



Motion Control System (MCS)

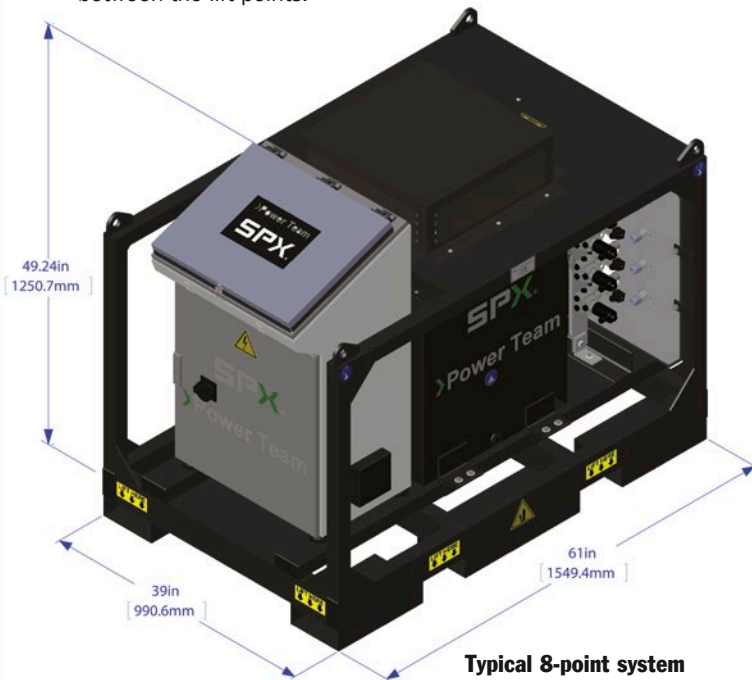
Power Team® Synchronized Lifting and Lowering System



MCS-PE554-8 shown.

POWER TEAM® SYNCHRONIZED LIFTING AND LOWERING SYSTEM

The Power Team® Motion Control System provides position control of a load in motion with high precision through a combination of accurate measurements, digital processing and sophisticated hydraulics. The PLC-controlled system is a combination of digital actuation and digital control providing significant advantages such as time savings, repeatability and extremely low internal stress in the moving object. Synchronized lifting reduces the risk of bending, twisting or tilting due to uneven weight distribution or load-shifts between the lift points.



THE SYSTEM CONSISTS OF:

1. PLC controller, pump, and oil reservoir.
2. Displacement sensors to monitor the position of the load.
3. Electrically controlled valves to control the distribution of oil into the hydraulic circuits.
4. Pressure sensors to monitor hydraulic pressures in each hydraulic circuit.

FEATURES:

- Load Capacity: only limited by the choice of cylinders (use with single or double acting cylinders).
- Intuitive graphic, touch screen control.
- Basic systems start at 8 jacking points, also available 16 or 24 points.
- Safety features include: full stop due to power failure, sensor failure, pressure overload, tolerance error, uncontrolled load movement, etc.
- Displayed information includes:
 - Startup diagnostics.
 - Position of lift points relative to starting position.
 - Pressure and load in kN at each lift point.
 - Status of each cylinder.
 - Status of alarms.
- Lifting / lowering accuracy of +/- 1 mm.
- Operating Pressure (up to) 700 bar.
- Standard system has a 151 liter tank.
- Standard system has a PE554 pump unit.
- Suitable for single acting and double acting cylinders.
- Suitable for standard cylinders and telescopic cylinders.

Ordering info: Please contact Power Team for technical support and optimal configuration of your system



Torque Wrench

HIGH CYCLE

MAX TORQUE 71816 Nm

700 bar

Heavy duty simple-to-use. Accuracy and speed under load. Breaking nuts loose and torquing.

TWHC HIGH CYCLE TORQUE WRENCH

The TWHC Torque Wrenches are designed with the following:

- Designed for high cycle life: 2 to 3x more than existing technology
- Increased reliability: simple drive assembly means less downtime
- Corrosion resistant material used for use in harsh environments
- Compact nose radius allows the tool to fit in tighter, hard-to-reach spaces
- Low weight, high strength design
- Fast operation, long stroke and optimum flow
- Multi-direction high flow swivel manifold
- Push button square drive reversal and reaction arm positioning
- Push-button release of square drive & reaction arm for all models except TWHC50.
- Fully enclosed drive mechanism for operator safety
- Swivel manifold internal relief valve prevents retract side over pressurization
- Fine tooth pawl prevents tool "lockon"





Torque Wrench

LOW CLEARANCE

MAX TORQUE 39024 Nm

700 bar

LOW CLEARANCE TORQUE WRENCHES

The TWLC Wrench was designed for the most inaccessible bolting areas found in industry. Its long neck, short height and small radius have all added to its great success

- Low Weight, High Strength Design
- Superior Torsional Strength
- Fast Operation Cycle
- Fine Tooth Pawl
- Floating Piston Design
- Auto-Connect Drive Piston
- Compact Frame Size
- Rigid Steel Body Construction
- Internal SwivelManifold Relief
- Built-in Reaction Pad
- Small Nose Radius
- Tool Free Link Change
- Corrosion Resistant Finish
- Multi-Axis High Flow Swivel Manifold
- Simple Design
- Consistent Torque Output
- Marathon Lifetime Warranty

The lightweight, heavy-duty tool features a long neck, short height, and small radius for inaccessible bolting areas found in industry.





**VANGUARD® ELECTRIC HYDRAULIC
TORQUE WRENCH PUMPS**

- Two-speed general duty pump
- External adjustable pressure regulator
- Retract side internal relief valve protects tool
- Hand remote
- Use for double or single acting tools

Electric Pump
HYDRAULIC TORQUE WRENCH PUMP

PE30 Series
5 l/min Max Flow
700 bar



CAUTION: This system should not be used for lifting applications.

HYDRAULIC TOOLS

Pump Model	Oil Delivery	Oil Reservoir (l)	Usable Oil (l)	Overall Width (mm)	Overall Length (mm)	Overall Height (mm)	Pump Weight w/Oil (kg)
PE30TWP-E110*	5 l/min. at 7 bar	4,75	4,5	356	331	458	30,9
PE30TWP-E220*	0,5 l/min. at 700 bar	4,75	4,5	356	331	458	33

	Electric Motor	Electrical Data	Electrical Control
PE30TWP	4,000 rpm		24 Volt remote control with 3 m cord
PE30TWP-E110*	0,75 kW, 115V/50Hz, 13 A		
PE30TWP-E220*	0,75 KW220V/50Hz, 7 A		

*CE Approved - designed for 50 Hz applications





Electric Pump

HYDRAULIC TORQUE WRENCH PUMP

PE55 Series
11,5 l/min MAX FLOW

700 bar

HYDRAULIC TOOLS



VANGUARD® ELECTRIC HYDRAULIC TORQUE WRENCH PUMPS

- Two-speed high performance pump
- External adjustable pressure regulator
- Retract side internal relief valve protects tool
- Hand remote
- Use for double or single acting tools
- Four-tool manifold (-4 model only) allows use of up to four tools simultaneously

CAUTION: This system should not be used for lifting applications.

