PRIMETALS TECHNOLOGIES

Adjusting Traversing Restbars Mechanical and Hydraulic

Traversing Restbars – Hands Off Technology

Hands off Technology

- Focus on Safety
- Taking the time to do things right
- Removing yourself from dangerous situations
- Being aware of your surrounding.
- This includes… Rigging

- Lunch at College Station 2024

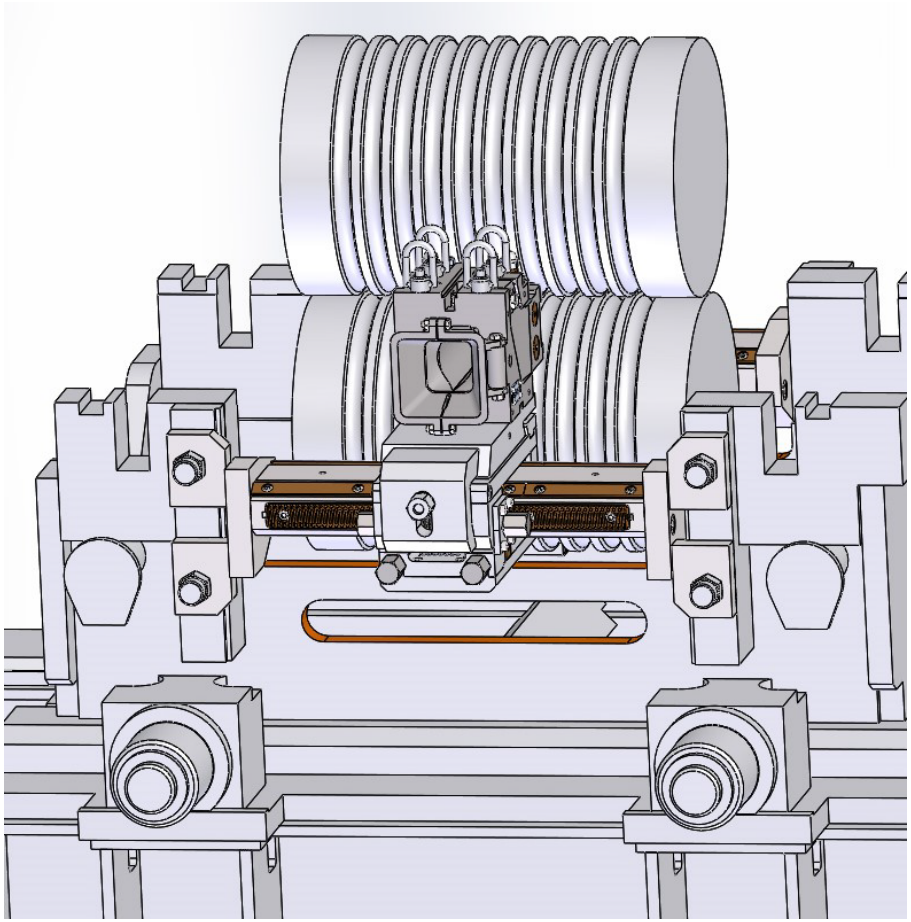
Traversing Restbars – Hands Off Technology

- Increased safety guidelines throughout Industry
- Reducing operator activities around hot stock – Red Line Initiative
- Ability to Adjust Guides from a Safe Distance

Traversing Restbars – Hands Off Technology

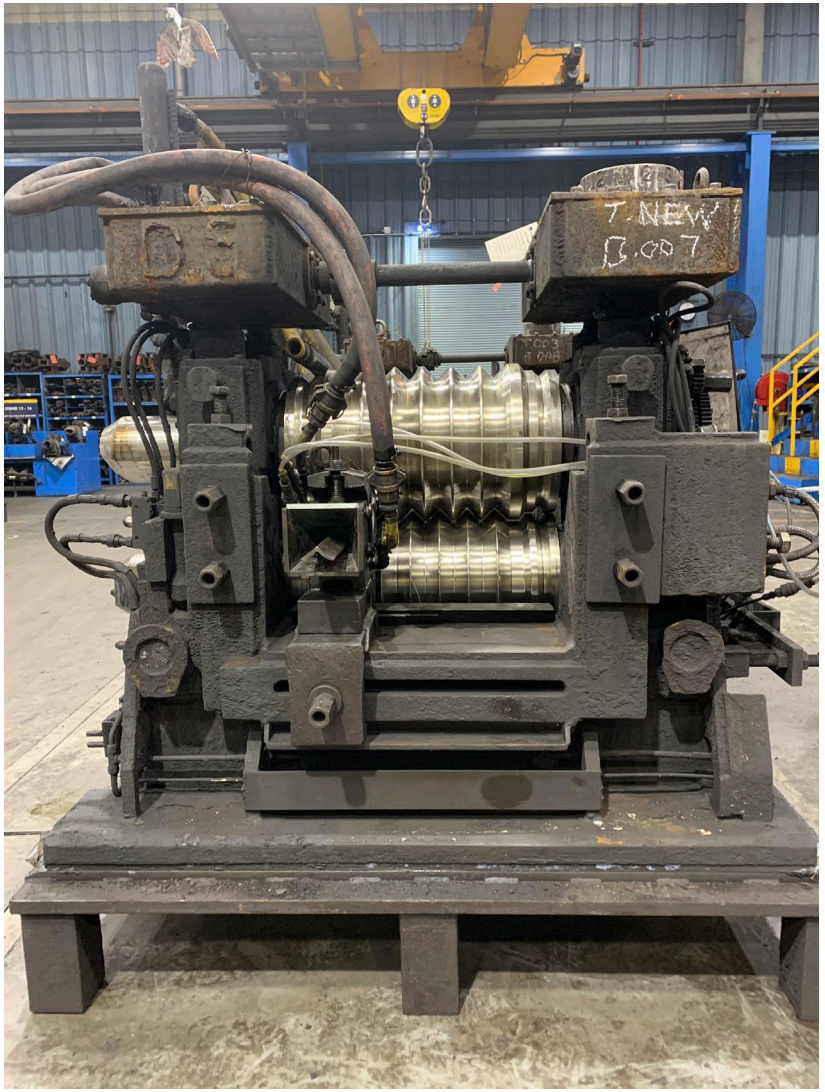
What is a Restbar?

