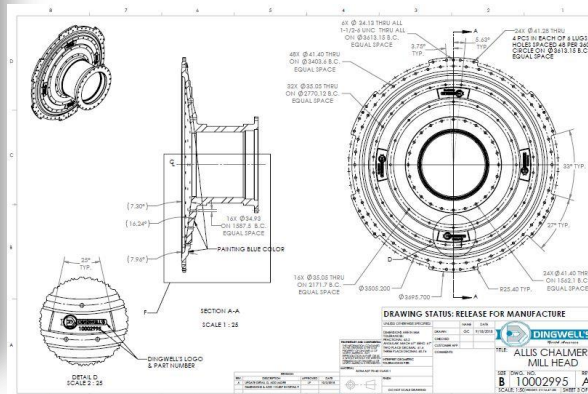
DINGWELL'S GLOBAL MINING DIVISION – MILL HEAD

**MACHINING | FABRICATION
MANUFACTURING | CASTING | FORGING**

ADVANCED CAPABILITIES



ON-SITE MEASUREMENT & DRAWING



Dingwell's engineering team check and measure OEM mill head on customer site, to produce production drawings & 3D model.

PATTERN MAKING



MOLDING PROCESS



Place a pattern in sand to create a mold, incorporate the pattern and sand.

CASTING

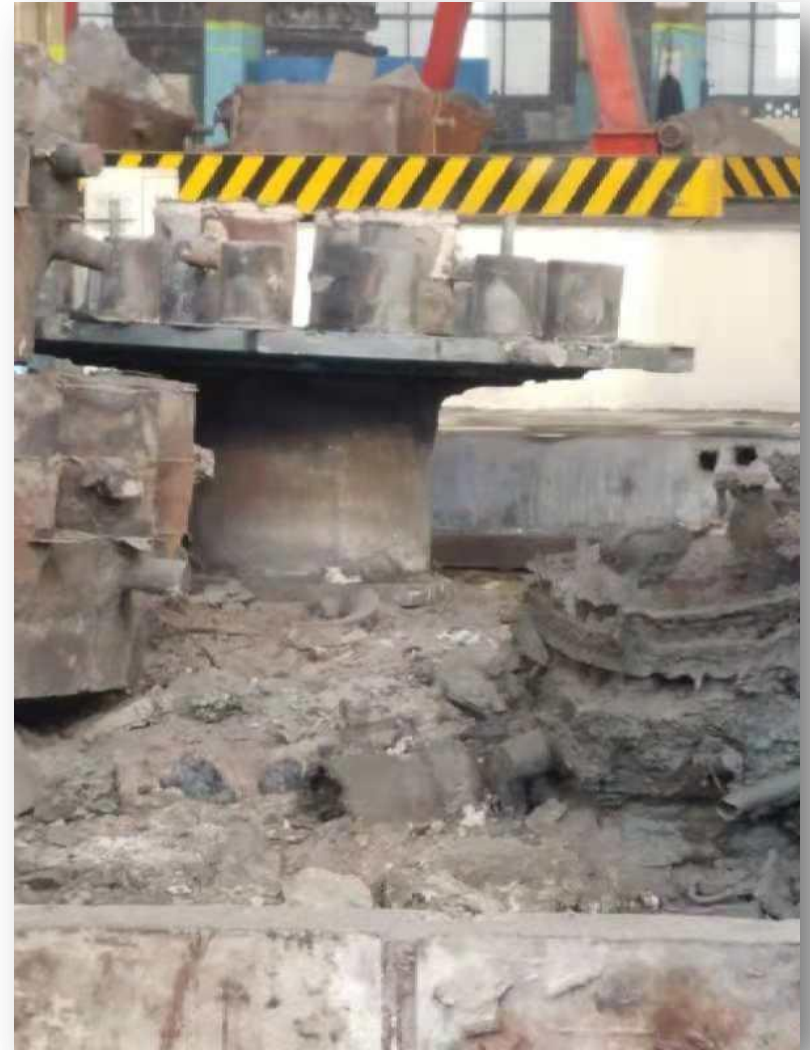


Remove the pattern, fill the mold cavity with molten metal.