Pump Model	Oil Delivery (l/min)	Oil Reservoir Usable Oil (l)	Overall Width (mm)	Overall Length (mm)	Overall Height (mm)	Pump Weight w/Oil (kg)
PE55TWP	11,5 at 7 bar	9,5	435	241	460	34
PE55TWP-E110*	0,9 at 700 bar					
PE55TWP-E220*						
PE55TWP4	11,5 at 7 bar	9,5	470	241	486	35,4
PE55TWP4-E110*						
PE55TWP4-E220*	0,9 at 700 bar					

	Electrical Data	
	Electric Motor	Electrical Control
PE55TWP	0,84 KW, 12000 rpm	Remote control with 3m cord
PE55TWP-E110*	115V, 25 amps	
PE55TWP-E220*	220V/50Hz, 13 amps	

* CE Approved-designed for 50Hz. applications.



AIR HYDRAULIC TORQUE WRENCH PUMP

- Use where air is the preferred source of power
- Powerful 2,2 Kw motor starts under load
- External adjustable pressure regulator
- Retract side internal relief valve protects tool
- Use for double or single acting tools
- Usable in hazardous areas:
per ATEX II, 2 GDC T5

Air Pump HYDRAULIC TORQUE WRENCH

RWP55 SERIES
Max. flow 7,6 l/min
700 bar



CAUTION: This system should not be used for lifting applications.

HYDRAULIC TOOLS

Pump Model	Oil Delivery (l/min)	Oil Reservoir (l)	Usable Oil (l)	Overall Width (mm)	Overall Length (mm)	Overall Height (mm)	Pump Weight w/Oil (kg)
RWP55	7,6 l/min at 7 bar 0,9 l/min at 700 bar	9,5	8,4	450	280	483	44
RWP55-4 (4-tool manifold)	7,6 l/min at 7 bar 0,9 l/min at 700 bar	9,5	8,4	450	280	483	44

Air Motor	Motor Data	Air Control
2,25 KW 1,4 m ³ / min @ 6 bar		Pneumatic remote control with 3,6 m cord





Nut Splitters

HYDRAULIC

15 & 25 Ton Capacity

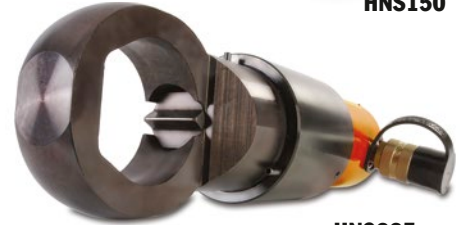
HYDRAULIC NUT SPLITTERS – 15- & 25-TON CAPACITY

- “Dial-in” feature on HNS150 makes adjustment of splitter simple, without the worry of damaging the bolt
- Specially designed “tool steel” cutter blade penetrates the nut to the precise point where it cracks, stopping short of the bolt threads
- Nut splitter features a dramatically improved cutter blade with an 800% greater resistance to chipping and breaking over previous models

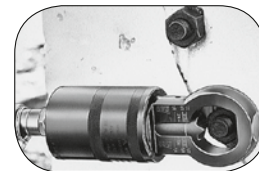
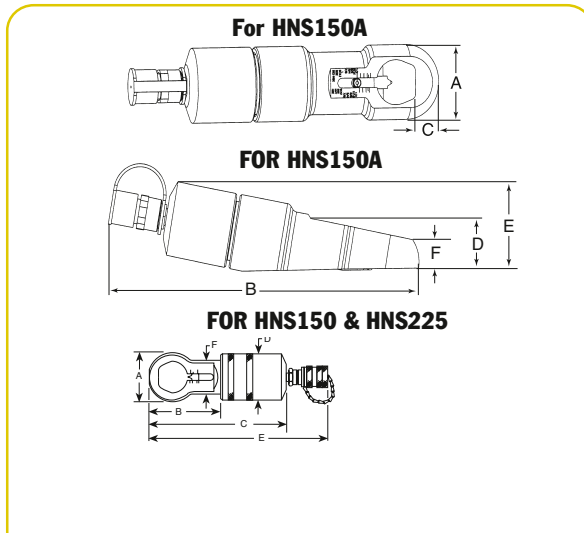
- All models feature a rugged one-piece cutting frame coupled to a heavy-duty hydraulic cylinder
- Compact size allows you to use it in confined areas where it will deliver enough force to split the toughest “fused” or rusted-on grade 2H nuts
- Simply split nut on one side, spin nut splitter 1/2 turn and make second cut on opposite side; nut separates into halves for easy removal



HNS150



HNS225



Align mark on cutter blade with scale.

Tool Model	FOR HNS150 & HNS225						HEAD THICKNESS (mm)	REPLACEMENT BLADE	TOOL WEIGHT (kg)
	A	B	C	D	E	F			
HNS150	73	86	200	70	264	53	25,4	308840	3,7
HNS150A	77	361	27	54	94	30	25,4	351985	7,2
HNS225	108	153	366	99	C	82	38,1	308022	13,2

CAPACITIES

Tool Model	5 (2 or A)	Nut Grade 9 (5 or B)	10 (8 or C)	12 (2 or H)
HNS150	1/2 - 1-1/2" (12,7-38,1mm) hex	1/2 - 1-1/2" (12,7-38,1mm) hex	1/2 - 1-5/16" (12,7-33mm) hex	1/2 - 1-1/8" (12,7-29mm) hex
HNS150A	1/2 - 1-1/2" (12,7-36mm) hex	1/2 - 1-1/2" (12,7-36mm) hex	1/2 - 1-5/16" (12,7-33mm) hex	1/2 - 1-1/8" (12,7-29mm) hex
HNS225	1-1/8 - 2-1/4" (29-57mm) hex	1-1/8 - 2-1/4" (54-57mm) hex	1-1/8 - 2-1/8" (29-55 mm) hex	1-1/8 - 1-11/16" (29-43mm) hex

HYDRAULIC TOOLS



Pipe Flange

HYDRAULIC SPREADERS

5 & 10 Ton



HFS3A

- You'll never again have to resort to "hammer and chisel" methods that waste time and effort. Flange spreaders should be used in pairs to provide even spreading force.
- Standard 60° wedge is suitable for most flanges; 30° "thin" and 60° "blunt" wedges are optional.
- The HFS3A is designed for applications where total thickness of flanges and max. spread gap is 76,2 mm or less and flange bolts are a min. of 17,5 mm dia.
- Use HFS6A if total thickness of flanges and max. spread gap is 152,4 mm or less, and flange bolts are a min. of 20,7 mm dia.

HYDRAULIC TOOLS



Capacity (tons)	Order Number	Standard Wedge Type	Optional Wedges		Min. Flange Opening (mm)			Max. Flange Opening (mm)			Combined Flange Opening (mm)	Max. Pin Dia. (mm)	Weight (kg)
			30° Thin	60° Blunt	60° Std.	60° Blunt	30°	60° Std.	60° Blunt	30°			
5	HFS3A	60° Sharp	350823	350822	1,6	25,4	1,6	38,1	38,1	18,3	76,2	17,4	4,1
10	HFS6A	60° Sharp	350549	350550	1,6	38,1	1,6	50,8	50,8	24,6	152,4	20,6	8,2





Spreaders

HYDRAULIC

1-1/2 Ton

It's a hydraulic pry bar!