- Piece of Equipment - Main purpose is to secure/position the Guide on the Mill Stand
- Located on both the Entry and Delivery Side of the Stand.
- Responsible for Horizontal and Vertical positioning for the Guide on Mill Roll Pass
- Common operation is to Un-Clamp saddle, relocate position, and then Clamp in place.



Static Restbars – Traditional Stand

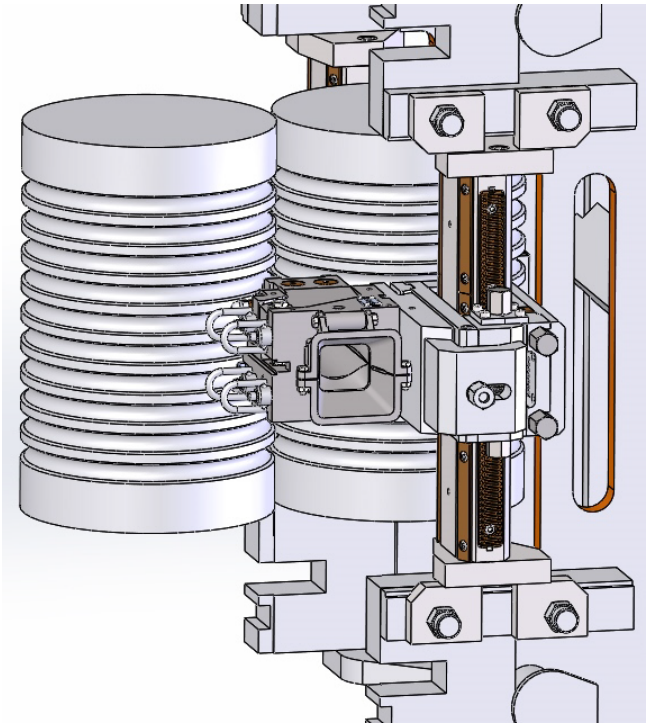
- Manual Adjustment: Pass to pass
- Hands on Clamping and Un-Clamping to position Guide Saddle to Adjust Mill
- Tooling/Wrenches Required
- Overhead crane or Hammer Required based on size of guide.
- Premature damage to Equipment



Traversing Restbars

- Static Restbars vs, Traversing Restbars
- Using mechanical advantage to adjust guide saddle.
- Very beneficial in the vertical stand, Possible 3 man operation reduced to a single operator. Time is money.

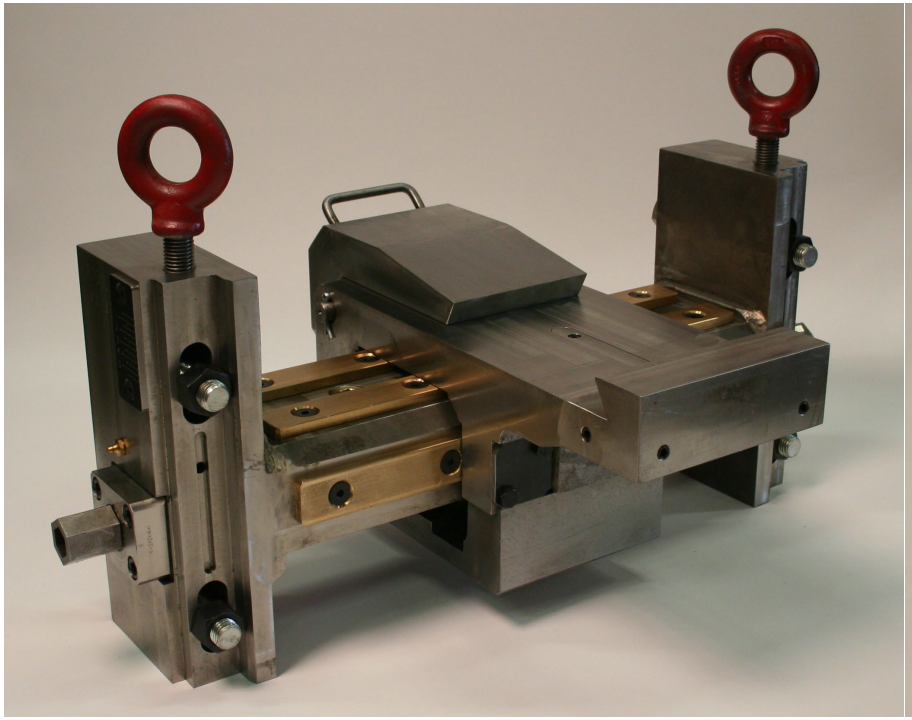
VS.

