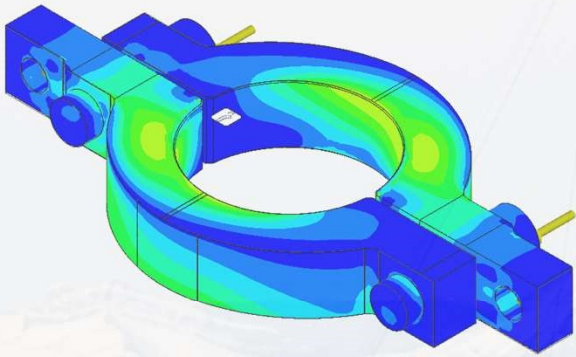


DASCO ESP

ESP Tooling Product Catalogue

Artificial Lift
Equipment Design,
Manufacturing &
Supply



Bridging the Gap Between Concept and Reality

EXPERIENCE THE DASCO ADVANTAGE

At DASCO we create incredible solutions for the challenges faced with artificial lift systems.

In everything we do, we believe in thinking differently and challenging the status quo. We do this by making products beautifully designed and user-friendly. Yes, this is possible even in the energy industry!

Our mission is to deliver outstanding results and experiences to our customers. We achieve this by delivering products that are simple, elegant, and practical. Our products will be precisely tailored to your needs and do exactly what you need them to do, this is the DASCO ADVANTAGE.

“Bridging the Gap Between Concept and Reality” is not only our purpose but what we do each day at DASCO. When you work with us, you can expect to push the boundaries of design and performance, because this is at the heart of what we do.

Artificial Lift Downhole Tool Design

- 3D CAD modelling & Finite Element Analysis (FEA)
 - Design software models & programming ensure accurate products are produced
- Industry recognized standards are met or exceeded - **API, ASME**
- Material selection & treatments optimized for performance and durability

CNC Machining and Manufacturing

- Prototype Manufacturing & 3D Printing
- CNC machining, milling & cut tables produce repeatable & accurate products

Testing and Repair

- Load testing - structural testing is performed & documented
- Ultrasonic cleaning & phosphate surface treatments
- Machining and welding



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TOOLING FOR EVERY STEP OF AN ESP INSTALLATION

Table of Contents:

Elevator Hook – API/ASME
Lifting Chains – ASME
Lifting Clamps – API/ASME
ESP Assembly Cans & Tables
Motor Jacking Assembly
ESP Shaft Shimming Tools
ESP Motor Alignment Tools
ESP Motor Oil Filling Tools
ESP Servicing Tools



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ELEVATOR HOOK – API / ASME

DASCO elevator hooks allow elevators to be safely and quickly adapted to lift non-tubular items with a safety lifting hook. Elevator hook assemblies are used in conjunction with chain lifting slings.

Lifting devices are required to meet industry recognized standards and undergo rigorous FEA analysis and third party testing to ensure safe use at the rig site.

Specifications and Design

- Standard – Working Load Limit (WLL) 12500 lb. (5670 kg)
- HD – Working Load Limit (WLL) 17000 lb. (7711 kg)
- 2 x WLL pull test & certification
- Magnetic Particle Inspection (MPI) after pull test
- Assembly designed with a minimum safety factor of 3:1
- Compatible with all standard rig elevators