HYDRAULIC TOOLS



HS2000
(Forged Steel)



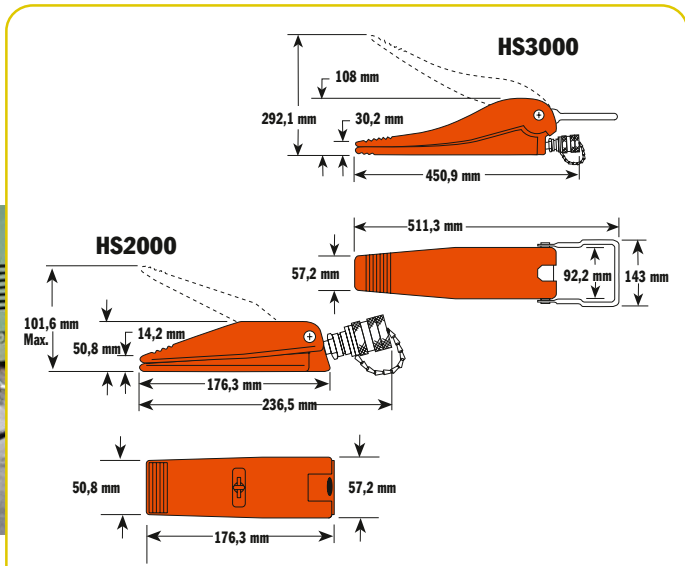
HS3000
(High Grade Ductile Iron)

Tested to conform to ASME B30.1 standard

- Use to lift machines or as a clamp; spread concrete forms or rebar or perform straightening jobs.
- Conforms to ASME B30.1 standard.
- High strength alloy steel forged upper and lower jaws on HS2000.
- Jaws are spring-return; retract automatically when pressure is released.

No. HS2000 – 1-ton capacity spreader. Full 908 kg capacity at 700 bar with 102mm spread. Can be “dead-ended” at

102mm spread under full load. Needs only 14,2mm clearance to engage jaws.
No. HS3000 – 1-1/2-ton capacity spreader. Full 1.362 kg capacity at 700 bar with 292 mm spread. Greater than competitive units. Needs only 30,2 mm clearance to engage jaws. Can be “dead-ended” at 292 mm spread at full load.



Capacity (tons)	Max. Spread (mm)	Order Number	Dimensions (mm)									Oil Capacity (cm ³)	Min. Clearance Required (mm)	Weight (kg)
			A	B	C	D	E	F	G	H	I			
1	101,6	HS2000	101,6	50,4	14,3	252,52	236,5	50,8	176	57	—	4	14,2	2,2
1 1/2	292	HS3000	292	108	30,2	—	451	57,2	511	143	92	20	30,2	10

HS2000 SPECIFICATIONS		HS3000 SPECIFICATIONS	
Maximum rated capacity	.....1 ton at 700 bar	Maximum rated capacity	..... 1-1/2-ton at 700 bar
Maximum spread	..... 101,6 mm	Maximum spread	..... 292 mm
Minimum clearance required	..... 14,2 mm	Minimum clearance required	.....30,2 mm
Cm ³ oil required	..... 4	Cm ³ oil required	..... 20



"C" CLAMPS

5, 10 & 25 TONS

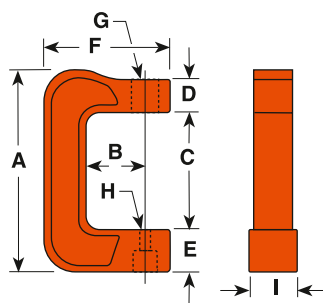


CC10

- In 5, 10 and 25 ton capacities. For use with Power Team general purpose single-acting series cylinders of comparable capacity.
- For clamping, pressing and bending. Ideal for welding and metal fabrication for fit-up of sheet or plate steel.
- Clamps withstand full rated capacity of the cylinders for which they are intended.
- To minimize the effects of off-center loading, the CC5, CC10 and CC25 should be used with the optional 350144 and 350145 swivel caps.

C-Clamps HYDRAULIC

Accessories

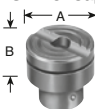


Items pictured at left are:
CC10
C104C
201923

Cap. (tons)	Order Number (C-Clamp only)	Use With Cyl. No.	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	F (mm)	G (in.)	H (mm)	I (mm)	Weight (kg)
5	CC5	C51C-C57C	314	95,3	186	50,8	63,5	197	1 1/2"-16 UN	22,2	76,2	11,3
10	CC10	C101C-C1010C	403	152,4	240	50,8	85,8	273	2 1/4"-14 UNS	22,2	88,9	20,9
25	CC25	C251C-C2514C	533	152,4	319	76,2	114,3	313	3 5/16"-12 UNS	36,5	117,5	41,3

OPTIONAL ACCESSORIES FOR USE WITH CC5, CC10 & CC25 HYDRAULIC CLAMPS

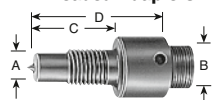
Swivel Caps



10 ton
350144*
A-35 mm
B-19 mm

25 ton
350145
A-50,8 mm
B-25,4 mm

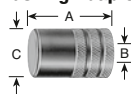
Threaded Adapters



10 ton
38597
A-1 - 8
B-1 - 8
C-19 mm
D-50,8 mm

25 ton
38953
A-1 1/4-7
B-1 1/2-16
C-70 mm
D-111 mm

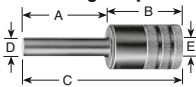
Pushing Adapters



10 ton
28228**
A-60,3 mm
B-1 - 8
C-38,1 mm

25 ton
28229**
A-73 mm
B-1 1/4-7
C-44,5 mm

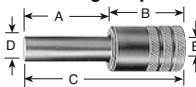
Pushing Adapters



10 ton
201923**
A-79,4 mm
B-57,2 mm
C-136,5 mm
D-12,7 mm
E-1 - 8

25 ton
34510**
A-82,6 mm
B-66,7 mm
C-149 mm
D-19 mm
E-1 1/4-7

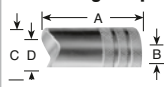
Pushing Adapters



10 ton
201454**
A-79,4 mm
B-57,2 mm
C-137 mm
D-19 mm
E-1 - 8

25 ton
34511**
A-82,6 mm
B-66,7 mm
C-149 mm
D-25,4 mm
E-1 1/4-7

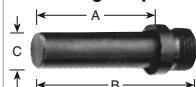
V Pushing Adapters



10 ton
34806**
A-66,7 mm
B-1 - 8
C-38,1 mm
D-25,4 mm

25 ton
34807**
A-79,4 mm
B-1 1/4-7
C-44,5 mm
D-31,8 mm

Pushing Adapters



5 ton
309874*
A-51,6 mm
B-562,8 mm
C-15,9 mm

* May be used with CC5
** Must be used with a threaded adapter.



Tire Removing

BB SERIES TOOL

10 Ton Hydraulic

Unseat tire beads hydraulically on 25" to 49" diameter earth mover rims with pry bar pockets.

TIRE REMOVING TOOL

- Made to fit into the pry bar pocket
- Hydraulic pressure does all the unseating.
- Lightweight and portable.
- P55 hydraulic hand pump and 9764 hose recommended to be used with BB1600.

