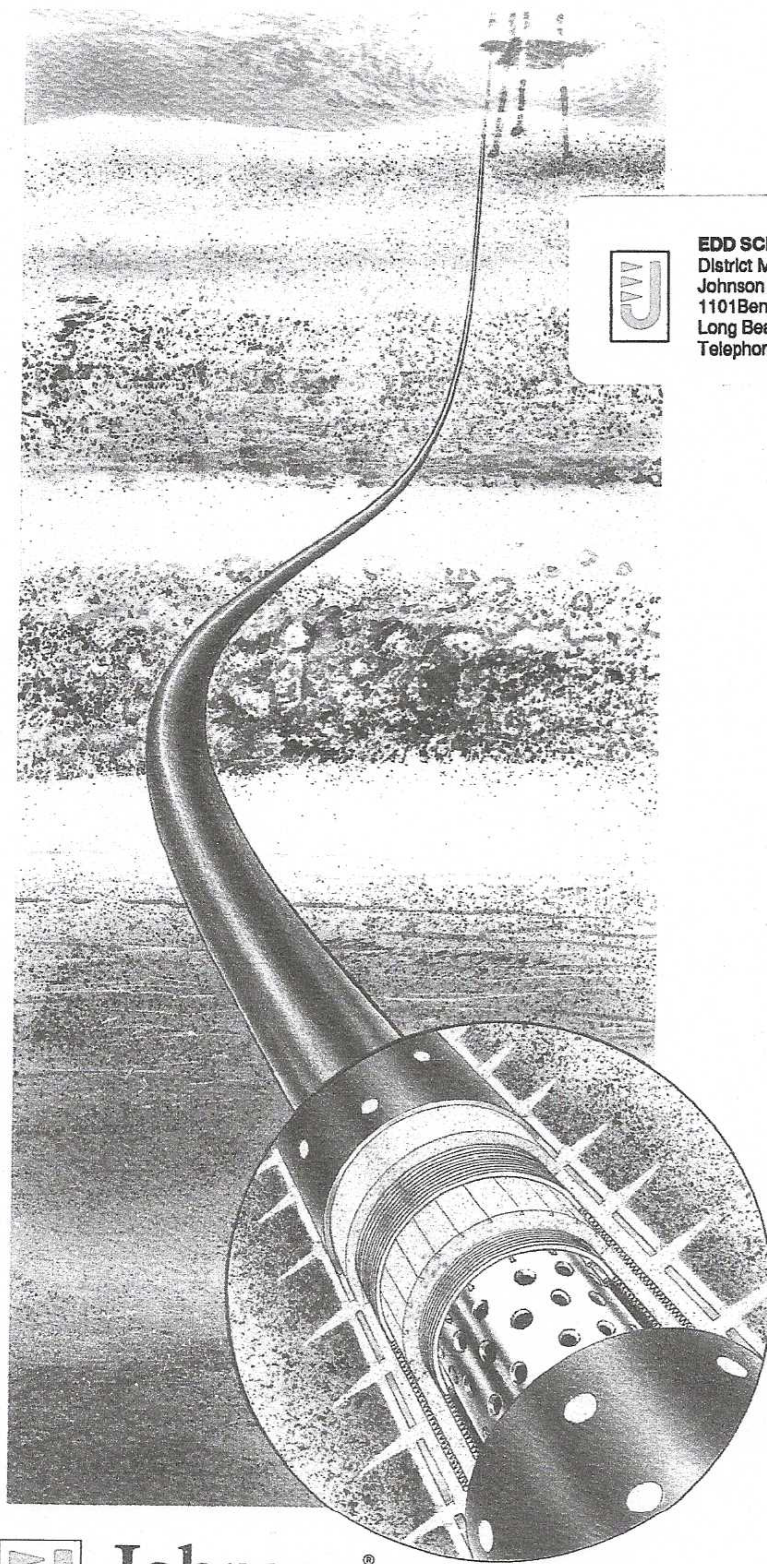




EDD SCHOFIELD
District Manager
Johnson Filtration Systems
1101 Bennett Street
Long Beach, CA 90804
Telephone: (213) 438-9999

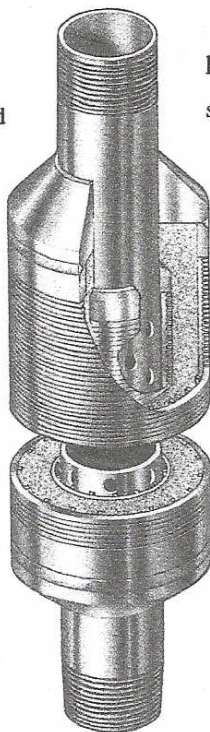


Johnson[®] Oil and Gas Well Screens

PRE-PACK™ Screens

Extra protection in hard-to-pack wells.

