



## Features and Benefits

### Metal-to-Metal Seal

All metal-to-metal design, which includes the upper and lower seals against the parent casing and each expandable casing connection.

The all metal-to-metal seal allows for higher temperature deployment and "life of the well" design.

### Compliant

Compliant expansion design provides sealing in Maximum and Minimum API tolerance against the parent casing.

### Premium Dopeless Connection

Dopeless connection for "Rig Ready" makeup. Designed for environmental sensitivity and more efficient rig floor makeup.

### High Temperature

Metal-to-Metal seal design and specific material selection allows for temperature ratings up to 500° F.

### No Drillout Required

For efficient operations and no debris in the production well.

## OVERVIEW

The Mohawk MetalPatch allows the operator to patch or clad the inner diameter of the casing, predominately used in remediation situations.

Casing, tubing or completion equipment in the wellbore is known to fail or deteriorate over the life of the well. This can mainly occur due to corrosion, a leaking tubular connection or sliding sleeve failure. The MetalPatch allows the area of concern to be covered and sealed with minimal loss of inner diameter.

The MetalPatch product is designed for deployment on jointed pipe or coiled tubing. The patch can cover an area ranging from 30' to 5,000' in length. The MetalPatch is also designed for deployment through nipples in the upper bore.

The patch is set in 5 steps:

1. Make up the tool, expandable casing, work string and RIH.
2. Initiate hydraulic expansion to set the lower seals.
3. Expand casing by pulling the work string.
4. Upper seal is set by applying hydraulic pressure again.
5. POOH.

The installed MetalPatch provides a metal-to-metal seal between the parent casing and the expandable casing.

## APPLICATIONS

The MetalPatch can be used in the following applications:

### Production Improvement

- Perforation shut off
- Wellbore reduction for improved flow rate / ESP

### Casing Integrity Issues

- Connection / Collar leaks
- Parted casing
- Casing corrosion
- Casing wear

### Completion Failures

- Leaking sliding sleeve
- Leaking frac valve

## SPECIFICATIONS

### TUBULAR

Customers Casing				
OD	Wt	ID	API Drift	Nipple
	[lb/ft]	[in]	[in]	[in]
5.00	26.7	3.876	3.751	3.626
	24.2	4.000	3.875	3.750
	23.2	4.044	3.919	3.794
	20.8	4.126	4.001	3.876

Expanded Tubular Geometry			Expanded Tubular Performance			
OD	Nominal ID	Special Drift	Exp. Press	Exp. Ratio	Int. Yield	Collapse
[in]	[in]	[in]	[psi]	[%]	[psi]	[psi]
3.759	3.275	3.215	2,979	9.5%	9,132	5,950
3.891	3.415	3.355	4,093	14.1%	8,679	5,470
3.938	3.464	3.404	4,443	15.8%	8,525	5,310
4.025	3.557	3.497	5,040	18.9%	8,248	5,020

Customers Casing				
OD	Wt	ID	API Drift	Nipple
	[lb/ft]	[in]	[in]	[in]
4.50	15.1	3.826	3.701	3.576
	13.5	3.920	3.795	3.670
	12.6	3.958	3.833	3.708
	11.6	4.000	3.875	3.750
	10.5	4.052	3.927	3.802
	9.5	4.090	3.965	3.840

Expanded Tubular Geometry			Expanded Tubular Performance			
OD	Nominal ID	Special Drift	Exp. Press	Exp. Ratio	Int. Yield	Collapse
[in]	[in]	[in]	[psi]	[%]	[psi]	[psi]
3.706	3.219	3.159	2,470	7.6%	9,325	6,140
3.806	3.325	3.265	3,397	11.1%	8,968	5,770
3.846	3.368	3.308	3,738	12.6%	8,829	5,630
3.891	3.415	3.355	4,093	14.1%	8,679	5,470
3.946	3.474	3.414	4,505	16.1%	8,497	5,280
3.987	3.516	3.456	4,787	17.5%	8,368	5,150

### RUNNING TOOL

- Overall Length 38 ft
- Weight 700 lb
- Pull Rating 120,000 lb
- Pressure 7,000 psi
- Temperature 500° F
- Flow Rate 30 GPM
- DLS 35° / 100 ft
- Expansion Pressure 3,000 psi