

Inch and Metric

Die Stock / Screw Extractor Sets

Pouce et Métrique

Porte-filière / Coffrets d'extracteurs de vis

DIE STOCKS **DIN 225**

FOR ROUND SPLIT DIES
for direct application of DIN 223 dies.

PKG QTY. 1



Steel Plain Finish

See page P66-67 for Dies DIN 223

SPAENAUR No.	SIZE mm	FOR ROUND DIE CAPACITY			Pipe	LENGTH mm
		Metric	Metric Fine	Whitworth		
877-083	16 x 5	M1 - 2.6	—	W1/16 - 3/32	—	160
877-084	20 x 5	M3 - 4	Mf3 - 4	W1/8 - 5/32	—	200
877-085	20 x 7	M4.5 - 6	Mf4.5 - 6	W3/16 - 1/4	—	200
877-086	25 x 9	M7 - 9	Mf7 - 9	W5/16	—	224
877-087	30 x 11	M10 - 11	Mf10 - 11	W3/8 - 7/16	R1/8	280
877-088	38 x 10	—	Mf12 - 14	—	G1/8 - G1/4	315
877-089	38 x 14	M12 - 14	—	W1/2 - 9/16	R1/4	315
877-090	45 x 14	—	Mf16 - 20	—	G3/8 - G1/2, RC3/8	450
877-091	45 x 18	M16 - 20	—	W5/8 - 13/16	RC1/2	450
877-092	55 x 16	—	Mf22 - 24	—	G5/8, 3/4	560
877-093	55 x 22	M22 - 24	—	W7/8	RC3/4	450
877-094	65 x 18	—	Mf26 - 35	—	G7/8, 1	630
877-095	65 x 25	M27 - 36	—	W1-1/8 - 1-3/8	RC1	630
877-096	75 x 30	M39 - 42	—	W1-1/2 - 1-5/8	—	800
877-097	90 x 36	M45 - 52	—	W1-3/4 - 2	—	900

DIE STOCKS FOR ROUND SPLIT DIES

Will fit Metric and Inch Dies

Steel Plain Finish

SPAENAUR No.	FOR ROUND DIE CAPACITY		LENGTH mm
	inch	mm	
877-098	1" x 3/8"	25.4 x 9.5	224
877-099	1-1/2" x 1/2"	38.1 x 12.7	325
877-100	2" x 5/8"	50.8 x 15.9	470



PKG QTY. 1

SCREW EXTRACTORS with Left Hand Spiral Thread

Steel, Plain Finish

PKG QTY. 1

SPAENAUR No.	NO.	SIZE mm	LENGTH mm	DRILLS mm	FOR SCREWS	
					Metric	Inch
877-217	1	1.4 - 3.6	50	1.8	M3 - 6	1/8 - 1/4"
877-218	2	2.1 - 4.9	57	2.6	M6 - 8	1/4 - 5/16"
877-219	3	3.1 - 6.5	64	3.7	M8 - 11	5/16 - 7/16"
877-220	4	4.8 - 8.8	71	5.5	M11 - 14	7/16 - 9/16"
877-221	5	6.2 - 11	78	7	M14 - 18	9/16 - 3/4"
877-481	6	9.4 - 15	85	10.3	M18 - 24	3/4 - 1"
877-222	7	12.7 - 19	92	13.7	M24 - 33	1 - 1-3/8"
877-223	8	17.5 - 24	100	18.6	M33 - 45	1-3/8 - 1-3/4"

SCREW EXTRACTORS SETS

With Left Hand Spiral Thread

PKG QTY. 1

Steel, Plain Finish



SPAENAUR No.	SET No.	CONTENTS OF SET	(See above chart for size details)
877-224	1	877-217, 877-218, 877-219, 877-220, 877-221	
877-225	2	877-217, 877-218, 877-219, 877-220, 877-221, 877-481	
877-226	3	877-217, 877-218, 877-219, 877-220, 877-221, 877-481, 877-222, 877-223	