PRE-PACK™ screens provide an added level of safety against voids that can occur in highly deviated completions. They are also effective in completions of questionable or partially-depleted zones, and multi-zone wells with two zones that are too close together to allow for a sufficient gravel pack in the lower zone.



Each PRE-PACK screen consists of a drilled pipe base inside two concentric stainless steel screen jackets that have been packed with resieved silica sand. The outer screen is longer to guard against any possible settling.

Specify PRE-PACK screens when conventional gravel packing methods are difficult or impractical, and when restrictions on casing size and planned use of wireline tools are not key well completion parameters.

PRE-PACK™ Screen specifications

Pre-Pack Size (in.)	Outer Screen O.D. (in.)	Annulus (inches)	Base Pipe				Thread Ends	Est. Shipping Wt. (lb./ft.)
			Size (in.)	PPF (lb./ft.)	I.D. (in.)	Holes/ft. No. (Diam.)		
1½ x 4	4.00	.660	1½	2.75	1.610	84 (⅝ Φ)	1.900 NU 10RD	13.5
2⅜ x 4	4.00	.420	2⅜	4.6	1.995	96 (⅞ Φ)	2⅜ NU 10RD	16.0
2⅞ x 4½	4.50	.310	2⅞	6.4	2.441	108 (⅞ Φ)	2⅞ NU 10RD	18.0
2⅞ x 5	5.00	.670	2⅞	6.4	2.441	108 (⅞ Φ)	2⅞ NU 10RD	20.4
3½ x 5½	5.51	.620	3½	9.2	2.992	108 (½ Φ)	3½ NU 10RD	24.3
3½ x 6	6.01	.870	3½	9.2	2.992	108 (½ Φ)	3½ NU 10RD	28.4

■ Screens are 304 stainless steel or 316L stainless steel on J/K 55 or L/N 80 drilled pipe. Other sizes and materials are available upon request.

■ Standard overall lengths are 6, 10, 20 and 30 ft. Corresponding screen lengths are 4, 8, 18 and 28 ft.

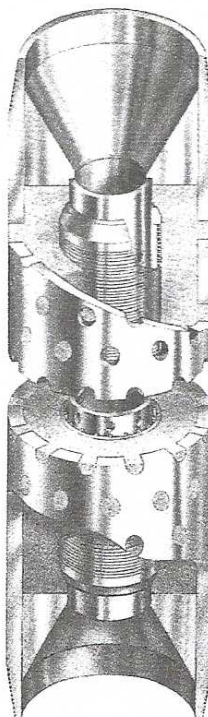
■ Available with resin coated or loose sand.

ULTRA-PACK™ Screens

The choice for open-hole completions and workovers.

Install Ultra-Pack™ screens in open-hole completions for effective sand control, without the expense and time involved in placing a gravel pack. Its baked-resin sand construction has a large open area to permit maximum fluid flow with a minimum pressure drop.

You can also run ULTRA-PACK on coil tubing or wireline to dramatically reduce costs of sand control in workovers. ULTRA-PACK is often used in difficult cased-hole completions when you need extra protection against damage to the screen surface.



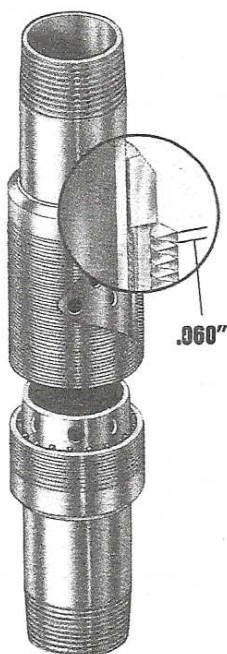
- Resieved sand, sized to industry standards, withstands bottom-hole fluids, acids, and temperatures to 650°F.
- Computer-controlled hole pattern and heavy-duty construction maintains assembly strength. Suitable for installation to 15,000 feet.
- Cone fittings at each end facilitate entry and exit of wireline and other running tools.
- Flush connections eliminate gravel bridging at section joints.

