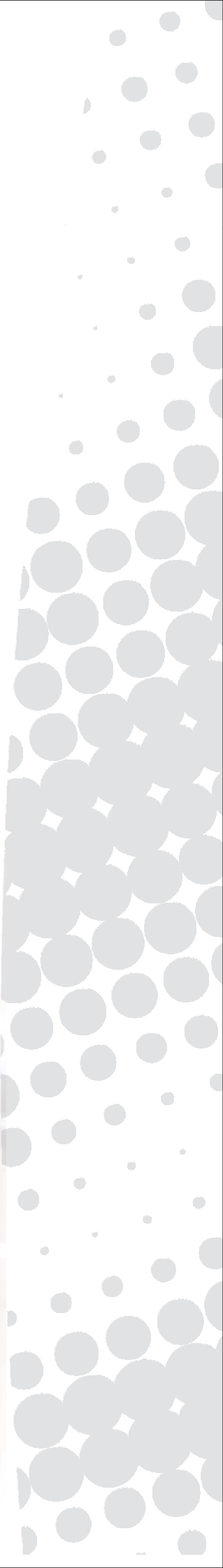
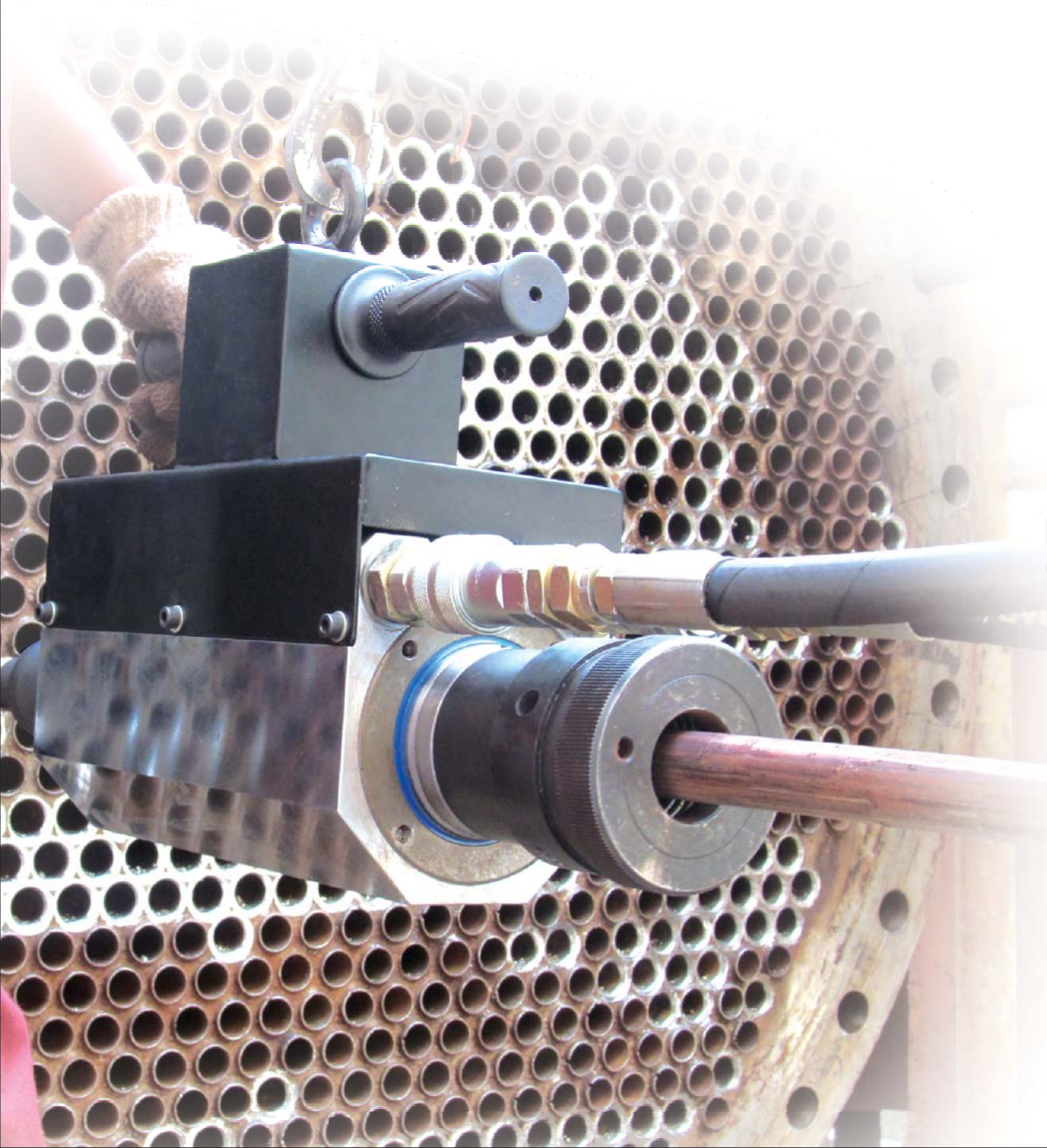




Subzero

The Tube Expander Company...

RETUBING **TOOLS**



WHAT WE OFFER

SUBZERO presents following tube pulling systems for pulling out tubes from Heat Exchanger in oil refinery, & from Condenser in power plant & from Boiler in sugar mills.