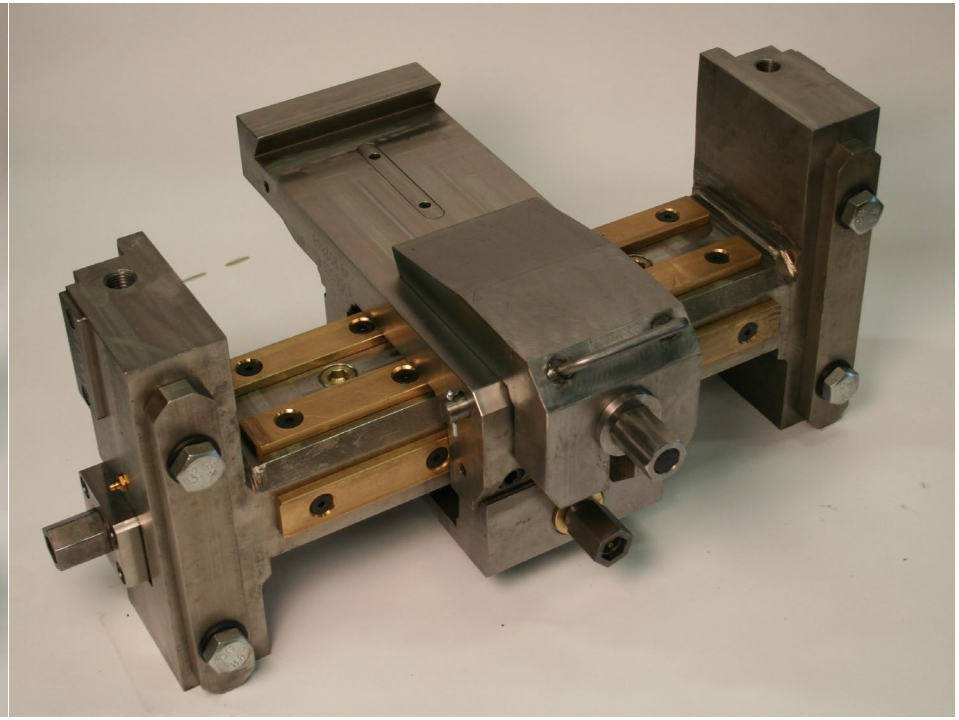


Traversing Restbars

Traversing Restbars – Stainless Steel

- Over 25 Year Experience – Numerous Installations around the World
- Heavy Duty construction
- Replaceable wear liners – simple to change.





Traversing Restbars

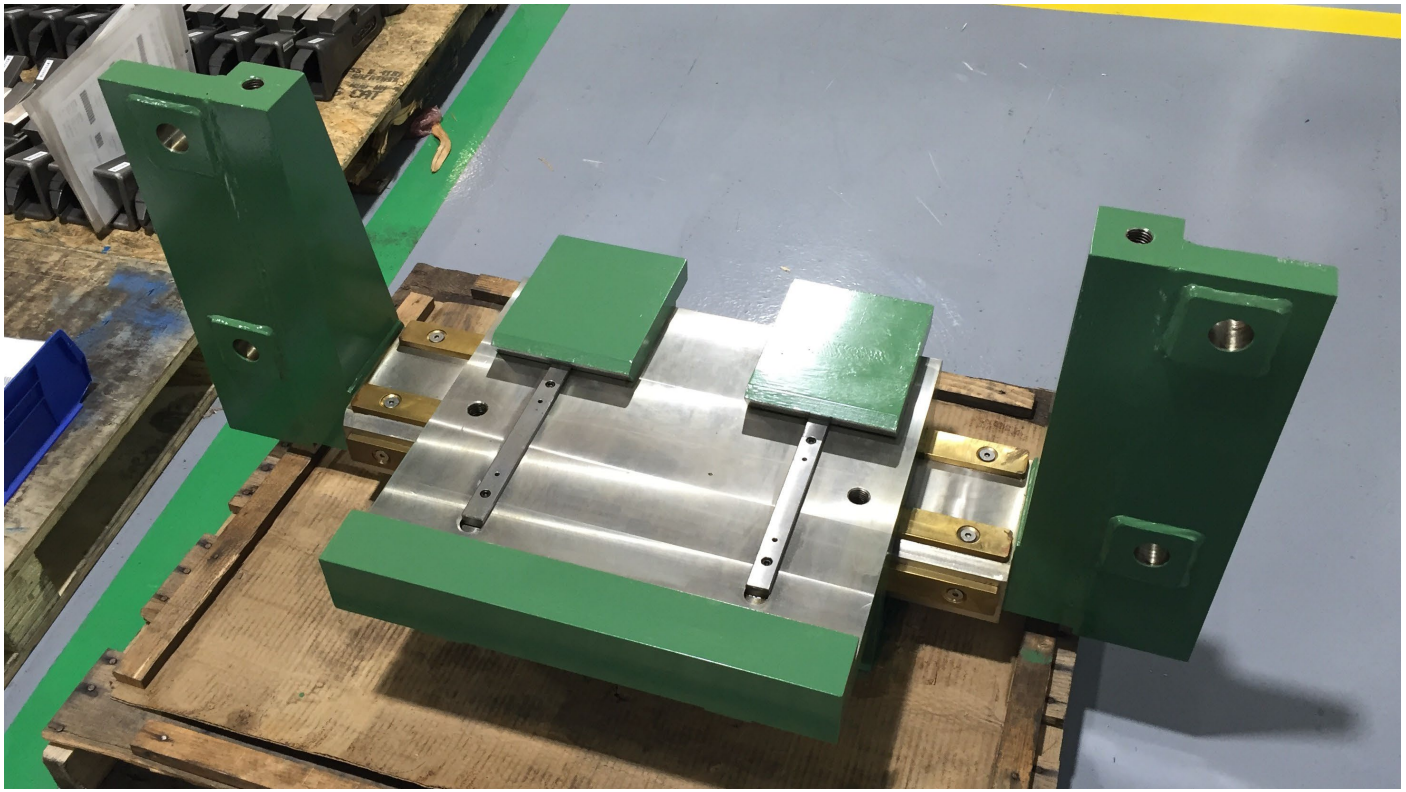
- Horizontal and Vertical Stands Installation
- Entry and Delivery Sides – Common Design for Multiple Stands
- Reduction in inventory, common spares

Traversing Restbars – Vertical Stand

- Entry and Delivery Sides
- Difficult adjustment especially with heavier guides.
- Adjustment accuracy

Traversing Restbars – Multiple Strand Saddles

- 2 Strand Saddles - Entry and Delivery Sides
- Key – Keyway Guide positioning
- Designed to existing stand mounting interfaces.
- Existing stand vertical adjustment incorporated.



Traversing Restbar – Mill Housing Stand

Custom Designed Traversing Restbar on Traditional Mill Housing Stand.

