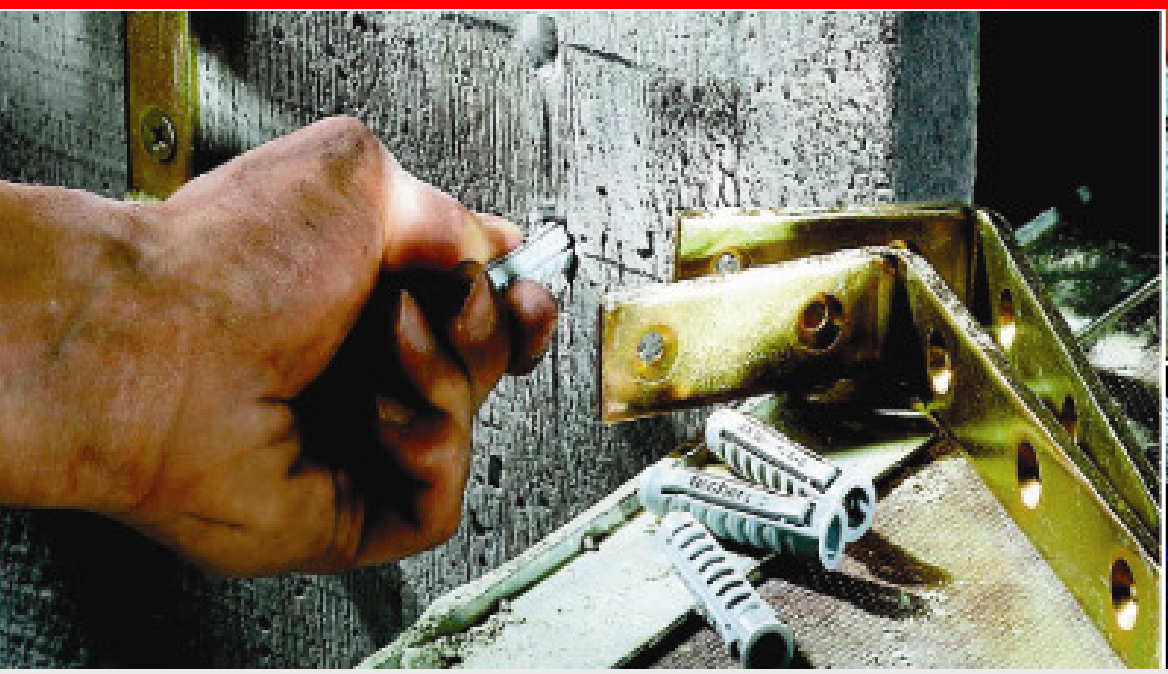
fischer Test Report



Fixing Tests for

KNAUF DRYWALL

fischer
FIXING SYSTEMS

Testing into Knauf

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KNAUFDRYWALL

1st April 2003

Ashley Quarterman
Artur Fischer (UK) Limited
Hithercroft Road
Wallingford
Oxon
OX10 9AT

Dear Ashley

Your colleague Dave Hanrahan has asked me to send you the following in confirmation of some testing your company did for us:

We confirm that the details in your document titled 'Fixing test report for Knauf' (dated 3 August 2001) were carried out at Artur Fischer UK and that the tests were carried out into single 'Knauf' boards 600mm x 600mm. The range Standard, Denseshield, Fireshield, Soundshield and Moistureshield were tested and the results are a true record of these tests.

Therefore we confirm that the fixings as described are suitable for use with the aforementioned 'Knauf' products up to the safe working loads stated.

Yours sincerely

pp Kenallgardner

Steve Halcrow
Technical Services Manager

RECEIVED
02 APR 2003

PO Box 133, Sittingbourne, Kent, ME10 3HW.
Tel: 01795 424499 Fax: 01795 428651 email: info@knauf.co.uk Website: www.knauf.co.uk
Factory Locations: Ridham Dock, Sittingbourne, Kent. Queens Road, Immingham, NE Lincolnshire
Registered in England and Wales. Branch Registration Number: BR000595 VAT Registered Number: GB 509 8325 32

1.2 Test Parameters

Various fixings were tested into Knauf plasterboards. The fixings were installed and tested in individual sheets and not in a wall configuration. The boards are manufactured using gypsum slurry, which contains, stucco, water and other additives. The face size we tested was 600x600 and had a thickness of 15mm. The board is available in several types that range from standard, Dense-shield, Fire-shield, sound-shield and Moisture-shield.
We tested all of the ranges.

The tests were carried out at:

fischer Fixings (UK) Ltd
Hithercroft Road
Wallingford
Oxfordshire
OX10 9AT

All tests were carried out using a calibrated 1.0kN and 5.0kN Hydrajaws tensile tester. To conform to CFA (Construction Fixing Association) guidelines each type of fixing was tested ten times.

