Fagioli operate a range of Jacks from 15 to 750 tonnes capacity each based upon lift cables of 1 to 50 strands of 18mm diameter, 7 wire die-compacted, prestressing strand of guaranteed minimum breaking load of 38 tonnes per strand. Jacks may be used singularly, in pairs, or in groups to give any lifting capacity required.

**STRAND JACKS - OVERVIEW**

**JACK COMPONENTS**

- Jack (Top) Anchor
- Main (Bottom) Anchor
- Centre Hole Jack
- Jack Support Beam
- Multi Strand Cable
- Wedges
- Mini Jacks
- Conical Holes
- Nuts
- Jack Support Beam
- Strands

**STRAND JACK USES**

Strand jacks are used in the following industries:
- Civil Engineering
- Offshore (Fabrication Yards and Offshore Sites)
- Petrochemical & Refinery
- Power Generation

**STRAND JACKING SYSTEM**

ASSEMBLY
Vitally important to strand jacks are the strands. These are 18mm diameter and are formed from seven wires. The seven wires are wound together to form a helix. After winding they are drawn through a die to compact and harden them. The resulting strand has a guaranteed ultimate tensile strength of 38 tonnes and a factor of safety of 2.5 is normally applied to give the safe working load of 15 tonnes. Other factors of safety have been used from 2.0 (short term load during a pulling operation) to 9.0 (inside a nuclear containment area) but 2.5 has been adopted as the industry norm.

**Power packs - remote control**

Power packs provide the oil to the jacks and can be powered by diesel engine or electric motor. All power packs have direct, panel mounted, monitoring and control systems. Further electronic monitoring can display number of lift strokes completed and individual stroke positions at each jack.

Similar control and monitoring facilities can also be positioned remote from the power pack to fully computerised systems, including automatic lifting and lowering capabilities. Maximum pumping pressure, hence jack lifting force, can be pre-set or altered at will by pressure control valves on the panel.

The control system is a PC operated system to operate up to 20 jacks with total synchronisation. The system features are:

- Lift and load sensitive detection
- Overload detection
- Lift counting
- Adjustable equalisation of jack strokes.

**Towerlift system**

Strand jacks are mainly used with Towerlift system. Towerlift is an extremely heavy duty structural support system designed in modular form for ease of assembly, erection.

Strand jacks and tower lift system are specifically used for heavy lift hoisting operations for the Oil & Gas and Civil industry.

**Innovative solutions**

Innovative solutions for use of strand jacking system in the heavy lifting / lowering operations were conceived by Fagioli during the last decade. For instance, for the installation of mobile barriers to be used as a defence of Venice from flood, Fagioli engineering department planned and built a tailor made gantry lunching structure provided with strand jacks on top.

**Stadium**

Fagioli strand jacking system is also used for the lifting and tensioning of cables net roof stadium. The system is remotely controlled and the lifting process is effected by tensioning the Upper and Lower Radial Cables. Picture on the right shows the cover cable system of the new Hotspur Tottenham stadium in London by means of 216 strand jacks operating at the same time.

**Skidding - load out**

Strand jacking system is used for the load out operation of Oil & gas and offshore modules with a pulling action exerted on dedicated skid tracks. Fagioli engineering department issues detailed documentation for the analysis of forces involved during the skidding operation. Picture on the right refers to the load out operation of a 12,000 ton Topside module onto a barge.

**Offshore module lifting**

In some cases Fagioli is called to execute the lifting of complete offshore jacket and topside modules either for the weighing operation and for the assembly of additional sections underneath. Fagioli strand jacking system (one of the biggest fleet on the market) is able to gain limitless tonnage capacity for this kind of offshore operations.

**Heavy industry application**

Strand jacks are also used for the assembly and lifting operations of heavy machinery such as complete blast furnace sections, Goliath crane, ship-to-shore cranes. Safety benefits comes from a steady and remotely controlled operation of the strand jacks guaranteed by the Tower lift system anchored at ground level.