Standards Referenced - Adaptor Plate

- API 8C – Sec 4.7/6.3.3/6.3.4/8.6/10.5
- ASME BTH-1-2017 Sec 3-3.2

Standards Referenced – Chain & Hook

- ASME B30.9, Sec 9-1.4, Chain & Hook require a design factor of 4:1



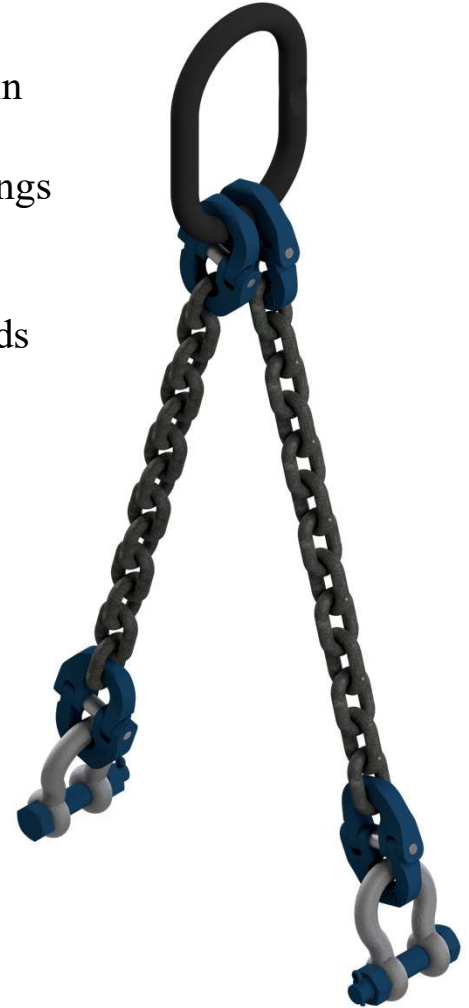
LIFTING CHAINS - ASME

DASCO lifting chain assemblies can be customized for all your lifting requirements including variations in chain end fittings, number of chain legs and chain lengths. Lifting chains are used in conjunction with elevator hook assemblies and lifting clamps to hoist the ESP into the rig during assembly. Typically, two leg slings with safety shackle ends are used.

Lifting devices are required to meet industry recognized standards and undergo 3rd party testing to ensure safe use at the rig site.

Specifications and Design

- Standard – Working Load Limit (WLL) 12500 lb. (5670 kg)
- HD – Working Load Limit (WLL) 17000 lb. (7711 kg)
- Certification included with all lifting chain slings
- Various custom configurations available



Standards Referenced - Chain, Shackle, Master Link & Connecting Link

- ASME B30.9, Sec 9-1.4, Chain, Master Link & Connecting Links require a design factor of 4:1
- ASME B30.26, Sec 26-1.2 Shackles require a design factor of 5:1 for loads up to and including 150 ton



LIFTING CLAMPS – API / ASME

DASCO lifting clamps are available for all major ESP brands. Lifting clamps are used to suspend the ESP in the rig during installation and removal of the pumping system.

Clamps are available in both friction and shouldering configurations and can be designed for a universal fit across a specific diameter or custom fit to a specific profile of ESP equipment. Clear labelling ensures easy identification and traceability so the right clamp is used for the job. Lifting clamps are used in conjunction with the elevator hooks and lifting chain.

Lifting devices are required to meet industry recognized standards and undergo rigorous FEA analysis and third party testing to ensure safe use at the rig site.

Specifications and Design

- Available for all ESP manufacturers in both friction and shouldering configurations
- Standard – Working Load Limit (WLL) 12500 lb. (5670 kg)
- HD – Working Load Limit (WLL) 17000 lb. (7711 kg)
- Structural safety factor on WLL – 3:1
- 2 x WLL pull test & certification
- Magnetic Particle Inspection (MPI) after pull test



Standards referenced:

- API 8C – Sec 4.7/6.3.3/8.6/9.16.2/10.5
- ASME BTH-1-2017 Sec 3-3.3.1/3-3.3.4



ESP ASSEMBLY CANS & TABLES

DASCO assembly cans and tables create an ergonomic working surface above the rig floor which both improves visibility and allows the technician to safely and comfortably access key components during the ESP assembly.

Assembly cans and tables are required to withstand high compression loads while supporting the ESP during assembly. All DASCO designs undergo rigorous FEA analysis and third party testing to ensure safe use at the rig site.

Specifications and Design

- Can -Working Load Limit (WLL) 12500 lb. (5670 kg)
- Table - Working Load Limit (WLL) 17000 lb. (7711 kg)
- Structural safety factor on WLL – 3:1
- 2 x WLL compression test
- Magnetic Particle Inspection (MPI) after compression test
- Standard height of 32”, alternative heights upon request
- Various sizes available - 4” ID to 20” ID
- Portable and easy to use

Options

- 304 stainless steel
- Powder coat finish
- Low profile - 24” height



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MOTOR JACKING ASSEMBLY

DASCO tandem motor jacking assemblies provide technicians with finite control when performing the precise operation of coupling ESP motors on a rig. When used in conjunction with the DASCO assembly can or table, the system provides a stable and adjustable mechanism for lifting one ESP motor into the other, ensuring a proper motor connection.

Assembly jacks are required to perform precise work in an adverse environment and must provide a rigid and secure support. The design of the DASCO jacking system prevents rocking, imbalance and slipping, providing a smooth and quality motor connection.

Specifications and Design

- Standard Working Load Limit (WLL) - 12500 lb.
- Set of two 4-ton hydraulic jacks
- Jack rails for secure hold
- 1" thick aluminum base plate
- Heavy duty saddles for supporting lifting clamps
- FEA analysis, 3:1 safety factor on WLL



Options

- 304 stainless steel
- Powder coat finish
- 8 ton lift jacks
- Sizes – 4" to 20"



ESP SHAFT SHIMMING / SPLINE ALIGNMENT

Tools that fit and perform flawlessly reduce the time on the rig, while increasing the accuracy of the measurement or alignment. DASCO precision made tooling will increase the efficiency and accuracy of the ESP installation.