HYDRAULIC TOOLS



Tool Model	Tool Weight kg.	Rim Size	Cylinder Capacity	Stroke (mm)
BB-1600	10,25	25" - 49"	10	101,6
BB1601	10,9	25" - 49" Single, two, three piece rims	10	101,6
Contact Factory	13,65	25" - 51"	12,3	107,9



FLS HYDRAULIC FLANGE SPREADER



Basic FLS15 Unit With Serrated Shoes

FEATURES AND BENEFITS:

- 15 Metric Ton Wedge-Driven Spreader
- Jaws Fully Supported by Wedge for Excellent Durability
- Low Friction Provided by Heavy-Duty Extended-Life Lubricant
- Ideal for Flanges With Narrow Gaps - Only 5 mm Required for Entry
- Very High Strength due to Special Alloy Used
- Compact and Lightweight Design - Only 252 mm Long at a Weight of 3.2 kg
- Easy to use - Ergonomically Balanced Handle and Gripping Tape
- Suitable for the Offshore Environment due to Superior Corrosion Resistance
- Quick Adjustments for Various Tasks due to Interchangeable Shoes (Both Stepped and Serrated)
- Easy and Quick Maintenance - No Special Tools Required
- Includes female half coupler - mates to standard 9798 male half coupler.

HYDRAULIC TOOLS

Max. Spreading Force	Order no.	Tip Clearance	Max. Spread	Type	Oil Capacity	Weight	Operating Pressure
15 ton	FLS15 FLS15-ST	5 mm	10 mm pro Hub	Hydraulic	16 cm ³	3,2 kg	max. 700 bar

Wedge opened	Wedge closed	Wedge opened	Wedge closed
<p>Dimensions: 15, 48, 252</p>	<p>Dimensions: 5, 38, 227, Ø 63</p>	<p>Dimensions: 15, 23, 31, 39, 47, 252</p>	<p>Dimensions: 5, 13, 21, 29, 37, 227, Ø 63</p>
FLS15	FLS15	FLS15-ST	FLS15-ST



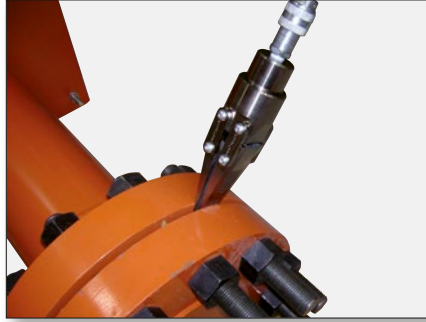
OFFSHORE FLANGE SPREADER KIT*		part number FLS15-FSK	part number FLS15-FSK-ST	part number FLS15-MSK	part number FLS15-MSK-ST
FLS15	SPREADER, HYDRAULIC SERRATED	2	-	1	-
FLS15-ST	SPREADER, HYDRAULIC STEPPED	-	2	-	1
SB15	ALUMINIUM HOLDING BLOCK	2	2	1	1
P19L	LIGHTWEIGHT HAND PUMP WITH GAUGE	1	1	-	-
3000827	MANIFOLD, 2 NEEDLE VALVE ASSEMBLY (incl. 2 gauges)	2	2	-	-
9765E (1x) and 9767E (2x)	HOSES	3	3	-	-
2008577	HEAVY DUTY CASE	1	1	-	-
3000832	HEAVY DUTY CASE	-	-	1	1

TOPSIDE FLANGE SPREADER KIT**		part number FLS15-FBK	part number FLS15-MBK	part number FLS15-FBK-ST	part number FLS15-MBK-ST
FLS15	SPREADER, HYDRAULIC SERRATED	2	1	-	-
FLS15-ST	SPREADER, HYDRAULIC STEPPED	-	-	2	1
SB15	ALUMINIUM HOLDING BLOCK	2	3	2	3
P19L	LIGHTWEIGHT HAND PUMP WITH GAUGE	1	1	1	1
MANIFOLD	MANIFOLD, 2 NEEDLE VALVE ASSEMBLY (incl. 2 gauges)	1	-	1	-
9765E (1x) or 9767E (2x)	HOSES	-	1	3	1
2008410	HANDLE FOR SPREADER	2	1	2	1
2008650	STANDARD CASE	1	1	1	1



HYDRAULIC SPREADER FLS15

This hydraulic spreader operates using the integrated wedge concept. It is ideal for creating space for flange surface cleaning and repair, and for gasket replacement. The spreader is single-acting, and requires a hydraulic pump with a three-way valve for actuation. Maximum operating pressure is 700 bar.



FLS HYDRAULIC FLANGE SPREADER

SPREADING FORCE:

Maximum 15 metric tons per tool at 700 bar. It is recommended that the tools be used in pairs, providing a maximum combined force of 30 metric tons.

TYPICAL APPLICATIONS:

- Pipe and flange repair
- Removing elbows
- Couplers - gasket and metal seal Replacement
- Heavy equipment maintenance

“RECOMMENDED COMPONENTS FOR A COMPLETE HYDRAULIC CIRCUIT



Optional handle
Part Number 2008410



Optional Stepped Shoe
Part Number 2008083*

Note: Part number is for one shoe only.
Two shoes required per spreader.
Two stepped shoes shown.



Optional Stepped Block
Part Number SB15 (1 pc)

WE RECOMMEND USE OF THE FOLLOWING POWER TEAM COMPONENTS:



Pump



Coupler



Hose



Gauge



Gauge Adapter

Description	Part Number
Two Speed, Single-Acting Hand Pump	P19L
Hydraulic Hose Assembly	9764E
Pressure Gauge	9040E
Gauge Adapter	9670
Coupler (male half coupler)	9798

Note: Torque wrench tools use smaller couplers. Do not attempt to use torque wrench hoses with this tool.



Hydraulic PUNCHES

20 & 35 Ton

HYDRAULIC TOOLS

- Punch smooth, precise holes in seconds; much faster than drilling.
- Fully portable for construction, maintenance and service applications, or can be mounted on a workbench for production jobs. Has carrying handle for precise locating.
- Rugged, forged steel "C" frame for great strength and durability.
- Dual action, spring loaded stripper holds material during punching operation, strips material from punch on return. Scribe lines on stripper aid in locating the punch (HP 35 only).
- Double Acting prevents binding and speeds retraction (HP20 only).
- The PE172 electric/hydraulic pump is an ideal power source.



HP35

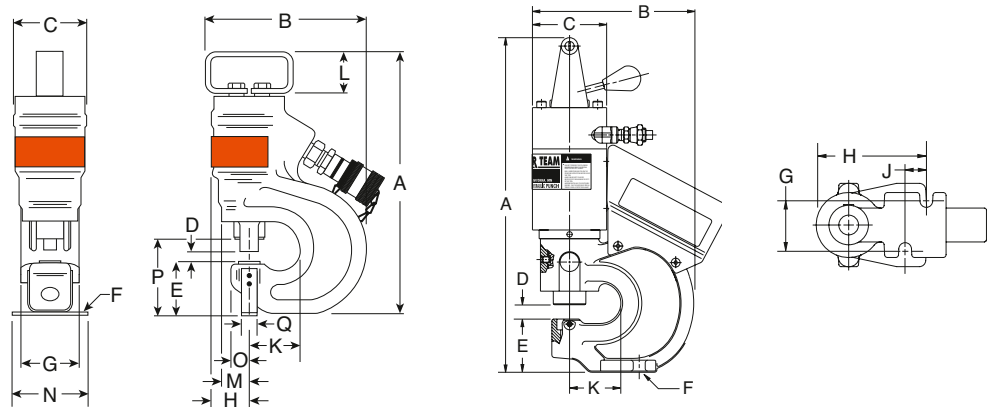
No. HP35 – Punch only, includes metal case and die change tools. Wt., 19 kg.