ULTRA-PACK™ Screen specifications

Ultra-Pack Size (inches)	O.D. (inches)	I.D. (inches)	Outer Casing		Connection	Approx. Wt. (lb./ft.)	Annulus (inches)	Holes per ft. No. (Diam.)	Casing Inlet Area (in. ² /ft.)
			Grade	lbs./ft.					
1 1/4 x .70	1.660	0.700	J-55	2.3	FJ	3.4	.215	72 (5/16)	5.52
2 1/8 x .70	2.063	0.700	J-55	3.25	FJ	5.1	.400	84 (5/16)	5.68
2 7/8 x 1S	2.875	1.380	J-55	6.4	FJ	11.9	.310	108 (3/8)	11.93
3 1/2 x 1 1/4	3.500	1.380	J-55	9.2	FJ	15.9	.406	108 (1/2)	21.21
4 x 2 1/8	4.000	1.751	K-55	9.5	FJ	18.6	.484	120 (1/2)	23.56
4 1/2 x 2 3/8	4.500	1.995	K-55	9.5	FJ	23.4	.596	144 (1/2)	28.27
5 x 2 7/8	5.000	2.441	K-55	15.0	FJ	29.5	.504	156 (1/2)	30.63
5 1/2 x 3 1/2	5.500	2.992	J-55	15.5	FJ	34.2	.465	168 (1/2)	32.99

- Internal screen is 304 stainless steel or 316L stainless steel, drilled pipe is J/K 55 or L/N 80 material.
- Standard lengths are 5, 10, 15 and 20 ft., except 1 1/4 and 2 1/8 sizes are 10 ft. maximum.
- Other sizes, thread forms and materials are available upon request.

SUPER-WELDTM Screens



Superior screen performance provides total sand control.

Key design features make SUPER-WELDTM screens a better choice than other pipe-base screens for excellent sand control.

Their jackets are fabricated with very narrow-faced screen wire that has been welded to a large number of vertical support rods. This creates more welds per square inch to resist installation stress which may cause slot deformation in lower-quality

screens. Boss rings provide double-welds for maximum strength and protection of the screen jacket. And a precise hole pattern in the pipe base, produced by computer-controlled multi-spindle perforating machines, maintains structural integrity and ensures flow performance.

This superior construction means SUPER-WELD screens have closer slot tolerances, more open area, and a rounder shape. Potential wash-outs—due to necked wires, over-sized slots and pin-holes often found in other screens—are eliminated. The net result is more reliable sand control.