2 Fixing Products tested.

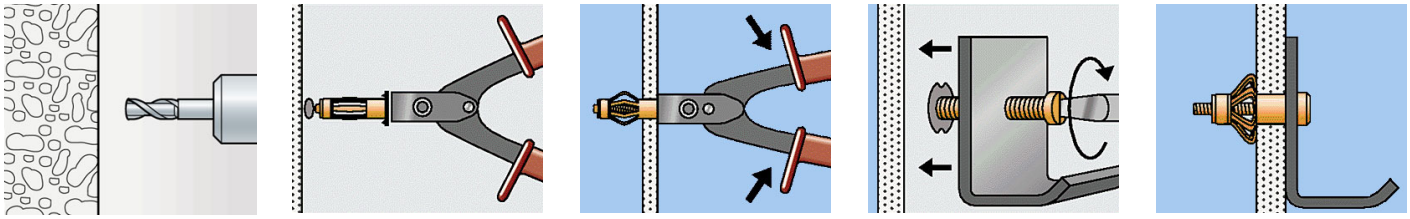
2.1 fischer HM Metal Cavity Fixing

Material: Steel, Zinc plated

Range: M4-M8

32-80 mm Long

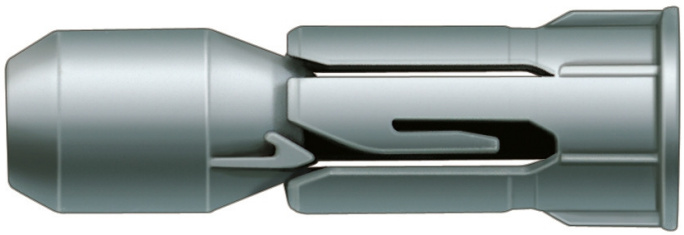
The fischer HM Metal Cavity Fixing is a practical cavity fastening system for metric screws. Its simple but effective system allows ease of installation for high load bearing applications, for fixing into a wide range of cavity materials such as the Knauf plasterboard. The fixings will accommodate materials from 3mm to 50mm thick and come with a wide range of head finishes from hook to eyelet. There is an installation tool available for this product HM Z1 for large applications



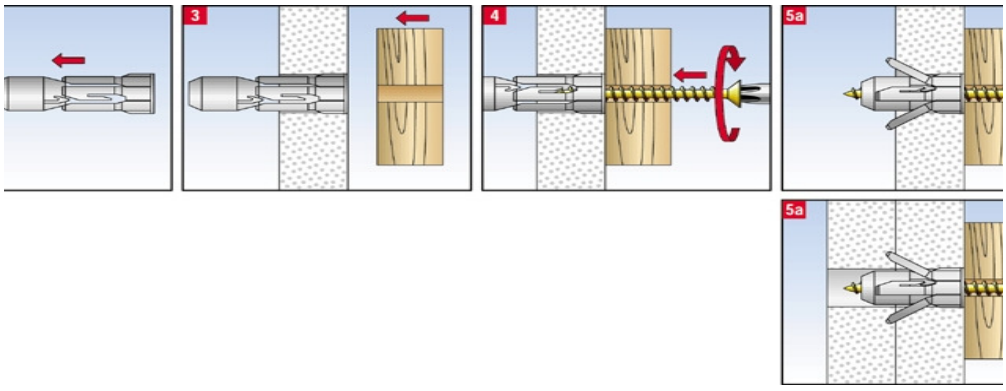
2.2 fischer PD Board Fixing

Material: Plug- Nylon (Polyamide 6)
Screw-Steel grade 5.8

Range: 8, 10 & 12



The fischer PD Board Fixing is the latest development in board and cavity fixings. This unique fixing offers ultimate load bearing capability for a simple but effective lightweight anchor.
The anchor has an extra short expansion zone allowing minimal space required in boards and short embedment depth in solid materials, another feature of this fixing is the ‘lock-in mechanism’ allowing the screw to be installed and un-installed several times. There are several longitudinal ribs to prevent the anchor from turning on installation and a small rim prevents the anchor from falling through the hole, all in all this is a good performance anchor.

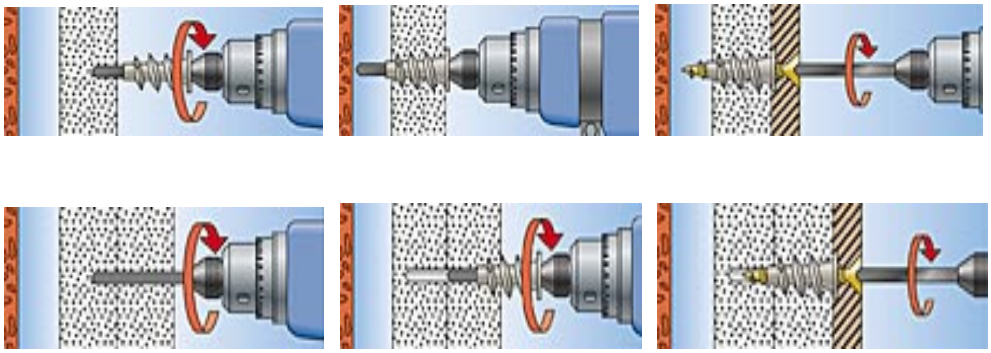


2.3 fischer GKS Self Drill Fixing

Material: Nylon
Metal screw grade 5.8

Range: 12 & 17

The fischer GKS has a self-cutting thread for rapid installation, there are no pre drilled holes required just a screwdriver or power driver. When installed the anchor is flush with the substrate surface and very little space is required behind substrate. This fixing is for fast installation and is capable of producing fairly high loads.