HEAT PRESERVATION



CLEANING



HEAT TREATMENT



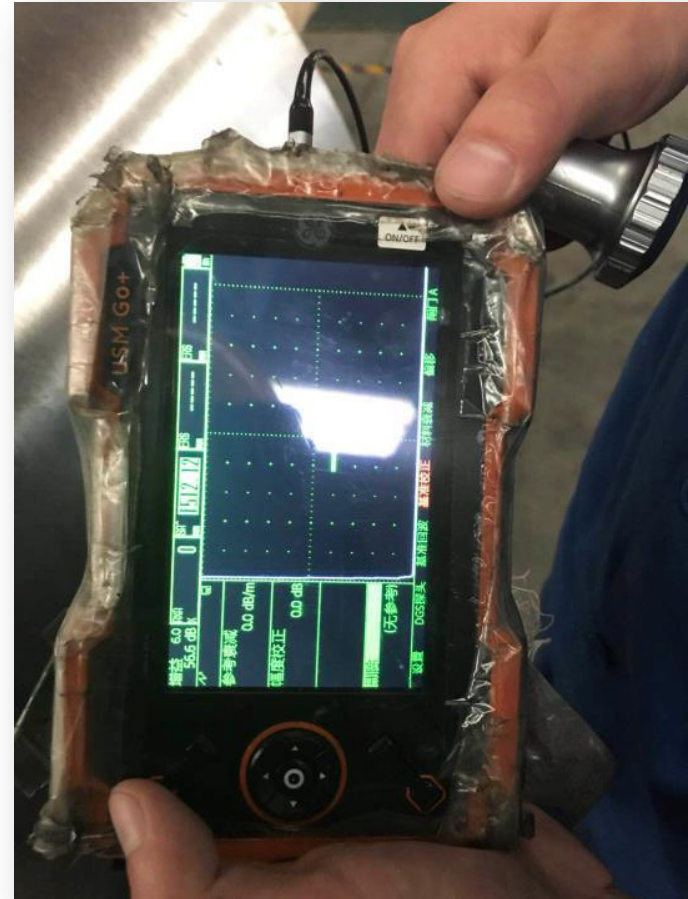
Proper heat treatment can improve material's strength, hardness, toughness, ductility, and corrosion resistance.

SANDBLASTING & FINISHING



Sandblasting cleanup after heat treatment, prior to machining.

DETECTION OF DEFECTS



In-process quality control identifies product defects that may have arisen during production prior to machining and before they potentially affect the entire order.

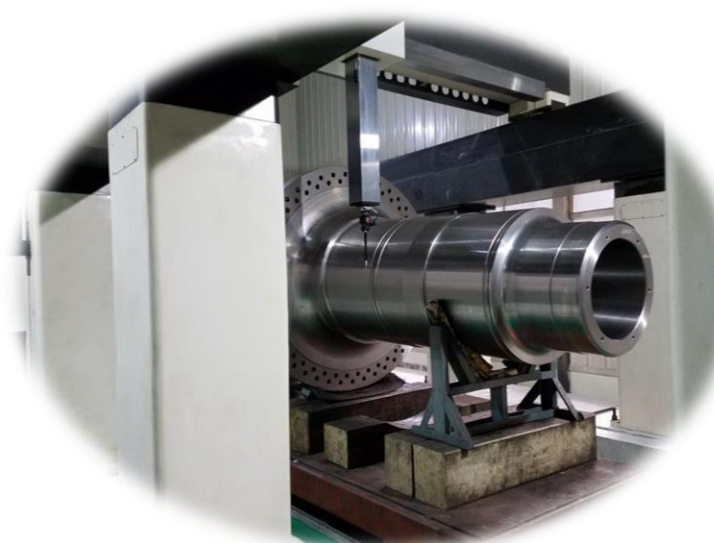
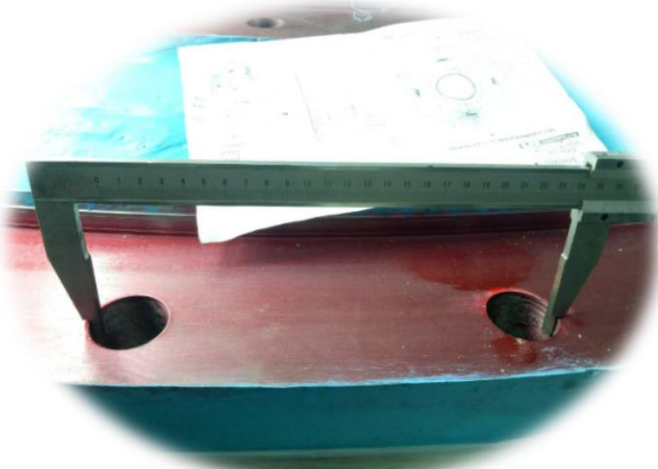
FINISH TURNING