CATALOG 14

SPAENAUR

Bolt Extractors / Drill Out Sets

Extracteurs de boulons / Jeux de perceage



Inch and Metric
Pouce et Métrique



THE DRILL-OUT® POWER EXTRACTOR

The Drill-Out® Power Extractor is excellent for removing broken bolts and studs without damaging the threads in the hole. The drill body is manufactured using the finest quality M-2 Hi-Speed Tool Steel (Rc 64). The collet is produced from H-13 Hot Work Die

Individual Drill-Out® Power Extractors	
SPAENAUR No.	To remove broken bolt or stud
876-860	1/4" or 6 mm
876-861	5/16" or 8 mm
876-862	3/8" or 10 mm
876-863	1/2" or 12 mm

Steel (Rc 54), using the finest steel of its type. All Drill-Out® Power Extractors are made with a precision ground 130° left hand cutting self-centering point, and are heat treated for toughness.

Drill-Out® Set

876-864

Contains all four extractor sizes.

Handsomely encased in a black polyethylene case making it ideally compact for storage and transportation.



PKG QTY. 1

WARNING ALWAYS USE PROTECTIVE EYEWEAR

1. Obtain a variable speed power drill and set it for reverse.
2. Measure the diameter of the broken bolt to determine the size Drill-Out® required. For example, if the broken bolt is 1/4" or 6 mm use the 1/4" 6 mm Drill-Out®. We recommend 3/8" variable speed drill. Impact and high horse-power drills may cause damage to Drill-Out®. See chart Figure 1A below.
3. Attach only the hex end of the Drill-Out® securely into the drill chuck. Thread collet back against the drill chuck. See Figure 2.
4. Make sure drill is set in reverse.
5. Place the tip of the Drill-Out® on the centre of the broken bolt and begin drilling. Do not allow collet to move down towards tip while drilling. If so, thread collet back towards chuck.
6. With the hole started, stop and observe making absolutely sure that you are at the centre of the broken bolt. If you are not centered, simply angle the drill toward the centre of the broken bolt and drill until the point of the drilled hole is on centre.

THE MOST IMPORTANT STEP IN EXTRACTING A BROKEN BOLT IS TO DRILL THE HOLE ON CENTRE.

7. With the hole started ON CENTRE, hold the drill parallel to the axis of the broken bolt and continue drilling.
8. Stop every 1/16" or 2 mm in depth to clean out chips and add cutting oil. Verify each time that you are drilling on centre and straight.
9. Stop drilling just before you reach the front of the collet. DO NOT let collet touch the end of the bolt. See Figure 2.

10. Clean out chips from hole and use penetrating oil to help loosen the broken bolt.
11. Move collet toward the drill tip with three or four threads showing.
12. Hold electrical drill firmly with both hands.
13. Bring drill speed to suggested RPMs, see Figure 1B, and plunge into the hole while applying pressure toward the broken bolt. See Figure 3. The collet automatically engages and extracts the broken bolt. See Figure 4.
14. If drill stalls during extraction hand removal is possible. Leave Drill-Out® lodged into the bolt and remove tool from drill.
15. Look to see if you have drilled exactly on centre. If so, use a wrench on the square collet head. Turn counter clockwise to remove the broken bolt. Do not use excessive force, damage to tool may occur.
16. If you get a lot of resistance when using a wrench, you may have drilled off centre, and the Drill-Out® tool is biting on the casting or you may be in an impossible situation. If this situation arises, remove Drill-Out® tool by turning clockwise. You may have to drill and tap new threads.
17. To remove Drill-Out® from broken bolt, firmly tighten broken bolt in a vise. Using an adjustable wrench turn the collet clockwise and remove the Drill-Out®. If necessary, clamp the hex end of the Drill-Out® into the vise and back the collet off the drill head. Drill-Out® is ready to use again.