Motor alignment tools and H-Tools (shim tools) are modelled and designed from OEM specifications. CNC machine applications ensure the splines, alignment pins, hole centers, and threads are properly located and sized, allowing the technician to produce accurate and consistent results every time.

Custom applications and equipment combinations are common in the ESP industry, and we have the industry expertise to design and build the unique tooling for your applications.

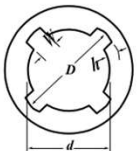


Fig. 7a. 4-Spline Fitting

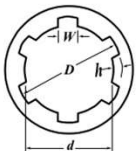


Fig. 7b. 6-Spline Fitting

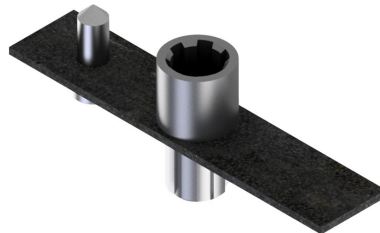


Fig. 7c. 10-Spline Fitting

Table 18. S.A.E. Standard 4-Spline Fittings

Nom. Diam	For All Fits				4A—Permanent Fit				y ^a	4B—To Slide—No Load				y ^a
	D	Min.	Max.	h	D	Min.	Max.	h		d	Min.	Max.	h	
1/4	0.749	0.750	0.179	0.181	0.636	0.637	0.055	0.056	78	0.561	0.562	0.093	0.094	123
3/8	0.874	0.875	0.209	0.211	0.743	0.744	0.065	0.066	107	0.655	0.656	0.108	0.109	167
1/2	0.999	1.000	0.239	0.241	0.849	0.850	0.074	0.075	139	0.749	0.750	0.124	0.125	219
5/8	1.124	1.125	0.269	0.271	0.955	0.956	0.083	0.084	175	0.843	0.844	0.140	0.141	277
3/4	1.249	1.250	0.299	0.301	1.061	1.062	0.093	0.094	217	0.936	0.937	0.155	0.156	341
7/8	1.374	1.375	0.329	0.331	1.168	1.169	0.102	0.103	262	1.030	1.031	0.171	0.172	414
1	1.499	1.500	0.359	0.361	1.274	1.275	0.111	0.112	311	1.124	1.125	0.186	0.187	491
1 1/8	1.624	1.625	0.389	0.391	1.380	1.381	0.121	0.122	367	1.218	1.219	0.202	0.203	577
1 1/4	1.749	1.750	0.420	0.422	1.486	1.487	0.130	0.131	424	1.311	1.312	0.218	0.219	670
1 1/2	1.998	2.000	0.479	0.482	1.698	1.700	0.148	0.150	555	1.498	1.500	0.248	0.250	875
1 3/4	2.248	2.250	0.539	0.542	1.910	1.912	0.167	0.169	703	1.685	1.687	0.279	0.281	1106
2	2.498	2.500	0.599	0.602	2.123	2.125	0.185	0.187	865	1.873	1.875	0.310	0.312	1365
2 1/4	2.998	3.000	0.720	0.723	2.548	2.550	0.223	0.225	1249	2.248	2.250	0.373	0.375	1969

^a See note at end of Table 21.



APPROVED BY: _____ DATE: _____

TABLE	
PROPERTY	VALUE
DIM A (INCHES)	
DIM B (INCHES)	
DIM C (INCHES, UNC OR UNF)	

DIM B (BOLT CIRCLE DIAMETER)
DIM C (BOLT THREAD SPECIFICATION)

0 INITIAL RELEASE 22 APR 2021 CDB BY 1

REVISION HISTORY

UNLESS OTHERWISE SPECIFIED, ALL DIMENSIONS ARE IN INCHES (FRACTIONS) AND DECIMALS (THIRDS, SIXTEENTHS, AND THIRTY-SECONDS). DIMENSIONS ARE GIVEN IN PARENTHESIS AFTER THE FIRST DIMENSION IS GIVEN IN INCHES.

ESP BASE TEMPLATE - REQUEST FOR INFORMATION FOR ESP SHIMMING TOOL

ESP SHIMMING TOOL - 0 1 OF 1

DASCO



ESP SERVICING TOOLS

DASCO provides a full line of custom and off-the-shelf ESP installation hand tools and general supplies. Prepackaged field service technician kits are available under a single part number with everything needed to perform a basic ESP installation. Having a dedicated ESP servicing tool kit eliminates delays and mistakes caused by missing or inadequate tooling, increasing the efficiency of field service operations.