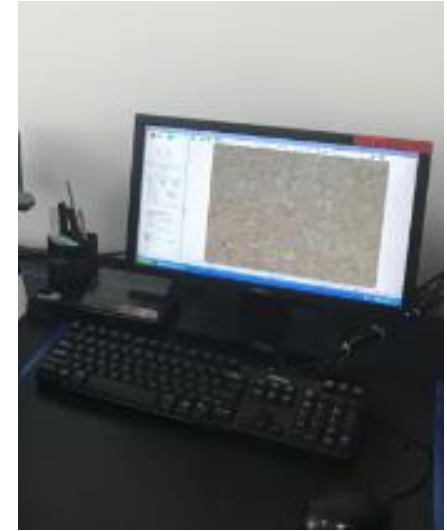
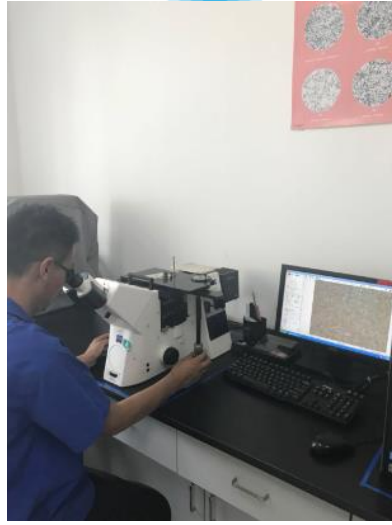
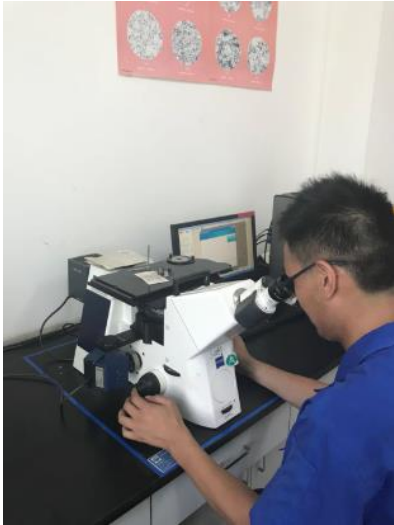
HOLE LAYOUT