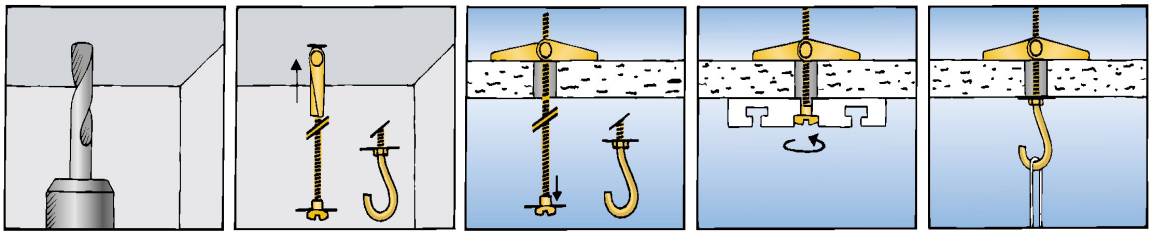


2.4 fischer KD8 Gravity Toggle

Material: Fixing-Steel, Zinc plated yellow passivated

Range: M3-M8

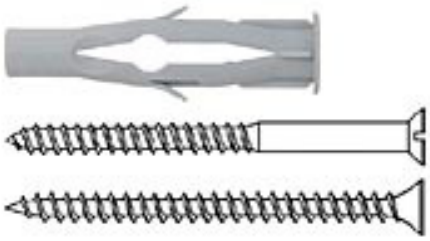
The fischer KD Toggle is the versatile cavity fixing. This fixing can be used in most substrate providing it has a cavity. It ranges from M3 to M8 and comes in varying lengths. It is made from mild steel grade 5.8 and is zinc pasivate. The installation procedure is simple and produces very high loads. Smaller versions of the KD toggle come with spring loaded toggle fixing and a selection of threaded attachments from hooks to eyelets.



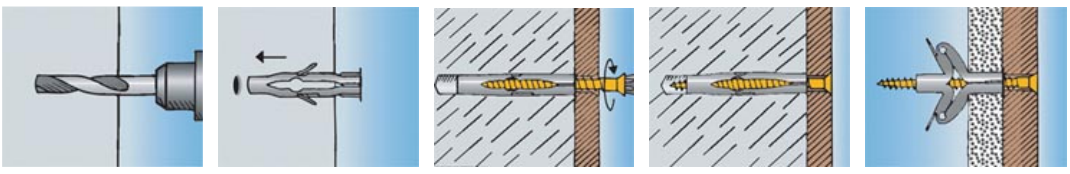
2.5 fischer FU Universal

Material: Nylon (polyamide 6)

Range: FU 6x35 – FU10x60



The fischer universal fixing FU is suitable for concrete, solid brick, perforated brick, hollow blocks, aerated concrete, plasterboard and other board materials thicker than 6mm. The FU and chipboard screws can be used for fastening shelves, light cupboards, curtain rails, skirting boards, lamps and towel rails.



3. Test Results for Standard Board
3.1a HM 8x55 SS

Test No	Substrate Tested	Drill Diameter	Axial Space	Load Achieved kN	Remarks
1	Standard 15mm plasterboard	13	150	1.20	Localised board failure
2	Standard 15mm plasterboard	13	150	1.15	Localised board failure
3	Standard 15mm plasterboard	13	150	1.20	Localised board failure
4	Standard 15mm plasterboard	13	150	1.25	Localised board failure
5	Standard 15mm plasterboard	13	150	1.15	Localised board failure
6	Standard 15mm plasterboard	13	150	1.10	Localised board failure
7	Standard 15mm plasterboard	13	150	1.20	Localised board failure
8	Standard 15mm plasterboard	13	150	1.15	Localised board failure
9	Standard 15mm plasterboard	13	150	1.20	Localised board failure
10	Standard 15mm plasterboard	13	150	1.25	Localised board failure

The average ultimate load is: **1.18kN**
Using a global safety factor of 4 the recommended load is: **0.30kN**

3. Test Results for Dense-Shield Board
3.1b HM 8x55 SS

Test No	Substrate Tested	Drill Diameter	Axial Space	Load Achieved kN	Remarks
1	Dense-shield 15mm plasterboard	13	150	1.62	Localised board failure
2	Dense-shield 15mm plasterboard	13	150	1.78	Localised board failure
3	Dense-shield 15mm plasterboard	13	150	1.70	Localised board failure
4	Dense-shield 15mm plasterboard	13	150	1.70	Tensile failure
5	Dense-shield 15mm plasterboard	13	150	1.60	Localised board failure
6	Dense-shield 15mm plasterboard	13	150	1.65	Localised board failure
7	Dense-shield 15mm plasterboard	13	150	1.57	Localised board failure
8	Dense-shield 15mm plasterboard	13	150	1.62	Tensile failure
9	Dense-shield 15mm plasterboard	13	150	1.61	Localised board failure
10	Dense-shield 15mm plasterboard	13	150	1.46	Localised board failure

The average ultimate load is: **1.63kN**
Using a global safety factor of 4 the recommended load is: **0.40kN**

3. Test Results for Sound-Shield Board
3.1c HM 8x55 SS

Test No	Substrate Tested	Drill Diameter	Axial Space	Load Achieved kN	Remarks
1	Sound-shield 15mm plasterboard	13	150	1.10	Tensile failure
2	Sound-shield 15mm plasterboard	13	150	1.08	Localised board failure
3	Sound-shield 15mm plasterboard	13	150	1.08	Localised board failure
4	Sound-shield 15mm plasterboard	13	150	1.07	Localised board failure
5	Sound-shield 15mm plasterboard	13	150	1.10	Localised board failure
6	Sound-shield 15mm plasterboard	13	150	1.01	Localised board failure
7	Sound-shield 15mm plasterboard	13	150	1.21	Localised board failure
8	Sound-shield 15mm plasterboard	13	150	1.12	Localised board failure
9	Sound-shield 15mm plasterboard	13	150	1.17	Localised board failure
10	Sound-shield 15mm plasterboard	13	150	1.20	Localised board failure

