



TECHNICAL SPECIFICATIONS FOR A WELLHEAD ISOLATION TOOL (TREESAVER)

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1.0 INTRODUCTION

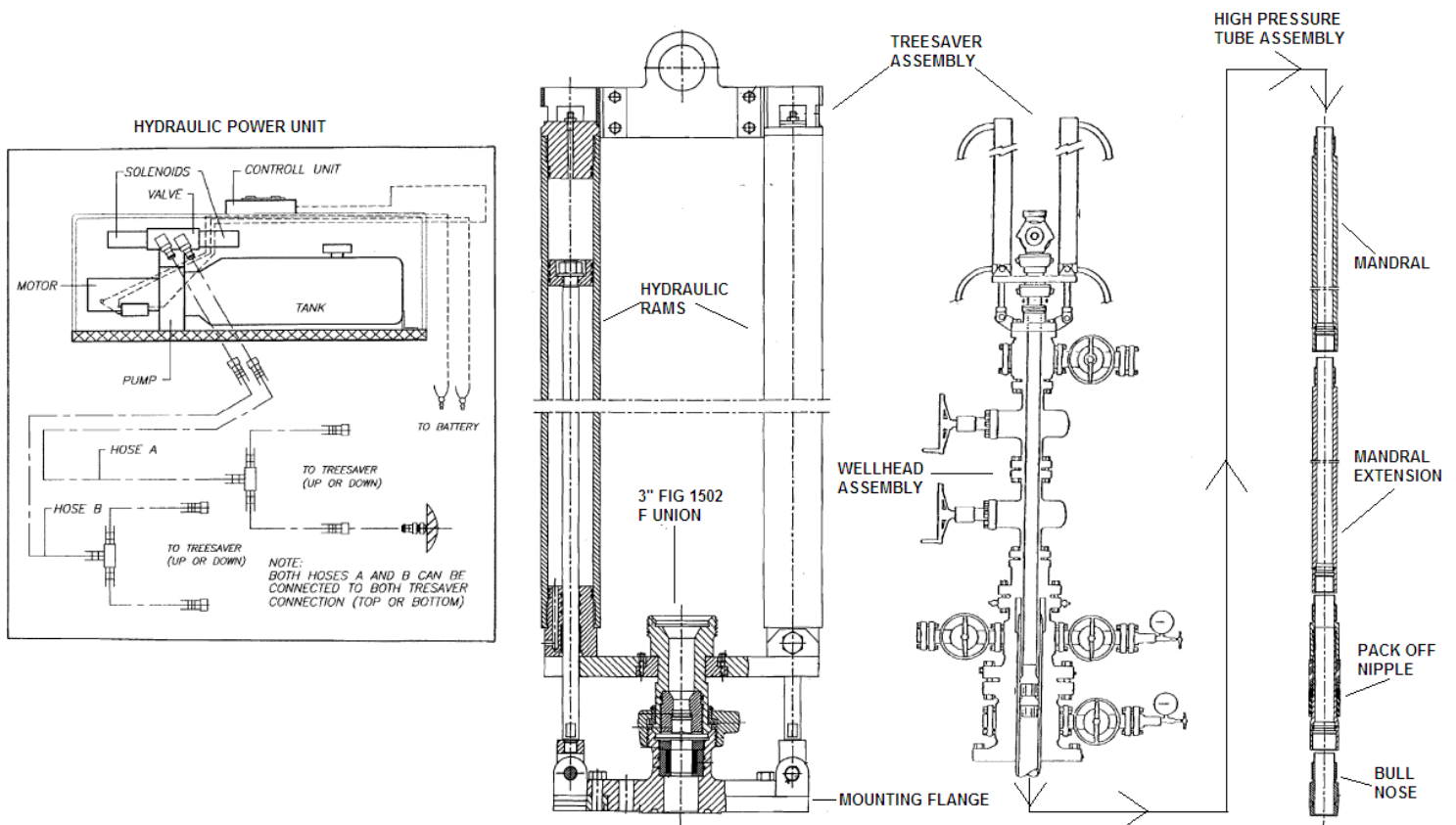
This specification covers a Wellhead Isolation Tool suitable for Gas/Oil Acid Fracturing operations. This Unit will be supplied loose suitable for storage/transportation by a suitable **CUSTOMER** supplied Truck Chassis or Trailer.

The equipment will be capable of operating in an ambient temperature range of 0 Deg C to +55 Deg C. (32 Deg F to +131 Deg F). The proposed Unit will include the following main components:

2.0 WELLHEAD ISOLATION TOOL PACKAGE

This "GN Wellhead Isolation Tool" (Treesaver) Package that is rated 15,000 PSI (103 mPa) and is fitted with a top mount 3" Female (thread) type Fig 1502 union rated 15,000 PSI (103 mPa). The complete package shall include a Treesaver Assembly and High Pressure Tube Assembly and shall be as per the following:

TYPICAL ONLY



Details of the specific components included with the Treesaver Package are as follows:

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A/ Hydraulic Power Unit

This is not included but can be supplied. The intention is the customer will supply hydraulic power with the crane truck that will deliver the unit the well site.