No. HP35S – Punch with punches and dies. Includes HP35 punch, metal case and 250459 punch/die set. Wt., 20 kg.

No. HP35P – Punch set with pump. Same as HP35SP, but does not include punch/die set. Wt., 39 kg. NOTE: Available in 220 volt, 50 Hz. Order with suffix "-220".

No. HP35SP – Punch set with pump. Includes HP35 punch, PE172 electric/hydraulic pump, 9756 hose, 9798 hose half coupler, 250459 punch/die set, metal case. Wt., 40 kg. NOTE: 220 volt, 50 Hz. Order with suffix "-220".

No. 250459 – Punch/die set for round holes. Includes one each: PD437 11,1 mm punch/die, PD562 14,3 mm punch/die, PD688 17,5 mm punch/die, PD812 20,6 mm punch/die. Wt., 0,7 kg.



Cap.	Order Number	Max. Oper. Press. (bar)	Max. Oil Cap. (cm ³)	Max. Material thickness (mm)	Max. Throat Depth															
					A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	Mtng. Holes F (mm)	G (mm)	H (mm)	J (mm)	K (mm)	L (mm)	M (mm)	N (mm)	O (mm)	P (mm)	Q (mm)
20	HP20	700	64	12,7	419	202	93	16	66	14	54	124	24	57	—	—	—	—	—	
35	HP35	700	75	12,7	349	229	95	14	73	6	76	46	—	71	57	38	89	22	102	19

No. HP20 – Basic punch. Wt., 15 kg.

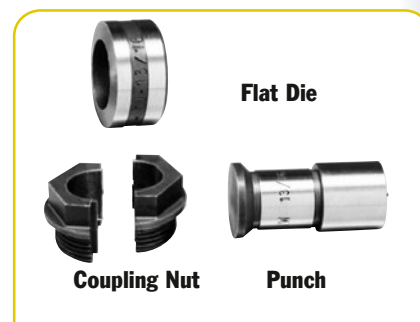
No. HP20S – Punch frame with cylinder, valve, handle, two coupling nuts, plus five punch and die sets in 6,4 7,9 ,9,5 ,11,1 and 13,5mm dia.Wt. 15,9 kg .

No. HP20SP* – Complete punch set with PE102AR pump (115/230V, 50/60 Hz), HP20HS hand switch, 9682 nipple, two 9792 female couplers and two 9793 male couplers. Also includes two 9758 3 m hoses, 9680 coupling, and same punch and die sets as in HP20S (above). Tool is completely assembled and pre-filled with oil. In storage box. Wt., 15,9 kg.

HP20



Punch Set HP20SP
Includes the PE102AR pump, HP20HS hand switch, hoses, couplers, punch and die sets in sizes 6,4, 7,9 ,9,5 ,11,1 , and 13,5 mm diameter, with storage box Wt.15,9 kg.



PUNCH/DIE SETS FOR HP20 & HP35 HYDRAULIC PUNCHES							TYPICAL 20 TON STYLE TOOLING					
For use with HP20 Hydraulic Punch					For use with HP35 Hyd. Punch		Punch Size (mm)	INCHES		MM		
Punch Size (mm)	Punch Style	Punch No.	Flat Die	Bevel Die No.	Coupling Nut No.	Punch/w Flat Die Set		Punch/w Bevel Die Set	Hole Dia.	Bolt	Hole Dia.	Bolt
6,4	Round	251970		--	252001	--	--	6,4	1/4	#10	6,3	--
7,9		251971	251983	--	252001	PD313	--	8,0	5/16	1/4	7,9	--
9,5		251972	251984	251996	252001	PD375	PD375B	9,5	3/8	5/16	9,5	M8
11,1		251973	251985	251997	252001	PD437	PD437B	11,1	7/16	3/8	11,2	M10
13,5		251974	251986	251998	252001	PD531	PD531B	13,5	17/32	7/16	13,5	M12
14,3		251975	251987	251999	252001	PD562	PD562B	14,3	9/16	1/2	14,3	--
17,5		251976	251988	--	252001	PD688	--	17,5	11/16	5/8	17,5	M16
19,8		251977	251989	--	252002	PD781	--	19,8	25/32	--	19,8	M18
20,6		251978	251990	--	252002	PD812	--	20,6	13/16	3/4	20,6	--
12,7		Square	251979	251991	--	252002	--	--				
13,5	251980		251992	--	252002	--	--					
6,4 x 19	Obround	251981	251993	--	252002	--	--					
9,5 x 19		251982	251994	--	252002	--	--					
			251995									



HP20FS



HP20HS

252000

ACCESSORIES FOR HP20 HYDRAULIC PUNCH

No. HP20FS – Optional foot switch mounted in foot switch guard. Supplied with 3 m cord and male remote connector. Wt., 0,9 kg.

No. HP20HS – Replacement handswitch. Supplied with 3 m cord and male remote connector. Wt., 0,9 kg.

No. 252000 – Optional coupling nut wrench. Makes punch/die changes easier without “rounding-off” coupling nuts. Wt., 0,3 kg.

TECH DATA

Page 231



Testers HYDRAULIC

200, 300
and 750 l/min



HT50A



HT200

HYDRAULIC TOOLS

200 , 300 AND 750 L/MIN IN-LINE HYDRAULIC TESTERS

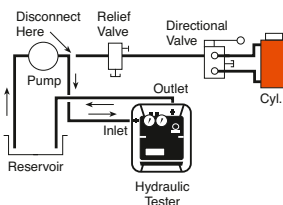
- Accurately measure oil flow, pressure and temperature on in-plant equipment, forklifts, machine tools and more.
- Temperature and flow readings are in Metric and English, accurate to within $\pm 2\%$ of full scale.
- Dual pressure gauges for high and low pressure readings; low pressure gauge is automatically shut off and protected as pressure rises beyond its maximum reading.
- Automatic pressure compensating feature lets you increase flow without

- affecting pressure setting.
- Reverse flow through tester will not cause damage; replaceable safety disc ruptures if pressure exceeds upper limit.
- Solid state voltage regulator eliminates errors caused by voltage change during testing.
- Troubleshoots systems with capacities to 750 l/min at pressures less than 350 bar. Accurately measure oil flow to $\pm 5\%$, pressure to within 2% and temperature readings within 1%.
- Pressure gauge is liquid filled to dampen system pulsation.

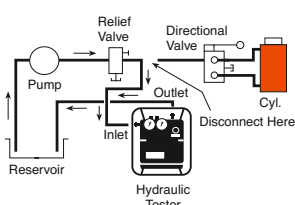
For more precise low pressure readings, an optional dual pressure gauge kit is available (see page 183).

No. HT50A – Hydraulic circuit tester with single liquid filled pressure gauge, 0-5000 psi, 0-350 bar. Includes two adapter unions for 3/4" male NPTF fittings. Wt., 16,8 kg.