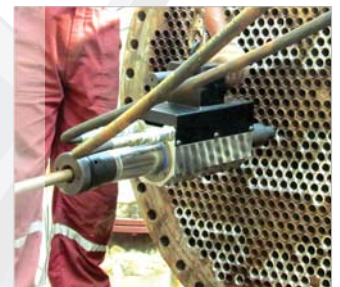
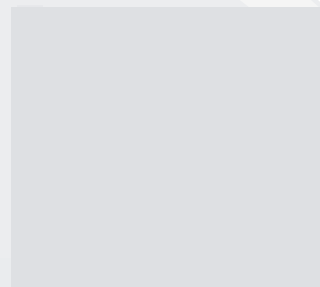
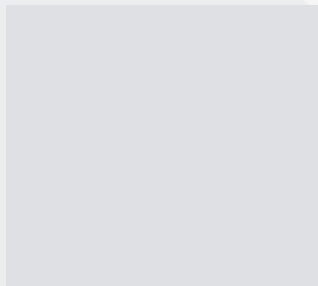
CONTINUES TUBE PULLING SYSTEM

- TUBE RUNNER – 5 (AUTO) is a continues tube pulling machine for removal of tubes from Heat Exchanger, condensers & straight tube boilers.
- Available in hydro-electric & hydro-pneumatic versions.
- Suitable for big maintenance or shutdown jobs



STUB PULLING SYSTEM

- TUBE RUNNER-3 / TUBE RUNNER-2 are only stub pulling machines for removal of cut stubs from tube sheet of U-tube & Bi-drum boilers.
- Available in hydro-electric & hydro-pneumatic versions.
- Suitable for big maintenance or shutdown jobs
- Compact Size.
- SAHP is compact portable stub pulling machine suitable for removal of stubs from heat exchanger / condenser
- Available in pneumatic version only.
- Suitable for thin tube sheet thickness from 20 to 50mm
- Suitable for small maintenance jobs.
- X-TRACTOR is compact automated stub pulling machine suitable for fast removal of stubs from heat exchanger / condenser.
- Available in electric version only.
- Suitable for thin tube sheet thickness from 20 to 50 mm
- Very fast compared to other stub pulling methods.



CONTINUOUS TUBE PULLING SYSTEMS

SUBZERO offers continuous tube pulling machine for removal of tubes from Heat Exchanger, condensers & straight tube boilers.

- Interchangeable pulling gun with same power pack.
- Pulling gun communicates with power pack via 24VDC control cable or pneumatic control cable.
- Removes tubes without damaging the tube sheet.
- Low setup time and ease of operation
- Auto switch over from low pressure high flow to high pressure - low flow on load and again back to low pressure – high flow when load is released.
- Automatic slow pulling of tube during tube sheet to tube bond breakage to minimize breakage of tubes & increase consumable life.
- Compact & ergonomic design of gun & power pack.
- Capacity to pull up to 4" tube continuously & 5" stub.
- Low maintenance cost and world wide availability of components
- Significant saving of time over conventional method of tube removal.
- Unit is portable with handle and mounted on four wheels for easy handling.
- Unit will pull tube continuously thru the gun effortlessly, needing only one man for operation.

TUBE PULLING POWER PACK SPECIFICATION

SPECIFICATION	TUBE RUNNER- 5 AUTO (Hydro-Electric)	TUBE RUNNER- 9 AUTO (Hydro-Pneumatic)
Input	3 Phase 415 +/- 10%V	Air Supply of 275 CFM @ 90 PSL
Power	3.7 K.W., 5h.P.	7.1 K.W., 9 HP
Max Working Pressure (Bar)	350	350
Weight Without Oil	220 kg.	220 kg.
Control	24 Volt DC	Pneumatic Control
Hydraulic Hose	¾" I.D.(Forward), ½" I.D.(Reverse) 5m long	¾" I.D.(Forward), ½" I.D.(Reverse) 5m long
Dimension (mm).(L X W X H)	1020 X 680 X 960	1020 X 680 X 960



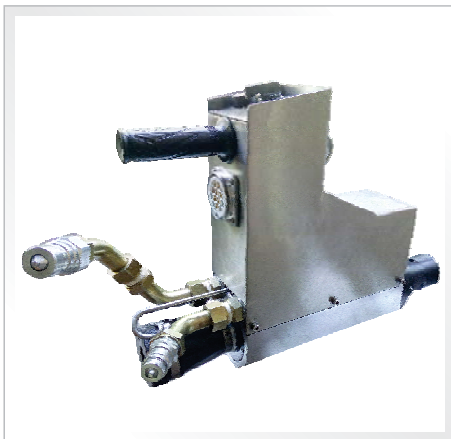
TUBE RUNNER - 5 AUTO (Hydro - Electric)



TUBE RUNNER - 9 AUTO (Hydro - Pneumatic)

TUBE PULLING GUN SPECIFICATION

SPECIFICATION	AUTO PULLER-15	AUTO PULLER-30	AUTO PULLER-45	AUTO PULLER-60
Max. Capacity (tons)	15	30	45	60
Stroke Length (mm)	150	150	150	100
Pulling Speed With TUBE RUNNER- 5 / 9 Auto	5.0	3.0	2.0	1.2
Max. Dia. Through Gun (mm / inches)	25.4 / 1 "	38.1 / 1 ½ "	76.2 / 3 "	101 / 6 4"
Weight (kg)	26	38	78 .	102
Max. Working Pressure (bar)	350	350	350	350
Dimension (mm) (L x W x H)	453 x 255 x 270	520 x 250 x 510	495 x 332 x 346.5	420 x 450 x 510



AUTO PULLER - 15



AUTO PULLER - 30



AUTO PULLER - 45

RECOMMENDED TUBE PULLING ACCESSORIES

SUBZERO recommends following accessories to aid faster removal of tubes and stubs.

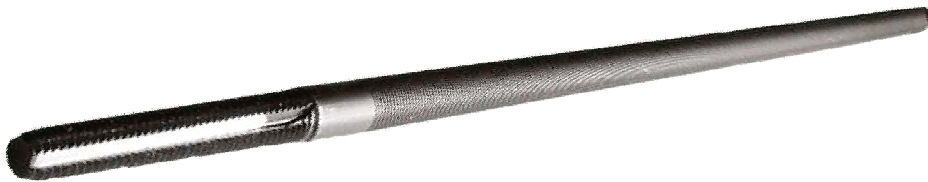
- IMPACT WRENCH - For tightening & loosening of tube pulling mandrel inside the tube ID.
- SPRING BALANCER - For load free hanging of tube pulling gun during tube pulling operation.