B/ Treesaver Assembly

This is a “Low Profile” design Unit (valve is only 14” (36 cm) above the wellhead), that utilizes two hydraulic cylinders (with integral bleed off valves) and is direct flange connected to the wellhead (**CUSTOMER** to advise required flange specifications). This Treesaver may be installed while wells are under pressures of up to 5,000 PSI (34.5 mPa).

C/ High Pressure Tube Assembly

The High Pressure Tube Assembly consists of:

- Mandrel (By-pass tube)
- Mandrel Extensions
- Pack-Off Nipple
- Bull Nose

A set of mandrel / packoff equipment is included and is designed around 2 types of 89 mm tubing with 76 or 74.2 mm ID. Also included for 73 mm tubing.

See packing list below

The Mandral and Mandral Extensions are available with internal diameters of: 1”, 1 1/4”, 1 1/2”, 1 5/8” and 1 3/4” (**CUSTOMER** to advise required sizes).

Mandral Extensions are available with lengths of: 6”, 1’ 6” and 5’ 0” (**CUSTOMER** to advise required quantities and lengths).

Pack-Off Nipples are available to fit tubing sizes of: 2 7/8” and 3 1/2” (**CUSTOMER** to advise required size).

3.0 UNITIZATION & COMPLETION

Unitization and completion will include the following miscellaneous items:

- All equipment will be built under the Quality Standards of ISO 9001 and all latest relevant/applicable manufacturing standards.
- All equipment will be brand new, will not be used or rebuilt returned equipment.

4.0 TESTING AND FINISH

Prior to shipment, the Unit will be thoroughly tested as per **GOES GmbH** specifications to ensure its proper performance. During the test, all operating systems are monitored. Any abnormal operations are corrected and re-tested to ensure the Unit is functioning properly.



The **CUSTOMER** is invited to witness the testing and sign off on acceptance of Unit prior to accepting the Unit.

All third party inspection costs are to the **CUSTOMER** account. Inspection of the Unit by the **CUSTOMER'S** representatives and any traveling expenses will be the responsibility of the **CUSTOMER**.

5.0 PAINT

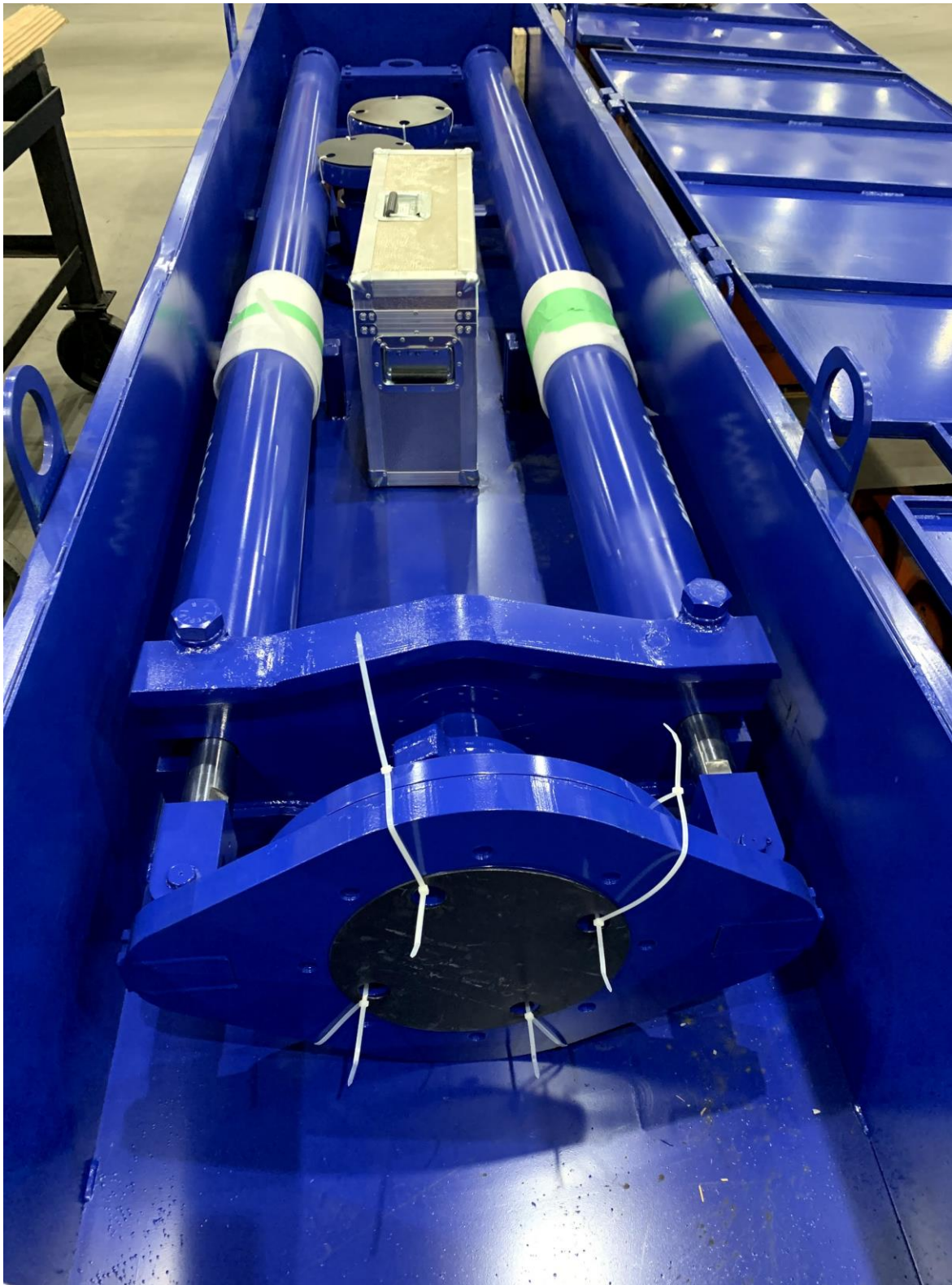
Unit shall be painted using a urethane paint system. All metal surfaces are sandblasted to ensure proper bonding of primer and paint in accordance with **GOES GmbH** Construction process specifications.