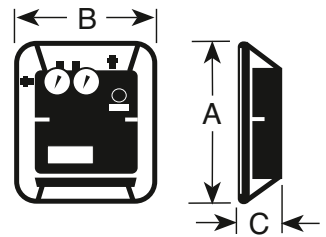
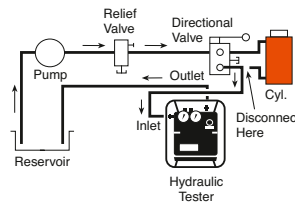
Testing a pump



Testing a relief valve



Testing a directional valve



Order Number	Max Flow (l/min)	Scale	Flow Ranges		Max. Oper. Pressure		Temp. Scale Range		Port Sizes	Weight lbs.	kg.	A in. (mm)	B in. (mm)	C in. (mm)
			(gpm)	(l/min)	psi	(bar)	°F	°C						
HT50A	200	—	0-50	0-200	5,000	345	20-240	-6 to 114	1 ¹ / ₁₆ -12UN Female "O" Ring with Union Adapt. 3/4" Female NPTF	30.3	16.8	12 ¹ / ₄ (311)	6 ¹ / ₄ (159)	10 (255)
HT75	300	High Low	15-75 3-15	50-300 10-60	5,000	345	100-250	40-120	3/4" NPT Swivel	18.2	8.6	13 ³ / ₄ (349.25)	11 ⁷ / ₈ (301.62)	5 ³ / ₄ (146.05)
HT200	750	High Low	25-200 5-40	100-750 20-150	5,000	345	100-250	40-120	1 ¹ / ₂ "* SAE Split Flange	28.2	13.6	15 ⁷ / ₈ (403.47)	13 ³ / ₄ (336.55)	6 ³ / ₄ (171.45)

For a complete listing of accessories for the HT series of hydraulic system testers, see pages 193-194.
*Not included, must be ordered separately, see page 194.



Service Accessories HYDRAULIC TESTER

DUAL GAUGE CONVERSION KIT FOR 50 GPM TESTER.

Provides more precise low pressure readings. Remove pressure gauge block and gauge from tester and replace it with this block. Install high pressure gauge from tester (350 bar) onto this new block.

No. 307281 – Dual gauge conversion kit. Consists of gauge mounting block, pulsation dampener, thermal overload protector, low pressure gauge and gauge protector. Wt. 0,45 kg.



307281

307281 Low pressure gauge calibrated 0-600 psi 0-42 bar.

37045



Auxiliary power cord for use with 300 and 750 l/min testers

No. 37045 – Auxiliary power cord. For use with any 12 or 24 volt battery to remotely power tester. Wt. 0,5 Kg. CAUTION: For use on negative ground systems only.

**9785
9786
8987
9788**



Hoses

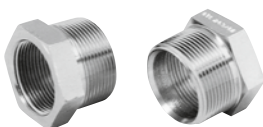
No. 9785 – Hose, 19,1 mm I.D. x 3/4" NPTF male both ends. 3 m length. 155 bar working pressure. (2 req'd on 200 and 300 l/min testers) Wt., 3kg. The following hose assemblies are all 4-ply spiral wound wire, 3 m long. For use with 750 l/min testers.

No. 9786 – Hose, 25,4 mm I.D. x 1 1/4" NPT male both ends. Recommended max. flow 340 l/min, with a working pressure of 280 bar. Wt., 6,3 kg.

No. 9787 – Hose, 31,8 mm I.D. x 1 1/4" NPT male both ends. Recommended max. flow 530 l/min, with a working pressure of 210 bar. Wt., 6,4 kg.

No. 9788 – Hose, 38,1 mm I.D. x 1 1/2" NPT male both ends. Recommended max. flow 750 l/min, with a working pressure of 175 bar. Wt., 11,4 kg.

203264



Hose reducer bushings

No. 203264 – Consists of two hose reducer bushings, 1 1/4" NPT female x 1 1/2" NPT male end. Needed to adapt No. 9786 25,4 mm I.D. hose and No. 9787 31,8 mm I.D. hose to tester. Wt., 1 kg.



Hydraulic Tester

SERVICE ACCESSORIES

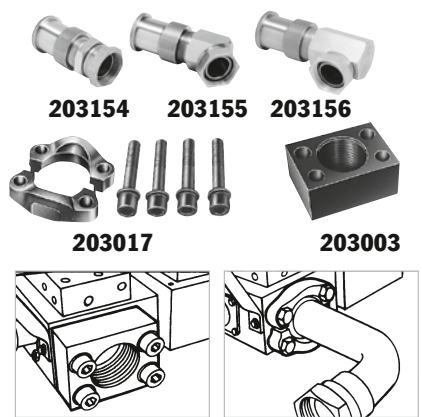
Fittings/adapters For the 750 l/min hydraulic tester

Attach to the HT200 hydraulic tester by the use of flanged-head adapters and split flanges, or by a set of female straight adapters.

HYDRAULIC TOOLS

FLANGED HEAD ADAPTER UNIONS AND SPLIT FLANGE KIT

- No. 203154** – Straight flange adapter. 38,1 mm flanged-head to 11/2" NPSM female swivel. Wt., 1 kg.
- No. 203155** – 45° flange adapter. 38,1 mm flanged-head by 11/2" NPSM female swivel. Wt., 1,5 kg.
- No. 203156** – 90° flange adapter. 38,1 mm flanged-head by 11/2" NPSM female swivel. Wt., 1,9 kg.
- No. 203017** – Split flange kit. Consists of four flange halves and attaching bolts to permit use of 38,1 mm I.D. flange adapters listed at left. Wt., 1,3 kg.



FEMALE STRAIGHT FLANGE ADAPTER

- No. 203003** – Consists of two female straight flange adapters with attaching bolts. When attached to inlet/outlet ports, allows connection of 11/2" NPT male hose ends to tester. Wt., 3,9 kg.

HYDRAULIC FITTINGS FOR USE WITH ALL TESTERS.