The average ultimate load is: **1.11kN**
Using a global safety factor of 4 the recommended load is: **0.28kN**

3. Test Results for Fire-Shield Board
3.1dHM 8x55SS

Test No	Substrate Tested	Drill Diameter	Axial Space	Load Achieved kN	Remarks
1	Fire-shield 15mm plasterboard	13	150	1.20	Localised board failure
2	Fire-shield 15mm plasterboard	13	150	1.21	Localised board failure
3	Fire-shield 15mm plasterboard	13	150	1.19	Localised board failure
4	Fire-shield 15mm plasterboard	13	150	1.24	Localised board failure
5	Fire-shield 15mm plasterboard	13	150	1.18	Localised board failure
6	Fire-shield 15mm plasterboard	13	150	1.10	Tensile Failure
7	Fire-shield 15mm plasterboard	13	150	1.31	Localised board failure
8	Fire-shield 15mm plasterboard	13	150	1.39	Localised board failure
9	Fire-shield 15mm plasterboard	13	150	1.42	Localised board failure
10	Fire-shield 15mm plasterboard	13	150	1.31	Localised board failure

The average ultimate load is: **1.25kN**
Using a global safety factor of 4 the recommended load is: **0.31kN**

3. Test Results for Moisture-Shield Board
3.1eHM 8x55 SS

Test No	Substrate Tested	Drill Diameter	Axial Space	Load Achieved kN	Remarks
1	Moisture-shield 15mm plasterboard	13	150	0.99	Tensile failure
2	Moisture-shield 15mm plasterboard	13	150	1.14	Tensile failure
3	Moisture-shield 15mm plasterboard	13	150	1.21	Localised board failure
4	Moisture-shield 15mm plasterboard	13	150	1.16	Localised board failure
5	Moisture-shield 15mm plasterboard	13	150	0.85	Localised board failure
6	Moisture-shield 15mm plasterboard	13	150	1.42	Localised board failure
7	Moisture-shield 15mm plasterboard	13	150	1.33	Localised board failure
8	Moisture-shield 15mm plasterboard	13	150	1.46	Localised board failure
9	Moisture-shield 15mm plasterboard	13	150	1.45	Localised board failure
10	Moisture-shield 15mm plasterboard	13	150	1.50	Localised board failure

The average ultimate load is: **1.25kN**
Using a global safety factor of 4 the recommended load is: **0.31kN**

3. Test Results for Standard Board
3.2a PD Cavity Fixing

Test No	Substrate Tested	Drill Diameter	Axial Space	Load Achieved kN	Remarks
1	Standard 15mm plasterboard	10	150	0.61	Localised board failure
2	Standard 15mm plasterboard	10	150	0.68	Localised board failure
3	Standard 15mm plasterboard	10	150	0.47	Localised board failure
4	Standard 15mm plasterboard	10	150	0.65	Localised board failure
5	Standard 15mm plasterboard	10	150	0.40	Localised board failure
6	Standard 15mm plasterboard	10	150	0.39	Tensile failure
7	Standard 15mm plasterboard	10	150	0.39	Tensile failure
8	Standard 15mm plasterboard	10	150	0.45	Localised board failure
9	Standard 15mm plasterboard	10	150	0.38	Tensile failure
10	Standard 15mm plasterboard	10	150	0.61	Localised board failure

The average ultimate load is: **0.50kN**
Using a global safety factor of 4 the recommended load is: **0.12kN**

3. Test Results for Dense-Shield Board
3.2b PD Cavity Fixing

Test No	Substrate Tested	Drill Diameter	Axial Space	Load Achieved kN	Remarks
1	Dense-shield 15mm plasterboard	10	150	0.72	Localised board failure
2	Dense-shield 15mm plasterboard	10	150	0.83	Localised board failure
3	Dense-shield 15mm plasterboard	10	150	0.61	Localised board failure
4	Dense-shield 15mm plasterboard	10	150	-	Board failure
5	Dense-shield 15mm plasterboard	10	150	-	Board failure
6	Dense-shield 15mm plasterboard	10	150	0.30	Localised board failure
7	Dense-shield 15mm plasterboard	10	150	0.65	Localised board failure
8	Dense-shield 15mm plasterboard	10	150	-	Board failure
9	Dense-shield 15mm plasterboard	10	150	-	Board failure
10	Dense-shield 15mm plasterboard	10	150	0.90	Localised board failure

The average ultimate load is: **0.40kN**
Using a global safety factor of 4 the recommended load is: **0.10kN**

3. Test Results for Sound-Shield Board
3.2c PD Cavity Fixing

Test No	Substrate Tested	Drill Diameter	Axial Space	Load Achieved kN	Remarks
1	Sound-shield 15mm plasterboard	10	150	0.53	Localised board failure
2	Sound-shield 15mm plasterboard	10	150	0.55	Localised board failure
3	Sound-shield 15mm plasterboard	10	150	0.49	Localised board failure
4	Sound-shield 15mm plasterboard	10	150	0.67	Localised board failure
5	Sound-shield 15mm plasterboard	10	150	0.49	Localised board failure
6	Sound-shield 15mm plasterboard	10	150	0.47	Localised board failure
7	Sound-shield 15mm plasterboard	10	150	0.55	Localised board failure
8	Sound-shield 15mm plasterboard	10	150	0.52	Localised board failure
9	Sound-shield 15mm plasterboard	10	150	0.55	Localised board failure
10	Sound-shield 15mm plasterboard	10	150	0.48	Localised board failure