TUBE PULLING CONSUMABLES

ITEMS	SPECIFICATION FOR ORDERING
Tube pulling mandrel	OD & ID of tube (refer page no. 74 to 76)
Pulling Collar	OD of tube & pulling gun model (refer page no. 76)
Front Pulling jaw	OD of tube & pulling gun model (refer page no. 77)
Rear Pulling jaw	OD of tube & pulling gun model (refer page no. 77)
Pulling Accessories	(refer page no. 77)



TUBE PULLING MANDREL



TUBE OD		SUITABLE FOR TUBE ID RANGE		SQUARE A/F	MODEL	SUITABLE PULLING GUN
MM	INCHES	MM	INCHES			
3/8"	9.53	6.5-7.5	0.260-0.295	5/16"	PM-7	AUTO PULLER - 15/30
		7.5-8.5	0.295-0.335	5/16"	PM-8	
1/2"	12.70	8.5-9.5	0.335-0.375	3/8"	PM-9	
		9.5-10.5	0.375-0.415	3/8"	PM-10	
		10.5-11.5	0.415-0.455	3/8"	PM-11	
		11.5-12.5	0.455-0.595	3/8"	PM-12	
5/8"	15.88	12.5-13.5	0.495-0.535	1/2"	PM-13A	
		13.5-14.5	0.535-0.570	1/2"	PM-14A	
		14.5-15.5	0.570-0.610	1/2"	PM-15A	

TUBE OD		SUITABLE FOR TUBE ID RANGE		SQUARE A/F	MODEL	SUITABLE PULLING GUN
MM	INCHES	MM	INCHES			
3/4"	19.05	12.5-13.5	0.495-0.535	5/8"	PM-13	AUTO PULLER - 15/30
		13.5-14.5	0.535-0.570	5/8"	PM-14	
		14.5-15.5	0.570-0.610	5/8"	PM-15	
		15.5-16.5	0.610-0.650	5/8"	PM-16	
		16.5-17.5	0.650-0.690	5/8"	PM-17	
		17.5-18.5	0.690-0.730	5/8"	PM-18	
		17.5-18.5	0.690-0.730	5/8"	PM-18S	
7/8"	22.22	18.5-19.5	0.730-0.768	5/8"	PM-19S	
		19.5-20.5	0.768-0.807	5/8"	PM-20S	

TUBE PULLING MANDREL

TUBE OD		SUITABLE FOR TUBE ID RANGE		SQUARE A/F	MODEL	SUITABLE PULLING GUN
MM	INCHES	MM	INCHES			
1"	25.4	18.5-19.5	0.730-0.770	3/4"	PM-19	AUTO PULLER - 15/30
		19.5-20.5	0.770-0.810	3/4"	PM-20	
		20.5-21.5	0.810-0.845	3/4"	PM-21	
		21.5-22.5	0.845-0.885	3/4"	PM-22	
		22.5-23.5	0.885-0.925	3/4"	PM-23	
		23.5-24.5	0.925-0.965	3/4"	PM-24	

TUBE OD		SUITABLE FOR TUBE ID RANGE		SQUARE A/F	MODEL	SUITABLE PULLING GUN
MM	INCHES	MM	INCHES			
1.1/4"	31.75 5	24.5-25.5	0.965-1.005	1"	PM-25	AUTO PULLER - 30
		25.5-26.5	1.005-1.045	1"	PM-26	
		26.5-27.5	1.045-1.085	1"	PM-27	
		27.5-28.5	1.085-1.125	1"	PM-28	
		28.5-29.5	1.125-1.160	1"	PM-29	
		29.5-30.5	1.160-1.200	1"	PM-30	
		30.5-31.5	1.200-1.240	1"	PM-31	

TUBE OD		SUITABLE FOR TUBE ID RANGE		SQUARE A/F	MODEL	SUITABLE PULLING GUN
MM	INCHES	MM	INCHES			
1.1/2"	38.10	31.5-32.5	1.240-1.280	1"	PM-32	AUTO PULLER - 30
		32.5-33.5	1.280-1.320	1"	PM-33	
		33.5-34.5	1.320-1.360	1"	PM-34	
		34.5-35.5	1.360-1.400	1"	PM-35	
		35.5-36.5	1.400-1.440	1"	PM-36	
		36.5-37.5	1.440-1.475	1"	PM-37	

TUBE OD		SUITABLE FOR TUBE ID RANGE		SQUARE A/F	MODEL	SUITABLE PULLING GUN
MM	INCHES	MM	INCHES			
1.3/4"	44.4"	37.5-38.5	1.476-1.516	1"	PM-38/44	AUTO PULLER - 45
		38.5-39.5	1.516-1.555	1"	PM-39/44	
		39.5-40.5	1.555-1.594	1"	PM-40/44	
		40.5-41.5	1.594-1.634	1"	PM-41/44	
		41.5-42.5	1.634-1.673	1"	PM-42/44	
		42.5-43.5	1.673-1.713	1"	PM-43/44	

TUBE PULLING MANDREL

TUBE OD		SUITABLE FOR TUBE ID RANGE		SQUARE A/F	MODEL	SUITABLE PULLING GUN
MM	INCHES	MM	INCHES			
2"	50.8	43.5-44.5	1.713-1.752	1"	PM-44/51	AUTO PULLER - 45
		44.5-45.5	1.752-1.791	1"	PM-45/51	
		45.5-46.5	1.791-1.831	1"	PM-46/51	
		46.5-47.5	1.831-1.870	1"	PM-47/51	
		47.5-48.5	1.870-1.909	1"	PM-48/51	
		48.5-49.5	1.909-1.949	1"	PM-49/51	

TUBE OD		SUITABLE FOR TUBE ID RANGE		SQUARE A/F	MODEL	SUITABLE PULLING GUN
MM	INCHES	MM	INCHES			
2.1/4"	57.1	49.5-50.5	1.949-1.988	1.1/2"	PM-50/57	AUTO PULLER - 45
		50.5-51.5	1.988-2.028	1.1/2"	PM-51/57	
		51.5-52.5	2.028-2.067	1.1/2"	PM-52/57	