Picture refers to the assembly of a complete Goliath crane.
STRAND JACKS - RANGE

15 TON CAPACITY STRAND JACK

SAFE WORKING LOAD 15 TONNES
MAXIMUM STROKE 250 mm
MAXIMUM WORKING PRESSURE 350 Bar
MAXIMUM TEST PRESSURE 420 Bar
ASSEMBLY WEIGHT 83 Kg
LIFTING CABLE SYSTEM 1/16 Dia
LIFTING CABLE DIAMETER 18 mm
CABLE U.T.S. 38.7 Tonne
1 BAR PRESSURE 0.043 Tonne

L15 MK1 Jack Data Sheet
Rev 01

1/4 BSPP Ports
4 Holes Ø18
Through Base

15 TON CAPACITY STRAND JACK

SAFE WORKING LOAD 15 TONNES
MAXIMUM STROKE 450 mm
MAXIMUM WORKING PRESSURE 308 Bar
MAXIMUM TEST PRESSURE 370 Bar
ASSEMBLY WEIGHT 170 Kg
LIFTING CABLE SYSTEM 1/16 Dia
LIFTING CABLE DIAMETER 18 mm
CABLE U.T.S. 38.7 Tonne
1 BAR PRESSURE 0.049 Tonne

L15 MK2 Jack Data Sheet
Rev 00

1/2" BSPP Ports
4 Holes Ø18
Through Base
50 TON CAPACITY STRAND JACK

SAFE WORKING LOAD: 46 TONNES
MAXIMUM STROKE: 450 mm
MAXIMUM WORKING PRESSURE: 260 Bar
MAXIMUM TEST PRESSURE: 312 Bar
ASSEMBLY WEIGHT: 460 Kg
LIFTING CABLE SYSTEM: 3/18 Dia
LIFTING CABLE DIAMETER: 72 mm
CABLE U.T.S: 116.2 Tonnes
1 BAR PRESSURE: 0.1917 Tonnes

100 TON CAPACITY STRAND JACK

SAFE WORKING LOAD: 105 TONNES
MAXIMUM STROKE: 300 mm
MAXIMUM WORKING PRESSURE: 350 Bar
MAXIMUM TEST PRESSURE: 420 Bar
ASSEMBLY WEIGHT: 760 Kg
LIFTING CABLE SYSTEM: 7/18 Dia
LIFTING CABLE DIAMETER: 126 mm
CABLE U.T.S: 271.2 Tonnes
1 BAR PRESSURE: 0.30 Tonnes

THE WORLD ..... OUR PASSION
100 TON CAPACITY STRAND JACK

SAFE WORKING LOAD: 105 TONNES
MAXIMUM STROKE: 300 mm
MAXIMUM WORKING PRESSURE: 350 Bar
MAXIMUM TEST PRESSURE: 420 Bar
ASSEMBLY WEIGHT: 773 Kg
LIFTING CABLE SYSTEM: 7/18 Dia
LIFTING CABLE DIAMETER: 128 mm
CABLE U.T.S.: 271.2 Tonnes
1 BAR PRESSURE: 0.30 Tonnes

L100 MK4 Jack Data Sheet
Rev 01

SAFE WORKING LOAD: 105 TONNES
MAXIMUM STROKE: 300 mm
MAXIMUM WORKING PRESSURE: 350 Bar
MAXIMUM TEST PRESSURE: 420 Bar
ASSEMBLY WEIGHT: 770 Kg
LIFTING CABLE SYSTEM: 7/18 Dia
LIFTING CABLE DIAMETER: 128 mm
CABLE U.T.S.: 271.2 Tonnes
1 BAR PRESSURE: 0.30 Tonnes

L100 MK5 Jack Data Sheet
Rev 00

THE WORLD ... OUR PASSION
180 TON CAPACITY STRAND JACK

L180 MK2 Jack Data Sheet
Rev 01

SAFE WORKING LOAD 185 TONNES
MAXIMUM STROKE 500 mm
MAXIMUM WORKING PRESSURE 350 Bar
MAXIMUM TEST PRESSURE 420 Bar
ASSEMBLY WEIGHT 1030 Kg
LIFTING CABLE SYSTEM 12/18 Dia
LIFTING CABLE DIAMETER 165 mm
CABLE U.T.S. 465 Tonnes
1 BAR PRESSURE 0.474 Tonnes

L180 MK4 Jack Data Sheet
Rev 01

SAFE WORKING LOAD 183 TONNES
MAXIMUM STROKE 450 mm
MAXIMUM WORKING PRESSURE 308 Bar
MAXIMUM TEST PRESSURE 370 Bar
ASSEMBLY WEIGHT 1212 Kg
LIFTING CABLE SYSTEM 12/18 Dia
LIFTING CABLE DIAMETER 168 mm
CABLE U.T.S. 465 Tonnes
1 BAR PRESSURE 0.5837 Tonnes
300 TON CAPACITY STRAND JACK