Hydraulic Traversing Restbar – Industry Direction

"Hands Off" Technology – Red Line Safety Initiative

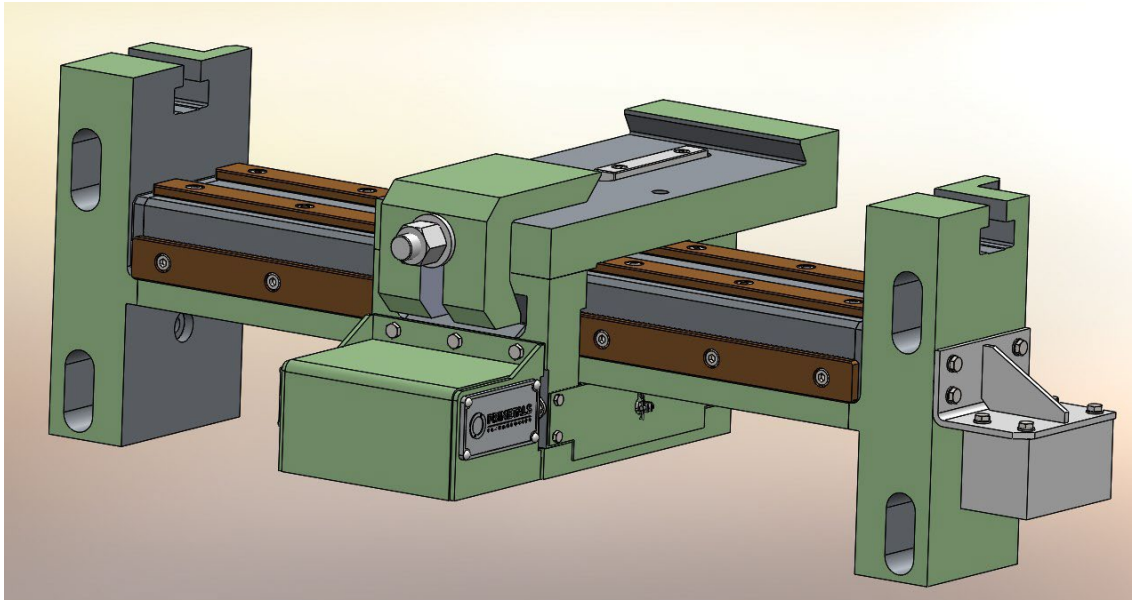
What we see in the near future:

- Control Several Stands from One Control Station
- Guide Position Readout for all Stands
- Reduce Downtime During Mill Adjustments - "Bar in Mill" Adjustments
- Easy Installation During Mill Stand Changes – Service Coupling Hydraulic Connections
- Safer Environment for Mill Operators

Hydraulic Traversing Restbar

"Hands Off" Technology - Hydraulic Traversing Restbar

- Red Line Safety Initiative
- Positioning and Clamping Controls
- Control Positioning within 0.002" - Digital Readout
- Adjustable Positioning with Bar in the Mill
- No Thread/Gear Backlash during Clamping



Hydraulic Traversing Restbar

"Hands Off" Technology - Hydraulic Traversing Restbar

- Designed to Fit Existing Restbar Mounting – No Stand Modification
- Custom Saddle and Clamping Design to your Guides Interface

Hydraulic Traversing Restbar

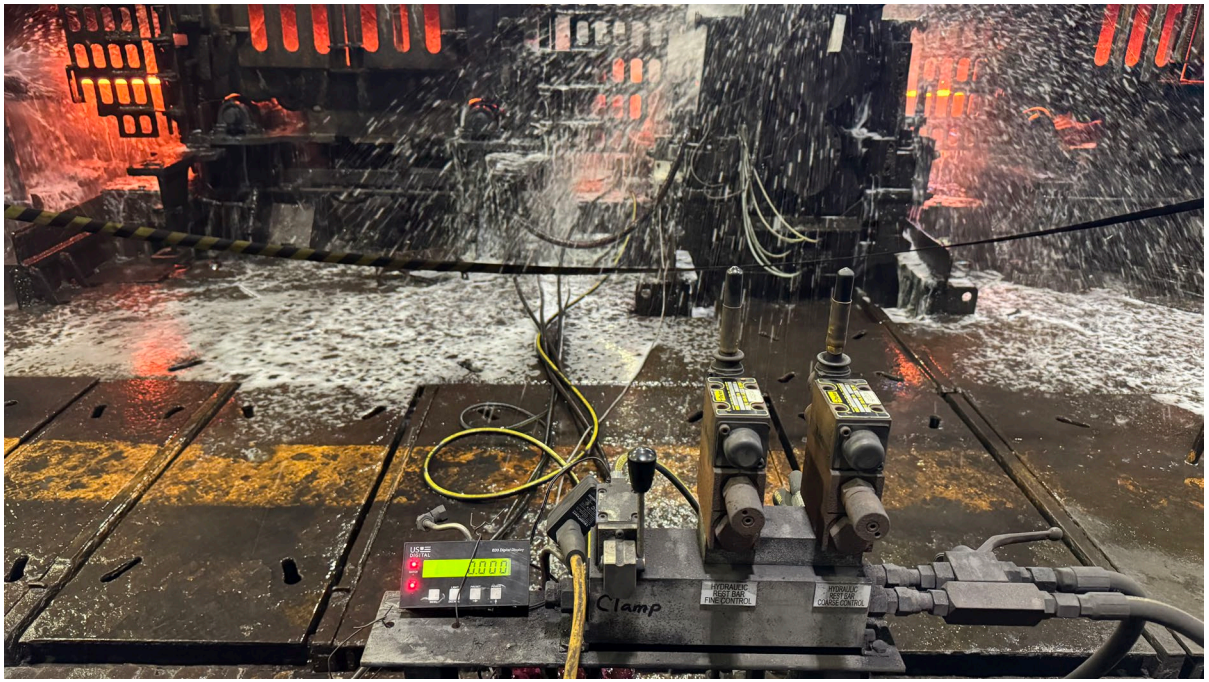
"Hands Off" Technology - Hydraulic Traversing Restbar