TUBE OD		SUITABLE FOR TUBE ID RANGE		SQUARE A/F	MODEL	SUITABLE PULLING GUN
MM	INCHES	MM	INCHES			
2.1/2"	63.5	53.5-54.5	2.106-2.146	1.1/2"	PM-54/63	AUTO PULLER - 45
		54.5-55.5	2.146-2.185	1.1/2"	PM-55/63	
		55.5-56.5	2.185-2.224	1.1/2"	PM-56/63	
		56.5-57.5	2.224-2.264	1.1/2"	PM-57/63	

TUBE PULLING COLLAR

Suitable for Tube OD		AUTO PULLER / STUB PULLER 15	AUTO PULLER / STUB PULLER 30	AUTO PULLER / STUB PULLER 45	AUTO PULLER / STUB PULLER 60
MM	INCHES				
9.53	3/8"	PC-11	PC-11		
12.70	1/2"	PC-14	PC-14		
15.88	5/8"	PC-18	PC-18		
19.05	3/4"	PC-21	PC-21		
22.22	7/8"	PC-25	PC-25		
25.40	1"	PC-28	PC-28	PC-45/28	
31.75	1.1/4"		PC-34	PC-45/34	
38.10	1.1/2"		PC-41	PC-45/41	
44.40	1.3/4"			PC-45/48	
50.80	2"			PC-45/56	PC-60/56
57.10	2.1/4"			PC-45/60	PC-60/60
63.5	2.1/2"			PC-45/66	PC-60/66
76.2	3"				PC-60/80
88.9	3.1/2"				PC-60/93
101.6	4"				PC-60/105



COLLAR

TUBE PULLING JAWS

TUBE OD		AUTO PULLER - 15		AUTO PULLER - 30		AUTO PULLER - 45		AUTO PULLER - 60	
MM	INCHES	FRONT	REAR	FRONT	REAR	FRONT	REAR	FRONT	REAR
9.53	3/8"	PJ-15-1F	PJ-15-1R	PJ-30-1F	PJ-30-1R				
12.70	1/2"	PJ-15-2F	PJ-15-2R	PJ-30-2F	PJ-30-2R				
15.88	5/8"	PJ-15-3F	PJ-15-3R	PJ-30-3F	PJ-30-3R				
19.05	3/4"	PJ-15-4F	PJ-15-4R	PJ-30-4F	PJ-30-4R				
22.22	7/8"	PJ-15-5F	PJ-15-5R	PJ-30-4AF	PJ-30-4AR				
25.40	1"			PJ-30-5F	PJ-30-5R	PJ-45-5F	PJ-45-5R		
31.75	1.1/4"			PJ-30-7F	PJ-30-7R	PJ-45-7F	PJ-45-7R		
38.10	1.1/2"			PJ-30-9F	PJ-30-9R	PJ-45-9F	PJ-45-9R		
44.40	1.3/4"					PJ-45-11F	PJ-45-11R		
50.80	2"					PJ-45-13F	PJ-45-13R	PJ-60-13F	PJ-60-13R
57.10	2.1/4"					PJ-45-14F	PJ-45-14R	PJ-60-14F	PJ-60-14R
63.5	2.1/2"					PJ-45-16F	PJ-45-16R	PJ-60-16F	PJ-60-16R
76.2	3"					PJ-45-17F	PJ-45-17R	PJ-60-17F	PJ-60-17R
88.9	3.1/2"							PJ-60-18F	PJ-60-18R
101.6	4"							PJ-60-19F	PJ-60-19R



FRONT JAW



REAR JAW

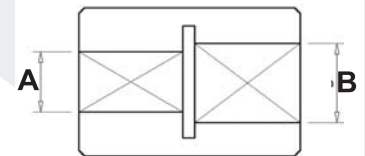
TUBE PULLING ACCESSORIES

AIR IMPACT WRENCH

MODEL	SUITABLE FOR TUBE PULLING MANDREL MODEL	SQUARE DRIVE
IMP - 1	PM - 7 to PM - 24	3/4"
IMP - 2	PM - 25 to PM - 37	1"
IMP - 2A	PM - 38 to PM - 49/51	1"
IMP - 3	PM - 50/57 to PM - 95/102	1.1/2"



PULLING SOCKET



MODEL	A	B
PS - 1	3/4	3/8
PS - 2	3/4	1/2
PS - 3	3/4	5/8
PS - 4	3/4	3/4
PS - 5	1	3/4
PS - 6	1	1
PS - 7	1.1/2	1
PS - 8	1.1/2	1.1/2

SPRING BALANCER

ABOUT	LOAD LIFTING RANGE	SUITABLE FOR PULLING GUN
SZSB - 30	20 TO 30	AUTO PULLER - 15
SZSB - 40	30 TO 40	AUTO PULLER - 30
SZSB - 85	70 TO 85	AUTO PULLER - 45
SZSB - 120	100 TO 120	AUTO PULLER - 60



SPRING BALANCER



PULLING SOCKET

STUB PULLING SYSTEMS

- SUBZERO offers stub pulling machine for removal of cut stubs from tube sheet of U-tube bundle, Heat Exchanger & Straight tube boiler.
- Suitable for big maintenance or shutdown jobs.
- Compact size.
- Available in electric or pneumatic versions.
- Interchangeable pulling gun with same power pack.
- Pulling gun communicates with power pack via 24VDC control cable.
- Removes stubs without damaging the tube sheet.
- Low setup time and ease of operation.
- Auto switch over from low pressure high flow to high pressure - low flow on load and again back to low pressure – high flow when load is released.
- Compact & ergonomic design of gun & power pack.
- Capacity to pull up to 4" stub.
- Low maintenance cost and world wide availability of components.
- Significant saving of time over conventional method of tube removal.
- Unit is portable with handle and mounted on four wheels for easy handling.
- Unit will pull stubs effortlessly, needing only one man for operation.