INSTRUCTIONS

1. Utiliser une perceuse a vitesse variable et inverseur de marche et la positionner de marche inversée.
2. Mesurer le diamètre du boulon brisé pour déterminer la grandeur de l'extracteur à utiliser. Exemple si le boulon est de 1/4" ou 6 mm, utiliser l'extracteur de 1/4" ou 6 mm.
3. Insérer la partie hexagonale de l'extracteur dans le mandrin. Visser le taraud extracteur vers le mandrin. Voir figure 2.
4. S'assurer que la perceuse est en marche inversée.
5. Placer la pointe de l'extracteur au centre du boulon et commencer à percer. Ne pas laisser le taraud extracteur descendre vers la pointe durant le perçage. Si cela se produit revisser le taraud extracteur vers le mandrin.
6. Lorsque vous avez commencé à percer, assurez-vous que vous êtes bien au centre du boulon. Si vous n'êtes pas centrés, pointer le foret vers le centre et percer.
7. Lorsque le trou est centré, maintenir le foret parallèle à l'axe du boulon et continuer à percer.
8. Arrêter le perçage tous les 1/16" ou 2 mm environ pour retirer les fragments et lubrifier. Vous assurer que vous êtes toujours bien centrés.
9. Arrêter le perçage avant que le taraud extracteur ne touche le boulon. Voir figure 2.
10. Nettoyer le trou percé avec du dégrappant pour relâcher le boulon.
11. Tourner le taraud extracteur vers le bout du foret de trois à quatre filetages.
12. Maintenir fermement la perceuse à deux mains.
13. Amener la vitesse de rotation de la perceuse comme indiqué à la figure 1B. Placer le foret dans le trou en appuyant sur la perceuse. Voir figure 3.
14. Le taraud extracteur s'engage et extrait automatiquement le boulon. Voir figure 4.
15. Si le foret se bloque durant l'extraction, il est possible de le dégager manuellement. Laisser l'extracteur logé dans le boulon et le retirer de la perceuse.
16. Vérifier si vous avez percé exactement au centre du boulon. Si oui utiliser une clé pour dévisser l'extracteur. Tourner dans le sens contraire des aiguilles d'une montre. Ne pas

ATTENTION TOUJOURS UTILISER DES VERRES PROTECTEURS LORSQUE

- mettre de pression excessive, vous pourriez endommager l'extracteur.
17. S'il y a beaucoup de résistance en dévissant avec une clé, vous n'avez sans doute pas bien centré le perçage et l'extracteur a pénétré dans la pièce et dans ce cas vous êtes dans une situation impossible. Si cela se produit retirer l'extracteur en tournant dans le sens des aiguilles d'une montre. Vous aurez peut-être à percer et faire un nouveau filetage.
18. Pour enlever l'extracteur du boulon, insérer le boulon dans un étai. Utiliser une clé ajustable et tourner le taraud extracteur dans le sens des aiguilles d'une montre. Si nécessaire serrer l'extrémité de l'extracteur dans un étai et enlever le taraud extracteur. L'extracteur est prêt à être utilisé.

- Helpful Hints**
- A. Centre punch before drilling to shock bolt.
 - B. Penetrating oil or heat is effective on rusted or chemically bonded bolts.
 - C. When bolt is broken below a flange, reverse collet to centre Drill-Out® as shown in Figure 4.
- Conseils Pratiques**
- A. Pointer le centre de boulon cassé avant le perçage.
 - B. Chauffer ou utiliser de l'huile à dégrapper, ceci est efficace contre la rouille et les dépôts chimiques.
 - C. Lorsque le boulon est brisé sous une bride, inverser le taraud extracteur sur l'extracteur. Voir figure 4.