	No. 16954 – 90° swivel adapter, 3/4" NPTF male x 3/4" NPSM female. Wt., 0,4 kg.		No. 26073 – Swivel adapter, 3/4" NPTF female x 1/2" NPSM female. Wt., 0,1 kg.
	No. 22041 – Coupler, 3/4" NPTF male x 3/4"-16 female ORB. Wt., 0,2kg.		No. 26074 – 45° swivel adapter, 3/4" NPSM female x 3/4" NPTF male. Wt., 0,3kg.
	No. 22042 – Coupler, 3/4" –16 female ORB x 1 1/16"-12 female 37° JIC. Wt., 0,2kg.		No. 26075 – Swivel adapter, 3/4" NPSM female x 3/4" NPTF female. Wt., 0,2 kg.
	No. 22043 – Coupler, 3/4" –16 female ORB x 9/16"-18 female 37° JIC. Wt., 0,2kg.		No. 26076 – Swivel adapter, 3/4" NPTF male x 3/4" NPSM female. Wt., 0,2kg.
	No. 22044 – Coupler, 3/4" –16 female ORB x 1/2"-20 female 37° JIC. Wt., 0,2 kg.		No. 26077 – Cap, 3/4" NPTF. Wt., 0,3kg.
	No. 27737 – Swivel adapter, 3/4" –16 male x 3/4" NPSM female. For use with No. 9785 hose, which has 3/4" NPTF male thread. Wt., 0,1kg.		No. 26078 – Plug, 3/4" NPTF. Wt., 0,1 kg.
	No. 27287 – Coupler, 3/4" –16 UNF female ORB x 7/8"-14 UNF female 37° JIC. Wt., 0,2kg		No. 26079 – Adapter, 3/4" NPTF female x 1 1/16" –12 male ORB. Wt., 0,2 kg.
	No. 13449 – Cap, 1 1/16"-12 UNF female, 3/4" O.D. tube, 37° flare. Wt., 0,1kg.		No. 208402 – 45° union adapter, 7/8"-14 UNF male 37° JIC x 3/4" NPTF female. 210 bar working pressure. Wt., 0,3 kg.
	No. 26068 – 45° swivel adapter, 1" NPTF male x 3/4" NPSM female. Wt., 0,4 kg.		No. 208401 – 45° union adapter, 7/8"-14 UNF male 37° JIC x 3/4" NPTF female. Wt., 0,4kg.
	No. 26069 – Swivel adapter, 1" NPTF female x 3/4" NPSM female. Wt., 0,2 kg.		No. 206753 – Coupler, 1 15/16"-12 UNF female 37° JIC x 3/4" NPTF female. Wt., 0,5 kg.
	No. 26070 – Adapter, 1" NPTF male x 3/4" NPTF female. Wt., 0,1kg.		No. 26666 – Connector, 1 5/16"-12 UNF male 37° JIC x 3/4" NPTF male. Wt., 0,2 kg.
	No. 26071 – Service tee, 3/4" NPTF female (2) x 3/4" NPTF male. Wt., 0,4 kg.		No. 28984 – Straight adapter, 3/4" NPTF female x 1 3/16" –12 UN male 37° JIC. Wt., 0,3 kg.
	No. 26072 – Swivel adapter, 3/4" NPSM female x 1/2" NPTF male. Wt., 0,2kg.		No. 28985 – Straight adapter union, 1 3/16"-12 UN female 37° JIC x 3/4" NPTF female. Wt., 0,6 kg.

NOTE: The recommended maximum working pressure on the above fittings is 5,000 psi except the 208402.



7313



714
Fed. Spec.:
GGG-P-480

Retaining Ring PLIERS

Internal and External

HORSESHOE LOCK RING PLIER

- For removing horseshoe lock rings used on hydraulic brakes, differentials, etc. Plier is 203mm long; max. spread: 23,8mm

No. 714 – Horseshoe lock ring plier. Wt., 0,2 kg.

No. 7313 – External snap ring plier easily removes snap rings used to retain bearings on shafts. Max. spread: 27mm.

RETAINING RING PLIER KITS

- Choose from four sets; internal ring, external ring and convertible pliers for either internal or external rings.

No. 7053K – Replaceable tip pliers kit. This versatile kit contains (1) internal and (1) external pliers with (8) tip sets. Two sets each: 0,9 mm dia. 90° bend, 1,2 mm dia. straight, 1,2 mm dia. 90° bend, 1,8mm dia. straight. Recommended for 6,4 –51 mm rings. Packaged in plastic storage case. Wt., 0,3 kg.

No. 15702 – Replaceable tip kit (only) for No. 7053K.

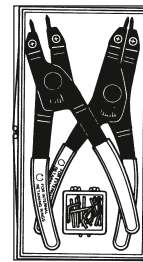
No. 7123K – Convertible pliers kit. Contains **No. 1120** (1mm dia./straight tip) and No. 1340 (1,8mm dia./straight tip). Each pliers “converts” to handle both internal and external rings. Packaged in a reusable plastic storage case. Wt., 0,4Kg.

No. 7125K – Convertible pliers kit. Contains **No. 1125** (1 mm dia./45° bent tip) and No. 1345 (1,8 mm dia./45° bent tip). Each pliers “converts” to handle both internal and external rings. Packaged in a reusable plastic storage case. Wt., 0,4kg.

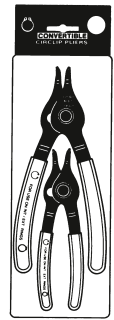
No. 7406K – Professional pliers kit. Contains (6) retaining convertible pliers to handle both internal and external rings from 6,4–51 mm. Includes straight and 90° off-set pliers with 1, 1,2, and 1,8 mm tip diameters. Includes Nos. 1120, 1131, 1320, 1329, 1340 and 1349. Packaged in an impact resistant storage case. Wt., 0,9 kg.

REPLACEMENT TIPS FOR 7300 AND 7301 PLIERS

No. 209201 – Replacement tips (pr.) for the 7300 and 7301 pliers. Wt., 0.1 kg.



7053K
internal &
external
plier, 4
sizes of
tips.



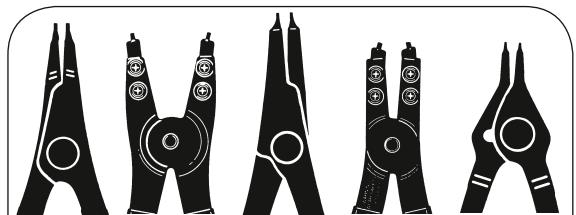
7123K



7406K

RETAINING RING PLIERS SELECTION GUIDE

Plier No	Tip Bend	Tip Size Dia. (mm)	For Int'l Rings* Bore Dia. (mm)	For External Rings* Shaft Dia. (mm)
0100	Str.	1	9,5 - 26	--
0200	Str.	1	--	6,4 - 22
0300	Str.	1,8	27 - 44,5	--
0400	Str.	1,8	--	24 - 36,5
0500	Str.	2,3	46 - 89	--
0600	Str.	2,9	--	38 - 89
7300	Str.	3	78 - 152	--
7301	Str.	3	--	38 - 165
Convertible Pliers				
1120	Str.	1	9,5 - 14	6,4 - 17
1125	45°	1	9,5 - 14	6,4 - 17
1131	90°	1	9,5 - 14	6,4 - 17
1320	Str.	1,2	16 - 26	17 - 22
1329	90°	1,2	16 - 26	17 - 22
1340	Str.	1,8	27 - 44,5	24 - 36,5
1345	45°	1,8	27 - 44,5	24 - 36,5
1349	90°	1,8	27 - 44,5	24 - 36,5



External	Internal	Convertible
No. 0200	No. 0100	No. 1120
No. 0400	No. 0300	No. 1320
No. 0600	No. 0500	No. 1340
		No. 1125*
		No. 1345*
		No. 1131**
		No. 1329**
		No. 1349**

Fed. Spec.: GGG-P-480-E

* 45° Angled Tips

** 90° Angled Tips

Always wear safety goggles when using pliers

*Capacities are shown for basic style rings.

3700.1 7791077746:W



Service Tools

ACCESSORIES



3344A

PHOTO TACHOMETER

- Infrared light source, micro-processor controlled crystal display.
- Strong magnetic base is included.

Machine speed: It is critical for proper machining operations. Speeds too fast or too slow can shorten tool life and cause expensive, unnecessary machine downtime. This digital photo tach can take readings from revolving shafts on drill presses, grinders, lathes and other machines. It can also be used to check engine operation on in-plant vehicles like forklifts. The 3344A is

accurate to within ± 1 rpm. The 10mm high liquid crystal display is easily visible even in high ambient light areas.

No. 3344A – Digital Photo Tachometer. With memory, photo probe assembly, magnetic base, 2,75 m of reflective tape and plastic case. Wt., 2 kg.