SPECIFICATION	TUBE RUNNER - 3
INPUT	3 Phase 415 +/- 10%V
POWER	2.2 K.W., 3 H.P, 1430 rpm
MAX WORKING PRESSURE	350 bar
WEIGHT WITHOUT OIL	120 kg
CONTROL VOLTAGE	24 Volt DC
HYDRAULIC HOSE	½" I.D x 5m long
DIAMENSION (L X W X H)	575 x 320 x 785 mm



TUBE RUNNER - 3

STUB PULLING GUN SPECIFICATION

SPECIFICATION	STUB PULLER 15	STUB PULLER 30	STUB PULLER 45	STUB PULLER 60
Max. Capacity	15	30	45	60
Stroke Length (mm)	150	150	150	150
Max. Dia. Through (inches)	1"	1 ½ "	3 "	4"
Weight (kg)	26	38	78	
Max Working Pressure (bar)	350	350	350	350
Dimension (mm) (L X W X H)	453 X 255 X 270	640 X 260 X 300	495 X 332 X 350	640 X 400 X 350



STUB PULLER 15

TUBE PULLING CONSUMABLES

ITEMS	SPECIFICATION FOR ORDERING
Short Spear	OD & ID of tube (refer page no. 3, 4 & 5)
Male Female Extension	OD of tube & pulling gun model (refer page no.)
Double Pull	OD of tube & pulling gun model (refer page no.)
Horse Shoe Lock	OD of tube & pulling gun model (refer page no.)



STUB PULLER 30

MODEL	TUBE O.D. Inch	THICKNESS Gauge	MODEL	TUBE O.D. Inch	THICKNESS Gauge
SS-0916	3/8	16	SS-1918	3/4	18
SS-0918	3/8	18	SS-1920	3/4	20
SS-0920	3/8	20	SS-2212	7/8	12
SS-0922	3/8	22	SS-2214	7/8	14
SS-1214	1/2	14	SS-2216	7/8	16
SS-1216	1/2	16	SS-2220	7/8	20
SS-1218	1/2	18	SS-2509	1	9
SS-1220	1/2	20	SS-2510	1	10
SS-1222	1/2	22	SS-2512	1	12
SS-1512	5/8	12	SS-2514	1	14
SS-1514	5/8	14	SS-2516	1	16
SS-1516	5/8	16	SS-2518	1	18
SS-1518	5/8	18	SS-2520	1	20
SS-1520	5/8	20	SS-3112	1 ¼	12
SS-1911	3/4	11	SS-3114	1 ¼	14
SS-1912	3/4	12	SS-3116	1 ¼	16
SS-1914	3/4	14	SS-3118	1 ¼	18
SS-1916	3/4	16	SS-3120	1 ¼	20



SHORT SPEAR



MALE FEMALE EXTENSION



DOUBLE PULL



HORSE SHOE LOCK

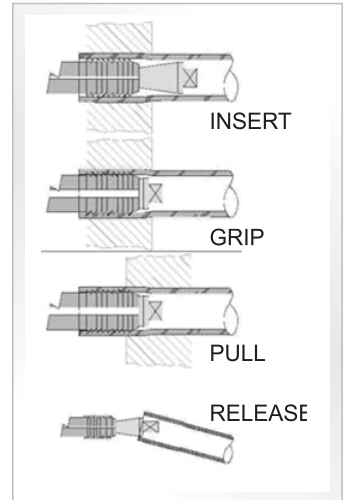
EXTRACTOR SERIES



EXTRACTOR 11



STUB PULLER POWERPACK
TUBE RUNNER 2



PULLING PROCEDURE

MODEL	CAPACITY TUBE OD	MAX PULLING FORCE	CONTROL VOLTAGE	STROKE	MAX PRESSURE	DIMENSION IN MM	WEIGHT
Extractor 11	3/4" TO 1"	11 ton	24VDC	120mm	350bar	L500 x W113 x H270	23 kg
MODEL	POWER		OIL TANK CAPACITY	MAX W/P	HYDRAULC HOSERE	DIMENSION IN MM	WEIGHT
	INPUT	CONTROL					
Tube Runner-2	3 Phase 415 +/- 10%V	24VDC	30 liters	350 bar	1/4" x 5 m	520 x 320 x 580	70 kg

EXTRACTOR SERIES STUB PULLING SYSTEM FEATURES

- Significant innovation in the field of stub removal.
- It offers fantastic combination of speed and power.

The system is designed for high speed stub removal with unique mechanism which removes the stub effortlessly. The auto grip mechanism eliminates the need of operator to tighten/loosen the gripper as done in conventional method of stub removal.

FEATURES

- It offers the fastest method of stub removal available as on date.
- Single switch operation – Gripping, pulling & ejection of tubes done in single cycle.
- Only one operator required to perform entire operation.
- Removes the stub without damaging tube sheet.
- Can be use for ferrous / non-ferrous / alloy steel tubes.
- Compact & portable.
- It is available in both electric and pneumatic version.
- Ideally suited for time bound shutdown job.



CONSUMABLES SELECTION CHART



COLLAR



JAW



TAPER MANDREL



TIE ROD

TUBE OD	TUBE SIZE		TUBE ID	EXPANSION RANGE	JAW	TAPER MANDREL	TIE ROD	COLLAR
INCHES/MM	B.W.G.	MM	MM	MM	E11J	E11TM	E11TR	PC
¾" (19.05)	12	2.77	13.4	13.5-5.5	E11-J-2A	E11TM 2A-8	E11TR 2A-8	PC-21
	13	2.41	14.2					
	14	2.11	14.8	14.5-16.5	E11-J-3			
	15	1.83	15.3	15.5-17.5	E11-J-4			
	16	1.65	15.7					
	18	1.24	16.5					
	19	1.07	16.8	17.0-19.0	E11-J-5			
	20	0.89	17.2					
	22	0.71	17.6					
7/8" (22.22)	12	2.77	16.6			16.6-18.5	E11-J-6	E11TM 2A-8
	14	2.11	18.0					
	16	1.65	18.9	18.5-20.5	E11-J-7			
	18	1.24	19.7					
	19	1.07	20.0	20.0-22.0	E11-J-8			
	20	0.89	20.4					
	22	0.71	20.8					
1" (25.4)	12	2.77	19.8	19.5-21.5	E11-J-9	E11TM 8A-11	E11TR 8A-11	PC-28
	13	2.41	20.6					
	14	2.11	21.2	21.0-23.0	E11-J-9/A			
	15	1.83	21.7					
	16	1.65	22.1	22.0-24.0	E11-J-10			