Prepackaged Tool Kits*

Motor Servicing

- Motor oil filling assembly
- Jack plates
- Custom check valve wrenches
- Lead washers

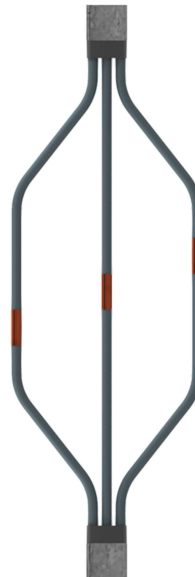
Field Service Technician Tool Kit

- Torque wrench adaptors, hex head and key
- Shim tools and shims
- Hand tools
- Electrical meters

Cable Splicing Kit

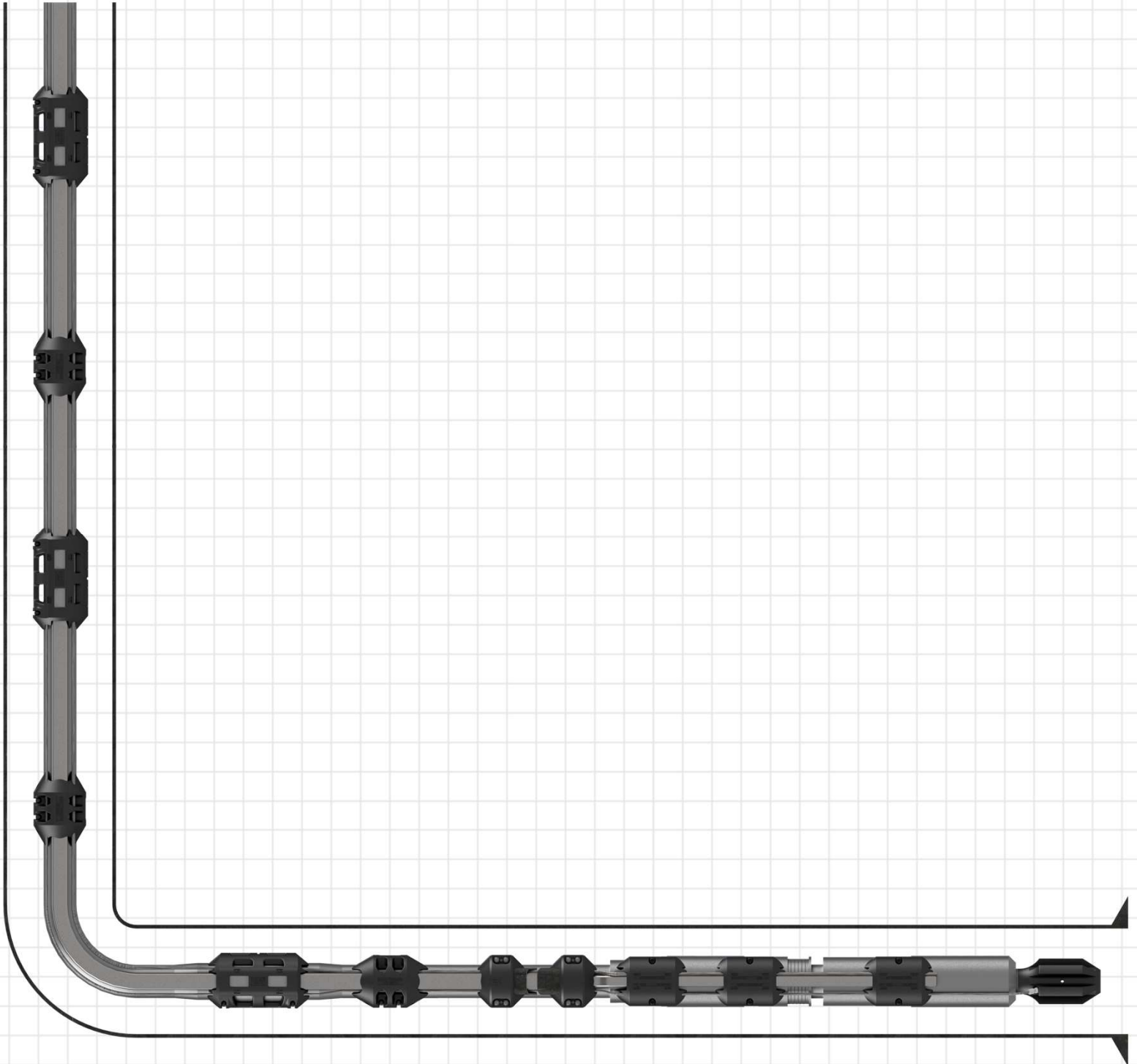
- Copper splicing crimp sleeves
- Splicing tables
- Splicing hand tools
- Splice tapes

* Contact us for full tool kit lists and pricing



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