QA PROCESS



Mill Test – Chemical Composition & Mechanical Properties



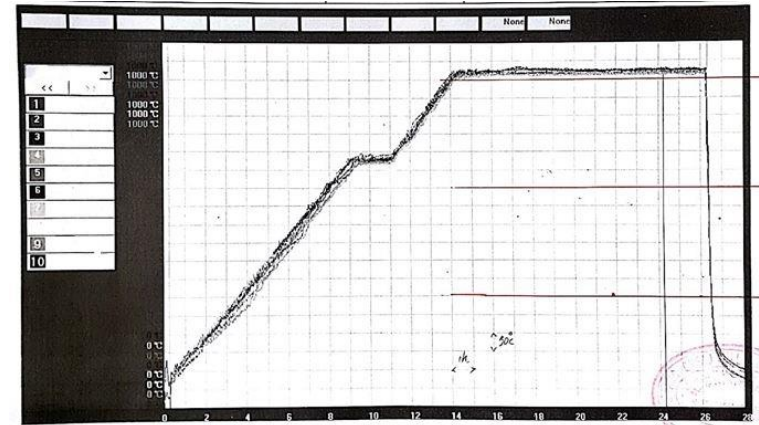
INSPECTION REPORT



Chemical Composition and Mechanical Properties Report

Customer	Furnace No.		B18-254		Heat Treatment		Normalizing + Tempering				
Contract No.	Material	ASTM A-2770-4	Unit Weight T		Quality		1				
Name of Product	Mill Head	Part No.	CC181122		Drawing No.		10002995				
Chemical Composition	Element %	C	Si	Mn	P	S	Cr	Ni	Mo	Cu	
	Standard	≤0.25	≤0.80	≤1.2	≤0.02	≤0.015	≤0.50	≤0.50	≤0.25	≤0.50	
	Sample	0.202	0.603	1.052	0.018	0.012	0.059	0.046	0.024	0.101	
Mechanical Property	Objective	Tensile Test				Impact Test		Hardness			
	Standard	Tensile Strength (N/mm ²)		Yield Strength (N/mm ²)		Elongation	Shrinkage	AKV/AKU JJ(JICM ₂)			
		483		276		22	30				
Sample	521.36		292.2		32.3	45					

This is to certify that material is in accordance with the standard of ASTM A27-2000, qualified by inspection.



Magnetic Particle Test Report

Product	Mill Head	Material	ASTM A-2770-40	Quantity	2
Drawing No.	10002995	MGE ORD No.	CC181119/181122	Test Standard	T9444-2007
Flaw Detector	CDX-220	Method	Continuous process yoke		
Distance	75-150mm	Current	8-12A		
Sensitivity	Calibration with a standard test block	Surface Condition	Ra≤12.5		
Figure: Testing Part					
Shaft Diameter					
Test Result: Passed					



Ultrasonic Report

Product	Mill Head	Material	ASTM A-2770-40	Quantity	2
Drawing No.	10002995	MGE ORD No.	CC181119/181122	Test Standard	T9444-2007
Flaw Detector	HS600	Coupl Lant	Chemical paste		
Trnsducer	2MHZ 20	Surface Condition	Ra≤0.3		
Cal Reference Block	Large Flat Base	Senslivity	Φ8		
Test Method: Straight / Contact					
Figure: Testing part					
Shaft Diameter					
Test Rusult: Passed					

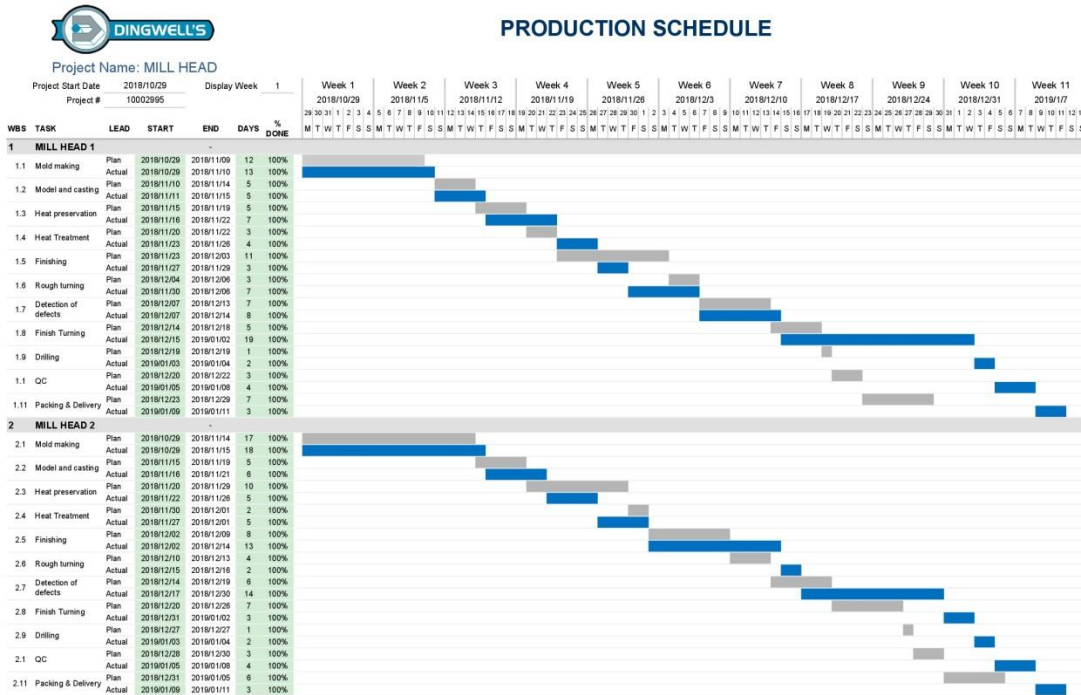
QA of chemical & mechanical properties,
magnetic particle & ultrasound testing reports