SUPER-WELDTM and SUPER-WELD HTTM Screen specifications

Size (in.)	PIPE BASE								SCREEN JACKET				Blank Length * inches	Approx. shipping weight lbs./ft.	No. of Rods	
	Pipe OD in.	Wt. lbs./ft.	Pipe ID in.	Thread ends	Coupling OD in.	No. of holes per ft. of pipe	Diam. of each hole in.	Total area of holes Sq. in./ft.	Screen jacket OD in.	Square inches of open area per ft. of screen for gauge opening listed						
	.008 in.	.010 in.	.012 in.	.020 in.												
¾	1.050	1.48	0.742	14NPT	1.313	72	¼	3.53	1.55	6.8	8.2	9.6	14.4	6	2.7	10
¾S	1.050	1.48	0.742	14NPT	1.313	72	¼	3.53	1.37	7.5	9.1	10.5	15.4	6	2.9	10
1	1.315	2.18	0.957	NU 10RD	1.660	60	⅝ ₁₆	4.60	1.82	8.0	9.7	11.3	16.9	6	3.6	12
1S	1.315	2.18	0.957	NU 10RD	1.660	60	⅝ ₁₆	4.60	1.63	8.9	10.8	12.5	18.3	6	3.8	12
1¼	1.660	2.30	1.380	NU 10RD	2.054	72	⅝ ₁₆	5.52	2.16	9.4	11.5	13.4	20.1	6	4.5	14
1½	1.900	2.75	1.610	NU 10RD	2.200	84	⅝ ₁₆	6.44	2.40	10.5	12.7	14.9	22.3	6	5.2	16
2⅛ ₁₆	2.063	3.25	1.751	1.9EU 10RD	2.500	84	⅝ ₁₆	6.44	2.56	11.2	13.6	15.9	23.9	6	6.0	18
2⅜	2.375	4.60	1.995	NU 10RD	2.875	96	¾	10.60	2.88	12.6	15.3	17.8	26.8	6	7.6	22
2⅞	2.875	6.40	2.441	NU 10RD	3.500	108	¾	11.93	3.38	14.8	17.9	20.9	31.5	6	10.0	26
3½	3.500	9.20	2.992	NU 10RD	4.250	108	½	21.21	4.00	17.5	21.2	24.8	37.3	6	12.9	30
4	4.000	9.50	3.548	NU 8RD	4.750	120	½	23.56	4.50	19.7	23.9	27.9	41.9	6	13.9	36
4½	4.500	11.60	4.000	LTC CSG	5.000	144	½	28.27	5.00	21.8	26.5	31.0	46.5	6	14.3	40
5	5.000	15.00	4.408	LTC CSG	5.563	156	½	30.63	5.51	24.1	29.2	34.1	51.3	9	18.2	44
5½	5.500	15.50	4.950	LTC CSG	6.050	168	½	32.99	6.01	26.3	31.9	37.2	55.9	9	19.8	48
6⅝	6.625	24.00	5.921	LTC CSG	7.390	180	½	35.34	7.14	31.2	37.9	44.2	66.5	9	31.3	58
7	7.000	23.00	6.366	LTC CSG	7.656	192	½	37.70	7.52	32.9	39.9	46.6	70.0	9	30.5	62
7⅝	7.625	26.40	6.969	LTC CSG	8.500	204	½	40.06	8.15	35.6	43.3	50.5	75.9	9	34.8	72
9⅝	9.625	36.00	8.921	LTC CSG	10.625	264	½	51.84	10.17	44.4	54.0	63.0	94.7	9	46.1	82

*Length of blank pipe from top of screen to first thread.

- SUPER-WELD screens are available in a variety of materials to work in different sub-surface environments.
- 304 stainless steel screen jackets and perforated pipe in J/K 55 and L/N 80 material are stocked for fast response to urgent requirements.

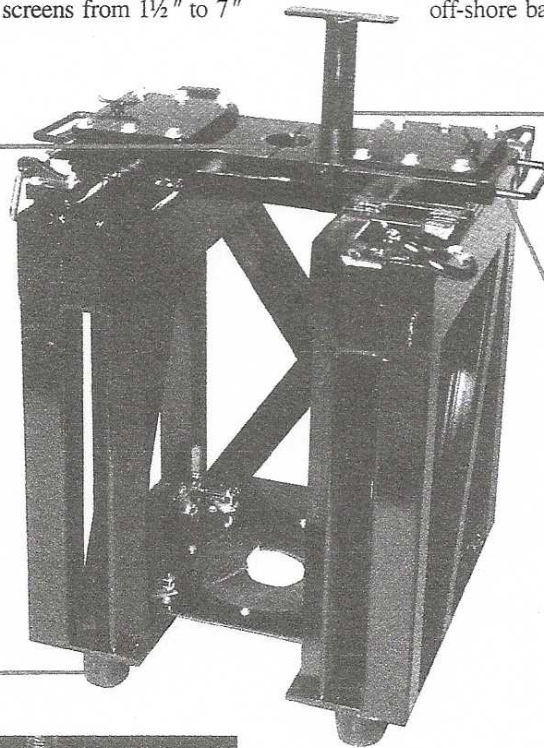
SUPER-SET™ Screen Slip System

Our screen installation tool can reduce rig time by 50-75 %, minimize screen damage, and make screen assembly easier. It installs in half the time of other assemblies, and it handles screens from 1½ " to 7 " diameters.

Units are available for rental, long-term lease or sale, if you have an extensive completion project. The system includes a set of wiper rubbers, jaws and an off-shore basket.

Special locking system virtually eliminates the risk of dropping a screen.