- Initial Installation Trial – Nucor Jewett, TX - Spring 2024
- Successful Clamping in both Horizontal and Vertical Positions

Hydraulic Traversing Restbar

"Hands Off" Technology - Hydraulic Controls

- Fast Movement Positioning Valve
- Slow "Precise" Positioning Valve
- Digital Position Readout
- Clamp "On/Off" Controls



Hydraulic Traversing Restbar

Adjusting Traversing Hydraulic Restbar

Industry is demanding this technology

Trial Results:

- Adjustments from a Safe Distance
- Precise Adjustments to Pass Line
- Pass line to pass line accuracy
- Precise Adjustments with “Bar in the Mill”
  - While still clamped in place.
- Hands off Clamping and Un-Clamping
- Clamp does not operate under Pressure
- Mechanically sound – holds position
- Horizontal and Vertical applications

Hydraulic Traversing Restbar

"Hands Off" Technology"

Challenges:

Mill Stand Restbar Environment

Electrical Equipment

- Extremely Noisy:
  - Water - Corrosion
  - Vibration
  - Impact Loads during Head In

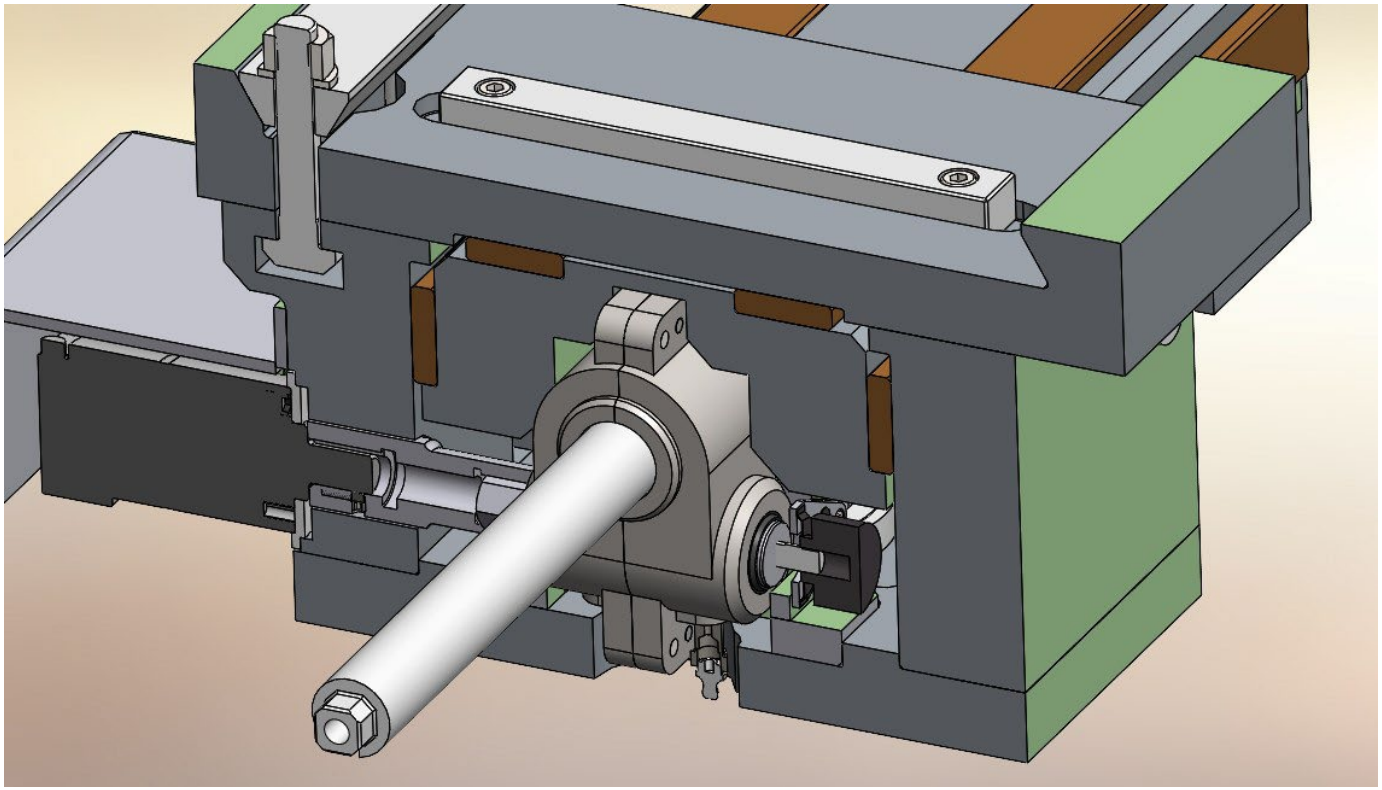
Advantage for Hydraulic Controls wherever possible within the stand

Every Mill has a place for this adjustability based on product they are rolling.