PAINTING & PACKAGING



All machined areas are applied with antirust oil or grease;
All non-machined areas are painted if required;
Final packaging to ensure products have proper protection.

PRODUCTION SCHEDULE & SHIPPING TRACKING SYSTEM



Bill Of Lading: 6124397443

Search

Main Info Containers Doc Status Customs Print Version Door Delivery

Booking Number	6124397440
Bill Number	6124397443
Cargo Cut Off	2019-01-31 00:00
Place of Receipt	Shanghai, China
Final Destination	Long Beach, California, United States - Hanjin Terminal - Pier T
Firms Code	Z952
Arrival at Final Destination Hub (Estimated)	2019-02-24 23:00
Vessel Name	HANJIN
Voyage	0031E
POL	Shanghai
POD	Long Beach - Hanjin Terminal - Pier T
Firms Code	Z952
B/L Type	Sea WayBill
B/L Release Status	Release

POR: Shanghai, China
 First POL: Shanghai
 Last POD: Long Beach, United States
 FND: Long Beach, California, United States

Schedule Detail

VesselName	Voyage	POL	Actual Loading	ETD	ATD	POD	ETA	ATA	Actual Discharge
HANJIN	0031E	Shanghai	2019-02-08 14:00	2019-02-08 00:00	2019-02-08 14:00	Long Beach	2019-01-22 14:15		

Carriage Overview

Container No	Empty Pick Up	Laden Return	Received at 1 st POL	Loading	Discharged	LFD	Devanning	Laden Pick Up	Empty Return
TEMU8044211	2019-03-03 08:11	2019-03-05 09:19	2019-03-05 09:19	2019-03-08 14:00					

Our computerized tracking systems allow Dingwell's stay on top of the production schedule and shipping logistics. We are able to update order status constantly to our value customer.

DELIVERY



We have in-depth global knowledge of logistics. Shipments are tracked from the shipping destination to the customer's location.