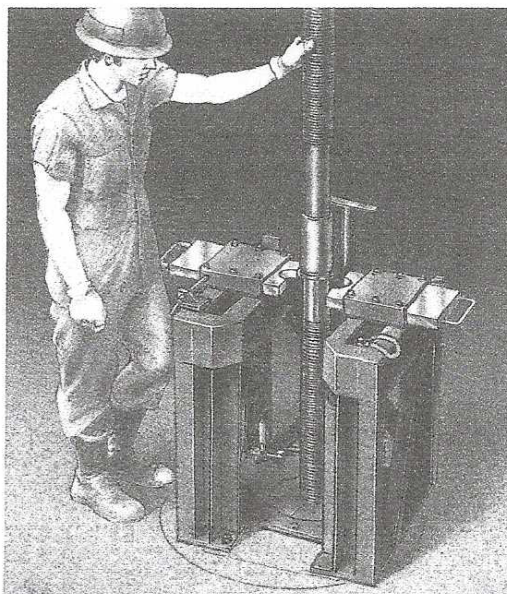
Master bushing pins engage 4-pin drive master bushings to maintain center alignment and provide maximum torque transmission. (27½" or 37½" rotary table. Call us for use with other sizes.)



Back-up post enables just one person to handle back-up wrench.

Sliding jaws help keep operator's hands away from danger.

Elevated work zone makes coupling of screen joints easier and faster.



More screen is placed in production intervals due to less blank area below the box.

Maximum Load Capacity	
Screen Diameter	Max. Load
1½" to 2¼"	11,000 lbs.
2¾" to 27/8"	13,500 lbs.
3½" to 4"	20,000 lbs.
4½" to 5"	26,000 lbs.
5½" to 7"	30,000 lbs.
Maximum Torque Capacity is 10,000 ft.-lbs.	

COMPARATIVE SIEVE DESIGNATIONS

Mesh		Sieve opening		Mesh		Sieve opening	
U.S. std.	Tyler	inches	mm	U.S. std.	Tyler	inches	mm
2½	2½	0.315	8.00 mm	25	24	0.0280	.710 mm
		0.312	7.925 mm			0.0276	.701 mm
3		0.265	6.73 mm	30		0.0232	.589 mm
	3	0.263	6.68 mm	35		0.0197	.500 mm
3½	3½	0.223	5.66 mm	40	32	0.0195	.495 mm
		0.221	5.613 mm			0.0165	.420 mm
4		0.187	4.76 mm		35	0.0164	.417 mm
	4	0.185	4.699 mm	45	42	0.0138	.351 mm
5	5	0.157	4.00 mm	50	48	0.0117	.297 mm
		0.156	3.962 mm			0.0116	.295 mm
6		0.132	3.36 mm			0.0098	.250 mm
	6	0.131	3.327 mm	60	60	0.0097	.246 mm
7	7	0.111	2.83 mm	70	65	0.0083	.210 mm
		0.110	2.794 mm			0.0082	.208 mm
8		0.0937	2.38 mm			0.0070	.177 mm
	8	0.093	2.362 mm	80	80	0.0069	.175 mm
10	9	0.0787	2.00 mm	100	100	0.0059	.149 mm
		0.078	1.981 mm			0.0058	.147 mm
12		0.066	1.681 mm		115	0.0049	.124 mm
	10	0.065	1.651 mm	140	150	0.0041	.104 mm
14	12	0.0555	1.41 mm	170	170	0.0035	.088 mm
		0.055	1.397 mm			0.0029	.074 mm
16		0.0469	1.19 mm		200	0.0024	.062 mm
	14	0.046	1.168 mm	230	250	0.0021	.053 mm
18	16	0.0394	1.00 mm	325	325	0.0017	.044 mm
		0.0390	0.991 mm			0.0015	.037 mm
20		0.0331	0.840 mm				
	20	0.0328	0.833 mm	400	400		

GRAVEL PACK DATA

Sand/gravel size, in.	U.S. mesh size	Recommended screen slot
0.006 x 0.017	40/100	.004
0.008 x 0.017	40/70	.006
0.010 x 0.017	40/60	.008
0.017 x 0.033	20/40	.012
0.023 x 0.047	16/30	.018
0.033 x 0.066	12/20	.025
0.039 x 0.066	12/18	.030
0.033 x 0.079	10/20	.025
0.047 x 0.079	10/16	.040
0.066 x 0.094	8/12	.060
0.079 x 0.132	6/10	.070

The screen slot opening is based on 100 percent retention of the gravel pack.