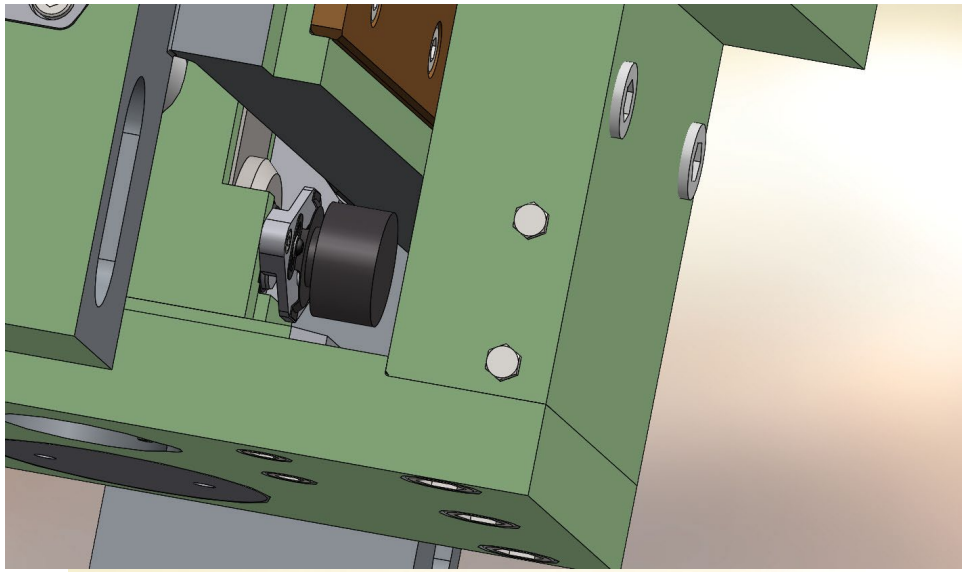
Hydraulic Traversing Restbar

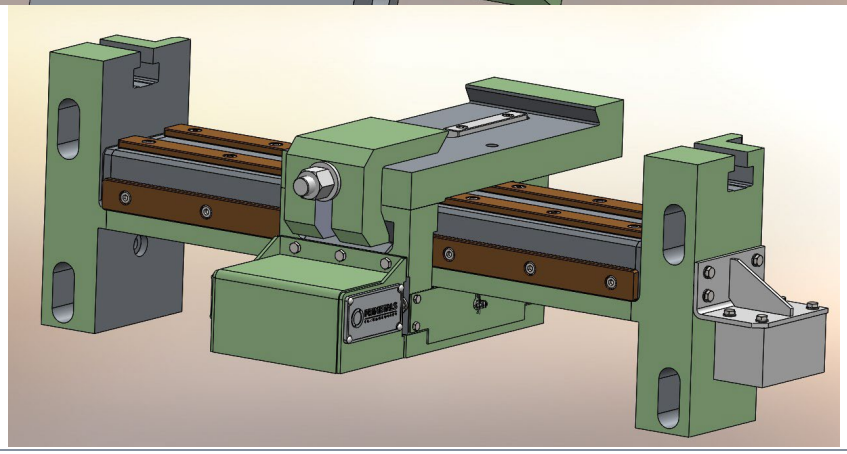
"Hydraulic Restbar – new encoder position

- IP Rated Encoder mounted direct to motor shaft
- Protected location inside guide saddle
- Removal of external draw wire design used in trial.

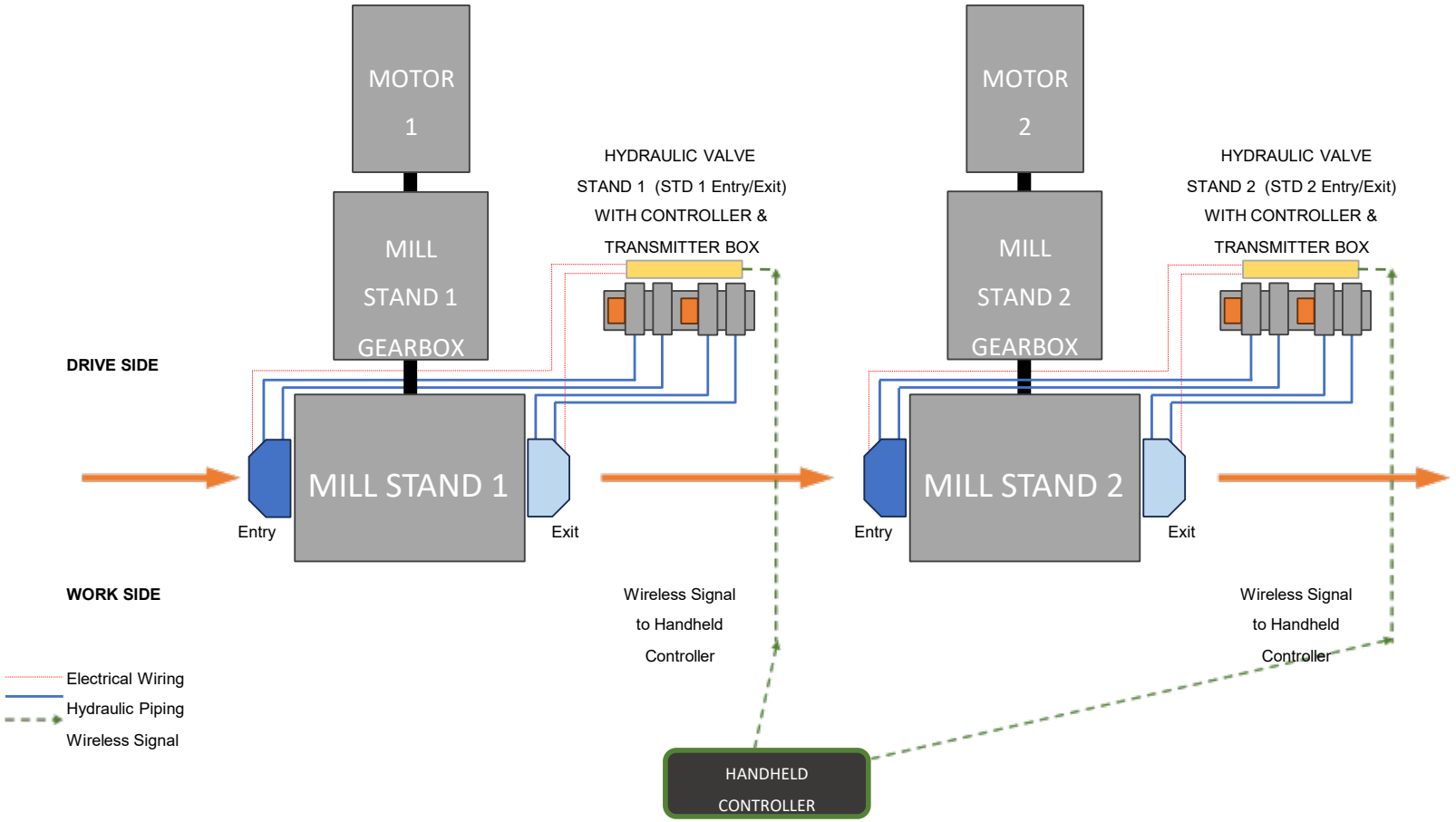


Position Encoder position comparison.