Drill-Out® Size Broken Bolt Size Boulon diamètre	3/8" Variable Speed Drill Perceuse à vitesse variable 3/8" Drilling à percer	Extracting L'extracteur
1/4" or 6mm 1/4" ou 6mm	700-800 RPM	350 RPM
5/16" or 8mm 5/16" ou 8mm	650-750 RPM	470 RPM
3/8" or 10mm 3/8" ou 10mm	600-700 RPM	840 RPM
1/2" or 12mm 1/2" ou 12mm	475-575 RPM	1400 RPM

FIGURE 1A 1B

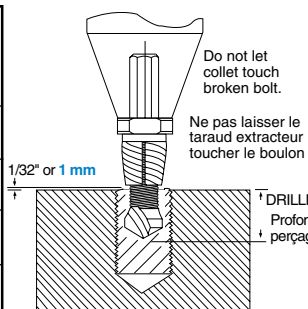


FIGURE 2 Drilling

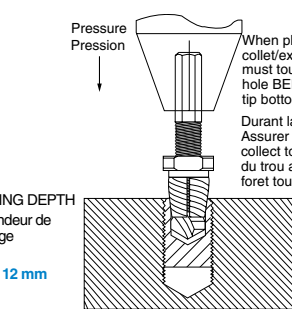


FIGURE 3 Plunging

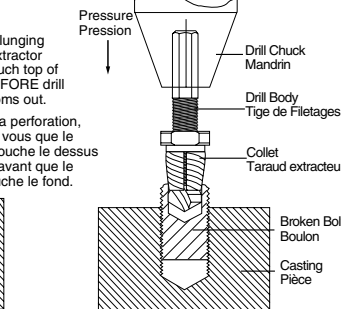


FIGURE 4 Extracting

Inch and **Metric**
Pouce et **Métrique**



Bolt Extractors / Drill Out Sets
Extracteurs de boulons / Jeux de perçage



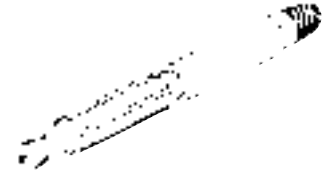
876-1607

Micro Power Extractor Set
PKG QTY. 1

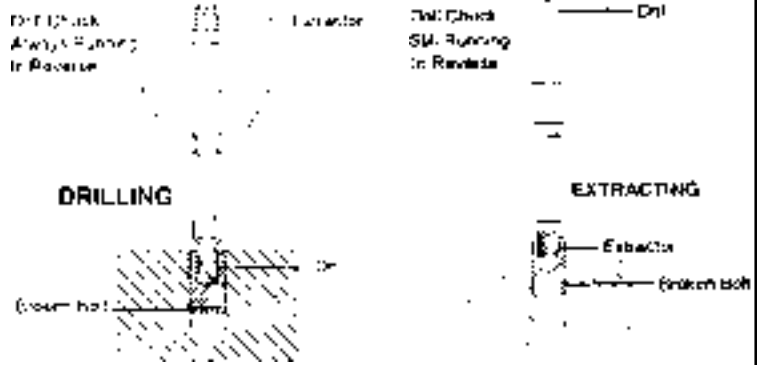
- Self Centering Drill Tip
- Short, Tough Drill Body
- Left Hand Cutting Edge
- Drill Bit and Extractor in One
- Easy, Time Saving Operation
- Drills Grade 8 (Class 10.9) Bolts

THE DRILL-OUT®
MICRO POWER EXTRACTOR

The DRILL-OUT® *Micro Power Extractor* has many of the same features as our larger extractors but its design is a bit different. Put the Micro tool into your reversible electric or battery powered drill, extractor side in, set it for reverse and drill your hole. Take the tool out, turn it around so that the drill side is inserted into the chuck and you have your extractor. Insert the extractor tip into the hole you just drilled and remove your broken screw. That's it! Fast, easy and dependable.



Individual Drill-Out® Micro Power Extractors	
SPAENAUR No.	To remove broken bolt or stud
876-1608	#5 & #6 or M3
876-1609	#8 or M4
876-1610	#10 or M5
876-1611	1/4" or M6
PKG QTY. 1	



DRILL-OUT®

7 PIECE MASTER KIT

876-1784

A new full range kit with substantial savings, compared to buying two kits or individual sizes.



PKG QTY. 1

Works on:

- most common fasteners: Grade 2 to 8, property classes 5.6 to 10.9 & stainless steel.
- Inch & Metric Sizes: 1/8 to 1/2" or **M3 to M12**.
- jagged, uneven or rough breaks; drill point eliminates walking, no centring tools are needed.
- confined work space; small design allows easy access.