HYDRO-PNEUMATIC SERIES

- The system is designed for removal of stubs from heat exchanger or condensers.
- The tool is suitable for small maintenance application.
- Compact, light weight & portable.
- Useful in confined areas.
- Required only industrial air supply of 90psi
- No electrical supply required.
- Suitable for explosive environment.
- Quick & easy arrangement to reduce downtime.

Above system includes following

1. Pulling Cylinder with Accessories
2. Air Power Foot Operated Pump
3. Support Collar 1
4. Support Collar 2
5. Horse Shoe Lock with adaptor
6. Hyd Hose 6 ft long with QRC
7. Spring Balancer



AIR HYDROLIC STUB PULLER



PULLER CYLINDER

MODEL	TUBE OD		MAX PULLING FORCE	CONTROL VOLTAGE	STROKE	MAX PRESSURE	DIMENSION	WEIGHT
	MIN	MAX						
SAHP - 9	½"	1.1/4"	9 ton	pneumatic	150 mm	700 bar	104 X 550 mm	18.5 kg

FOOT OPERATED PUMP

MODEL	POWER		OIL TANK CAPACITY	MAX WORKING PRESSURE	HYDRAULIC HOSE	DIMENSION IN MM	WEIGHT
	INPUT	CONTROL					
AHP - 1102	Air supply 90 psi	foot paddle	1.7 liters	700 bar	1/4" x 5 m	264 x 135 x 205	7.0 kg



HAND PUMP

PULLING GUN



PULLING GUN SPECIFICATION	SP-700-20	SP-700-30	SP-700-50
Max Capacity (tons)	20	30	60
Max dia thru Gun mm (inches)	25 (1")	30(1.1/8")	50 (2")
Stroke (mm)	100	100	75 / 100
Weight (kg)	11.4	18	30 / 32

HAND PUMP MODEL	MAX W.P PRESSURE	TANK CAPACITY	WEIGHT	DIMENSIONS
SHP - 2P4 - 2 - 8 - E	700 bar	8 Liter	20 kg	500 x 279 x 355 mm

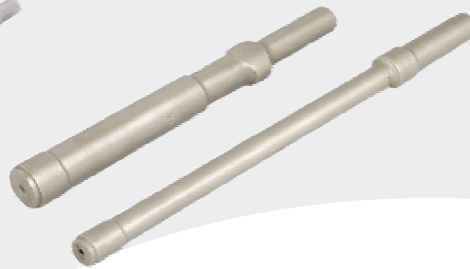
PULLING CONSUMABLES (SHORT SPEAR)

MODEL	TUBE O.D. Inch	THICKNESS Gauge	MODEL	TUBE O.D. Inch	THICKNESS Gauge
SS-0916	3/8	16	SS-2212	7/8	12
SS-0918	3/8	18	SS-2214	7/8	14
SS-0920	3/8	20	SS-2216	7/8	16
SS-0922	3/8	22	SS-2220	7/8	20
SS-1214	1/2	14	SS-1918	3/4	18
SS-1216	1/2	16	SS-1920	3/4	20
SS-1218	1/2	18	SS-2509	1	9
SS-1220	1/2	20	SS-2510	1	10
SS-1222	1/2	22	SS-2512	1	12
SS-1512	5/8	12	SS-2514	1	14
SS-1514	5/8	14	SS-2516	1	16
SS-1516	5/8	16	SS-2518	1	18
SS-1518	5/8	18	SS-2520	1	20
SS-1520	5/8	20	SS-3112	1 1/4	12
SS-1911	3/4	11	SS-3114	1 1/4	14
SS-1912	3/4	12	SS-3116	1 1/4	16
SS-1914	3/4	14	SS-3118	1 1/4	18
SS-1916	3/4	16	SS-3120	1 1/4	20



TUBE WALL REDUCER

■ HSS reamer with Morse taper to fit in standard drill machine. Front end is suitably grounded as per tube gauge to facilitate reduction of tube thickness there by weakening expansion joint of tube for its removal.



TUBE DRIFT/KNOCKOUT TOOL

■ Built from high impact steel for knocking out tube from tube sheet with pneumatic hammer. Front end machined as per tube gauge for correct alignment of tool there by facilitating removal of tube without damaging tube sheet.



COLLAPSING TOOL

■ Used for collapsing the non-ferrous tubes or ferrous tube made thinner using tube wall reduce for driving the tube out of tube sheet. Preferably to be used with pneumatic hammer.

SPECIFICATIONS

Tube O.D. inch	Model Number	MT Shank #
3/8	WR-375	1
1/2	WR-500	2
5/8	WR-625	2
3/4	WR-750	2
7/8	WR-875	2
1	WR-1000	3
1.1/4	WR-1250	3
1.1/2	WR-1500	3
1.3/4	WR-1750	3
2	WR-2000	3
2.1/2	WR-2500	4
2.3/4	WR-2750	4
3	WR-3000	4
3.1/4	WR-3250	4
3.1/2	WR-3500	4
4	WR-4000	4

Tube O.D. inch	Model Number
3/8	KT-375
1/2	KT-500
5/8	KT-625
3/4	KT-750
7/8	KT-875
1	KT-1000
1.1/4	KT-1250
1.1/2	KT-1500
1.3/4	KT-1750
2	KT-2000
2.1/2	KT-2500
2.3/4	KT-2750
3	KT-3000
3.1/4	KT-3250
3.1/2	KT-3500
4	KT-4000