The average ultimate load is: **0.53kN**
Using a global safety factor of 4 the recommended load is: **0.13kN**

3. Test Results for Fire-Shield Board
3.2d PD Cavity fixing

Test No	Substrate Tested	Drill Diameter	Axial Space	Load Achieved kN	Remarks
1	Fire-shield 15mm plasterboard	10	150	-	Tensile failure
2	Fire-shield 15mm plasterboard	10	150	-	Tensile failure
3	Fire-shield 15mm plasterboard	10	150	0.10	Localised board failure
4	Fire-shield 15mm plasterboard	10	150	0.15	Localised board failure
5	Fire-shield 15mm plasterboard	10	150	0.11	Localised board failure
6	Fire-shield 15mm plasterboard	10	150	0.11	Localised board failure
7	Fire-shield 15mm plasterboard	10	150	0.01	Localised board failure
8	Fire-shield 15mm plasterboard	10	150	0.26	Localised board failure
9	Fire-shield 15mm plasterboard	10	150	0.11	Localised board failure
10	Fire-shield 15mm plasterboard	10	150	0.10	Localised board failure

The average ultimate load is: **0.11kN**
Using a global safety factor of 4 the recommended load is: **0.03kN**

3. Test Results for Moisture-Shield Board
3.2e PD Cavity Fixing

Test No	Substrate Tested	Drill Diameter	Axial Space	Load Achieved kN	Remarks
1	Moisture-shield 15mm plasterboard	10	150	0.82	Localised board failure
2	Moisture-shield 15mm plasterboard	10	150	0.80	Localised board Failure
3	Moisture-shield 15mm plasterboard	10	150	0.73	Localised board failure
4	Moisture-shield 15mm plasterboard	10	150	0.81	Localised board failure
5	Moisture-shield 15mm plasterboard	10	150	0.61	Localised board failure
6	Moisture-shield 15mm plasterboard	10	150	0.60	Localised board failure
7	Moisture-shield 15mm plasterboard	10	150	0.69	Localised board failure
8	Moisture-shield 15mm plasterboard	10	150	0.62	Localised board failure
9	Moisture-shield 15mm plasterboard	10	150	0.64	Localised board failure
10	Moisture-shield 15mm plasterboard	10	150	0.69	Localised board failure

The average ultimate load is: **0.7kN**
Using a global safety factor of 4 the recommended load is: **0.2kN**

3. Test Results for Standard Board
3.3a fischer KD Gravity Toggle

Test No	Substrate Tested	Drill Diameter	Axial Space	Load Achieve kN	Remarks
1	Standard 15mm plasterboard	20	150	1.15	Localised board failure
2	Standard 15mm plasterboard	20	150	1.10	Localised board failure
3	Standard 15mm plasterboard	20	150	1.10	Localised board failure
4	Standard 15mm plasterboard	20	150	1.32	Localised board failure
5	Standard 15mm plasterboard	20	150	1.16	Localised board failure
6	Standard 15mm plasterboard	20	150	1.13	Localised board failure
7	Standard 15mm plasterboard	20	150	1.15	Localised board failure
8	Standard 15mm plasterboard	20	150	1.05	Localised board failure
9	Standard 15mm plasterboard	20	150	1.23	Localised board failure
10	Standard 15mm plasterboard	20	150	1.16	Localised board failure

The average ultimate load is: **1.15kN**
Using a global safety factor of 4 the recommended load is: **0.29kN**

3. Test Results for Dense-Shield Board
3.3b fischer KD Gravity Toggle

Test No	Substrate Tested	Drill Diameter	Axial Space	Load Achieved kN	Remarks
1	Dense-shield 15mm plasterboard	20	150	2.01	Localised board failure
2	Dense-shield 15mm plasterboard	20	150	1.90	Localised board failure
3	Dense-shield 15mm plasterboard	20	150	1.79	Localised board failure
4	Dense-shield 15mm plasterboard	20	150	1.60	Localised board failure
5	Dense-shield 15mm plasterboard	20	150	1.38	Localised board failure
6	Dense-shield 15mm plasterboard	20	150	1.55	Localised board failure
7	Dense-shield 15mm plasterboard	20	150	1.25	Localised board failure
8	Dense-shield 15mm plasterboard	20	150	1.30	Localised board failure
9	Dense-shield 15mm plasterboard	20	150	1.56	Localised board failure
10	Dense-shield 15mm plasterboard	20	150	0.92	Board failure

The average ultimate load is: **1.52kN**
Using a global safety factor of 4 the recommended load is: **0.38kN**

3. Test Results for Sound-Shield Board
3.3c fischer KD Gravity Toggle

Test No	Substrate Tested	Drill Diameter	Axial Space	Load Achieved kN	Remarks
1	Sound-shield 15mm plasterboard	20	150	1.42	Localised board failure
2	Sound-shield 15mm plasterboard	20	150	1.30	Localised board failure
3	Sound-shield 15mm plasterboard	20	150	1.31	Localised board failure
4	Sound-shield 15mm plasterboard	20	150	1.19	Localised board failure
5	Sound-shield 15mm plasterboard	20	150	1.43	Localised board failure
6	Sound-shield 15mm plasterboard	20	150	1.21	Localised board failure
7	Sound-shield 15mm plasterboard	20	150	1.20	Localised board failure
8	Sound-shield 15mm plasterboard	20	150	1.38	Localised board failure
9	Sound-shield 15mm plasterboard	20	150	1.34	Localised board failure
10	Sound-shield 15mm plasterboard	20	150	1.13	Localised board failure