No. 39811 – Replacement magnetic base assembly. Wt. 0,1kg.

No. 45329 – Replacement photo probe assembly. Wt., 0.2 kg.

No. 204666 – Replacement retro-reflective indicator tape, 2,75 m long x 12,7mm wide. Wt., 0.1 kg.

SPECIFICATIONS

Readout: Liquid crystal display: 4 (10mm high) digits, low battery indicator, memory mode indicator, high and low RPM memory mode indicator.

Range: 200 to 9999 rpm. Accuracy: $\pm .25\%$, ± 1 rpm. Update time: 3/4 second.

Power switch: Membrane switch (automatic shut-off after one minute of no signal input).

Power source: 9 volt alkaline battery. Light source: Infrared with 4,6m plug-in cable.

Light holder assembly: 13,6 kg rated magnet; 50,8 mm dia. x 6,4 mm high (102 mm high overall with post).

Size: 86 w, 152 h x 38 mm d.

Carrying case: 343 w, 254 h x 102 mm d.

MECHANICAL TOOLS

HTS50 HEAVY-DUTY PIPE SEALANT WITH TEFLON®

- Seals new or damaged threads; resists water, chemicals and oils.
- Replaces conventional tape methods; forms a clog-free seal. Effective at 700 bar.

When “plumbing” a hydraulic system, there’s now a better answer than tapes which can tear or shred, possibly plugging filters, valves or gauges. This compound combines the lubri-

cating qualities of Teflon® with a fast curing anaerobic sealant. Seals all metal fittings, plugs and threaded joints quickly and easily. Cures to form a permanent seal which is inert to hydrocarbons, most acids, chemicals, solvents and steam. Allows adjustment up to 16 hours after assembly; cannot loosen under vibration. Prevents galling of mating parts upon disassembly. Withstands temperatures from -54° to +190° C.

No. HTS50 – Sealant, 50 ml. tube. Wt., 0.2 kg.

(Teflon® is a registered trademark of duPont Co.)

HTS50



“O” RING SEAL PICKS

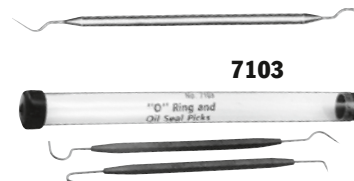
Even the seemingly simple job of removing and installing “O” ring seals can be difficult without the aid of the proper tool. The 7312 all metal “O” ring seal pick does the job with ease. Two special picks in set No. 7103 get right to the trouble areas.

No. 7312 – “O” ring seal pick. Wt., 0.1 kg.

No. 7103 – Set of two “O” ring seal picks. Wt., 0.1 kg.

7312

7103



UNIVERSAL OUTSIDE THREAD CHASER

Restore damaged threads on shafts, housings, cages, etc., for re-assembly of matching parts. Eliminates need for thread-cutting equipment. Will not harm threads. V-pads and dies can be replaced. Cap. 32 to 127 mm O.D.

No. 7402 – Thread chaser, complete (with 6 dies: threads per inch – 4, 5, 6, 7, 7½, 8, 9, 10, 11, 11½, 12, 14, 16, 18, 20 and 24). Wt., 0,2 kg.

No. 202817 – Metric die set (3 dies: mm per thread: 1, 1¼, 1½, 1¾, 2, 2½, 3, 3½, and 4). Wt., 0.1 kg.

7402



MAGNETIC PICK-UP TOOL

Has permanent magnetic head for retrieving parts from otherwise inaccessible places.

No. 7395 – Pick-up tool with pocket clip. 152 mm lg. Wt., 0.1 kg.

7395





Wrenches AND PRY BARS

RATCHETING CHAIN WRENCHES

Special head design allows you to turn wrench in either direction. Ratcheting action makes it possible to re-grip without removal. For parts of most any size and shape.

No. 7400 – Chain wrench, cap. 12,7 to 121 mm O.D. (Capacity= 450 Nm)
Wt., 0,9kg

No. 7401 – Chain wrench, cap. 76 to 171 mm O.D. (Capacity= 900 Nm)
Wt., 2,3 kg.

No. 209199 – Replacement chain with pin for No. 7400 chain wrench (406 mm long).

No. 209200 – Replacement chain with pin for No. 7401 chain wrench (610 mm long).

ADJUSTABLE HOOK SPANNER WRENCH

Needed wherever turret adjusting nuts or packing gland nuts are used. Cap.: 38 to 102 mm. Handle overall length: 483 mm.

No. 885 – Adjustable hook spanner wrench. Wt., 1,4 kg.

ADJUSTABLE HOOK SPANNER WRENCHES

Replace many fixed-size wrenches... cover range of capacities needed to service industrial tractors and other equipment. Drop-forged jaws adjust to eleven positions for a capacity of 121 to 324 mm O.D. Handle overall length: 610 mm; diameter: 25,4 mm.

No. 7307 – Spanner wrench with one 9,5 mm thick jaw. Wt., 3,3 kg.

No. 7308 – Spanner wrench with two interchangeable jaws: one 9,5 mm thick, one 19 mm thick. Wt., 5 kg

HEAVY-DUTY ADJUSTABLE SPANNER

Extra heavy construction. Has one 19 mm thick, eleven-position hook-jaw for a capacity of 131 to 324 mm O.D. Drop-forged. Handle length: 654 mm; handle dia.: 33.3 mm

No. 7309 – Heavy duty adjustable hook spanner wrench. Wt., 5 kg.

ADJUSTABLE GLAND NUT WRENCH

Designed to handle 51 to 152 mm dia. hydraulic cylinder gland nuts on many construction vehicles. Fits 6,4 and 7,9 mm dia. pin holes; features a 3/4" sq. drive.

No. 1266 – Adjustable gland nut wrench. Wt., 1,4 kg.

No. 204928 – Replacement pin for No. 1266

PRY BARS

Our rolling head pry bars are an extremely popular and useful tool. Head may be used for almost any prying job since a great deal of leverage can be obtained. Long tapered body may be used as a lining-up drift.

No. 7162 – Pry bar; 9,5 mm round, 152 mm long. Wt., 0,1 kg.

No. 7163 – Pry bar; 11,1 mm round, 305 mm long. Wt., 0,3 kg.

No. 7164 – Pry bar; 14,3 mm round, 406 mm long. Wt., 0,5 kg.

No. 7165 – Pry bar; 19 mm round, 457 mm long. Wt., 1 kg.

JIMMY BARS

Ideal for general lifting or prying. Heat treated chrome alloy steel to resist bending or breaking.

No. 7166 – Jimmy bar; 15,9 mm round, 457 mm long. Wt., 0,6 kg.

No. 7167 – Jimmy bar; 19 mm round, 610mm long. Wt., 1,1 kg.

No. 7168 – Jimmy bar; 22,2 mm round, 762 mm long. Wt., 1 kg.

"MAJOR PERSUADER" JIMMY BARS

Two big jimmy bars for big jobs. Forged from chrome alloy steel.

No. 7420 – Jimmy bar; 22,2 mm round, 1.168 mm long. Wt., 3,4 kg.

No. 7421 – Jimmy bar; 25,4 mm round, 1.372 mm long. Wt., 1,9 kg.



MECHANICAL TOOLS