Resieved packs are recommended for 16 x 30 or finer gravel packs.

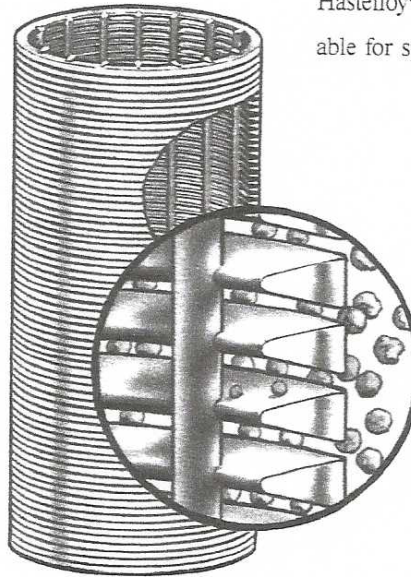
Selecting The Right Gravel Packed Screen

We recommend the following criteria when you are selecting an effective gravel packed screen:

1. Length: The screen should be long enough to cover the perforated interval. A good rule is to allow five feet of screen for overlap on the top and bottom.
2. Annular Clearance: To ensure proper gravel pack placement with minimal bridging, we recommend that the annular area, between the outside diameter of the screen and the inside diameter of the casing, be as large as possible. Common rules of thumb are 1" for conventional pipe base screens and $\frac{3}{4}$ " for prepacked screens.
3. Slot size: Current practice is to have the gravel pack be four to six times larger than the grain size of the formation. Pick a screen slot that retains 100% of the gravel pack. Resieved sands are recommended for 16x30 or finer gravel packs.
4. Length of Blank Pipe: If space is available, the blank pipe length should be at least three times the screened interval to allow for 40% or more loss in gravel volume when the gravel settles out of the gel.
5. Centralizers: Steel centralizer blades are commonly welded at 15 foot intervals on screens and blank pipe to ensure even gravel placement. Shorter intervals or specially curved centralizers are suggested for deviated wells.

6. Material selection: Screens made with 304 stainless steel can be specified in many installations. For more corrosive environments or when well temperatures exceed 180 °F, we recommend and stock 316L stainless steel. Incoloy* 825 and other exotic materials, such as

Inconel*, Carpenter 20*, and Hastelloy* C276, are also available for special applications.



J/K 55 and L/N 80

steel are standard materials for pipe bases, and other materials

are available. Coatings can also be applied.

Whenever you have a question on materials, just contact your Johnson representative.

*Inconel and Incoloy are registered trademarks of International Nickel Company. Hastelloy is a registered trademark of Cabot Metals, Inc. Carpenter 20 is a registered trademark of Cartech, Inc.

 Johnson Filtration Systems
World Leader through Talent and Technology™

U.S.A. Home Office ■ P.O. Box 64118 ■ St. Paul, Minnesota 55164 ■ Tel: 612-636-3900 ■ Fax: 612-638-3171 ■ Telex 29-7451
U.S.A. Gulf Coast ■ 220 Crip Lane ■ Dason, Louisiana 70529 ■ Tel: 318-988-1992 ■ Fax: 318-988-1997
U.S.A. West Coast ■ 1101 Bennett Street ■ Long Beach, California 90804 ■ Tel: 213-438-9999 ■ Fax: 213-438-8788
AUSTRALIA ■ 96 Bath Road, Kirrawee, N.S.W. 2232 ■ Tel: 02-521-3444 ■ Fax: 02-521-3947 ■ Telex: 25 371
FRANCE ■ Zone Industrielle, 86530 Availles-en-Chatellerault ■ Tel: 49-93-68-92 ■ Fax: 49-93-68-75 ■ Telex: 791-124
U.K. ■ Johnson House, Browells Lane ■ Feltham, Middlesex TW13 7EQ ■ Tel: 081-751 4424 ■ Fax: 081-890 1533 ■ Telex: 935479

08912 K

© 1991

Printed in U.S.A.