The average ultimate load is: **1.3kN**
Using a global safety factor of 4 the recommended load is: **0.32kN**

3. Test Results for Fire-Shield Board
3.3d fischer KD Gravity Toggle

Test No	Substrate Tested	Drill Diameter	Axial Space	Load Achieve	Remarks
1	Fire-shield 15mm plasterboard	20	150	1.40	Localised board failure
2	Fire-shield 15mm plasterboard	20	150	1.32	Localised board failure
3	Fire-shield 15mm plasterboard	20	150	1.60	Localised board failure
4	Fire-shield 15mm plasterboard	20	150	1.57	Localised board failure
5	Fire-shield 15mm plasterboard	20	150	1.20	Localised board failure
6	Fire-shield 15mm plasterboard	20	150	1.46	Localised board failure
7	Fire-shield 15mm plasterboard	20	150	1.63	Localised board failure
8	Fire-shield 15mm plasterboard	20	150	1.65	Localised board failure
9	Fire-shield 15mm plasterboard	20	150	1.42	Localised board failure
10	Fire-shield 15mm plasterboard	20	150	1.28	Localised board failure

The average ultimate load is: **1.45kN**
Using a global safety factor of 4 the recommended load is: **0.36kN**

3. Test Results for Moisture-Shield Board
3.3e fischer KD Gravity Toggle

Test No	Substrate Tested	Drill Diameter	Axial Space	Load Achieved kN	Remarks
1	Moisture-shield 15mm plasterboard	20	150	1.75	Localised board failure
2	Moisture-shield 15mm plasterboard	20	150	1.30	Localised board failure
3	Moisture-shield 15mm plasterboard	20	150	1.85	Localised board failure
4	Moisture-shield 15mm plasterboard	20	150	1.45	Localised board failure
5	Moisture-shield 15mm plasterboard	20	150	1.10	Localised board failure
6	Moisture-shield 15mm plasterboard	20	150	1.41	Localised board failure
7	Moisture-shield 15mm plasterboard	20	150	1.00	Localised board failure
8	Moisture-shield 15mm plasterboard	20	150	1.40	Localised board failure
9	Moisture-shield 15mm plasterboard	20	150	1.32	Localised board failure
10	Moisture-shield 15mm plasterboard	20	150	1.10	Localised board failure

The average ultimate load is: **1.37kN**
Using a global safety factor of 4 the recommended load is: **0.34kN**

3. Test Results for Standard Board
3.4a fischer FU Universal Fixing

Test No	Substrate Tested	Drill Diameter	Axial Space	Load Achieved kN	Remarks
1	Standard 15mm plasterboard	10	150	0.60	Localised board failure
2	Standard 15mm plasterboard	10	150	0.69	Localised board failure
3	Standard 15mm plasterboard	10	150	0.73	Localised board failure
4	Standard 15mm plasterboard	10	150	0.60	Localised board failure
5	Standard 15mm plasterboard	10	150	0.74	Localised board failure
6	Standard 15mm plasterboard	10	150	0.67	Localised board failure
7	Standard 15mm plasterboard	10	150	0.80	Localised board failure
8	Standard 15mm plasterboard	10	150	0.83	Localised board failure
9	Standard 15mm plasterboard	10	150	0.64	Localised board failure
10	Standard 15mm plasterboard	10	150	0.71	Localised board failure

The average ultimate load is: **0.70kN**
Using a global safety factor of 4 the recommended load is: **0.17kN**

3. Test Results for Dense-Shield Board
3.4b fischer FU Universal Fixing

Test No	Substrate Tested	Drill Diameter	Axial Space	Load Achieved kN	Remarks
1	Dense-shield 15mm plasterboard	10	150	1.35	Localised board failure
2	Dense-shield 15mm plasterboard	10	150	1.46	Localised board failure
3	Dense-shield 15mm plasterboard	10	150	1.29	Localised board failure
4	Dense-shield 15mm plasterboard	10	150	1.32	Localised board failure
5	Dense-shield 15mm plasterboard	10	150	1.30	Localised board failure
6	Dense-shield 15mm plasterboard	10	150	1.40	Localised board failure
7	Dense-shield 15mm plasterboard	10	150	1.67	Localised board failure
8	Dense-shield 15mm plasterboard	10	150	1.29	Localised board failure
9	Dense-shield 15mm plasterboard	10	150	1.17	Localised board failure
10	Dense-shield 15mm plasterboard	10	150	1.15	Localised board failure

The average ultimate load is: **1.34kN**
Using a global safety factor of 4 the recommended load is: **0.33kN**

3. Test Results for Sound-Shield Board
3.4c Fischer FU Universal Fixing

Test No	Substrate Tested	Drill Diameter	Axial Space	Load Achieved kN	Remarks
1	Sound-shield 15mm plasterboard	10	150	0.74	Localised board failure
2	Sound-shield 15mm plasterboard	10	150	0.69	Localised board failure
3	Sound-shield 15mm plasterboard	10	150	0.73	Localised board failure
4	Sound-shield 15mm plasterboard	10	150	0.68	Localised board failure
5	Sound-shield 15mm plasterboard	10	150	0.71	Localised board failure
6	Sound-shield 15mm plasterboard	10	150	0.71	Localised board failure
7	Sound-shield 15mm plasterboard	10	150	0.79	Localised board failure
8	Sound-shield 15mm plasterboard	10	150	0.81	Localised board failure
9	Sound-shield 15mm plasterboard	10	150	0.68	Localised board failure
10	Sound-shield 15mm plasterboard	10	150	0.00	Localised board failure