The RAL color Code has 5015

6.0 DOCUMENTATION

The equipment described herein is fabricated in accordance with industry accepted standards. Two (2) sets of parts books and maintenance manuals (comes with 2 CDs) for the Unit as set forth in this specification, along with relevant schematics and assembly drawings are provided with the Unit. One set of documents for the full certification of the Unit and required test certificates are also provided.







TREESAVER ASSY,3-1/16",10/15 KSI,2-3/8" includes the following:		
HEAD	814-51-117-0-2	1
3-1/16"FLANGE, 15 KPSI,BX154	814-51-301-0-3	1
FLANGE HOLDER,FLANGE SUPPORT,3-1/16,15KSPI	814-58-102-0-3	1
MANDREL,2-7/8",60 IN	814-51-102-0-2	2
MANDREL,3-1/2",60 IN	814-51-103-0-2	2
INSERT,FLANGE SUPPORT,3-1/16,15 KPSI	814-51-104-0-1	1
MANDREL EXTENSION,2-7/8",36 IN	814-51-102-0-2	1
MANDREL EXTENSION,2-7/8",24 IN	TBA	1
MANDREL EXTENSION,2-7/8", 12 IN	814-51-106-2-2	1
MANDREL EXTENSION,3-1/2",36 IN	814-51-107-3-2	1
MANDREL EXTENSION,3-1/2",24 IN	TBA	1
MANDREL EXTENSION,3-1/2", 12 IN	814-51-107-2-2	1
THREADED INSERT,2-7/8	814-51-108-2-2	1
THREADED INSERT,3-1/2	814-51-108-4-2	1
PACK-OFF NIPPLE,2-7/8"	814-62-1-0-2	3
PACK-OFF NIPPLE,3-1/2"	814-64-1-0-2	3
BULL NOSE,2-7/8"	814-51-114-0-2	1
BULL NOSE,3-1/2"	814-51-115-0-2	1
SUPPORT PLATE ASSEMBLY	814-53-1-0-4	1
SPLIT RING	814-51-118-0-2	1
SEGMENT,3"FIG 1502	814-155-315-0-2	1
WING NUT,3"FIG 1502	3207277	1
PACKING NUT,2-7/8	814-72-153-1-1	1
PACKING NUT,3-1/2	814-72-154-1-1	1
PACKING SET,MANDREL,2-7/8	814-56-1-0-1	3
PACKING SET,MANDREL,3-1/2	814-56-4-0-1	3
FLANGE HOLDER	814-51-119-0-1	2
HYDRAULIC RAM ASSEMBLY	814-52-1-0-4	2
LIFTING EYE	814-51-124-0-2	1
CONNECTOR	814-51-125-0-1	4
BOLT	814-51-126-0-1	4
NUT	814-51-127-0-1	4
LOCK WASHER	814-51-128-0-1	4
BOLT	814-51-129-0-1	12
LOCK WASHER	814-51-130-0-1	12
SNAP RING	814-51-131-0-1	1
LOCKING BOLT	814-51-132-0-1	4
LOCK WASHER	814-51-133-0-1	4
COTTER PIN	814-51-134-0-1	4
O-RING	901-630-033-7-1	1
O-RING	901-433-723-7-1	2
O-RING,3-1/2"	901-418-722-5-1	5
O-RING,2-7/8"	901-416-222-3-1	5
O-RING,3-1/2"	901-321-213-8-1	1
O-RING,2-7/8"	901-317-513-2-1	1
STRAIGHT SEAL,2-7/8	TBA	12
PACKING,2-7/8	TBA	12
STRAIGHT SEAL,3-1/2	TBA	12
PACKING,3-1/2	TBA	12
FLANGE TEE,3-1/16 15KSI X 3-1/16 10KSI X 2"FIG 1502 F	TBA	1
FLANGE TEE,3-1/16 15KSI X 2-9/16 10KSI X 2"FIG 1502 F	TBA	1
TRANSPORT BOX	814-94-1-3-2	1