Tube O.D. inch	Model Number
3/8	CT-375
1/2	CT-500
5/8	CT-625
3/4	CT-750
7/8	CT-875
1	CT-1000
1.1/4	CT-1250
1.1/2	CT-1500
1.3/4	CT-1750
2	CT-2000
2.1/2	CT-2500

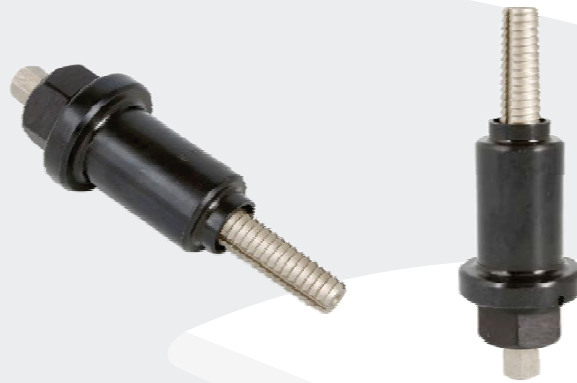


Chipping Hammer with safety retainer for use with Tube Drifts / Collapsing Tools.

MODEL CH-1 - SPECIFICATION

Blows/min	Bore	Stroke	Weight
1600	1.1/8" (28.5 mm)	3.1/4" (82.5mm)	16 lbs (7.0 kg)

MANUAL TUBE PULLER

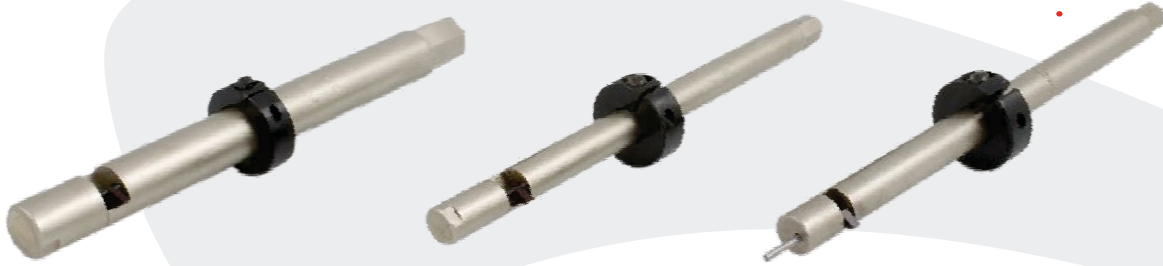


Ideally suitable for small maintenance job. Manual tube puller allows easy removal off stubs and tubes. Can be use with impact wrench in combination with drive socket.

SPECIFICATIONS

O. D.		BWG	Tube Size Wall Thickness		I. D.		Tube Puller Model Number	Spare Spear Model Number
mm	inch		mm	inch	mm	inch		
6.35	1/4	18	1.24	0.49	3.86	.152	MTP-25-18	MPS-25-18
9.52	3/8	16	1.65	0.65	6.22	.245	MTP-38-16	MPS-38-16
9.52	3/8	18	1.24	0.49	7.04	.277	MTP-38-18	MPS-38-18
9.52	3/8	20	0.88	0.35	7.75	.305	MTP-38-20	MPS-38-20
12.70	1/2	14	2.11	0.83	8.48	.334	MTP-50-14	MPS-50-14
12.70	1/2	16	1.65	0.65	9.40	.370	MTP-50-16	MPS-50-16
12.70	1/2	18	1.24	0.49	10.21	.402	MTP-50-18	MPS-50-18
12.70	1/2	20	0.88	0.35	10.92	.430	MTP-50-20	MPS-50-20
15.88	5/8	14	2.10	0.83	11.66	.459	MTP-63-14	MPS-63-14
15.88	5/8	16	1.65	0.65	12.57	.495	MTP-63-16	MPS-63-16
15.88	5/8	18	1.24	0.49	13.39	.527	MTP-63-18	MPS-63-18
15.88	5/8	20	0.88	0.35	14.10	.555	MTP-63-20	MPS-63-20
19.05	3/4	14	2.10	0.83	14.86	.585	MTP-75-14	MPS-75-14
19.05	3/4	16	1.65	0.65	15.75	.620	MTP-75-16	MPS-75-16
19.05	3/4	18	1.24	0.49	16.56	.652	MTP-75-18	MPS-75-18
19.05	3/4	20	0.88	0.35	17.27	.680	MTP-75-20	MPS-75-20
22.22	7/8	14	2.10	0.83	18.01	.709	MTP-87-14	MPS-87-14
22.22	7/8	16	1.65	0.65	18.92	.745	MTP-87-16	MPS-87-16
22.22	7/8	18	1.24	0.49	19.74	.777	MTP-87-18	MPS-87-18
22.22	7/8	20	0.88	0.35	20.45	.805	MTP-87-20	MPS-87-20
25.40	1	14	2.10	0.83	21.18	.834	MTP-100-14	MPS-100-14
25.40	1	16	1.65	0.65	22.10	.870	MTP-100-16	MPS-100-16
25.40	1	18	1.24	0.49	22.91	.902	MTP-100-18	MPS-100-18
25.40	1	20	0.88	0.35	23.62	.930	MTP-100-20	MPS-100-20

ONE REVOLUTION INTERNAL TUBE CUTTER - OTC SERIES



- These tool is designed for hand operation using ratchet or hand wrench for cutting ferrous and non-ferrous tubes. The cutter bit operates on an eccentric principle with the cutter bit in the closed position insert the cutter in to the tube to be cut. Apply wrench and turn in a clockwise direction. The tool bit will move out and pierce the tube wall. Continued turning and cut the tube off in one revolution. The cutter is then turned counterclockwise slightly to close the bit allowing the cutter to be removed from the tube.
- Standard cutter available with 6 inch reach extra long cutter available on request.