The average ultimate load is: **0.65kN**
Using a global safety factor of 4 the recommended load is: **0.16kN**

3. Test Results for Fire-Shield Board
3.4d fischer FU Universal Fixing

Test No	Substrate Tested	Drill Diameter	Axial Space	Load Achieved kN	Remarks
1	Fire-shield 15mm plasterboard	10	150	0.76	Localised board failure
2	Fire-shield 15mm plasterboard	10	150	0.90	Localised board failure
3	Fire-shield 15mm plasterboard	10	150	0.96	Localised board failure
4	Fire-shield 15mm plasterboard	10	150	0.94	Localised board failure
5	Fire-shield 15mm plasterboard	10	150	0.61	Localised board failure
6	Fire-shield 15mm plasterboard	10	150	0.84	Localised board failure
7	Fire-shield 15mm plasterboard	10	150	0.44	Localised board failure
8	Fire-shield 15mm plasterboard	10	150	0.61	Localised board failure
9	Fire-shield 15mm plasterboard	10	150	-	Tensile failure
10	Fire-shield 15mm plasterboard	10	150	0.88	Localised board failure

The average ultimate load is: **0.77kN**
Using a global safety factor of 4 the recommended load is: **0.19kN**

3. Test Results for Moisture-Shield Board
3.4e fischer FU Universal Fixing

Test No	Substrate Tested	Drill Diameter	Axial Space	Load Achieved kN	Remarks
1	Moisture-shield 15mm plasterboard	10	150	0.95	Localised board failure
2	Moisture-shield 15mm plasterboard	10	150	0.82	Localised board failure
3	Moisture-shield 15mm plasterboard	10	150	0.94	Localised board failure
4	Moisture-shield 15mm plasterboard	10	150	0.89	Localised board failure
5	Moisture-shield 15mm plasterboard	10	150	0.80	Localised board failure
6	Moisture-shield 15mm plasterboard	10	150	0.78	Localised board failure
7	Moisture-shield 15mm plasterboard	1	150	0.72	Localised board failure
8	Moisture-shield 15mm plasterboard	10	150	0.80	Localised board failure
9	Moisture-shield 15mm plasterboard	10	150	0.89	Localised board failure
10	Moisture-shield 15mm plasterboard	10	150	-	Tensile failure

The average ultimate load is: **0.84kN**
Using a global safety factor of 4 the recommended load is: **0.21kN**

3. Test Results for Standard Board
3.5a fischer GKS Self Drill Fixing

Test No	Substrate Tested	Drill Diameter	Axial Space	Load Achieved kN	Remarks
1	Standard 15mm plasterboard		150	0.60	Localised board failure
2	Standard 15mm plasterboard		150	0.69	Localised board failure
3	Standard 15mm plasterboard		150	0.73	Localised board failure
4	Standard 15mm plasterboard		150	0.60	Localised board failure
5	Standard 15mm plasterboard		150	0.74	Localised board failure
6	Standard 15mm plasterboard		150	0.67	Localised board failure
7	Standard 15mm plasterboard		150	0.80	Localised board failure
8	Standard 15mm plasterboard		150	0.83	Localised board failure
9	Standard 15mm plasterboard		150	0.64	Localised board failure
10	Standard 15mm plasterboard		150	0.71	Localised board failure

The average ultimate load is: **0.70kN**
Using a global safety factor of 4 the recommended load is: **0.18kN**

3. Test Results for Dense-Shield board
3.5b fischer GKS Self Drill Fixing

Test No	Substrate Tested	Drill Diameter	Axial Space	Load Achieved kN	Remarks
1	Dense-shield 15mm plasterboard		150	0.71	Localised board failure
2	Dense-shield 15mm plasterboard		150	0.58	Localised board failure
3	Dense-shield 15mm plasterboard		150	0.49	Localised board failure
4	Dense-shield 15mm plasterboard		150	0.42	Localised board failure
5	Dense-shield 15mm plasterboard		150	0.50	Localised board failure
6	Dense-shield 15mm plasterboard		150	0.57	Localised board failure
7	Dense-shield 15mm plasterboard		150	0.52	Localised board failure
8	Dense-shield 15mm plasterboard		150	0.63	Localised board failure
9	Dense-shield 15mm plasterboard		150	0.39	Localised board failure
10	Dense-shield 15mm plasterboard		150	0.50	Localised board failure

The average ultimate load is: **0.53kN**
Using a global safety factor of 4 the recommended load is: **0.13kN**

3. Test Results for Sound-Shield Board
3.5 fischer GKS Self Drill Fixing

Test No	Substrate Tested	Drill Diameter	Axial Space	Load Achieved kN	Remarks
1	Sound-shield 15mm plasterboard		150	0.27	Localised board failure
2	Sound-shield 15mm plasterboard		150	0.26	Localised board failure
3	Sound-shield 15mm plasterboard		150	0.30	Localised board failure
4	Sound-shield 15mm plasterboard		150	0.29	Localised board failure
5	Sound-shield 15mm plasterboard		150	0.26	Localised board failure
6	Sound-shield 15mm plasterboard		150	0.41	Localised board failure
7	Sound-shield 15mm plasterboard		150	0.34	Localised board failure
8	Sound-shield 15mm plasterboard		150	0.29	Localised board failure
9	Sound-shield 15mm plasterboard		150	0.30	Localised board failure
10	Sound-shield 15mm plasterboard		150	0.26	Localised board failure