DRILL-OUT® kit contains Spaenaur numbers 876-1608, 876-1609, 876-1610, 876-1611, 876-861, 876-862 and 876-863 as found at top of this page and on previous page.

Micro Sizes

1/8" to 1/2" or **M3 to M6**

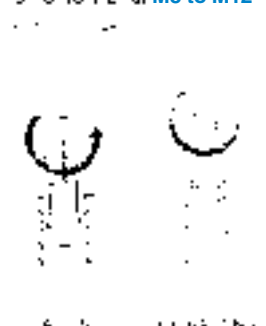


Drill Bit and Extractor in one.

1. Insert DRILL-OUT® into drill set for REVERSE.
2. Drills into broken bolt on centre.
3. Extracts using the POWER of the drill.

Regular Sizes

5/16" to 1-1/2" or **M8 to M12**



CATALOG 14 SPAENAUR

Screw / Pipe / Bolt Extractors & Sets

Inch

Vis / Tuyau / Jeux d'extracteurs/Extracteurs de boulons

Pouce

Screw and Pipe Extractors

Remove broken screws, bolts, threaded parts and pipe.



Drill a hole in broken part, insert extractor and turn to the left. Broken piece is extracted without damage to threads.

Hi-Carbon Steel, Plain Finish

SPAENAUR No.	To Remove Diameter Screw	Diameter of ScrewExtractor		Drill Size
		Shank	Point	
876-865	3/32" to 5/32"	1/8"	.060"	5/64"
876-866	5/32" to 7/32"	3/16"	.080"	7/64"
876-867	7/32" to 9/32"	1/4"	1/8"	5/32"
876-868	9/32" to 3/8" and 1/8" Pipe	5/16"	3/16"	1/4"
876-869	3/8" to 5/8" and 1/4" Pipe	7/16"	1/4"	17/64"
876-870	5/8" to 7/8" and 3/8" Pipe	5/8"	3/8"	13/32"
876-871	7/8" to 1-1/8" and 1/2" Pipe	7/8"	15/32"	17/32"
876-872	1-1/8" to 1-3/8" and 3/4" Pipe	1-1/32"	3/4"	13/16"
876-873	1-3/8" up and 1" Pipe	1-9/32"	1"	1-1/8"

Hi-Carbon Steel, Plain Finish



Screw and Pipe EXTRACTOR KIT

SPAENAUR No. **876-874**

Contains 5 Extractors in an attractive reusable pouch.

SPAENAUR No.	To Remove Diameter Screw	Diameter of ScrewExtractor		Drill Size
		Shank	Point	
876-865	3/32" to 5/32"	1/8"	.060"	5/64"
876-866	5/32" to 7/32"	3/16"	.080"	7/64"
876-867	7/32" to 9/32"	1/4"	1/8"	5/32"
876-868	9/32" to 3/8" and 1/8" Pipe	5/16"	3/16"	1/4"
876-869	3/8" to 5/8" and 1/4" Pipe	7/16"	1/4"	17/64"

SCREW/BOLT REMOVER SETS (With Left Hand Spiral Drills)

A unique combination of left hand spiral drills and bolt/screw extractors. Designed to quickly and easily remove a wide variety of broken studs. Left hand spiral drills often eliminate the need for bolt and screw extractor. Drill may loosen bolt stud with counter clockwise rotation. 135° split point drill will cut harder metals than a 118° point drill. Most broken studs are work hardened during the breaking process.



SPAENAUR No. 876-1190

4 left hand Super Premium drill bits.
 Sizes: 3/32", 1/8", 3/16" and 1/4".
 4 bolt and screw extractors.
 Sizes: 1, 2, 3 and 4.

Sets come in black metal index box with i.d. plate.

SPAENAUR No. 876-1191

5 left hand Super Premium drill bits.
 Sizes: 3/32", 1/8", 3/16", 1/4" and 5/16".
 5 bolt and screw extractors.
 Sizes 1, 2, 3, 4 and 5.

P