Dimension QC

 DINGWELL'S NORTH AMERICA 963 Alloy Drive, Thunder Bay ON Canada 215 Main Street, Superior WI USA www.dingwells.com				
Date:	MILL HEAD AS PER	Material:	Heat Number:	
2019/02/25	DRAWING # 10002995	ASTM A-2770-40	T18-0941/01B	
Serial No.	Dimensional-Checking Theoretical measure	Tolerances unspecified	Inspected By:	Obtained in mm
1	4384.675 ^{+0.325} _{0.000}		CMM or Micrometer	4384.8
2	933.596	±0.127	Depth Gauge	933.6
3	1495.425	±0.127	Vernier Caliper	1495.5
4	1457.325	±0.127	Vernier Caliper	1457.3
5	9.525	±0.127	Depth Gauge	9.5
6	45°	±1/2°	Angle Gauge	45°
7	Φ431.800 ^{0.000} _{0.025}		Micrometer	Φ431.787
8	511.820	±0.127	Micrometer	511.870
9	78.5°	±1/2°	Angle Gauge	78.5°
10	78.5°	±1/2°	Angle Gauge	78.5°
11	Φ609.600 ^{0.000} _{0.050}		Micrometer	Φ609.590
12	R152.400	±0.127	Template	R152.400
13	R57.150	±0.127	Template	R57.150
14	671.904	±0.127	Depth Gauge	671.9
15	2889.250±0.127		CMM or Micrometer	2889.3
16	990.573±0.127		Depth Gauge	990.5
17	908.050	±0.127	Vernier Caliper	908.02
18	781.050	±0.127	Depth Gauge	781.02
19	20.320	±0.127	Depth Gauge	20.320
20	Φ635.000	±0.127	Dial Indicators	Φ635.100
21	Φ1079.500	±0.127	CMM or Micrometer	Φ1079.600
22	Φ1117.655 ^{+0.050} _{0.000}		CMM or Micrometer	Φ1117.700
23	R117.475	±0.127	Template	R117.475
24	170.180	±0.127	Depth Gauge	170.200
25	38.100	±0.127	Depth Gauge	38.200
26	18.415	±0.127	Depth Gauge	18.52
27	7.620	±0.127	Depth Gauge	7.640
28	Φ152.400	±0.127	Vernier Caliper	Φ152.460
29	3/4-16UNF-2B		thread plug Gauge	3/4-16UNF-2B
30	104.458±0.127		Depth Gauge	104.5

31	99.695±0.127		Depth Gauge	99.7
32	Φ170.180	±0.127	Vernier Caliper	Φ170.200
33	Φ177.800	±0.127	Vernier Caliper	Φ177.820
34	Φ63.500	±0.127	Vernier Caliper	Φ63.500
35	75°	±1/2°	Angle Gauge	75°
36	3.810	±0.127	Depth Gauge	3.800
37	45°	±1/2°	Angle Gauge	45°
38	4.216	±0.127	Vernier Caliper	4.22
39	Φ523.875 ⁰ _{-0.051}		Micrometer	Φ523.855
40	127	±0.762	Vernier Caliper	127
41	2 1/2		Template for thread	OK
42	11.430	±0.127	Depth Gauge	11.500
43	Φ165.100	±0.127	Vernier Caliper	Φ165.160
44	155.000	±0.127	Depth Gauge	155.1
45	Φ125.90 ⁰ _{-0.051}		Template for thread	Φ125.90
46	114.3	±0.762	Depth Gauge	114.5
47	2 1/2		Template for thread	2 1/2
48	Φ1409.7	±0.381	Dial Indicators	Φ1409.72
49	4.763	±0.127	Depth Gauge	4.76
50	45°	±1/2°	Angle Gauge	45°
51	Φ1408.086	±0.127	Micrometer	Φ1408.106
52	112.801	±0.127	Vernier Caliper	112.9
53	Φ50.800	±0.127	Micrometer Depth Gauge	Φ50.800
54	79.375	±0.127	Depth Gauge	79.4
55	203.200	±0.127	Vernier Caliper	203.32
56	Φ1206.500	±0.127	Vernier Caliper	Φ1206.600
57	12×Φ22.225	±0.127	Vernier Caliper	12×Φ22.220
58	66.675	±0.127	Depth Gauge	66.7
59	1-8UNC-2B		Template for thread	1-8UNC-2B
60	50.800	±0.127	Depth Gauge	50.900
61	Φ26.670	±0.127	Vernier Caliper	Φ26.600
62	90°	±1/2°	Angle Gauge	90°
	VT		Visual Test	OK

QC by: Darrel

Audit by: Lonnie

DW/JL-072 Rev.01

QC report along with material certification etc. are supplied with order.

SUMMARY



OUR COMMITMENT

- Quality Guaranteed
- Professional Tech Support
- Competitive Pricing
- Exceptional Customer Service & Reporting

DINGWELL'S GLOBAL

Your “OEM” Alternative

SATISFACTION GUARANTEED



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Ontario, Canada P7B 5Z8
(807) 623-4477

USA

215 Main Street, Superior
Wisconsin, USA 54880
(715) 395-0256