SAFE WORKING LOAD: 295 TONNES
MAXIMUM STROKE: 450 mm
MAXIMUM WORKING PRESSURE: 350 Bar
MAXIMUM TEST PRESSURE: 420 Bar
ASSEMBLY WEIGHT: 2497 Kg
LIFTING CABLE SYSTEM: 19/18 Dia
LIFTING CABLE DIAMETER: 205 mm
CABLE U.T.S.: 736.2 Tonnes
1 BAR PRESSURE: 0.892 Tonnes

L300 MK2 Jack Data Sheet
Rev 01

SAFE WORKING LOAD: 295 TONNES
MAXIMUM STROKE: 450 mm
MAXIMUM WORKING PRESSURE: 308 Bar
MAXIMUM TEST PRESSURE: 370 Bar
ASSEMBLY WEIGHT: 2480 Kg
LIFTING CABLE SYSTEM: 19/18 Dia
LIFTING CABLE DIAMETER: 205 mm
CABLE U.T.S.: 736.2 Tonnes
1 BAR PRESSURE: 0.894 Tonnes

L300 MK4 Jack Data Sheet
Rev 00
STRAND JACKS - RANGE

450 TON CAPACITY STRAND JACK

SAFE WORKING LOAD: 418 TONNES
MAXIMUM STROKE: 450 mm
MAXIMUM WORKING PRESSURE: 308 Bar
MAXIMUM TEST PRESSURE: 370 Bar
ASSEMBLY WEIGHT: 3320 Kg
LIFTING CABLE SYSTEM: 27/18 Dia
LIFTING CABLE DIAMETER: 256 mm
CABLE U.T.S.: 1046.2 Tones
1 BAR PRESSURE: 1.4842 Tones

L450 MK4 Jack Data Sheet
Rev 00

600 TON CAPACITY STRAND JACK

SAFE WORKING LOAD: 573 TONNES
MAXIMUM STROKE: 450 mm
MAXIMUM WORKING PRESSURE: 308 Bar
MAXIMUM TEST PRESSURE: 370 Bar
ASSEMBLY WEIGHT: 4420 Kg
LIFTING CABLE SYSTEM: 37/18 Dia
LIFTING CABLE DIAMETER: 305 mm
CABLE U.T.S.: 1433.7 Tones
1 BAR PRESSURE: 1.9480 Tones

L600 MK3 Jack Data Sheet
Rev 00
STRAND JACKS - RANGE

600 TON CAPACITY STRAND JACK

SAFE WORKING LOAD: 573 TONNES
MAXIMUM STROKE: 450 mm
MAXIMUM WORKING PRESSURE: 308 Bar
MAXIMUM TEST PRESSURE: 370 Bar
ASSEMBLY WEIGHT: 4520 Kg
LIFTING CABLE SYSTEM: 37/18 Dia
LIFTING CABLE DIAMETER: 305 mm
CABLE U.T.S.: 1433.7 Tonnes
1 BAR PRESSURE: 1.8839 Tonnes

L600 MK5 Jack Data Sheet
Rev 00

750 TON CAPACITY STRAND JACK

SAFE WORKING LOAD: 757 TONNES
MAXIMUM STROKE: 450 mm
MAXIMUM WORKING PRESSURE: 308 Bar
MAXIMUM TEST PRESSURE: 370 Bar
ASSEMBLY WEIGHT: 6480 Kg
LIFTING CABLE SYSTEM: 50/18 Dia
LIFTING CABLE DIAMETER: 368 mm
CABLE U.T.S.: 1937.4 Tonnes
1 BAR PRESSURE: 2.460 Tonnes

L750 MK1 Jack Data Sheet
Rev 01
- Comprehensive, completely automatic, remote control and monitoring;
- Mechanically fail-safe gripping mechanisms;
- Pre-set overload protection;
- Automatic synchronisation of lifting speeds irrespective of loads;
- Ample operating speeds;
- Load is held mechanically not hydraulically at any time movement is stopped;
- Movement can be stopped and held indefinitely at any point in jack stroke;
- Extremely precise adjustment of the lift for setting of weld gaps or the fitting of steelwork connecting bolts;
- Automatic lifting and lowering without any personnel in attendance at the jacks;
- Easy re-distribution of the jack loads;
- Minimal maintenance of gripping mechanisms;
- Gripping mechanisms are fully accessible at all times;