The average ultimate load is: **0.29kN**
Using a global safety factor of 4 the recommended load is: **0.07kN**

3. Test Results for Fire-Shield Board
3.5d fischer GKS Self Drill Fixing

Test No	Substrate Testing	Drill Diameter	Axial Space	Load Achieved kN	Remarks
1	Fire-shield 15mm plasterboard		150	0.36	Localised board failure
2	Fire-shield 15mm plasterboard		150	0.48	Localised board failure
3	Fire-shield 15mm plasterboard		150	0.50	Localised board failure
4	Fire-shield 15mm plasterboard		150	0.45	Localised board failure
5	Fire-shield 15mm plasterboard		150	0.42	Localised board failure
6	Fire-shield 15mm plasterboard		150	0.36	Localised board failure
7	Fire-shield 15mm plasterboard		150	0.43	Localised board failure
8	Fire-shield 15mm plasterboard		150	0.32	Localised board failure
9	Fire-shield 15mm plasterboard		150	0.37	Localised board failure
10	Fire-shield 15mm plasterboard		150	0.39	Localised board failure

The average ultimate load is: **0.41kN**
Using a global safety factor of 4 the recommended load is: **0.05kN**

3. Test Results for Moisture-Shield Board
3.5e fischer GKS Self Drill Fixing

Test No	Substrate Tested	Drill Diameter	Axial Space	Load Achieved kN	Remarks
1	Moisture-shield 15mm plasterboard		150	0.32	Localised board failure
2	Moisture-shield 15mm plasterboard		150	-	Tensile failure
3	Moisture-shield 15mm plasterboard		150	0.39	Localised board failure
4	Moisture-shield 15mm plasterboard		150	0.41	Localised board failure
5	Moisture-shield 15mm plasterboard		150	0.42	Localised board failure
6	Moisture-shield 15mm plasterboard		150	-	Tensile failure
7	Moisture-shield 15mm plasterboard		150	-	Tensile failure
8	Moisture-shield 15mm plasterboard		150	-	Tensile failure
9	Moisture-shield 15mm plasterboard		150	0.38	Localised board failure
10	Moisture-shield 15mm plasterboard		150	0.32	Localised board failure

The average ultimate load is: **0.37kN**
Using a global safety factor of 4 the recommended load is: **0.09kN**

4. Summary

Standard 15mm plasterboard				
Fixing Tested	**Article No.**	**Average ultimate load**	**Safe working load**	**Characteristic axial spacing**
HM 8x55 SS	56064	1.18 kN	0.30 kN	150mm
PD10	15935	0.50 kN	0.12 kN	150mm
KD8	80178	1.15 kN	0.25 kN	150mm
FU10x60	53336	0.70 kN	0.17 kN	150mm
GK	52389	0.70 kN	0.17 kN	150 mm
Dense-shield 15mm plasterboard				
Fixing Tested	**Article No.**	**Average ultimate load**	**Safe working load**	**Characteristic axial spacing**
HM 8x55 SS	56064	1.63 kN	0.40 kN	150mm
PD10	15935	0.40 kN	0.10 kN	150mm
KD8	80178	1.52 kN	0.38 kN	150mm
FU10x60	53336	1.34 kN	0.33 kN	150mm
GK	52389	0.70 kN	0.17 kN	150 mm
Sound-shield 15mm plasterboard				
Fixing Tested	**Article No.**	**Average ultimate load**	**Safe working load**	**Characteristic axial spacing**
HM 8x55 SS	56064	1.11 kN	0.28 kN	150mm
PD10	15935	0.53 kN	0.13 kN	150mm
KD8	80178	1.30 kN	0.32 kN	150mm
FU10x60	53336	0.65 kN	0.16 kN	150mm
GK	52389	0.29 kN	0.07 kN	150 mm
Fire-shield 15mm plasterboard				
Fixing Tested	**Article No.**	**Average ultimate load**	**Safe working load**	**Characteristic axial spacing**
HM 8x55 SS	56064	1.25 kN	0.31 kN	150mm
PD10	15935	0.11 kN	0.03 kN	150mm
KD8	80178	1.45 kN	0.36 kN	150mm
FU10x60	53336	0.77 kN	0.19 kN	150mm
GK	52389	0.41 kN	0.05 kN	150 mm
Moisture-shield 15mm plasterboard				
Fixing Tested	**Article No.**	**Average ultimate load**	**Safe working load**	**Characteristic axial spacing**
HM 8x55 SS	56064	1.25 kN	0.31 kN	150mm
PD10	15935	0.70 kN	0.20 kN	150mm
KD8	80178	1.37 kN	0.34 kN	150mm
FU10x60	53336	0.84 kN	0.21 kN	150mm
GK	52389	0.37 kN	0.09 kN	150 mm

5. Conclusion

Five fixings were selected for their suitability and the test results collated.
All the fixings were installed in accordance with the manufacture guidelines.

The test results for all of the fixings tested show a good variation in ultimate loads. This allows the Engineer/Architect/End-user to have a wide range of anchors to choose from, depending on function and load performance.

Failure of the fixings was determined by substrate failure. Axial spacing's are given in the results and should be used as a guide only.

For further information regarding the test report please contact fischer technical department. Tel: 01941 827920.