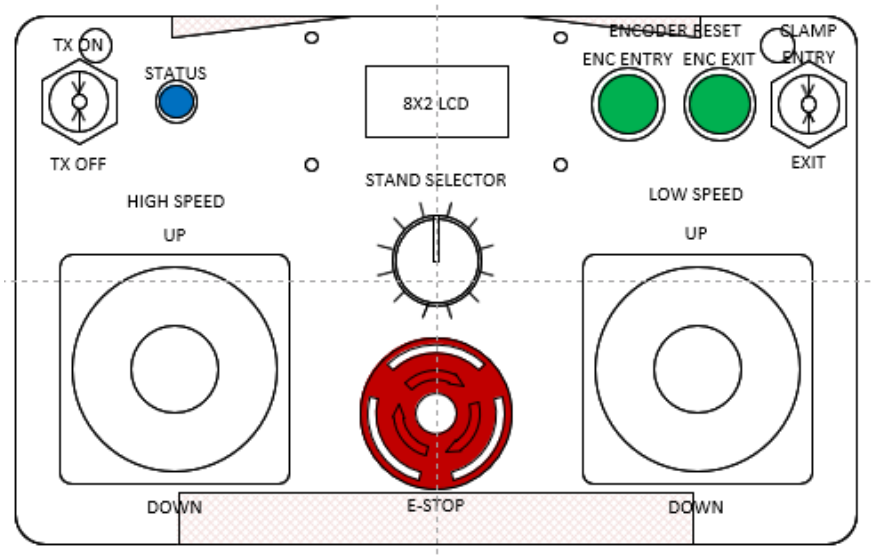
MILL STAND REST BAR CONTROL



Hydraulic Traversing Restbar

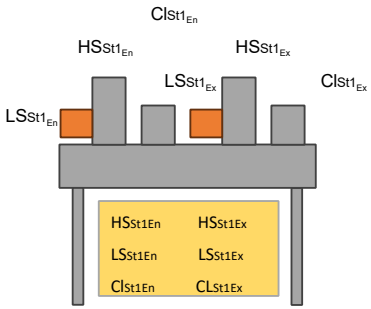
"Hands Off" Technology – Wireless Controlled Belly Pack

- 4 Restbars Controlled per Belly Pack
  - All Entry for 4 Stands
  - Entry and Delivery for 2 Stands
- LCD Screen to show Guide Saddle Positioning
- High Speed Adjustment
- Low Speed Adjustment
- Stand Selector Switch
- E-Stop

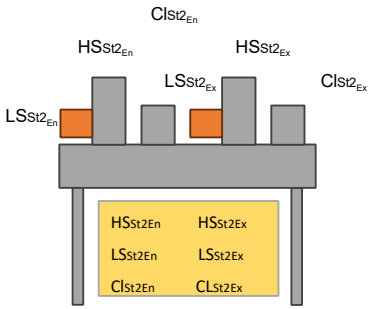


MILL STAND REST BAR CONTROL

HYDRAULIC VALVE STAND LAYOUT



Hydraulic Valve Stand With Junction Box and Transmitter



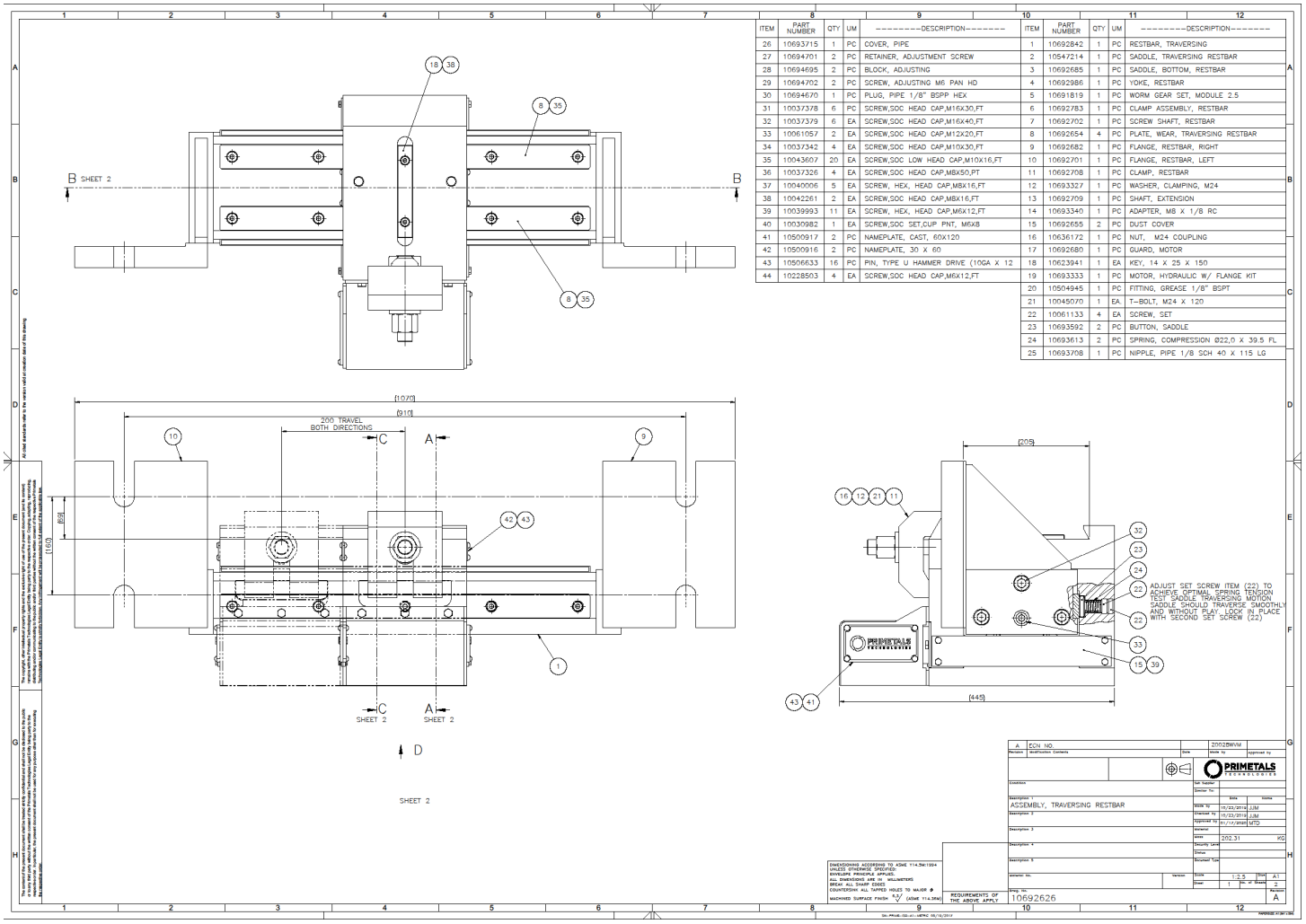
Electrical Signals:

$HSSt1_{En}$	High Speed Stand 1 Entry
$LSSt1_{En}$	Low Speed Stand 1 Entry
$ClSt1_{En}$	Clamp Stand 1 Entry
$ESt1_{En}$	Encoder Stand 1 Entry
$HSSt1_{Ex}$	High Speed Stand 1 Exit
$LSSt1_{Ex}$	Low Speed Stand 1 Exit
$ClSt1_{Ex}$	Clamp Stand 1 Exit
$ElSt1_{Ex}$	Encoder Stand 1 Exit

Electrical Signals:

$HSSt2_{En}$	High Speed Stand 2 Entry
$LSSt2_{En}$	Low Speed Stand 2 Entry
$ClSt2_{En}$	Clamp Stand 2 Entry
$ESt2_{En}$	Encoder Stand 2 Entry
$HSSt2_{Ex}$	High Speed Stand 2 Exit
$LSSt2_{Ex}$	Low Speed Stand 2 Exit
$ClSt2_{Ex}$	Clamp Stand 2 Exit
$ElSt2_{Ex}$	Encoder Stand 2 Exit

Hydraulic Traversing Restbar



ITEM	PART NUMBER	QTY	UM	DESCRIPTION
26	10693715	1	PC	COVER, PIPE
27	10694701	2	PC	RETAINER, ADJUSTMENT SCREW
28	10694695	2	PC	BLOCK, ADJUSTING
29	10694702	2	PC	SCREW, ADJUSTING M6 PAN HD
30	10694670	1	PC	PLUG, PIPE 1/8" BSPP HEX
31	10037378	6	PC	SCREW,SOC HEAD CAP,M16X30,FT
32	10037379	6	EA	SCREW,SOC HEAD CAP,M16X40,FT
33	10061057	2	EA	SCREW,SOC HEAD CAP,M12X20,FT
34	10037342	4	EA	SCREW,SOC HEAD CAP,M10X30,FT
35	10043607	20	EA	SCREW,SOC LOW HEAD CAP,M10X16,FT
36	10037326	4	EA	SCREW,SOC HEAD CAP,M8X50,PT
37	10040006	5	EA	SCREW, HEX, HEAD CAP,M8X16,FT
38	10042261	2	EA	SCREW,SOC HEAD CAP,M8X16,FT
39	10039993	11	EA	SCREW, HEX, HEAD CAP,M6X12,FT
40	10030982	1	EA	SCREW,SOC SET,CUP PNT, M6X8
41	10500917	2	PC	NAMEPLATE, CAST, 60X120
42	10500916	2	PC	NAMEPLATE, 30 X 60
43	10506633	16	PC	PIN, TYPE U HAMMER DRIVE (10GA X 12
44	10228503	4	EA	SCREW,SOC HEAD CAP,M6X12,FT

ITEM	PART NUMBER	QTY	UM	DESCRIPTION
1	10692842	1	PC	RESTBAR, TRAVERSING
2	10547214	1	PC	SADDLE, TRAVERSING RESTBAR
3	10692685	1	PC	SADDLE, BOTTOM, RESTBAR
4	10692986	1	PC	YOKE, RESTBAR
5	10691819	1	PC	WORM GEAR SET, MODULE 2.5
6	10692783	1	PC	CLAMP ASSEMBLY, RESTBAR
7	10692702	1	PC	SCREW SHAFT, RESTBAR
8	10692654	4	PC	PLATE, WEAR, TRAVERSING RESTBAR
9	10692682	1	PC	FLANGE, RESTBAR, RIGHT
10	10692701	1	PC	FLANGE, RESTBAR, LEFT
11	10692708	1	PC	CLAMP, RESTBAR
12	10693327	1	PC	WASHER, CLAMPING, M24
13	10692709	1	PC	SHAFT, EXTENSION
14	10693340	1	PC	ADAPTER, M8 X 1/8 RC
15	10692655	2	PC	DUST COVER
16	10636172	1	PC	NUT, M24 COUPLING
17	10692680	1	PC	GUARD, MOTOR
18	10623941	1	EA	KEY, 14 X 25 X 150
19	10693333	1	PC	MOTOR, HYDRAULIC W/ FLANGE KIT
20	10504945	1	PC	FITTING, GREASE 1/8" BSPT
21	10045070	1	EA.	T-BOLT, M24 X 120
22	10061133	4	EA	SCREW, SET
23	10693592	2	PC	BUTTON, SADDLE
24	10693613	2	PC	SPRING, COMPRESSION Ø22,0 X 39.5 FL
25	10693708	1	PC	NIPPLE, PIPE 1/8 SCH 40 X 115 LG

PRIMETALS
TECHNOLOGIES

THANK YOU