SPECIFICATIONS

Tube O. D.		Tube Gauge	Tube I. D.		Cutter Model No.	Spare Bit Model No.
mm	inch	BWG	mm	inch		
15.87	5/8"	14	11.4-11.9	.450-.470	OTC-625-14	OTC-625-SB
		15-16	12.0-12.9	.472-.510	OTC-625-16	
		17-18	12.7-13.5	.500-.531	OTC-625-18	
		19-20	13.5-14.2	.531-.560	OTC-625-20	
		22	14.0-14.7	.550-.580	OTC-625-22	
19.05	3/4	14-15	14.7-15.5	.580-.610	OTC-750-14	OTC-750-SB
		16	15.2-16.0	.600-.630	OTC-750-16	
		17-18	15.9-16.5	.625-.650	OTC-750-18	
		19-20	16.7-17.5	.660-.690	OTC-750-20	
22.22	7/8	14-15	17.8-18.5	.700-.730	OTC-875-14	OTC-875-SB
		16-17	18.8-19.5	.740-.770	OTC-875-16	
		18	19.3-20.0	.760-.790	OTC-875-18	
		19-20	19.8-20.6	.780-.810	OTC-875-20	
25.40	1"	14	20.8-21.6	.820-.850	OTC-1000-14	OTC-1000-SB
		15	21.3-22.1	.840-.870	OTC-1000-15	
		16-17	22.8-22.6	.860-.890	OTC-1000-16	
		18-20	22.6-23.1	.890-.910	OTC-1000-18	
		22	23.9-24.6	.940-.970	OTC-1000-22	
31.75	1.1/4	12	25.9-26.7	1.020-1.050	OTC-1250-12	OTC-1250-SB
		13-14	26.7-27.4	1.050-1.080	OTC-1250-14	
		15-16	27.9-28.7	1.100-1.130	OTC-1250-16	
		17-19	28.7-29.6	1.130-1.160	OTC-1250-18	
38.10	1.1/2	12-13	32.5-33.3	1.280-1.310	OTC-1500-12	OTC-1500-SB
		14-15	33.8-34.5	1.330-1.360	OTC-1500-14	
		16-17	34.5-35.3	1.360-1.390	OTC-1500-16	
		18-19	35.3-36.1	1.390-1.420	OTC-1500-18	
50.80	2	12-13	45.0-46.0	1.770-1.810	OTC-2000-12	OTC-2000-SB
		14-15	46.2-47.2	1.820-1.860	OTC-2000-14	
		16-17	47.2-48.2	1.860-1.900	OTC-2000-16	
		18-19	48.0-49.0	1.890-1.930	OTC-2000-18	
63.50	2.1/2	12-13	57.6-58.6	2.270-2.310	OTC-2500-12	OTC-2500-SB
		14-15	58.9-60.0	2.320-2.360	OTC-2500-14	
		16-17	60.0-61.0	2.360-2.400	OTC-2500-16	
		18-19	60.7-61.7	2.390-2.430	OTC-2500-18	

PUSH TYPE INTERNAL TUBE CUTTER - ATP SERIES



TOOL BIT

SUBZERO make ATP series tube cutters are designed to cut walls of tubes internally.

Features:-

- 1) Quick method of cutting ferrous or non-ferrous tubes.
- 2) Tool can be used with standard Electric or Pneumatic drive.
- 3) Two piece body and mandrel construction allow for quick and easy tool replacement.

Operation :-

- 1) Connect the tool to drive.
- 2) Insert the tool in to the tube.
- 3) Start the drive & apply inward pressure.
- 4) Tube will cut in few seconds.

SPECIFICATIONS

Tube O.D.	Tube Gauge (BWD)	Tube Cutter Model No. (Std. Reach)	Spare Cutting Bit Model No.	Size
5/8"	14-22	ATP-625	ATP-625-SB	3/8"
3/4"	14-22	ATP-750	ATP-750-SB	
7/8"	14-22	ATP-875	ATP-875-SB	
1"	12-22	ATP-1000	ATP-1000-SB	1/2"
1.1/4"	12-22	ATP-1250	ATP-1250-SB	
1.1/2"	12-22	ATP-1500	ATP-1500-SB	

Standard adjustable reach is 4"(101.6mm) and they are available in optional increments of 2"(50.8mm). "A" reach = 6"(152.4mm). "B" reach = 8"(203.2mm). "C" reach = 10"(254.0mm).

Recommended Drive

Model	Tube Size	Chuck Size	Weight (Kg)
Drive - 3	5/8" - 1"	3/8"	8.5
Drive - 5	1.1/4" - 1.1/2"	1/2"	7.5

INTERNAL TUBE CUTTER - PR68 SERISE



- PR-68 tube cutters are ideal for cutting thick walled boiler tubes.
- The Internal Tube Cutter PR-68 is driven via the square in a clockwise direction using either an electric, pneumatic or hydraulic driving machine.
- cutters are available in standard reach of 4" (100mm). Additional reaches in increments of 4" are available up to 16" (400mm).

SPECIFICATIONS

Size	Tools Model Number	Spare Bit Model Number	Tube I.D. Range		Max. Tube O.D.		Body Diameter		Drive Square Male
			mm	inch	mm	inch	mm	inch	
195	0681951	1681951	20-25	.787-.984	34	1.339	19.5	.768	1/2"
245	0682451	1682451	25-30	.984-1.181	38	1.496	24.5	.965	
290	0682901	-	30-35	1.181-1.378	43	1.693	29	1.142	
330	0683301	1682901	35-40	1.378-1.575	48	1.890	33	1.299	
380	0683801	-	40-50	1.575-1.969	58	2.126	38	1.496	
480	0684801	-	50-60	1.969-2.362	68	2.677	48	1.890	
530	0685301	1684801	55-65	2.165-2.559	73	2.874	53	2.087	3/4"
630	0686301	-	65-75	2.559-2.953	83	3.268	63	2.480	
730	0687301	-	75-85	2.953-3.346	93	3.661	73	2.874	
830	0688301	1687301	85-95	3.346-3.740	103	4.055	83	3.268	
930	0689301	-	95-105	3.740-4.134	113	4.449	93	3.661	

